Low CD4 Counts Despite Effective ART in Hospitalized Malawian HIV+/COVID+ Coinfected Patients

To the Editors:

Most Coronavirus-disease-2019 (COVID) patients in African hospitals are treated in isolation units[1] (IUs). For infection prevention, access is often restricted, and diagnostic and therapeutic efforts are, thus, more difficult. In Lilongwe, Malawi, Lighthouse (LH) is a local antiretroviral therapy (ART) clinic providing care for advanced HIV disease (AHD) at Kamuzu Central Hospital (KCH). KCH as a tertiary referral hospital for Malawi's central region operates 2 IUs. To mitigate the abovementioned effects for COVID+/HIV+ coinfected patients treated in the IUs, LH clinicians visited the IUs daily to ensure AHD services (CD4 counts, serum-cryptococcal-antigen (CrAg), and urine-lipoarabinomannan (LAM), treatment, and prophylaxis for opportunistic infections.

In a 5-week period (week 30–34, 2021) during Malawi's third COVID wave, 46 COVID+/HIV+ patients were seen (48% female individuals, median age 51 years, interquartile range 41–59). Concomitant risk factors of severe COVID disease present were hypertension (40%), diabetes (34%), and obesity (17%).

Seventeen (37%) patients were diagnosed HIV-positive within this hospital admission or in the past 6 months, 29 (63%) patients were already on ART for more than 6 months (median 11 years, interquartile range 6–14). In-hospital mortality was observed in 7 of the 21 (33%) COVID+/HIV+ patients younger than 50 years and 15 of the 25 (60%) COVID+/HIV+ patients older than 50 years. Comparison with overall mortality from the IU register [irrespective of HIV status; younger than50 years: 30% (19%–42%), older than 50 years: 60% (48%–72%)] did not suggest a higher mortality in HIV+ patients.

CD4 counts of <200 cells/mL, defining AHD according to WHO,[2] were seen frequently—in 75% of the patients newly diagnosed and in 67% of those on ART (table 1). Opportunistic coinfections were also frequent: 6 patients had a positive urine-LAM—3 died, and 3 recovered. One patient was diagnosed with tuberculosis meningitis and one with serum CrAg-positive cryptococcal meningitis—both died.

To further investigate the high proportion of low CD4 counts among patients taking ART for years, viral loads were assessed. These were suppressed in 90% of patients, making ART failure as the main cause of low CD4 counts unlikely. Because COVID patients reportedly have diverse changes in T-cell immunity including low CD4 counts,[3] we determined the CD4 count in 27 consecutive HIV−/COVID+ patients older than 18 years admitted over 2 weeks to the IU. Their CD4 counts were significantly higher than that in both HIV+/COVID+ patient groups. A synergistic negative effect of severe acute respiratory syndrome coronavirus 2 and HIV on CD4 cells of coinfected patients seems, therefore, likely. Contrary to investigations in other settings,[4] we observed this effect also in patients who were treated with ART successfully and are virologically suppressed. We speculate that, as in our setting, CD4 counts by the time of ART initiation are often low,[5] a lasting exhaustion of CD4 cells may aggravate changes even when on ART.

Our findings require more detailed immunological characterization of African

TABLE 1. Laboratory Results in COVID+ Patients in Isolation Unit Stratified by HIV and ART Status

	Absolute lymphocytes*	CD4†	CD4% <15%	CrAg+‡	LAM+§	VL <40 copies/mL‖
HIV+ ART none or <6 month	Median (IQR): 1100/mL (705–1400) <1000/mL: 7/15 (47%)	Median (IQR): 120/mL (102–198) <200/mL: 12/16 (75%) <100/mL. 4/16 (25%)	8/14 (57%)	1/14 (7%)	3/13 (23%)	—
HIV+ ART >6 months	Median (IQR): 910/mL (610–1400) <1000/mL: 15/25 (60%)	Median (IQR): 134/mL (85–234) <200/mL: 16/24 (67%) <100/mL: 7/24 (29%)	11/22 (50%)	0/19 (0%)	3/18 (17%)	19/21 (90%)
HIV−	Median (IQR): 1013/mL (781–1617) <1000/mL: 13/27 (48%)	Median (IQR): 318/mL (227–551) <200/mL: 4/27 (15%) <100/mL: 2/27 (7%)	2/27 (7%)	—	—	—

Denominators vary because of missing data. Comparison of CD4 counts (Mann–Whitney U test): HIV− vs. HIV+, ART >6 months: z score = 3.59, P = 0.00034; HIV− vs. HIV+, ART <6 months: z score = 2.98, P = 0.00278; and HIV+, ART >6 months vs. HIV+, ART <6 months: z score = 0.08, P = n.s.

*BC-2800, Mindray.

†PIMA CD4, Abbott.

‡CrAg LFA, IMMY.

§Determine tuberculosis LAM Ag, Abbott.

‖GeneXpert HIV Viral Load, Cepheid.

IQR, interquartile range; n.s., not significant.

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HIV+/COVID+ patients and their lymphocyte subpopulations during COVID infection. Our data clearly underline that AHD is a clinically relevant problem in COVID coinfected patients as well, and comprehensive HIV care needs to be ensured in COVID treatment units.

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Rapid Implementation of a Telemedicine Program in a Ryan White–Funded HIV Clinic During a Global Pandemic

To the Editors:

The COVID-19 pandemic presented unique challenges to treat patients with HIV in maintaining health care appointments for optimal disease management. People living with HIV (PLWH) had limited access to antiretroviral therapy and in-office appointments for health care needs due to clinic closures in compliance with Centers for Disease Control and Prevention social distancing guidelines.[1]

To address the gaps in care caused by the COVID-19 pandemic, HIV clinics quickly transitioned to a telemedicine model.[2,3] Prepandemic studies have assessed the efficacy of alternative telehealth encounters for PLWH, which predominantly took the form of e-mails, phone calls, and videoconferencing.[4,5] The Infectious Disease Society of America released a policy paper encouraging further research and use of telemedicine for HIV because it enables accessible and effective care.[6] Studies have repeatedly demonstrated the benefits and success of telemedicine among PLWH in resource-limited settings, such as remote areas and prison populations.[7,8]

In a Ryan White (RW)–funded HIV program in suburban Eastern Pennsylvania with a patient population representative of national demographics and comorbidities among PLWH,[9] we performed an observational study and analyzed quality outcomes comparing preimplementation and postimplementation of a telemedicine model during the initial wave of the global pandemic.

Participants included PLWH at an RW-funded clinic in Eastern Pennsylvania. The study population represents an aggregate sample of all patients seen during the 1-year period between September 24, 2019, and September 23, 2020.

The patient population in the clinic was analyzed during the 6-month period before and the 6-month period after the shift to telemedicine options. The pretelemedicine period is defined as September 24, 2019–March 22, 2020. The initiation of telemedicine coincided with the definition of COVID-19 as a pandemic and around the time of stay-at-home orders, and the telemedicine period is defined as March 23, 2020–September 23, 2020. The clinic was nearly completely shut down for in-person visits from March 23, 2020, to June 4, 2020, and dependent almost entirely on telemedicine visits. From June 5, 2020, to September 23, 2020, in-person visits were routine, and virtual visits were offered on patient request or if patients had symptoms concerning for COVID-19.

Virtual visits were primarily offered by Microsoft Teams, with the ability to transition to FaceTime, Google Duo, and telephone visits if technical issues impeded the use of Microsoft Teams. Microsoft Teams was the preferred method for video virtual visits because it is compliant with the Health Insurance Portability and Accountability Act.

Demographic information on race, ethnicity, age, insurance status, household income, and housing security was pulled from the HIV clinic data warehouse for the patients visiting the clinic 6 months before and 6 months post the initiation of telemedicine. Provider appointments were conducted every 6 weeks, 3 months, or 6 months, depending on the clinical status of the patient as per the clinic routine. HIV RNA testing (viral load) was consistently conducted within 1 month before each clinic appointment. Comorbid conditions, appointment adherence, number of visits conducted, viral load suppression (VLS) rate, and gaps in care (defined as no provider encounter within 6 months) were extracted from the electronic health record. VLS rate was an aggregate monthly percentage of patients with an HIV RNA of less than 200 copies/mL, based on the most recent viral load for a patient and included the entire active clinic population. Primary outcomes included rates of VLS, no-shows, and gaps in care. Press Ganey scores were followed to assess patient satisfaction.

This study was reviewed by the hospital network's Institutional Review Board and determined exempt. Only deidentified information was used to conduct research.

The clinic population included 345 unique patients during the time of this analysis. Among the cohort, 62.5% was male individuals with ages ranging from 19 to 82 years with a median (interquartile range) of 53 years (43.4–62.6 years); 65.8% was White, 30.9% Black/African American, and 33.6% self-identified as Hispanic/Latino. The median annual household income was $12,216 (mean = $19,749) with 52.0% at or below the federal poverty level (FPL). Approximately 2.9% was uninsured, 45.3% had

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