prescribing policy for use of IV bisphosphonate in the setting of HIV has not yet been established.
Method: Our audit consists of a retrospective data collection on PLWHIV receiving IV bisphosphonate therapy on the Gazzard Day Unit at Chelsea and Westminster Hospital. The search included all patients who had received at least one dose of IV ibandronic or zoledronic acid between January 2015 and December 2017.
Result: Ninety patients were identified, of which 71 (79%) patients were male, with an average age of 56 years. Only two patients had a FRAX score documented before starting IV bisphosphonate therapy; the majority of patients (88/90) had a pre-treatment dual X-ray absorptiometry (DXA) scan, of which 67 (74%) patients had confirmed osteoporosis. Twenty-three patients (26%) were started on IV bisphosphonate therapy for other reasons (e.g. myeloma, vertebral wedge compression). Twenty-five of 90 (28%) patients had regular DXA scans performed during treatment. At the time of auditing, 39 patients (43%) were still on antiretrovirals associated with an increased risk of osteoporosis, including combinations containing TDF (n = 19) (21%), or protease inhibitors (PIs) (n = 31) (34%), and combinations containing both TDF and boosted PIs (n = 6) (7%). At the time of the audit 60% of patients were actively receiving IV bisphosphonate therapy, with average treatment duration of 24 months. Fifteen (28%) patients had exceeded the recommended 5-year duration of therapy. Renal function, calcium and vitamin D levels were regularly monitored during treatment for all patients on IV bisphosphonate therapy. Half of the patients have been given vitamin D supplementation; 17% have been prescribed both calcium and vitamin D. In our patient population no patients were found to have experienced adverse effects secondary to IV bisphosphonate therapy, such as osteonecrosis of the jaw or atypical bone fractures.
Conclusions: Our audit has shown that guidance is needed to ensure appropriate use of IV bisphosphonate in PLWHIV. As a result of our findings, in our centre a multidisciplinary approach was taken to implement strategies aimed at improving management and monitoring of IV bisphosphonate administration.

COMORBIDITIES AND COMPLICATIONS OF DISEASE AND/OR TREATMENT: CARDIOVASCULAR

P166

Immune and inflammatory biomarkers in naïve HIV-infected patients starting antiretroviral therapy: a prospective study

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Background: Atherogenesis in HIV patients is multifactorial. Our aim was to assess the effect of HIV infection and ART on several proatherogenic biomarkers and its relationship with subclinical atherosclerosis in a cohort of HIV-infected naive patients.
Methods: Multicentre prospective comparative study. Two groups of naïve HIV patients (group A: CD4 > 500, not starting ART at baseline; group B: CD4 < 500, starting ART at baseline) were compared with healthy controls (HC), matched by age and sex. At baseline, Months 12 and 24, laboratory data and carotid echography were performed. Low density lipoprotein (LDL) particle phenotype was measured by gel electrophoresis; total lipoprotein-associated phospholipase A2 (Lp-PLA2) by 2-thio-PAF assay; interleukin-6 (IL-6), high sensitivity C-reactive protein (hs-CRP), sCD14, sCD163 and ADMA by ELISA.
Results: Eighty-four participants: 62 HIV patients (group A, n = 31; group B, n = 31) and 22 HC. Median age was 37 (30 to 43) years, 81% men. At baseline HIV patients had higher plasma concentrations of hs-CRP ($p < 0.001$), sCD14 ($p = 0.001$), sCD163 ($p < 0.001$) and LDL-Lp-PLA2 ($p = 0.004$) and a worse LDL particle phenotype (smaller LDL size; $p = 0.011$) compared to HC group. Moreover, group B had higher levels of sCD14 ($p = 0.001$), sCD163 ($p = 0.032$) and ADMA ($p = 0.003$) compared to group A. No differences in common carotid-intima media thickness (cc-IMT) were found. During follow-up 11 participants in group A started ART (not included in following analyses). In group B, at Month 24, there was an improvement in LDL phenotype: an increase in LDL particle size ($p = 0.015$) and a decrease in the percentage of sd-LDL particles ($p = 0.032$). In group B at Month 12, sCD14 ($p = 0.001$), sCD163 ($p < 0.001$) and ADMA ($p = 0.001$) decreased, whereas IL-6 decreased at Month 24 ($p = 0.096$), achieving all biomarkers similar values to those observed in HC; only CRP ($p = 0.037$) remained higher in group B at Month 24 compared to HC. No biomarkers changes were observed in group A nor in HC. Only group A showed a significant increase in common c-IMT at Month 24 ($p = 0.006$). sCD14 and sCD163 levels correlated with those of several lipid variables (TC, HDL-c, LDL-c) at baseline and at Month 24. Change in CD4 and HIV viral load correlated with IL-6, hs-CRP, sCD14 and c-IMT.
Conclusions: In HIV-infected naive patients, ART was associated with improvements in LDL particle phenotype and inflammatory/immune biomarkers, reaching values similar to those of the controls, and preventing c-IMT increase. Biomarkers were associated with lipid disturbances.

P167

Incidence of dyslipidaemia and modification of atherosclerotic cardiovascular disease (ASCVD) risk in HIV-infected patients who switch away from tenofovir disoproxil fumarate (TDF)-based to TDF-sparing regimens in the Icona Foundation Cohort

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Background: Increasing values of total cholesterol (TC), high-density lipoproteins (HDL), low-density lipoproteins (LDL) and triglycerides (TG) were observed among HIV patients on combination ART (cART) switching away from TDF–based regimens in randomised trials. However, the impact of these changes in terms of modification of ASCVD risk or need for lipid-lowering therapy has not been assessed. This study aimed to

Abstract P167 – Table 1. Mean values and differences between two values of lipids before and before/after TDF discontinuation

Biomarker	N	T0 Mean 1 (SD1)	T1 Mean 2 (SD2)	Difference	*p* value	N	T1 Mean 1 (SD1)	T2 Mean 2 (SD2)	Difference	*p* value
LDL	1019	112.7 (33.0)	110.6 (33.0)	−2.1	0.178	557	111.5 (56.8)	121.7 (37.1)	+10.2	<0.01
	1361	44.9 (13.2)	44.8 (13.7)	−0.1	0.105	713	43.7 (13.3)	48.6 (15.6)	+4.9	<0.01
TC	1691	179.2 (38.5)	178.3 (38.6)	−0.9	0.550	879	180.4 (40.3)	199.4 (42.8)	+19.0	<0.01
Non-HDL	1358	134.7 (37.8)	134.3 (36.9)	−0.4	0.618	710	137.0 (38.0)	150.6 (41.8)	+13.6	<0.01
TG	1484	132.6 (96.8)	138.0 (231.9)	−5.4	0.365	866	146.5 (85.8)	155.7 (106.8)	+9.2	<0.01

T0 and T1 = pre TDF discontinuation; TD2 = post TDF discontinuation.

characterise changes in lipid profile and ASCVD risk after switching away from a TDF-based to a TDF-sparing cART in a real-world setting.

Materials and methods: Patients who started TDF-based cART from 2008 and switched to a TDF-sparing regimen were selected. We analysed changes of TC, HDL, LDL, non-HDL, TG in patients who discontinued TDF, in the period before [−12; 0] and after [+4; +12] TDF switch. Paired *t*-test was used to compare two values before and before/after TDF switch and ANCOVA to test the effect on lipid variations of third drug combined with TDF and type of regimen started after. We calculated proportion of patients, not recommended before, to be treated according to strong/moderate level of recommendation of 2013 AACE guidelines after TDF stop. In a subgroup, 10-year ASCVD risk was calculated by Framingham Global Score.

Results: Two thousand five hundred and forty-three patients included. Data showed stability before and increase after TDF interruption. TC and non-HDL increased of +19 and +14 mg/dL, respectively (Table 1). No difference in TC and non-HDL was observed according to third drug combined with TDF at switching (NNRTI +18, PI/b +19, INSTI +17, p at ANCOVA =0.932). Receiving PI/b after TDF discontinuing was associated to increase in TC (+28 vs. +17, $p < 0.01$) and non-HDL (+24 vs. +11, $p < 0.01$). Conversely, receiving INSTI after TDF switch predicted lower increase in TC (+14 vs. +21, $p = 0.02$) and in non-HDL (+9 vs. +15, $p = 0.03$). No difference was observed according to backbone after TDF change (TAF +23, ABC +19, less drug regimen +19, $p = 0.963$). Over 201 subjects, last value of ASCVD risk during TDF was 6.7% and 7.5% after ($p < 0.01$). Twenty-two of 201 (11.0%) passed from a risk low (<10%) to intermediate (10 to 20%) or high (>20%) or from intermediate to high after TDF stop. The percentage of patients who became eligible for statin within one year from TDF discontinuation was estimated as 3.8% (95% CI 3.1 to 4.6).

Conclusion: We found evidence for a significant increase in lipids following TDF discontinuation. This variation did not appear to have a major impact on the 10-years estimated CVD risk.

P168

Serum trimethylamine-N-oxide concentrations are associated with cardiovascular risk factors and subclinical vascular damage in HIV-positive patients

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Introduction: All cardiovascular (CV) risk scores under predict the incidence of CV events in HIV+ subjects and there are no clinically validated markers to increase disease prediction [1]. Trimethylamine-N-oxide (TMAO) has been shown to promote atherosclerosis and higher levels have been associated with CV events [2,3]. Being a modifiable risk factor we aimed at assessing the association between serum TMAO concentrations and CV risk as well as carotid intima media thickness (cIMT).

Methods: A fasting blood sample was collected and TMAO measured through a LC-MS method in consecutive HIV-positive patients from two Italian hospitals (Rome and Turin). Anthropometric, clinical and biochemical data were recorded; 10-year cardiovascular risk score was calculated according to the ASCVD algorithm (<7.5%, 7.5 to 20%, >20%). The cIMT was performed by the same operator at 1 cm from carotid bifurcation as the average of three measurements (abnormal >0.9 mm). Polypharmacy was defined as ≥5 drugs other than ARV treatment. Data are expressed as medians (interquartile ranges).

Results: One hundred and eighty patients were included: age, gender (% male) and ethnicity (% Caucasian) were 50 years (42.2 to 55.5), 80% and 92.7%, respectively. Current and nadir CD4+ cell count were 566/μL (389 to 756) and 201/uL (85 to 330); treatment duration was 9.6 years (3.6 to 16) with 159 patients (89.9%) showing HIV RNA <50 copies/mL. Patients' CV risk scores fell in the low (37%), intermediate (15.1%) and high (47.9%) strata. TMAO levels were 165.8 ng/mL (103 to 281.8). Higher TMAO quartile included 44 (24.4%) patients with higher CV risk (77.1% vs. 22.9%, rho = 0.26, $p = 0.001$), abnormal IMT value and plaque evidence (80% vs. 20%, $p < 0.0001$) and polypharmacy (47% vs. 14.7%, $p = 0.05$). Conversely, lower TMAO concentrations were observed in smokers (70.5%, $p = 0.004$). (20.5% vs. 70.5%, $p = 0.004$, OR 2.4). No immunovirological or ARV therapy-related characteristics seem to predict higher TMAO values.

Conclusion and Discussion: TMAO higher concentrations were observed in patients with higher CV risk score and subclinical vascular damage measured by abnormal IMT/plaque presence. HIV-positive patients with higher TMAO concentrations may benefit from targeted nutritional interventions.

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