Results. The proportion of AIDS-related deaths decreased markedly between 1995 and 2017, while the proportion of deaths from non-AIDS cancers has increased (figure). Patients with non-AIDS cancers were older, had a higher CD4 count and greater proportion with undetectable viral load, and were more likely to be male; over 80% were current or prior smokers (table). Among all deaths from 2013 to 2017, 44% of eligible patients received colon cancer screening, 66% received cervical cancer screening, and 29% received breast cancer screening. Of patients who died from HCC, one out of six had imaging for HCC within 1 year and none within 6 months of diagnosis.

Conclusion. Improvements in cancer screening and preventative health measures including smoking cessation and lifestyle improvement education may help to reduce the increasing proportion of non-AIDS cancer-related deaths among PLWH.

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2246. Assessment of Factors Impacting Cervical Cancer Screening Rates Among Urban Women Living with HIV/AIDS

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Session: 240. HIV: Malignancy
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Background. Although cervical cancer disproportionately affects women living with HIV, having high cervical cancer screening rates for this population continues to be a challenge. In our urban HIV clinic caring for ~700 women, the baseline annual on-site screening rate was only 68% in 2017. The goal of this study was to identify factors related to low rates of screening in order to inform quality improvement efforts.

Methods. Over the time period of January 1, 2015 and June 30, 2017, we conducted a retrospective chart review of 185 randomly selected women with HIV. We collected data on cervical cancer screening adherence according to the screening guidelines provided by the Department of Health and Human Services. Correlations between clinical and demographic factors and patterns of cervical cancer screening were analyzed using chi square and logistic regression.

Results. During the review period, 68 (37%) patients completed two annual cervical cancer screenings, 96 (52%) completed 1, and 21 (11%) completed none. Of those completed, 22% were abnormal. When follow-up colposcopy was indicated, 18 of 42 (42%) women completed colposcopy within 6 months. Patients with screening rates lower than recommended were more likely to have substance use disorders and be uninsured (P<0.05). Factors significantly associated with adherence to screening guidelines included history of an abnormal pap test, current antiretroviral therapy, and more than four HIV-related primary care visits per year. Age and HIV viral load between the groups were not significantly different.

Conclusion. In this urban HIV clinic cohort, a high proportion of women completed at least one cervical cancer screening test over a 2-year period, a promising result in the setting of a recent change in cervical cancer screening guidelines less frequent testing. However, a smaller proportion completed colposcopy when indicated. The strongest predictors of low adherence to the guidelines were substance use disorder and lack of insurance. The next phase of this project will include a review of cervical and anal cancer screening rates among women, as well as patient surveys to determine quality improvement strategies that may further enhance acceptability and access to cervical and anal cancer screening and prevention.

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2247. Antiretrovirals Perturb Cholesterol Biosynthesis in PBMCs of HIV-Infected Individuals

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Background. Although antiretroviral therapy (ART) has resulted in a marked decrease in AIDS-related morbidity and mortality, the therapeutic benefit is often limited by side effects such as metabolic derangement, lipodystrophy, hyperlipidemia and cardiovascular diseases. The underlying mechanisms of these toxicities are not well understood. With a high prevalence of metabolic syndrome, we investigated the effect of ART on cholesterol biosynthesis.

Methods. A case–control study of ART-induced toxicity was conducted. Cases comprised HIV-infected individuals (N=16) on ART with viral loads averaging 20 copies/mL. Cases were matched to HIV-uninfected controls (N=16) by age, sex, and race/ethnicity. RNA was isolated from PBMCs after which qRT-PCR was performed. Wilcoxon Rank Test was used to evaluate significance (P<0.05). The cholesterol regulation genes that were studied included: sterol regulatory element-binding protein 2 (SREBP2, sensory control), HMG-CoA reductase (HMGCR, de novo synthesis), low density lipoprotein receptor (LDLR, uptake) and ATP-binding cassette transporter member 1 (ABCA1, efflux), AMP-activated protein kinase A1and B2 (AMPK1A1 and AMPK2B, markers of cellular energy status) as well as NR1H3 (also known as LXRα-liver x receptor alpha, a precursor to ABCA1).

Results. The age of participants ranged from 33 to 60 years, 16 males and 31% females. The ethnicity comprised of 25% Non Hispanic whites, 6% Hispanic white and...
69% African Americans. The ART regimen of the cohort was mostly tenofovir/emtricitabine (44%), tenofovir/emtricitabine/efavirenz (19%) and zidovudine/lamivudine (6%). ABCA1 and HMGCR were upregulated in cases compared with healthy controls (P < 0.01 and P = 0.01, respectively) (Figure 1).

Conclusion. ART might cause intracellular accumulation of cholesterol leading to upregulation of ABCA1 gene. ABCA1 Perturbation of cholesterol biosynthesis may be in the causal pathway of ART-associated metabolic syndrome.

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2248. Changes in Lipid Profiles for Patients to Tenofovir Alafenamide (TAF)-Containing Regimens: Perspectives from a Military HIV-Positive Cohort
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Background. Tenofovir alafenamide (TAF) was approved in 2015 for use in HIV-1 TAF decreases risk of renal and bone toxicity compared with tenofovir disoproxil fumarate (TDF). Early clinical trials reported median increases in low-density lipoprotein (LDL) of 20–29 and 9–13 mg/dL for total cholesterol (TC) following switch therapy from TDF-containing regimens at 48 weeks, raising concern for increased cardiovascular (CVD) risk over time. We assessed real-world changes in serum lipid concentrations following transition to TAF-containing regimens.

Methods. Eligible subjects in the U.S. Military Natural History Study, a longitudinal cohort of HIV-infected military beneficiaries, had been switched from TDF to TAF-based regimens, and had pre- and post-switch lipid profiles available. Antiretroviral therapy history, serum lipids, CD4 count and viral load were collected from the study database. Wilcoxon rank-sum test was used to compare lipid profile changes.

Results. As of January 1, 2018, 408 subjects on TDF switched to TAF; 238 had pre and post lipid profiles. Subjects were primarily male (95%), 45.4% African American, 70% were ≥40 years old at TAF start; 8% had CVD and 10% had diabetes. Changes in lipid profiles and CD4 count are presented in Table 1. No difference was seen when categorizing by age. Lipid changes not seen in subjects switched from an efavirenz (EFV) regimen. Increases in TC, HDL, and LDL were observed in those transitioning to TAF-containing regimens. No difference was seen when categorizing by age. Lipid changes not seen in subjects switched from an efavirenz (EFV) regimen. Increases in TC, HDL, and LDL were observed in those transitioning to TAF-containing regimens.

Conclusion. Patients with poor virological outcomes at 12 months of first-line ART had increased likelihood of insulin resistance compared with those with treatment success. There was good evidence to suggest that the proportion of those with VLS and IR was less than those with VLS and no IR.

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2250. Metformin for Preventing Diabetes Mellitus in HIV-Infected Patients with Prediabetes: A Randomized Controlled Trial
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Session: 241. HIV: Metabolic, Cardiovascular, and Renal Complications Saturday, October 6, 2018: 12:30 PM

Background. Both HIV and diabetes mellitus (DM) increase the risk for cardiovascular diseases. Prediabetes (PreDM), a condition preceding DM, is commonly observed among HIV-infected patients. Choosing antiretroviral therapy (ART) and lifestyle interventions may have a preventive role in the development of type 2 diabetes mellitus and HIV. Metformin and lifestyle interventions have been shown to reduce risk of progression to DM in non-HIV-infected population. This study aimed to evaluate the efficacy of metformin for preventing DM in HIV-infected patients.

Methods. An open-label randomized controlled clinical trial was conducted in HIV-infected patients with PreDM. Patients were randomized into two groups: metformin group (received metformin) and control group (not received metformin). Patients in both groups were counseled regarding diet control and lifestyle modification and followed for 6 months. The primary endpoint was the development of DM. Fasting plasma glucose (FPG), 2-hour 75-g oral glucose tolerance test (OGTT), computer-based homostatic model assessment index body mass index (HOMA Index) and insulin resistance (HOMA-IR) were analyzed.

Results. Seventy-four patients were enrolled, 37 in each group. Mean age was 49.6 years and 68.9% were males. At baseline, mean CD4 cell count was 570 cells/mm3 and mean body mass index (BMI) was 24.6 kg/m2. Baseline characteristics including age, sex, BMI, waist-hip (W/H) ratio, duration of ART, ART regimen, CD4 cell count and HIV RNA were similar between two groups (P > 0.05). At 6 months, patients in metformin group and two control groups had improved DM risk reduction (2.70%, 95% CI, −9.09% to +15.20%). Mean HbA1c significantly decreased from baseline only in metformin group. HOMA-IR at 6 months was significantly lower in metformin group (1.08 vs 1.478, P = 0.042). BMI, W/H ratio, FPG, HOMA Index and HOMA-IR at 6 months were not significantly different between two groups (P > 0.05). No patient had adverse effects that led to discontinuation of metformin. No cardiovascular event was observed in study period.

Conclusion. Metformin appears to improve insulin resistance and prevent progression to DM in HIV-infected patients with PreDM. Further study with longer study period is needed to evaluate long-term benefit of metformin.

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