HIV MEDICINE

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HIV Medicine aims to provide an alternative outlet for publication of international research papers in the field of HIV Medicine, embracing clinical, pharmacological, epidemiological, ethical, preclinical and *in vitro* studies. In addition, the journal will commission reviews and other feature articles. It will focus on evidence-based medicine as the mainstay of successful management of HIV and AIDS.

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Oral Abstracts

Oral Research Presentations Session 1

O1

The impact of the introduction of a specialist HIV pharmacy service (SHPS) to satellite HIV clinics

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Background: BHIVA Standards recommend specialist HIV pharmacy provision within HIV services. In 2015, our NHS Hospital Foundation Trust acquired 3 satellite HIV outpatient clinics (Clinics A, B and C) consisting of approximately 1,050 patients in total. The clinics and HIV multi-disciplinary team (MDT) had no HIV pharmacist input. ARV prescriptions were screened remotely by a non-specialist pharmacist, with no access to patient notes/bloods and no pharmacy support was directly available for patients or staff. In April 2017, a specialist HIV pharmacy service (SHPS) was implemented in Clinic A, and in January 2018 expanded to include Clinics B and C. The aims were to improve patient safety, provide specialist HIV pharmacy advice and support to patients and healthcare professionals (HCP), and support prescribing to guidelines and achievements of national targets, including CQUINs. A 0.5WTE specialist HIV pharmacist now covers the 3 clinics. A service evaluation was undertaken to assess the impact of the SHPS.
Methods: Pharmacy-led interventions were prospectively recorded over a 15 month period at Clinic A and 10 month period at Clinics B and C. Interventions were categorised as drug-drug interactions (DDIs), other clinical interventions (e.g. identifying potential ARV switches or rationalising ARV regimes), patient counselling, patient safety (e.g. responding to MHRA Drug Safety alerts), reduction of drug wastage, proactive patient follow-up and engagement (patients identified as overdue clinic review or requiring early follow-up), medication errors and prescription quantity adjustment. Additionally at Clinic A, CQUINs were recorded over a 12 month period and a pharmacist-led treatment support clinic was implemented. A service evaluation survey was sent to 16 MDT members across all sites.
Results: A total of 514 interventions were made across all 3 sites over a 15 month period. Where interventions came under more than one category, they were allocated to the most significant (Table O1.1).

Clinic A consists of 363 patients. There were approximately £74,000 total cost savings delivered through NHSE ARV CQUINs over a 12 month period at Clinic A. 116 appointments were booked in the pharmacy-led clinics over a 10 month period at Clinic A. 13/16 MDT members completed the service evaluation survey and 100% felt a HIV pharmacist in clinic improves patient safety and is a valuable member of the HIV MDT.
Conclusions: Implementation of the SHPS in these clinics contributed to improvements in patient safety, reduced ARV wastage and expenditure, provision of HIV pharmaceutical advice to patients and HCP and supports BHIVA recommendations on specialist pharmacy provision within HIV services. This supports the case for a permanent SHPS in these clinics, with opportunities of further service development, for example with non-medical prescribing.

Table O1.1

Type of intervention	Number (%) n=514
Drug-drug interactions	47 (9%)
Other clinical interventions	143 (28%)
Patient counselling	33 (6%)
Patient safety	37 (7%)
Reduction of drug wastage	16 (3%)
Follow-up	116 (23%)
Medication errors	22 (4%)
Prescription quantity adjustments	100 (20%)

O2

Improving communication between primary and secondary care for HIV-positive patients

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Background: A large proportion of HIV-related inpatient admissions at our centre are from those who have disengaged from their HIV care and are often not known to our service. There are a significant number of adverse drug events which occur because potential drug interactions with antiretrovirals (ARVs) are not identified in primary care. Improved communication with primary care may help mitigate this.
Methods: 6 local Primary Care Centres were selected and asked to carry out an audit of HIV positive patients at their practice coded as diagnosed with HIV on EMIS (primary care electronic patient record system). They collected data on basic demographics, the location of their HIV care, whether they had had a letter from the HIV care centre in the preceding 12 months, what ARVs they were on, whether they were uploaded on EMIS, any concomitant medicines prescribed. Where there were no recent letters, efforts were made to establish whether the patient was still in care and obtain an up-to-date letter. ARVs were also uploaded on EMIS and drug interactions were checked for.

Table O2.1

Primary Care Centre	Size of Patient Cohort	No of HIV positive patients& prevalence	No of named HIV treatment centres	No accessing local centre	No with GP letter in last 1 year	No with ARVs recorded on EMIS
1	7,500	38 (0.5%)	9	19 (50%)	26 (68%)	2 (5%)
2	10,000	53 (0.5%)	12	14 (50%)	30 (57%)	NR
3	16,000	57 (0.4%)	10	22 (39%)	38 (67%)	32 (56%)
4	13,500	62 (0.5%)	13	17 (27%)	35 (56%)	NR
5	12,000	42 (0.4%)	5	21 (50%)	22 (52%)	1 (2%)
6	7,750	52 (0.7%)	6	NR	27(52%)	NR

NR = not recorded.

Results:
0.4–0.7% of the primary care cohorts were known to be HIV positive, with patients accessing multiple HIV treatment centres. 52–68% of patients had a letter in their file from the HIV treatment centre in the previous year. ARVs were not routinely uploaded on EMIS. The majority of those under the local treatment centre and without recent correspondence were in care and an up-to-date letter was sent. A number of patients had moved practice, were lost to follow up, had not consented to the HIV centre communicating with their GP or had not informed the GP of their treatment centre. A number of significant drug interactions were also identified (Table O2.1).
Audit limitations: It was difficult to obtain feedback from the other HIV treatment centres. A second audit 6 months later could not be performed as 5/6 of the primary care clinicians involved in the project had moved jobs.
Conclusions: Our audit fell far short of the BHIVA standards which state that the target for the proportion of HIV positive people with evidence of communication with GPs (if they have consented to share information) in the previous 15 months is 95%. The HIV positive patients in this audit access a large number of different HIV centres. This may represent a barrier to improved communication between primary and secondary care.

O3

Facilitating primary care non-antiretroviral drug prescribing in people living with HIV: the Think ARV project

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Background: Most co-morbidities affecting people living with HIV (PLWH) are managed in the community by General Practitioners (GPs). Medication-related problems (MRPs) can arise when PLWH on combination antiretroviral therapy (cART) are prescribed other medicines ("non-ART"). Although our HIV service already provides regular education updates for GPs, and the HIV pharmacy team is available to answer queries by telephone (landline) and email, Phase 1 of the "Think ARV" initiative identified a need for additional support for GPs when prescribing for patients on cART. Phase 1 also evaluated GPs' confidence in prescribing non-ART for PLWH, ascertained preferred methods of support, and informed Phase 2 (intervention development). "Think ARV" Phase 2 objectives were:

- to further raise GPs' awareness of potential MRPs associated with primary care prescribing for PLWH on ART;
- to develop, implement and evaluate strategies to reduce MRPs by facilitating GPs' access to HIV pharmacist advice.

Methods: The "Think ARV" intervention was co-designed by HIV physicians, HIV pharmacists and GPs, with project management support. It was developed to facilitate local GPs' access to real-time specialist prescribing advice, reflecting preferences for enhanced telephone and email access identified in Phase 1. Details of a new dedicated mobile phone staffed by HIV pharmacists during working hours, and an email address for non-urgent advice, were included on a bespoke sticker incorporating the "Think ARV" logo. Stickers were sent (with accompanying information) to all local GP practices, following launch at a primary care educational event and an article in a regular GP bulletin. Data collected pre- and post-intervention (6 month periods before and after project launch) were: cART regimen, non-ART drugs, nature of query, recommendation and method of communication. Severity of identified drug-drug interactions (DDIs) was categorised according to the University of Liverpool rating system at www.hiv-druginteractions.org (from green – no interaction expected, to red – contraindicated). A user-satisfaction survey was emailed to enquirers who provided contact details.
Results: Over 12 months, 89 queries were recorded, with a significant increase from 26 pre-intervention to 63 afterwards, $p<0.001$ CI (1.6–1.8). Table O3.1 summarises the types of queries received; most common were potential DDIs. More contraindicated DDIs were identified post-intervention compared to beforehand (7 vs. 3), and a higher number of DDIs required dose adjustments and/or additional monitoring during the second period (13 vs. 5). Although only 6 out of 15 service evaluations were returned, all reported a high level of satisfaction with the accessibility, timeliness and quality of the advice received.

Table O3.1. Types of medicine-related problems (MRPs)

MRP type	Pre-intervention (n=26)	Post-intervention (n=63)	Total (n=89)
Drug-drug interactions	20	59	79
Drug history	3	1	4
Vaccine advice	2	2	4
Adverse effects of cART	1	0	1
Adherence of cART	0	1	1

Conclusions: The "Think ARV" project objectives have been met, evidenced by an increase in queries from GPs, including via the dedicated mobile phone, and the number of potential MRPs identified. Next steps include: continuing to engage more GPs, and exploring other ways of reducing MRPs in PLWH, eg via community pharmacists and secondary care outpatient services.

O4

BHIVA guidelines and breastfeeding in the UK: the current picture

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Background: The British HIV Association (BHIVA) recommends formula-feeding infants born to women living with HIV (WLHIV), eliminating postnatal transmission, but also states that virologically-suppressed treated women with good treatment adherence choosing to breastfeed may be clinically supported in this. Guidelines on diagnostics for breastfed infants and maternal viral load monitoring reflect this, but little is known about current clinical practices. Data are lacking on breastfeeding (BF) by WLHIV in resource-rich settings; the National Surveillance of HIV in Pregnancy and Childhood (NSHPC) is placed to collect this data for the first time in the UK.
Methods: The NSHPC conducts surveillance of all pregnancies to diagnosed WLHIV in the UK/Ireland. HIV-infected children <16 years are also reported through a parallel paediatric reporting system. Data on supported BF (where a woman chooses BF and is supported to do so in line with BHIVA guidelines) has been collected since 2012 and enhanced surveillance conducted since August 2018. We describe these cases reported by 31/12/18.
Results: Among 6,733 singleton livebirth deliveries 2012–2018, 111 were reported as planned and/or supported breastfeeding; 14/111 were in women with ≥1 previous reported pregnancy. Most (94%) pregnancies were to women diagnosed pre-pregnancy (104/111), >80% of pregnancies (92/111) were to Black African women and median age at delivery was 35 years (IQR: 31,40). Duration of breastfeeding ranged from 1 day–2 years.
Enhanced data collection been carried out for 57 cases to date. Reason(s) for BF were known in 46 cases including: bonding (19), health benefits (16), family pressures (9), disclosure concerns (5) and finance (1) (>1 reason may be reported). There were problems with attendance for monthly testing in 15/57 cases. There were negative 18 month antibody tests in 33/57 infants to date. Challenges experienced included access to maternal monthly test results by paediatric respondents and continuity of care where a transfer of care occurs during BF.
Conclusions: BF reports reflect guideline updates, the current 'U=U' era and continued strides towards normalising maternity experiences for WLHIV. Our results highlight the importance of an MDT approach and awareness of the BHIVA 'Safer Triangle'. Numbers remain small and cases to date have been diverse, underscoring the need for careful monitoring, enabled by our national surveillance; as numbers increase further insights will be gained to guide policy and practice.

O5

38% of childbearing women with HIV in the UK would like to breastfeed: PACIFY study

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Background: World Health Organization advice for post-partum women with HIV in resource poor settings is to breast feed (BF) whilst taking suppressive antiretroviral treatment (ART). PROMISE data reports a transmission rate of <1% at 12 months in infants breast fed by mothers on suppressive ART. In resource rich settings avoidance of breast feeding is still advised due to lack of data and Undetectable = Untransmissible (U=U) in breastfeeding has yet to be established. Despite this, small numbers of women living with HIV in the UK are electing to breastfeed. We explored the views of childbearing women with HIV in the UK around breast feeding.
Methods: The Positive Attitudes Concerning Infant Feeding (PACIFY) study group, which included representation from women with HIV, devised an anonymised questionnaire looking at the attitudes of pregnant women living with HIV. This was offered to women living with HIV in the third trimester of pregnancy or within 3 months post-partum. Women were recruited from 12 UK clinics from June 2017-June 2018. Data on demographics and HIV parameters were also collected.
Results: 94 women responded to our questionnaire. 69% (65/94) of participants were Black African, median age 36 years (range 20–44). Median CD4 count was 618 cells/mm^3, 92% (87/94) had an undetectable HIV viral load at <50 copies/ml, 1% (1/94) had a HIV viral load of 268 copies/ml and 7% (7/94) no data available. 38% (36/94) stated they would like to BF and 89% (84/94) said they would BF their child if they were HIV negative. 62% (58/94) had friends, family or community members question why they were not breast feeding, and 66% (62/94) had to lie about why they were not intending to BF. When asked if they have ever breast fed: 72% (68/94) never had, 20%(19/94) had before HIV diagnosis, 3%(3/94) had after HIV diagnosis (outside UK), and 2%(2/94) after HIV diagnosis (in UK). Healthcare workers had discussed breast feeding with 89% (84/94) of women, but half wanted more information.
Conclusions: Currently BHIVA guidelines 2018 recommend formula feeding, however, over a third of respondents to this questionnaire said they would like to BF their baby. Stigma and secrecy remain an issue for the women who felt compelled to disguise their reasons for not breast feeding. We believe it is time for HIV clinicians in resource rich settings to have a more open dialogue with women about the risks/benefits of breastfeeding on suppressive ART and optimize ways to support those who may choose to do so.

O6

Optimal timing for serological screening for HIV-exposed uninfected infants: the later the better?

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Background: Uninfected infants born to mothers living with HIV are routinely tested for loss of maternal antibody at 18 months of age as per current BHIVA guidance. HIV serological screening is undertaken using a 4th generation antigen/antibody assay with initial reactive samples undergoing further confirmatory testing. These assays are extremely sensitive and very low levels of serum antibody can still be detected in some infants at 18 months, leading to retesting. We audited serological screening outcomes in HIV exposed uninfected (HEU) infants at 2 NHS Trusts.
Methods: HEU infants born January 2013-August 2016, were identified via case records. Data collected included date of birth; gestation; mode of delivery; breastfeeding status, age at testing; test results and assay. Data were anonymised and entered in Excel with descriptive statistics comparing serological outcomes. No HIV infected infants were born during the study period.
Results: 142 HEU infants identified, 21 were excluded from analysis (insufficient data (17), breast fed (4)). Of 121 infants, 101 (83%) were born at term, 20 (17%) preterm (<37/40), of which 2 were very preterm (<32/40). Overall median [IQR] age at first serology was 19.1 [18.1; 21.4] months. Initial serology was positive in 10/121 (8.3%). Median age [IQR] at testing for infants with positive serology (n=10) was 18.3 [18.1; 18.8] months vs. negative serology (n=111) 19.2 months [18.1; 21.5]; no statistically significant difference. All ten infants with positive HIV serology were born at term; median gestation 38.5 weeks. 7/10 infants had reactive serology on two different 4th generation assays, both screening and confirmatory, while in 3 the initial screening positive result was not confirmed on further testing. Subsequent serology was available for 8/10 infants, taken at a median of 21.3 months of age. 5/8 (63%) were negative. One was reactive but HIV RNA PCR negative and discharged, one was still reactive on the initial screening assay but negative on confirmatory testing and was discharged. The remaining child had a second positive at 24.7 months had a third serology non-reactive at 29.4 months.
Conclusions: 8.3% of HEU infants required repeat serology to confirm loss of maternal antibody. Delaying serological testing to 22 months of age would have reduced this to <2% and lessened the not inconsiderable emotional cost to parents, toddlers and outpatient resource implications associated with repeated testing. In our trust the cost of HIV serology is estimated at £7, and RNA PCR at £20. In future we will postpone HEU infant serological screening from 18 to 22 months. Any child with persistent maternal antibody at 22 months will have an HIV RNA PCR, and if negative will be discharged.

Oral Research Presentations Session 2

O7

The role of raltegravir alone or combined with lamivudine as PrEP: a phase 2 randomised controlled clinical trial

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Background: Oral pre-exposure prophylaxis (PrEP) is an effective prevention strategy against HIV-1 transmission. Raltegravir is promising as a PrEP agent, particularly for men who have sex with men. It is well tolerated, has few drug-drug interactions and has good penetration into rectal tissue. It is not known whether tissue penetration is equal between men and women or whether Raltegravir on its own or in combination with lamivudine can provide *ex vivo* protection from HIV.
This study evaluated whether a 7-day course of Raltegravir 400 mg bd or Raltegravir 400 mg/lamivudine 150 mg bd can prevent HIV from infecting genital tissue and related drug levels in blood and genital tissue to ex vivo protection from HIV.
We present results of a PK/PD dosing study of Raltegravir±Lamivudine in all HIV exposure compartments and compare men and women, in a phase 2, open label, randomised controlled clinical trial.
Methods: 36 healthy adult female (n=18) and male participants (n=18) received 7 days Raltegravir 400 mg bd followed by 4 weeks wash out and 7 days Raltegravir 400 mg/lamivudine. Individuals were randomised as to first regime and timing of tissue sampling. (A1/B 1 sampled on day 2 and 8, A2/B2 sampled on day 4 and 10; A3 & B 3 sampled on day 6 and 12). All individuals received tissue sampling at baseline; for each regime they were sampled on PrEP, off PrEP. Sampling included blood, oral fluid, rectal fluid and rectal tissue for all. In addition women provided a cervico-vaginal aspirate and a vaginal biopsy. Anti-viral activity was assessed by ex vivo challenge with R5-tropic HIV-1BaL of explants cut from mucosal tissue biopsies and measurement of p24 antigen levels in supernatants during 15 days of culture. Drugs levels were measured by LCMS.
Results: Steady state was reached by day4 in all compartments. Raltegravir in plasma was slightly higher than VF (~2-fold day 6, 1.5-fold day 12) and RF >500-times that of plasma at day 6 versus >3,000-fold higher at day 12

(raltegravir alone). Lamivudine concentrations were highest in rectum [day 6 mean (CV%): 203,177 ng/ml (304%)] followed by VF [2,151 ng/ml (93%)] then plasma [169 ng/ml (41%). Off PrEP, plasma and VF raltegravir concentrations declined rapidly but persisted in RF until day 12 [101,126 ng/ml (322%)]. Lamivudine washout was most rapid in plasma, less so in VF with high concentrations persisting in RF.
At day 2, Raltegravir provided maximum ex vivo protection in 83% of rectal and 100% of vaginal samples. By day 12 protection decreased to 64% in rectal and 67% in vaginal samples. Raltegravir/Lamivudine provided 100% protection in rectal tissue from day 2 to 10, and from day 8 to 12 in vaginal explants. On day 12, there was 82% protection in rectal tissue and 100% in vaginal tissue.
Conclusions: Raltegravir and lamivudine concentrations greater than the EC90 occurred in multiple sites of HIV acquisition after 7 days of oral dosing. This suggests that Raltegravir±lamivudine may be a suitable candidate for PrEP. However the rapid decline in drug concentrations of Raltegravir upon drug cessation suggest that good adherence or supplementation with Lamivudine would improve efficacy.

O8

Pharmacokinetics (PK) of bictegravir (BIC) in combination with polyvalent cation containing (PVCC) antacids and supplements

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Background: BIC is a potent, unboosted integrase strand transfer inhibitor (INSTI) with a high barrier to resistance coformulated with emtricitabine and tenofovir alafenamide (B/F/TAF). BIC has a wide therapeutic-efficacy range and high mean (%CV) inhibitory quotient (IQ) of 16.1 (35.2%); where IQ is the trough plasma concentration over the protein adjusted concentration that results in 95% inhibition of wild-type HIV-1 naïve virus (paIC95). Absorption of INSTIs, including BIC, can be lowered via chelation by the high concentrations of di/trivalent cations contained in certain antacids or supplements. The effect of polyvalent cations on BIC exposures administered under various food and time dependent dosing conditions was evaluated in healthy volunteers.
Methods: B/F/TAF 50/200/25 mg was administered to healthy volunteers (N=14/cohort) simultaneously under fasted or fed conditions, with/without maximum strength antacid (aluminium hydroxide 1,600 mg, magnesium hydroxide 1,600 mg, simethicone 160 mg), calcium carbonate (1,200 mg), or ferrous fumarate (324 mg). Additionally, the effect of staggering B/F/TAF ± 2 hours from maximum strength antacid under fasted conditions was evaluated in healthy volunteers (N=14). BIC area under the plasma concentration versus time curves from time zero to infinity for each treatment were determined and compared to B/F/TAF administered alone fasted (control). Geometric least-squares mean ratios of treatment versus control and 90% confidence intervals were calculated.
Results: B/F/TAF coadministered simultaneously with certain cations (antacid, ferrous fumarate) under fasted conditions substantially reduced (63–79%) BIC exposures. Under fed conditions, BIC exposures were reduced modestly (47%) with antacid and were unaffected by ferrous fumarate or calcium carbonate supplements. When B/F/TAF was administered in the fasted state 2 hours after antacid, mean BIC exposures were reduced 52% but remain projected to be substantially above paIC95 (IQ=7.7) and the lower IQ values associated with efficacy in the B/F/TAF registrational trials (lowest observed IQ=4.7). BIC exposures were not affected by B/F/TAF fasted administration 2 hours before antacid. All study treatments were well tolerated.
Conclusions: The high IQ values and associated efficacy of BIC in the B/F/TAF registrational trials supports its flexible use in patients using PVCC antacids/supplements through co-administration either fed or fasted when staggered ± 2 hours.

O9

High level of pre-existing NRTI resistance prior to switching to B/F/TAF (Study 4030)

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Background: Bictegravir (B) is coformulated with the nucleoside/tide reverse transcriptase inhibitors (NRTIs) emtricitabine (F) and tenofovir alafenamide fumarate (TAF) (B/F/TAF). Study 4030 is an ongoing, fully enrolled, phase 3, randomised, double-blinded study (n=565) of HIV-1 RNA suppressed participants on once daily dolutegravir (DTG) + F/TAF or F/tenofovir disoproxil fumarate (TDF) switching 1:1 to DTG + F/TAF or B/F/TAF for 48 weeks. Documented INSTI resistance was not enrolled if known at randomisation, but all NRTI, NNRTI, and PI resistance was allowed.
Methods: Proviral DNA genotypes (GenoSure Archive) from baseline samples and historical plasma HIV-1 RNA genotypes were analysed. Documented or suspected NRTI resistance was assigned to group 1) K65R/E/N or ≥3 TAMs containing M41L or L210W (TAMs: D67N, K70R, L210W, T215F/Y, and K219Q/E/N/R), group 2) M184I/V, any other set of TAMs, K70E/G/M/Q/S/T, L74I/V, V75A/S/M/T, Y115F, T69D, or Q151M, or group 3) no major NRTI resistance. Virologic outcomes used last available on-treatment HIV-1 RNA with the blinded Week 12 Independent Data Monitoring Committee data cut.
Results: Historical genotypes were available from 285/565 participants (50%). Retrospective analysis of archived mutations by HIV DNA genotype were determined for 377/565 participants; 200 also had historical genotypes. In total, 82% (462/565) of participants had pre-switch genotypic data available resulting in 24% with major NRTI resistance: 5% (29/565) in group 1 (K65R or ≥3TAMs) and 18% (104/565) in group 2 (other NRTI mutations). M184V/I was present in 17% (77/462) of participants with data. HIV DNA genotyping identified previously unknown major NRTI resistance in 15% of participants (58/377). Preexisting INSTI mutations were found in 5% of participants (19/399): T97A (n=12), N155S (N=1), Y143H (n=2), R263K (n=2), Q148H+G140S (n=1), and S147G (n=1). Primary non-nucleoside RT inhibitor and protease inhibitor resistance mutations were present in 24% (113/462) and 8% (36/462) of participants. At this interim analysis, HIV-1 RNA <50 copies/mL was maintained in 99% of participants, 97% (28/29) in group 1, 99% (103/104) in group 2, 97% (75/77) with M184V/I, and 100% (19/19) with INSTI-R.
Conclusions: This study found frequent NRTI resistance in suppressed participants switching from a DTG + F/TDF or F/TAF regimen, much of which was previously undocumented. Early data show high suppression using potent triple therapy of B/F/TAF or DTG + F/TAF.

O10

Long-active cabotegravir + rilpivirine for HIV maintenance: FLAIR week-48 results

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Background: The 2-drug long-acting (LA) injectable regimen of the INSTI cabotegravir (CAB) and the NNRTI rilpivirine (RPV) is being developed to reduce dose frequency, pill taking and drug exposure. FLAIR, a phase 3, open-label, multicentre study is investigating whether switching to monthly CAB+RPV is noninferior to dolutegravir/abacavir/lamivudine (DTG/ABC/3TC).
Methods: ART-naïve participants (pts) received induction therapy with oral DTG/ABC/3TC (CAR) for 20 weeks. Those with HIV-1 RNA <50 c/mL at 16 weeks were eligible to enter the maintenance phase and randomly assigned (1:1) to continue CAR or switch to LA. LA-arm pts received an oral lead-in of CAB 30 mg + RPV 25 mg once daily for 4 weeks to assess tolerability before receiving CAB+RPV as intramuscular monthly LA injectable

therapy. The primary endpoint was viral load (VL) ≥50 c/mL at Week (W)48 by FDA snapshot algorithm (noninferiority [NI] margin: 6%). Safety, tolerability and confirmed virologic failure (CVF) were secondary endpoints.
Results: 566/629 pts who initiated induction therapy were randomly assigned to the LA or CAR arm (283/arm). The median age was 34 years (11% ≥50 yr); 22% were female and 74% were white. At the induction phase start, median CD4 count was 444 cells/mm^3 (7% <200 cells/mm^3), median VL was 4.49 log10 c/mL (20% ≥100,000 c/mL). Six pts in the LA arm (2.1%) and 7 in the CAR arm (2.5%) had HIV-1 RNA ≥50 c/mL at W48, meeting NI criteria for the primary endpoint and for the key secondary endpoint of HIV-1 RNA <50 c/mL (LA 93.6% vs. CAR 93.3%). Four LA recipients (1.4%) had CVF; 3 had mutations in the NNRTI + INSTI domains (K101K/E/Q + G140R, E138K + Q148R, and E138E/A/K/T + Q148R, respectively) and 1 was not tested (PO only). The CAR arm had 3 CVFs with no INSTI resistance. Adverse events (AEs) leading to withdrawal and serious AEs were infrequent in both arms. The most common drug-related AE was injection site reactions (ISRs; 82% of pts in the LA arm); frequency decreased over time. 99% of ISRs were Grade 1 or 2; the median duration was 3 days. Of 263 LA pts completing HIVTSQc at W48, 99% were more satisfied with CAB+RPV compared with their prior daily oral CAR.
Conclusions: The regimen of monthly injections of CAB+RPV was noninferior to DTG/ABC/3TC at W48. The LA regimen was generally well tolerated with few CVFs. Overall, these results demonstrated the therapeutic potential of CAB+RPV injections, following short initial induction with oral DTG/ABC/3TC to achieve viral suppression.

O11

The impact of vorinostat and therapeutic vaccine on gut HIV DNA: the RIVER gut study

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Background: The RIVER randomised control trial examined the impact of a T-cell prime-boost vaccination with vorinostat plus ART (ART+V+V) compared with ART alone in treated primary HIV infection (PHI) on blood total HIV DNA. Tissue reservoirs such as the gut-associated lymphoid tissue (GALT) are important sites of HIV persistence and may be differentially affected by the intervention. This RIVER sub study compares HIV DNA, markers of immune activation & exhaustion in GALT, and microbial translocation by study arm.
Methods: ART was commenced within 4 weeks of confirmed PHI diagnosis at enrolment. At week 24, when plasma HIVRNA was suppressed, participants were randomized (1:1) to receive either ART or ART plus a prime-boost T-cell vaccination(ChAdV63.HIVconsv and MVA.HIVconsv) followed by 10 doses of 400 mg of vorinostat (ART+V+V). Following completion of the RIVER study protocol individuals (from each arm) consented to the gut sub study; individuals underwent colonoscopy, with terminal ileum and rectal biopsies taken for HIV DNA quantification (qPCR) and assessment of immune activation and exhaustion (PD-1 and HLA-DR/CD38 expression on CD4+ cells) by flow cytometry. Plasma microbial translocation markers (sCD163 & sCD14) were measured in plasma using Luminex. P24 antigen was measured in stimulated tissue explant supernatants by ELISA.
Results: Eleven male participants were enrolled in the RIVER gut study, five in the ART-only arm and six in the ART+V+V arm,. The median total HIV DNA in the terminal ileum was 2.8 (ART+V+V) and 3.1 (ART) log copies per 10 gut cells (p=0.25), and in the rectum 2.8 (ART+V+V) and 3.0 (ART) log per 10^6 gut cells. (p=0.14). No significant differences in expression of PD-1 and HLA-DR/CD38 co-expression on CD4+ T-cells from GALT were observed between study arm, median p24 levels measured from explant supernatants (n=7) were similar in each arm. Significantly higher sCD163 (p=0.03) but not sCD14 (p=0.55) levels were observed in plasma from participants in the ART+V+V arm compared with ART only.
Conclusions: These data suggest that vorinostat in combination with a T-cell prime-boost-vaccine during PHI did not impact the GALT HIV reservoir, nor measures of immune exhaustion & activation on GALT CD4 T-cells in ART+V+V treated individuals compared with ART alone. Measures of bacterial translocation appear to be increased in the ART+V+V arm over the ART-only arm, warranting further investigation.

BHIVA Research Awards winner 2015, John Thornhill

O12

The effect of time to viral suppression at primary HIV infection on long-term immunological recovery: results from the HEATHER cohort

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Background: Antiretroviral therapy (ART) at primary HIV infection (PHI) is associated with enhanced immunological recovery and low viral reservoir. Given the uncertainty of the benefit of rapid viral suppression at PHI, we examined a cohort of prospectively recruited individuals who started ART at PHI, to explore factors associated with an undetectable viral load (VL<50 copies/ml) by 12 weeks of treatment (12/52) and long-term immunological control (CD4 >900 or CD4:8 ratio >1 at 2 years). We hypothesized that rapid virological suppression at PHI would be associated with enhanced long-term immune recovery.
Methods: Participants with PHI (documented HIV seroconversion in preceding 6 months, p24 antigen positive in the absence of antibody or an "incident" recent incidence test) in the HEATHER cohort, who commenced ART within 3 months of diagnosis were included in the analysis. Factors associated with

Table O12.1. Factors associated with immunological control at 2 years following ART initiation in PHI

Variable		Unadjusted OR	p-value	Adjusted OR*	p-value
HIV acquisition risk	MSM	1		1	
	Other	0.19 (0.03, 1.27)	0.06	0.23 (0.04, 1.46)	0.12
Age at seroconversion	Per year increase	1.01 (0.98, 1.05)	0.46		
Baseline HIV viral load	Per log10 increase	1.04 (0.92, 1.17)	0.53		
Baseline CD4 cell count	Per 50 cell increase	1.14 (1.05, 1.24)	0.001	1.21 (1.07, 1.37)	0.002
Baseline CD4 cell count	<350 cells/mm^3	1			
	350–500 cells/mm^3	1.29 (0.48, 3.50)	0.62		
	>500 cells/mm^3	3.98 (1.38, 11.5)	0.006		
Baseline CD4:CD8 ratio	Per 0.1 increase	1.20 (1.09, 1.33)	0.0003	1.23 (1.04, 1.45)	0.015
Time to starting ART	Per week increase	1.03 (0.97, 1.09)	0.34		
ART regimen at PHI	2NRTI+PI	1			
	2NRTI+INSTI +/− PI	1.69 (0.65, 4.39)	0.93		
	2NRTI+NNRTI	2.05 (0.69, 6.02)	0.12		
VL<50 cps/ml by 12 weeks		0.52 (0.19, 1.43)	0.20		

*Adjusted for categorical baseline CD4, CD4:CD8 and HIV acquisition risk.

VL<50 at 12/52 and immunological control were explored using multivariate logistic regression.
Results: Of 157 individuals, 99% were male, mean (standard deviation: SD) age 36 (9.7) years. 56% commenced a protease inhibitor (PI) based regimen, 24% an integrase inhibitor (INI) based regimen and 20% a non-nucleoside-based regimen. Median (interquartile range: IQR) time to ART initiation and time on ART were 45 (27, 68.5) days and 3.1 (2.4, 3.9) years respectively. Median (SD) baseline HIV RNA was 179,010 (25,406 to 1.4 million) copies/ml and CD4 533 (225.1) cells per mm^3. 86% had CD4/CD8 ratios <1 at baseline. Median (IQR) time to virological suppression was 6.19 (3.7, 11.5) months. 20 (13%) were undetectable by 12 weeks on ART, 120 (76%) had achieved immunological control by 2 years. There was no association with VL<50 at 12/52 and immunological control (p>0.05). Initiation of an INI based regimen was associated with VL<50 at 12/52 (unadjusted odds ratio: OR (95% confidence interval: CI) 4.88 (1.54, 15.4) p=0.003). A high baseline CD4/CD8 ratio and CD4 count (adjusted OR (95% CI) 1.23 (1.04, 1.45) p=0.015 per 0.1 increase and 1.21 (1.07, 1.37) per 50 cell/mm^3 increase p=0.002 respectively) were associated with immunological control (Table O12.1).

Conclusions: Using a large cohort of individuals with confirmed seroconversion, we show that rapid virological suppression at PHI was associated with INI based regimens. However, although this may reduce onward transmission risk, it appears not to be associated with enhanced long term immunological outcome.

O13

Discontinuations and virological response in late presenters with INSTI- or PI-based ART

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Background: Active opportunistic infections and/or low CD4+ T-cell (CD4+) counts are exclusion criteria in most clinical trials. Late presenters (LP) are therefore inadequately represented in studies comparing efficacy of antiretroviral regimens, leading to a lack of data on optimal treatment options. Our study aimed to investigate the efficacy and safety of first line ART with integrase-inhibitor (INSTI) or protease-inhibitor (PI) based regimens in patients with low CD4+ counts and/or an AIDS-defining disease.
Methods: We conducted a retrospective, multicenter analysis to investigate discontinuation rates and clinical outcome in patients with a CD4 cell count <200/μL and/or an AIDS defining disease after starting first line ART. Data were collected in three European HIV clinics: Universityhospital Frankfurt, Kings College London and Hospital Fundación Jiménez Díaz Madrid. All patients with CD4 <200/μL and/or an AIDS defining disease who started INSTI or PI-based first line ART between January 2014 and December 2016 were included in this study. Proportions of those discontinuing ART and with adverse events were compared using univariate analysis. Virologic response was analyzed by using FDA snapshot analysis (HIV-1 RNA <50 copies/mL at week 48).
Results: A total of 218 LP were included in the study, 13.8% women, 23.8% non-European ethnicity with a mean (SD) baseline CD4 91/μL (112) and CD4/CD8 ratio of 0.11 (0.19). 131 LP were started on INSTI-based regimen and 87 on PI's. Those commenced on PI were more likely to be older (mean (SD) age 53 (16.7) vs. 43 (15.5) years); 91.8% of the INSTI and 92.4% of PI treated patients had a viral load <50 copies/mL at week 48, discontinuation rates due to adverse events were 3.4% in the INSTI and 8.1% in the PI group respectively. No significant differences in discontinuation rates were observed at week 12 or 48 between INSTI and PI-based regimens (p=0.78 and 0.47 respectively). Virologic response was equally good in those receiving integrase or protease inhibitors (91.8% vs. 92.4%; p=0.88; odds ratio (95% CI) 1.05 (0.38–2.82).
Conclusions: In a European cohort of LP starting first line INSTI or PI based ART regimens, there were no significant differences in discontinuation rates or virologic response at week 48. Our results indicate that the choice between INSTI and PI can be made on an individual basis of the patient presenting late for first line ART. Future research will focus on the identifying factors associated with regimen selection in this cohort.

O14

Sustained HIV-1 remission following CCR5Δ32/Δ32 allogeneic haematopoietic stem cell transplantation

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Background: HIV-1 cure remains elusive with only one reported case a decade ago[1,2]. Termed the "Berlin Patient", the individual underwent 2 rounds of allogeneic Hematopoietic Stem Cell Transplantation(allo-HSCT) using a donor with a homozygous mutation in the HIV coreceptor CCR5 (CCR5Δ32/Δ32) to treat his acute myeloid leukemia. Total body irradiation was given with each HSCT. Critically, it is unclear which treatment or patient parameters contributed to this only documented HIV cure.
Methods: An HIV-1-infected adult underwent allo-HSCT for Hodgkin's Lymphoma using cells from a CCR5Δ32/Δ32 donor. He experienced only mild gut graft versus host disease. Antiretroviral therapy was interrupted 16 months after transplant. HIV-1 remission has been maintained through a further 17 months.
Results: Plasma HIV-1 RNA has been negative at <1 copy/ml with HIV-1 DNA negative in peripheral CD4 T lymphocytes. Quantitative viral outgrowth assay from peripheral CD4 T lymphocytes shows no reactivatable virus using a total of 24 million resting CD4 T cells. CCR5-tropic, but not CXCR4-tropic viruses were identified in HIV-1 DNA from CD4 T cells of the patient prior to transplant. CD4 T cells isolated from peripheral blood post-transplant did not express CCR5 and were only susceptible to CXCR4-tropic virus *ex vivo*. HIV-1Gag-specific CD4 and CD8 T-cell responses were lost after transplantation whilst Cytomegalovirus (CMV)-specific responses were detectable. Likewise, HIV-1-specific antibodies and avidities fell to levels comparable to those in the Berlin patient following transplantation.
Conclusions: These data show that single allo-HSCT with homozygous CCR5Δ32 donor cells may be sufficient to achieve long-term HIV-1 remission with reduced intensity conditioning and no irradiation, supporting CCR5 stem cell therapy as a compelling strategy to achieve an HIV cure.

O15

Safety of tenofovir alafenamide (TAF) in patients with a history of proximal renal tubulopathy on tenofovir disoproxil fumarate (TDF)

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Background: Tenofovir disoproxil fumarate (TDF) may cause treatment-limiting proximal renal tubulopathy (PRT). Case reports suggest that tenofovir alafenamide (TAF) may be a treatment option for patients with a history of PRT. We studied the effect of TAF on renal and bone biomarkers in patients with a history of PRT.
Methods: Virally supressed persons with a history of PRT on TDF (confirmed histologically or by ≥2 of: proteinuria [>30 mg/mmol], hypophosphataemia [<0.64 mmol/L], normoglycaemic glycosuria, rapid eGFR decline [>5 ml/min/1.73 m^2/year], clinical resolution of PRT upon TDF discontinuation, not currently receiving TDF and naive to TAF were randomized 1:1 to continue current antiretroviral therapy (ART) or initiate emtricitabine (F)/TAF with discontinuation of NRTI as appropriate. Renal function and bone turnover markers were analysed at baseline, week 4 and week 12. The primary outcome was the mean difference in urinary retinol-binding protein/creatinine ratio (RBPCR; reference range <2.93 μg/mmol) from baseline to 12 weeks. Data were analyzed using linear regression, with robust standard errors (primary outcome), and repeated measures mixed effects models (secondary outcomes). The trial was registered under EudraCT 2016-003345-29.

Results: 31 persons (mean age 52.4 [SD 0.3] years, 97% male, 90% white, median [IQR] time since HIV diagnosis, first ART exposure and TDF discontinuation: 20.1 [12.2, 27.5], 12.6 [7.5, 21.1] and 6.8 [5.0, 10.1] years, and median CD4 count 489 [429, 637] cells/mm^3) were randomised; all completed the study through week 12. Baseline RBPCR (median [IQR]) was 1.43 [0.64, 3.82] in the F/TAF arm vs. 0.72 [0.31, 3.90] in the deferred arm. At 12 weeks, there was no difference in the change in RBPCR from baseline between the two study arms (β 19.6, 95% CI −35.3, 74.5, p=0.47). There was also no difference between the two study arms in change in eGFR by creatinine or cystatin C, albuminuria, proteinuria, renal phosphate handling, (fasting) urinary osmolality, parathyroid hormone and bone turnover markers. No cases of PRT have emerged during 351 person-months of exposure to TAF.
Conclusions: In people with a history of PRT on TDF, 12-week exposure to TAF did not adversely affect renal tubular function. These data suggest that TAF may be an option for this group of patients, although longer term safety data are required. This study will continue to assess the renal and bone safety of F/TAF in this population through to 96 weeks.

Oral Research Presentations Session 3

O16

HIV antiretroviral drug regimens and lung-function decline in early HIV infection

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Background: Chronic obstructive pulmonary disease (COPD) is the third leading cause of death worldwide. A meta-analysis of 11 studies showed that HIV is an independent risk factor for COPD (OR 1.14; 95% CI 1.05 to 1.25). HIV antiretroviral (ARV) drugs have been proposed as a potential mechanism leading to COPD in HIV, but data are lacking to assess potential adverse effects of specific ARVs on lung function. We addressed this knowledge gap by using data from the Strategic Timing of Antiretroviral Treatment (START) Pulmonary Substudy.
Methods: START enrolled HIV-positive, ARV-naïve adults with CD4+ T-cell counts >500 cells/mm^3 and randomised participants to either immediate initiation of ARVs or deferred initiation until a CD4+ count of 350 cells/mm^3 or AIDS. ARV regimens were required to adhere to US Department of Health and Human Services guidelines. We collected post-bronchodilator spirometry prior to randomisation and annually thereafter.
In this analysis, we excluded those who never started ARVs during follow-up or did not have good-quality spirometry on ARVs. We estimated lung function decline, expressed as FEV_1 slope (mL/year), among participants from both treatment groups in START. Time zero was considered the spirometry measure prior to ART initiation and slopes were estimated using repeated measures mixed models. All ARV regimens in START contained a nucleos(t)ide reverse-transcriptase inhibitor (NRTI), so we compared non-nucleoside (NNRTI), protease inhibitor (PI), and integrase strand transfer inhibitor (INSTI) ARV classes. Comparisons were adjusted for randomised treatment arm, age, sex, race, region of the world, smoking status, COPD at baseline, and $\log_{10}$ HIV-RNA prior to ARV initiation.
Results: Of 1,026 Pulmonary Substudy participants, 853 (83.1%) were included in this analysis. NNRTIs were used by 643 (75.4%), PIs by 128 (15.0%), and INSTIs by 82 (9.6%). Median (IQR) Log_{10} HIV-RNA prior to starting ARVs was 4.3 (3.7, 4.9) and number of annual spirometry tests was 4 (3, 5). We found no statistically significant differences in FEV_1 slopes by ARV class, with NNRTI and PI slopes similar to those in general population studies (−25 to −30 mL/year) (Figure O16.1). The small number of participants on INSTIs resulted in imprecise estimates of FEV_1 slope for this class of ARVs.
Conclusions: Lung function decline is similar for NNRTI and PI-based ARV regimens. More data are needed to assess possible adverse effects of INSTIs on lung function.

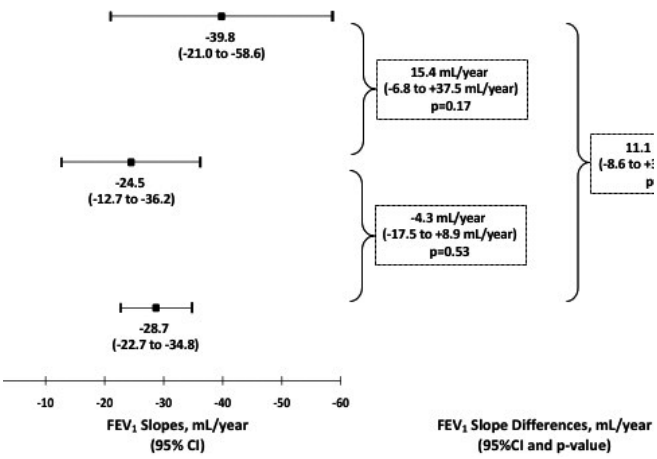

Figure O16.1

O17

Invasive pneumococcal disease in people living with HIV in England, 1999–2017

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Background: The 7-valent pneumococcal conjugate vaccine (PCV7) was introduced into the childhood immunisation programme in 2006 and replaced with the 13-valent vaccine (PCV13) in 2010. Both vaccines have been highly effective in preventing invasive pneumococcal disease (IPD) across all age groups because of direct and indirect (herd) protection. At-risk adults, including those with HIV, are currently recommended to receive a single dose of the 23-valent pneumococcal polysaccharide vaccine (PPV23). Here, we describe the epidemiology of IPD in people living with HIV following the introduction of both PCVs.
Methods: Public Health England conducts enhanced surveillance of HIV and IPD in England. We used a hierarchical algorithm to link the two national datasets for adults aged ≥15 years over the period 1999–2017. A CD4 slope decline algorithm was used to estimate date of HIV infection.
Results: Among 105,834 adults with HIV, 1,450 (872 men, 578 women) developed IPD during the surveillance period, with 6% (93/1,450) having more than one IPD episode. Two-thirds (67%, 973/1,450) were aged 15–44 years at the time of first IPD diagnosis and half (47%, 647/1,389) were of black African ethnicity. Median interval between HIV diagnosis and IPD diagnosis was 2 years [IQR, 0–7]. The majority of IPD cases (70%, 1,018/1,450) occurred >3 months after HIV diagnosis, however, in 343 (24%) individuals IPD and HIV were co-diagnosed within 90 days. In the remaining 6% (89/1,450) of individuals, a missed opportunity for earlier HIV diagnosis was identified, with IPD diagnosed >3 months before HIV; most of these missed diagnoses occurred in earlier years.
Average annual IPD incidence in people with HIV aged 15–64 was 169 per 100,000; this was >10 times higher than among the general adult population (10 per 100,000). Overall incidence rates were greater among heterosexual men and women (198 and 200 per 100,000) than gay and bisexual men (114 per 100,000). Incidence of IPD varied over the surveillance period, peaking at 284 episodes per 100,000 people living with HIV in 2007. Between 2007–2012 incidence fell rapidly, and has remained steady in the most recent 5 years at ~100 per 100,000.
Conclusions: IPD incidence among people with HIV reduced after PCV13 replaced PCV7 in 2010 and has remained stable. Serotype replacement in invasive disease was not seen to the same extent as in the general population. Adults presenting with IPD should continue to be routinely rested for underlying HIV infection.

O18

Equivalent responses to quadrivalent influenza vaccine are detectable in blood and oral fluid in healthcare workers and men living with HIV on ART

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Background: Inactivated quadrivalent influenza vaccine (QIV) is preferred for yearly immunisation for people living with HIV (PLWH) but efficacy and immunogenicity data are limited.

Methods: We compared blood and oral fluid (OF) responses in men who started antiretroviral therapy (ART) during the chronic phase of HIV infection (C-HIV), n=8, or the early phase of HIV infection (E-HIV), n=8, and healthcare control subjects (HC), n=14, receiving the newly-licensed 2017–2018 QIV. Sera were analysed using haemagglutination inhibition (HAI) against the four influenza strains (Table O18.1) and OF was analysed for Influenza/A-specific IgG. The responses of CD4+ circulating T-follicular helper cells (cTFH) and CD19+ antibody secreting cells (ASC) were measured using multi-parameter flow cytometry. Data were analysed using FlowJo v10.4.2 and GraphPad Prism v7.04.

Results: The median (IQR) age was 45 (34–54) years. CD4 counts at baseline were similar in those with E-HIV and C-HIV. 11/14 (78.6%) HC reported a negative HIV test within the previous 3.5 years. Seroprotection rates were high in all three groups (75–100%), with no difference in serum HAI titre, (p=0.76) (Table O18.1). Serum HAI titres and Influenza/A-specific IgG in OF were highly correlated; A/H1N1 (p<0.0001) and A/H3N2 (p=0.0005). The frequency of activated cTFH (p<0.0001) and ASC (p=0.001) increased at Day 7 post immunisation, returning to baseline at Day 28, with no difference in fold change between the three groups. T-cell activation and fold change in HAI titre post immunisation were lower in those self-reporting influenza vaccination in the preceding three years, irrespective of HIV infection (p<0.0001).

Table O18.1. Demographics and seroprotection rates post QIV

	HC	(IQR)	E-HIV	(IQR)	C-HIV	(IQR)
Age (years)	37	(29–49)	48	(42–58)	50	(38–55)
CD4 count (cells/ul)	ND	-	789	(665–1033)	609	(454–931)
Nadir CD4 count (cells/ul)	ND	-	522	(467–734)	170	(80–410)
Months HIV VL<50 copies/ml	NA	-	19	(7–27)	90	(53–159)
HAI≥40		(%)		(%)		(%)
A/Michigan	12	(85.7)	6	(75)	7	(100)
A/Hong Kong	14	(100)	8	(100)	7	(100)
B/Brisbane	14	(100)	7	(87.5)	7	(100)
B/Phuket	14	(100)	8	(100)	7	(100)

Conclusions: In the first UK study of PLWH receiving QIV, we report high seroprotection rates, equivalent to those of healthcare workers, in men with suppressed HIV infection and immune recovery. Our data support the use of QIV in the seasonal influenza vaccination programme for PLWH, and indicate measurement of influenza-specific antibody in the oral cavity is a potential alternative to serum sampling.

O19

HIV co-morbidities and their impact on attendance frequency at HIV clinics in England and Wales: findings from Positive Voices 2017 linked to national cohort data

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Background: As people with HIV live longer due to effective ART, the prevalence of co-morbidities may increase, impacting upon HIV service use. Using national cohort and patient survey data we examine the impact of co-morbidities on HIV service attendance patterns.

Methods: Positive Voices is a cross-sectional survey of 4,422 people attending 73 HIV clinics in England & Wales, recruited Jan-Sept 2017. Co-morbidities were self-reported as ever diagnosed from a list of 24 conditions. Survey responses were linked to HIV clinical data from England in 2017. Those newly diagnosed with HIV or starting ART within the previous 12 months were excluded (n=33). Consultation frequency was compared in those with/without selected co-morbidities by poisson regression. Suppressed viral load (VL) was defined as VL≤200 copies/mL.

Results: HIV clinic attendance information was available for 87% (3,861) of respondents; 72% were men, 39% of non-white ethnicity, median age was 49 [IQR: 41–56] and there was a median of 11 [6–16] years since diagnosis.

There were 12,602 HIV clinic visits in 2017. Median number of attendances was 3 [2–4]; however, attendances were highly skewed with a third attending ≥4 times. Respondents in the highest decile of HIV consultations attended a median of 7 [6–9] (range 6–27) times in a year and accounted for 25% of all HIV consultations. The majority (97%) were on ART with suppressed VL.

71% self-reported at least 1 co-morbidity with 33% reporting ≥3 conditions. The most common conditions were depression (31%), high cholesterol (27%), anxiety (24%), high blood pressure (21%) and sleep disorders/insomnia (14%). In multivariable regression controlling for age, gender, ethnicity, VL suppression and HIV risk group, there was a significant positive association between consultation frequency and number of co-morbidities reported (β=0.04 (0.03–0.05), p<0.001) (β: the change in consultations for a given characteristic, after controlling for other factors i.e. β of 0.04 means 0.04 additional consultations). Dementia was most strongly associated with consultation frequency, alongside psychosis/schizophrenia, neuropathy/peripheral neuropathy, cancer, and anxiety.

Conclusions: In this engaged cohort of people with HIV, almost three-quarters report co-morbidities. Our results suggest an association between co-morbidities and increased clinic attendance. Monitoring the increasing burden of co-morbidities is needed to plan the future of HIV services.

O20

Self-reported symptoms of insomnia and objective measures of sleep quality in people living with HIV and comparable controls

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Background: Insomnia and sleep disturbances are commonly reported among people living with HIV (PLWH). Sleep disorders are associated with depressive illnesses and a decreased quality of life. Whilst previous studies have generally relied on self-reported symptoms, their association with objective measures of sleep quality remains unclear. We evaluated associations between self-reported symptoms of insomnia and objectively-measured sleep duration and efficiency in PLWH and HIV-negative controls.

Methods: We collected self-reported symptoms of insomnia [insomnia severity index (ISI)] and actigraphy data for 7 days/nights on a subset of PLWH and HIV-negative controls aged ≥50 participating in the POPPY study. Clinical insomnia was defined as ISI≥15 and objectively-measured average sleep duration and efficiency (% of time spent asleep of the time spent in bed) were derived from the actigraphy data. Linear regression was used to test differences in sleep duration and efficiency between people with and without

insomnia, separately in PLWH and controls, also stratified by ethnicity, gender, BMI and work shift (day/not working vs. night/irregular shift).
Results: The 242 PLWH and 117 HIV-negative controls were predominantly male (88% and 68%) with a median (IQR) age of 60 (56, 65) and 60 (57, 66) years, respectively. Whilst clinical insomnia was reported by a greater proportion of PLWH than controls (23% vs. 6%, p<0.001), HIV status was not associated with differences in sleep duration (7.0 vs. 7.1 hours, p=0.28) or efficiency (88% vs. 89%, p=0.13). While PLWH with insomnia had statistically shorter sleep duration than those without insomnia [mean (95% CI): 22 (2, 42) minutes shorter, p=0.04], the difference was non-significant within the control group [mean (95% CI): 15 (−23, 53) minutes, p=0.44] and it was small in most subgroups of PLWH (Figure O20.1). Similarly, although sleep efficiency was lower in PLWH with insomnia than in PLWH without insomnia [mean (95% CI): 2% (0, 4) lower, p=0.02] differences were small within some subgroups of PLWH (Figure O20.1) and within the control group (p=0.49).
Conclusions: We report generally weak associations between self-reported symptoms of insomnia and objective measures of sleep quality, suggesting

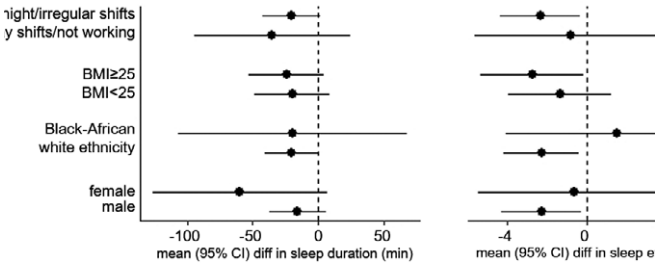

Figure O20.1. Difference in sleep duration (left) and efficiency (right) between PLWH with insomnia vs. PLWH without insomnia

they may measure different constructs. Further research is needed to better understand the perception and consequences of good sleep in PLWH.

O21

Psychological burden and the impact on engagement with care among ethnically diverse older women with HIV

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Background: Increasing numbers of women living with HIV (WLHIV) are living into older age. Recent data has indicated high levels of poverty and psychological illness among WLHIV in the UK. Despite this, there is a paucity of information on the impact of psychosocial factors on HIV outcomes among older women living with HIV. In a sample of predominantly Black African WLHIV in England aged 45–60, we explore the association between psychosocial factors and HIV care outcomes.
Methods: Analysis of cross-sectional data on 841 women recruited to the PRIME Study, a questionnaire study of WLHIV aged 45–60 in England in 2016–2017. Analysis of psychosocial factors was limited to women who reported their ethnicity as White UK, Black African or Black Caribbean (n=724). Psychological symptoms were measured using the Patient Health Questionnaire 4 (PHQ-4). Social isolation was measured using a modified version of the Duke-UNC Functional Social Support Scale. Odds ratios were obtained using logistic regression.
Results: Over 85.3% (728/841) of WLHIV in our sample were born outside of the UK, with 70% (607/841) reporting their ethnicity to be Black African (BA). BA women were more likely than Black Caribbean (BC) or White British (WB) women to have a university education (48.3%, 27.3%, 25.71% respectively, p<0.001), but were not more likely to be employed (68.4%, 61.4%, 61.4%, p=0.563) and they were less likely to have enough money to meet their basic needs (56.5%, 63.0%, 82.9%, p<0.001). Nearly two-fifths (282/724) of WLHIV reported social isolation, with BA and BC women more likely to report this than WB women (BC; 47.8%, aOR 2.69, 95% CI 1.23–5.93, p<0.05, BA; 39.9% aOR 1.95, 95% CI 1.12–3.41, p<0.05). BA women were less likely to report being diagnosed with depression than WB women (26.5% vs. 52.9%, aOR 0.40, 95% CI 0.22–0.71, p<0.01) but more likely to report current psychological distress (23.9% vs. 14.3%, aOR 3.34, 95% CI 1.38–8.13, p<0.05). Psychological distress was associated with suboptimal antiretroviral adherence (OR 1.56, CI 1.17–2.08, p<0.05) and HIV clinic attendance (OR 2.26, 95% CI 1.50–3.40, p<0.001), but was not associated with having a detectable HIV viral load (OR 1.18, 95% CI 0.68–2.08, p>0.5).
Conclusions: We report high levels of poverty, psychological distress and social isolation in this ethnically diverse group of WLHIV aged 45–60, especially amongst BA WLHIV. Psychological distress was associated with poorer engagement in HIV care. Despite being more likely to experience psychological distress, BA women were less likely to have been diagnosed with depression. The provision of holistic HIV care requires awareness of the psychosocial needs of midlife WLHIV, which may be more pronounced in those from Black and Minority Ethnic communities, and prompt referral for support including psychology, peer support and advice around benefits.

O22

Clinical outcomes and experiences of trans people accessing HIV care in England

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Background: Studies of trans people abroad indicate increased risk of HIV acquisition, high levels of stigmatisation and poorer clinical outcomes than cis people. We report the first national data for trans (including non-binary) people living with HIV.
Methods: The HIV & AIDS Reporting System (HARS) collects clinical data on adults attending specialist HIV clinics in England and since 2015 has included questions on gender identity and trans/cis status, in addition to markers of clinical complexity. Positive Voices is a cross-sectional survey of 4,424 people attending 73 HIV clinics in England & Wales, recruited Jan-Sept 2017. HARS data for 2015–2017 were matched to survey data and trans status was verified through survey responses or clinic follow-up.
Results: Of the 85,537 people receiving HIV care in England in 2017, 123 were reported as trans (0.14%); 114 identified as women or trans women, 10 as men or trans men and 5 described their gender in another way (gender diverse). Over half (56%; 69/123) of those reported as trans lived in London, two thirds (69%; 85/123) were aged under 50 and one third (38%, 47/123) were from a minority ethnicity. Late diagnosis rates in the past 5 years were similar for trans and cis people (40% and 43%). Of the 123 trans people in care in 2017, 98% were on ART and of those, 97% had a suppressed viral load (compared to 98% and 95% among cis people). Trans people were significantly more likely than cis people to be under active psychiatric care (16% vs. 4%, p<0.001), but not for any other complexities in HARS.
Of the 4,424 respondents to Positive Voices, 39 (0.88%) self-identified as trans. Trans respondents reported significantly higher levels of anxiety and depression compared to cis (41% moderate to extreme anxiety or depression vs. 23%, p<0.005). Although not significant, trans people reported poorer general health than cis people (40% fair to very bad health vs. 26%) and were twice as likely to report having been refused or delayed health care (11% vs. 6%).
Conclusions: People living with HIV are diverse, however HIV clinical care is of a high standard for all. Trans people with HIV reported poorer mental health than cis people with HIV and our results demonstrate the need for ongoing psychosocial support in HIV clinics. The proportion of people self-identifying as trans was significantly higher than that reported by clinicians, we recommend that questionnaires to self-report gender identity are used in clinics.

O23

Risk factors and patterns of HCV transmission amongst men who have sex with men

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Background: We sought to characterise risk factors and patterns of HCV transmission in a cohort of men who have sex with men (MSM).
Methods: MSM with recently-acquired HCV (AHCV) (n=40) were prospectively recruited from 01/2017–08/2017 ('clinic cohort'). Clinical data and risk behaviours were identified by notes review and questionnaires. Comparison was made between HIV+ vs. HIV− men using chi-squared, Fishers exact or Mann Whitney U tests. Blood was obtained for HCV whole genome sequencing. Phylogenetic analyses for genotype (GT) 1a were performed, including MSM from the clinic cohort (n=18) and 2 other AHCV cohorts, TARGET3D (n=24) and CHAT (n=10), to identify transmission clusters.
Results: Sixteen out of 40 (40.0%) men were HIV−. HIV− vs. HIV+ men were significantly (sig.) younger (34, IQR 29–43 vs. 44, 36–50 years, respectively). Most HCV infections were GT1a (13, 81.3% HIV− vs. 14, 58.3% HIV+ men); GT4 was sig. less frequent in HIV− (n=1, 6.3%) vs. HIV+ men (n=9, 37.5%). Most (22, 91.7%) HIV+ MSM were aviraemic on antiretrovirals; most (13, 81.3%) HIV− MSM had taken HIV PrEP in the last year. Seven HIV− (43.8%) vs. 11 HIV+ (45.8%) men had a history of injection drug use (IDU), methamphetamine being used most often (11/18, 61.1%); 15(93.8%) HIV− vs. 19(79.2%) HIV+ men reported non-injected drug use in the last year. HIV− men had sig. more partners (36, IQR 16–50 vs. 16, 4–16); reporting of group sex (14, 87.5% vs. 17, 70.8%), condomless anal sex (16, 100.0% vs. 21, 87.5%) and fisting (12, 75.0% vs. 13, 54.2%) in the last year was not sig. different for HIV− vs. HIV+ men, respectively. The preferred way of meeting partners was via phone apps (13, 81.3% HIV− vs. 21, 87.5% HIV+ men), with one app used by 26/29 (89.7%) respondees. For the question, 'how many partners in the past 12 months did you think had HIV?', a majority thought 'some', 'most' or 'all' partners had HIV (13, 81.3% HIV− vs. 20, 83.3% HIV+ recruits); few men thought 'some', 'most' or 'all' partners had HCV (4, 25.0% HIV− vs. 3, 12.5% HIV+ recruits). For 52 GT1a sequences, 47(90.4%) clustered with ≥1 other sequence. There were 7 clusters of 2–27 men; 6 clusters contained HIV− and HIV+ MSM and 1 cluster only HIV+ MSM. One mixed HIV−/HIV+ cluster was likely part of a larger cluster first seen in HIV+ MSM in 2007
Conclusions: PrEP-using MSM are at risk of HCV, with similar behaviours to HIV+ MSM. Younger age and greater partner number for HIV− MSM raise the possibility of a rapid HCV epidemic, with transmissions likely bridging from HIV+ populations. Few men demonstrated HCV awareness and risk reduction strategies should be expanded.

O24

Fall in HCV incidence in HIV+ MSM in London following expansion of access to DAA therapy

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Background: Modelling of the London HCV epidemic in HIV+ MSM suggested early access to DAA treatment plus risk-behaviour modification may reduce incidence. With high rates of linkage to care and treatment access, micro-elimination of HCV within HIV+ MSM may be realistic, ahead of 2030 WHO targets. Data from European cohorts have shown a reduction in HCV incidence amongst HIV+ MSM. We examine the effect of HCV treatment access (in the pre- and post-DAA era) and risk-behaviour modification on incidence of HCV first and re-infections for HIV+ MSM in three large London clinics.
Methods: A retrospective cohort study was conducted at 3 large London HIV clinics (Royal Free and St Mary's Hospitals, Mortimer Market) between July 2013 and June 2018. During each 6-month period the following data were collected [1] number of first acute HCV diagnoses [2] number of subsequent acute HCV diagnoses (re-infections) [3] denominator of HIV+ MSM under active follow up [4] number of PEG IFN/RBV or DAA-based HCV treatments for acute/early HCV (<12 m since diagnosis) [5] number of PEG IFN/RBV or DAA-based HCV therapies for chronic HCV (>12 m since diagnosis). Incidence rates (acute HCV diagnoses/ HIV+ MSM 1000 PYFU) and re-infection rates (re-infections/all incident infections x 100) were calculated for each time-period.
Results: 256 acute HCV infections were identified (211 first infections and 45 re-infections) (Figure O24.1). DAA treatment became widely available in late 2015. All centres adopted risk-reduction behaviour intervention with counselling/psychology. Incidence of first HCV episode peaked at 14.9/1000 HIV+ MSM PYFU [95% CI 10.4–19.4] in 2015. Rates fell to 3.0/1000 HIV+ MSM PYFU [95% CI 1.4–5.7] by 2018. Proportion of re-infection in acute HCV diagnoses increased from 9% to 47% during the study period. 40 (15.6%) cleared HCV spontaneously. 15 (6%) self-purchased generic DAAs. Supervised chronic HCV/HIV treatment rates increased from 2.8/month in pre-DAA era to 15.6/month in post-DAA era. Time from diagnosis to starting any HCV treatment reduced fromsed average of 40.9 months (2013) to 3.1 months (2018).
Conclusions: There has been a 79% reduction in incidence of first HCV infection and 65% reduction of overall HCV incidence in HIV+ MSM since the epidemic peak of 2015 which coincides with wider access to DAA-based therapy across London. However, while incidence has fallen, re-infection rates remain high and may be increasing. Further interventions to reduce ongoing transmission including early treatment and access to treatment for re-infection are likely to be needed if micro-elimination is to be achieved.

BHIVA Research Awards winner 2014, Daniel Bradshaw

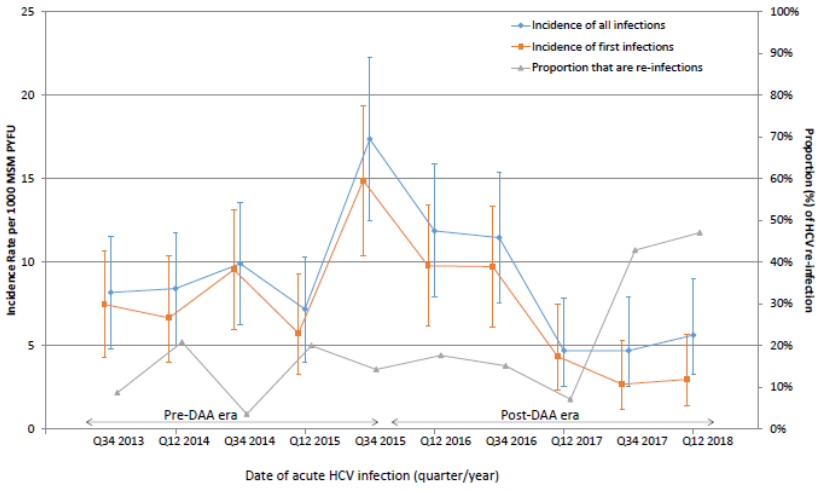

Figure O24.1. Incidence rate of acute HCV infections 2013–2018

Oral Research Presentations Session 4

O25

Sexual health education landscape in Scotland

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Background: Comprehensive sexual health education (CSHE) is a critical element in equipping young learners with accurate and age-appropriate sexual health. It empowers youth to make healthy and responsible choices about their sexual and social relationships by preparing them with the skills and knowledge to reduce the risks of HIV and other sexually transmitted infections. The broad aims of the survey are to examine student experiences of sexual health lessons and understanding of HIV. It gauges student attitudes and behaviour towards sexual health lessons, to measure their understanding of HIV, and to assess student's knowledge of and use of sexual health services.
Methods: An online, cross-sectional school survey of students ages 12 to 18 was administered between October 2017 and February 2018.
Results: The survey reached 2,806 students in 418 schools across 19 council areas, the largest of its kind in Scotland. 84% of students reported that sexual health lessons were offered at their school at the time of the survey. Of those, 57% were not participating in sexual health lessons during their current school year. When asked whether students know how to minimise HIV risk; 34% said 'no', 26% said 'somewhat', and 40% said 'yes'. 22% of students reported that their lessons did not provide them with sufficient knowledge on how to minimise HIV risk; 48% reported it 'somewhat' did. 15% of students reported not knowing anything about HIV transmission and prevention, 58% said they knew some things, 24% said they knew a lot, and 4% said they knew everything. A large proportion of students believed that HIV could be transmitted through kissing (27%), spitting (45%), or acquired through toilet seats (34%). 50% of students reported wanting more information on HIV transmission and 58% on HIV prevention. 41% of students reported not knowing where to go for sexual health services despite 73% citing they would use the service if the need arose. 56% of students reported their teacher being 'very confident' in delivering sexual health messages, 37% stated that their teacher was 'somewhat confident' and 6% 'not at all confident'. Students cited they receive sexual health information from teachers (49%), TV and the internet (23%), friends (13%), and parents (13%).
Conclusions: Despite RSHP education being underpinned by Scotland's Curriculum of Excellence which provides a framework that all publicly funded schools are required to follow, the experiences of secondary school students have highlighted that they are not being adequately informed about sexual health and HIV. Many students approach adulthood equipped with confusing or conflicting sexual health information that are sometimes exacerbated by embarrassment or silence from adults. It is therefore recommended that (1) sexual health lessons be delivered by well-trained and supported teachers, sexual health professionals, or third sector providers to ensure sexual health messages are delivered effectively, (2) legislation be introduced for RSHP lessons to become a compulsory component of the Scottish curriculum, and (3) to update RSHP guidance with 21st century understanding of HIV and sexual health and produced in collaboration with key stakeholders.

O26

Reducing barriers to HIV self-testing among black African communities – self testing pilot. A Public Health England HIV Innovation Project. December 2017–November 2018

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Background: Black Africans (BA) are disproportionately affected by HIV in England, comprising 38% of heterosexuals diagnosed in 2017, 57% of whom were diagnosed late. Late diagnosis was even higher in BA men (69%).
HIV self testing is a preferred way to test among BA (Sigma, 2015). Despite increased online availability of self tests since 2015, Terrence Higgins Trust (THT) note a lower uptake amongst BA than other groups.
In focus groups, BA stated that primary reasons for this are privacy and confidentiality, prompting a reluctance to receive kits in shared accommodation.
With PHE funding, we added Click & Collect delivery to explore whether it would help remove barriers to ordering HIV tests online.
Methods:
- 20,000 self tests offered online to key communities, including BA, from May–December 2018.
- Click & Collect option was provided, with a choice of 4,000+ collection points. While open to all, enhanced promotion went to BA.
- Users were sent two follow-up text messages requesting results. All individuals with a reactive result received support calls from THT Direct.
- A user satisfaction survey assessed experiences and reasons for using the service.

Results:
- 18,597 test kits dispatched – 3,291 to BA.
- 50% of BA reported results, compared to 61% overall.
- Click & Collect uptake: 10% overall, 18% for BA men in particular.
- 11 BA reported reactive results, one of these used Click & Collect. The reactivity rate for BA who reported results was 0.7%.

From the user satisfaction survey:

- Over 48% of Click & Collect users stated primary reasons for choosing it were not wanting anyone they lived with accidentally opening package, or finding out they were taking an HIV test.
- 50% of BA Click & Collect users chose the self test due to confidentiality – compared to 34% of all other Click & Collect users, for whom it was not a top reason.
- For non-Click & Collect users, a higher proportion of BA reported that they would have chosen it had they known about it (55% compared to 21% in all other groups).

Conclusions: Results confirm that Click & Collect may address privacy and confidentiality issues among BA for whom this is a primary issue. Compared to other groups, the proportion of BA men using Click & Collect was higher. As self testing is further embedded in sexual health services, this offers an important strategic opportunity to increase HIV testing uptake by a group affected by high levels of late diagnosis.

O27

Attitudes and factors to PrEP uptake among HIV risk groups across London

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Background: The PrEP Champion Project was designed to increase knowledge of, and accessibility to, PrEP among MSM, heterosexual BAME men, women and trans people; factors around acceptability were also explored. The project was implemented between December 2017 and November 2018.
Methods: 54 PrEP Champions were trained to assess PrEP knowledge and acceptability differences among the target groups using a specifically designed PrEP Assessment Tool.
Results: 1,056 people across all target groups were included in the analysis. Age range: 16–71 years old (average=35); 85% people were from the 33 boroughs of London.
Awareness: 513 people (49%) had heard about PrEP including 81% of MSM, 66% trans people, 22% women and 13% heterosexual BAME men. PrEP awareness among MSM is significantly higher than other groups ($p=0.000$). This may be due to more PrEP users among MSM and sexual health discussions being less normalised in certain communities, eg BAME.
Attitude around PrEP use: 903 people were HIV negative or not taking PrEP at the time of the assessment. 45% said they would use PrEP when needed and 26% might consider PrEP if needed. Women are less likely to reject PrEP initially more than other groups ($p<0.02$); yet they are also less likely to use PrEP, probably due to a perception of low HIV risk. Trans people reported being less likely to use PrEP ($p=0.005$) mainly due to concerns of side effects, drug interactions and common STIs.
Barriers to PrEP use: These included lack of knowledge around PrEP (44%); cost (34%); lack of protection from other STIs (18%); availability (14%); and stigma (related to multiple partners) (12%). Of the top named factors influencing PrEP use, cost and knowledge were consistent among all target groups; being most important to MSM and trans people, whereas knowledge of PrEP was more important for women and heterosexual BAME men.

Conclusions: As PrEP is implemented in England in the upcoming years, it is important to understand factors that hinder and support its use, especially among high risk groups. Approximately half of the target groups had previously heard about PrEP. Most would use PrEP when needed however the percentages were lower for women and trans people. Factors influencing PrEP use, across all target groups, included cost, knowledge and accessibility, presenting key areas upon which programmes to encourage PrEP use can be built.

028

Happy birthday Scottish PrEP! Uptake and STI epidemiology from the first year of the NHS HIV PrEP programme in Scotland

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Background: Human Immunodeficiency Virus (HIV) Pre Exposure Prophylaxis (PrEP) significantly reduces the risk of HIV acquisition. Scotland was the first country in the UK to provide an NHS- funded PrEP programme for all eligible residents via sexual health services, and this began on 1st July 2017. We report on PrEP uptake and STI epidemiology for the first year of PrEP roll out.
Methods: Data all patients commencing on PrEP during the first year of the Scottish PrEP programme (01/07/2017–30/06/2018) were extracted from NaSH (the National Sexual Health IT System) or an equivalent electronic spreadsheet from non-NaSH using services. A novel clinical coding system was introduced to enable identification of those assessed for PrEP, and those who initiated PrEP, Data were linked with laboratory diagnoses for blood borne viruses and bacterial STIs.
Results: In the first year of the Scottish PrEP programme, 1,872 individuals had one or more prescriptions for PrEP, amounting to a total of 4,432 prescriptions. Almost all were male (1,855; 99%), and the vast majority were MSM (1,846; 98.6%). The largest proportion (739; 39%) were aged 20–29 years at first PrEP prescription and almost a third were aged 40 or above (530; 28%).
78% reported a history of condomless anal sex with ≥2 partners in the last 12 months and almost 1/5 had a documented bacterial rectal STI in the previous 12 months. Almost three quarters (1,386; 74%) chose daily PrEP with 17% (309) received only event-based PrEP during the year .
Around a fifth of those prescribed PrEP may be attending sexual health services for the first time, or at least for the first time in NaSH history, suggesting that PrEP is drawing patients in to services who are at high risk for HIV and other STI.
In the context of an increase in HIV testing among MSM in the sexual health clinic setting, the proportion positive in the year before NHS PrEP introduction (4/1000) was similar to that for the year after (3/1000). Corresponding rates for diagnosed recent infection were 1/1000 and 0.9 respectively
Among those prescribed PrEP, rates of gonorrhoea (including rectal), testing and numbers diagnosed positive increased between the two 12 month periods either side of NHS PrEP introduction but rates of infection remained similar. Such rates were higher among those ever versus never prescribed PrEP. Similar observations were recorded for chlamydia with an increase in testing and diagnoses among MSM ever prescribed PrEP, and no overall change in the proportion positive pre and during the first year of NHS PrEP.
Conclusions: In the first year of the Scottish PrEP programme 1,872 individuals at high risk of HIV commenced PrEP. Early indications show a similar rate of HIV infection and bacterial STI in this population so far, however many had been on PrEP for a short time by the end of the first year, therefore it is likely much too early to draw conclusions about impact; accordingly, further evaluation at the end of subsequent years with more sophisticated analyses will be required to evaluate outcomes fully.

029

U=U: patient and staff awareness, understanding and impact

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Background: U=U is universally accepted but promotion in clinics may be inconsistent. We surveyed patients and staff in a London clinic on awareness, barriers and preferred solutions.
Methods: By online survey, we asked patients about awareness and understanding of U=U, impact in key areas and how they'd like to receive additional information. Staff were asked how, when and with whom they explained U=U, barriers and perceived impact. Results were collated and discussed with staff to generate new communication strategies.
Results: 112 surveys were completed, 81 patients and 31 staff. Most patients were male (86%) and gay (72%); 32% hadn't heard of "U=U" despite all being undetectable on ART, but 80% agreed with "being undetectable for six months means no sexual transmission"; 20% were unsure of or didn't believe the message. Of the "U=U aware", 30% heard about it from the clinic. Similar proportions of MSM & heterosexuals reported a positive impact on how they felt about HIV; heterosexuals were less likely to report benefit in other areas including disclosure and enjoying sex (referencing difficulties negative partners had believing U=U) but more likely to report positive impact on taking ART.
Staff respondents included doctors, nurses, psychologists, health advisors and patient representatives. 87% discuss U=U with all or most patients but only 35% of felt all or most of their patients know about U=U. Some described misinformation e.g. U=U requiring 3 months of suppression and not applying in the context of concurrent STI. Reported reactions from patients included relief, disbelief, confusion and anger. Reported barriers included lack of time (31%) and assumption of knowledge (18%). Most staff wanted more training, 72% requested U=U artwork in the waiting area, 66% wanted written information in different languages.
Conclusions: Levels of understanding amongst our patients are mixed; around one third had not heard of U=U but 80% agreed being undetectable for six months means no sexual transmission, indicating a lack of awareness of the shorthand, but not the concept. U=U has a positive impact on respondents' feelings about HIV with some differences between MSM and heterosexuals. Just under half of patients wanted more information.
Most staff discuss U=U with most or all patients but there was wide variation and some misinformation. The main barriers were lack of time and assuming patients already knew. Staff also reported mixed patient reactions, some suggesting repeated conversations may be necessary for patients to trust U=U after many years of safer sex. Staff perceptions of positive impact on feelings about HIV were consistent with patients, but over-estimated the impact on other areas, such as disclosure and adherence.

030

Molecular characterisation of HIV acquisition events in the PARTNER study

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Background: The PARTNER study investigated the risk of HIV transmission among HIV serodifferent couples that reported condomless sexual intercourse in which the HIV-positive partner was on suppressive ART. A number of HIV-negative partners become HIV-positive during follow-up. As previously reported, none of the HIV acquisition events was phylogenetically characterised as representing within-couple transmissions. In the main PARTNER analysis, only follow-up periods when couples had sexual intercourse without condoms and without PEP or PrEP and when the positive partner had a viral load <200 copies/ml were considered eligible for inclusion. With support from a BHIVA research award, the aim of this sub-analysis was to obtain a detailed molecular characterisation of the HIV acquisition events observed in the PARTNER study, including events occurring both during and outside eligible follow-up.
Methods: PARTNER 1 (2010–2014) followed 548 heterosexual couples and 340 MSM couples. The PARTNER 2 extension study (2014–2018) recruited and followed MSM couples only (total 972 MSM couples). When a HIV-negative

partner was found to have become HIV-positive, a venous blood sample was taken from both partners to determine the genetic relatedness of the respective HIV sequences. In the partner on suppressive ART, viral sequences were derived from HIV-1 DNA recovered from PBMC; in the newly positive partner, sequences were derived from plasma HIV-1 RNA. Bulk *pol* and *env* sequences were obtained by conventional sequencing. In addition, a subset of plasma samples underwent deep sequencing (Illuminia MiSeq) to detect virus variants with high sensitivity. Briefly, a ~1,000 bp amplicon of reverse transcriptase (RT) was generated, viral haplotypes were reconstructed, and those occurring with >1% frequency were subjected to phylogenetic analysis. Linkage between viral sequences was determined using Maximum-likelihood and Bayesian Markov Chain Monte-Carlo inferences.

Results: Overall, 22 acquisition events were characterised, comprising 11 in PARTNER 1 (10 MSM, 1 heterosexual) and 11 in PARTNER 2 (all MSM). A total of 16/22 (73%) events (15 MSM, 1 heterosexual) occurred during eligible follow-up, whereas 6/22 (27%) events (all MSM) occurred outside eligible follow-up. Reasons for non-eligibility comprised: no data on sexual behaviour (n=3), no condomless sex (n=1), PEP use (n=1), and no plasma viral load measurement in the HIV-positive partner (n=1). Bulk viral sequences were obtained in all couples, comprising 22/22 (100%) couples for *pol* and 18/22 (87%) couples for *env*. The analysis of these sequences indicated that all the HIV-positive partners had subtype B infection, whereas 9/22 (41%) newly HIV-positive partners acquired non-B infections, including one each of subtypes A1, C, G, CRF02_AG, CRF20_BG, CRF29_BF, CRF60_BC and 2 cases of CRF14_BG. All bulk sequences were phylogenetically unrelated. The deep sequencing analysis comprised 8 HIV acquisition events, including 6 occurring during eligible follow-up and 2 occurring during non-eligible follow-up. The phylogenetic analysis confirmed lack of linkage between the bulk sequence of the HIV-positive partner and the plasma viral haplotypes of the newly positive partner.

Conclusions: Using both standard and sensitive sequencing methodologies, and including seroconversion events occurring in non-eligible periods, there was no evidence of within-couple transmissions in the PARTNER study.

BHIVA Research Awards winner 2015, Anna Maria Geretti

Poster Abstracts

Antiretrovirals: Efficacy, Interactions and Pharmacokinetics

P1

A Phase 3, randomised, controlled clinical trial of bictegravir in a fixed-dose combination, B/F/TAF, versus ABC/DTG/3TC in treatment-naïve adults at week 96

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Background: Bictegravir (B), a potent integrase strand transfer inhibitor (INSTI) with a high barrier to resistance, is coformulated with emtricitabine (F) and tenofovir alafenamide (TAF) as the single-tablet regimen BFTAF. We report 96 Week (W) results from an ongoing phase 3 study comparing BFTAF to coformulated dolutegravir, abacavir, and lamivudine (DTG/ABC/3TC) in treatment-naïve adults living with HIV-1. Primary outcome at W48 demonstrated non-inferior virologic responses, similar bone and renal profiles, and no viral resistance.
Methods: We randomised 1:1 HLA-B*5701-negative adults, without HBV and with estimated glomerular filtration rate (eGFR) $\geq$ 50 ml/min to receive blinded BFTAF (50/200/25 mg) or DTG/ABC/3TC (50/600/300 mg) with matching placebos once daily. Primary endpoint was proportion with HIV-1 RNA $<$ 50 c/ml at W48 (FDA snapshot), with secondary analyses at W96. Non-inferiority was assessed with 95% confidence intervals (CI) (12% margin). Other secondary endpoints were safety (adverse events [AEs], laboratory abnormalities) and predefined analyses of bone mineral density (BMD) and measures of renal function (eGFR, proteinuria).
Results: 629 adults were randomised (314 BFTAF, 315 DTG/ABC/3TC). At W96, BFTAF was non-inferior to DTG/ABC/3TC: 87.9% vs 89.8%, respectively, achieved HIV-1 RNA $<$ 50 c/ml (difference -1.9%; 95%CI -6.9% to 3.1%, p=0.45). In per-protocol analysis, 99.6% on BFTAF vs 98.9% on DTG/ABC/3TC achieved HIV-1 RNA $<$ 50 c/ml (p=0.33). Most common AEs overall were nausea (11% BFTAF, 24% DTG/ABC/3TC, p$<$0.001), diarrhoea (15%, 16%), and headache (13%, 16%). Through W96, no participant had emergent resistance to study drugs. No participant discontinued BFTAF due to AEs; 5 (2%) discontinued DTG/ABC/3TC due to AEs (1 after W48). Treatment-related AEs occurred in 28% BFTAF vs 40% DTG/ABC/3TC (p=0.002); most common was nausea (6%, 17%. p$<$0.001). At W96, mean % changes in spine and hip BMD were small and similar between groups; median change in eGFR was significantly less with BFTAF (-7.8 vs -9.6 ml/min, P=0.01 respectively), while median % changes in proteinuria were similar.
Conclusions: At week 96, BFTAF was virologically non-inferior to DTG/ABC/3TC, with no viral resistance or safety-related discontinuations. BFTAF was well tolerated with less nausea than DTG/ABC/3TC and similar bone and renal safety.

P2

A review of patients' medication history over a 2-month period in an HIV clinic

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Background: To establish if patients declared drug history differentiated from the GPs electronic medication history, to determine if there were any discrepancies and to check for any Drug-Drug interactions (DDIs).
Methods: Over a 2 month period, patients were asked their full drug history including inhalers, nasal sprays, injections, creams, indigestion remedies, over the counter (OTC), herbal, recreational, medicines purchased abroad or via the internet. Patients were also asked their consent, to allow us to view their medication records with the GP electronically using the SCR (summary care record) or the hospital's electronic patient records.
The patients' drug histories were compared to the electronic records and any discrepancies noted. The medications were checked against their Anti-retroviral medicines (ARVs) using the Liverpool website to determine any DDIs.
Results: 83 patients had a full drug history recorded. 10 patients (12%) were on no other medicines. 16 patients (19%) were only on OTC/Herbal/recreational medicines and were found to have no drug-drug interactions with their ARVs. 57 patients (69%) were on at least 1 other prescribed medicine. 18 of these 57 patients (32%) had polypharmacy (more than 5 concurrent medicines). 32 (56%) patients had no DDIs. 25 of the 57 patients (44%) had a potential interaction with their ARVs. 6 patients had multiple DDIs and all of these were from the polypharmacy group. There were a total of 7 significant interactions that required action: 4 required documentation to the GPs for careful monitoring or dose adjustment, 2 required the concomitant medication to be changed and 1 patient needed immediate change of their ARVs to avoid a serious DDI.
5 out of 83 patients (6%) had a verbal drug history which varied from their GPs record with 1 of them having a potentially serious undisclosed DDI.
Conclusions: 7 (8%) patients had DDIs which were avoided by conducting a full drug history obtained from both the SCR and patient. Of which 3 were potentially serious and hence the patients had either their ARVs or their concomitant medication changed.
This demonstrates that having a specialist HIV pharmacist available to screen ARV prescriptions is essential and it is imperative to conduct a full drug history each time a patient receives an ARV prescription as drug histories change and undisclosed medicines could have potential serious drug interactions.

P3

An audit on the management of drug interactions between antiretroviral medicines and anticoagulants and/or antiplatelet medicines

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Background: Background: The management of multiple co-morbidities and drug-drug interactions (DDIs) is becoming increasingly challenging in an aging population of people living with HIV. Interactions exist between antiretrovirals (ARVs) and anticoagulants (ACs) (warfarin and the directly acting ACs) and antiplatelets (APs) (eg. clopidogrel and ticagrelor). This audit reviewed whether potential interactions were identified in clinic, discussion(s) documented between healthcare professionals and whether adverse events potentially linked to the co-administration of these drugs were recorded, including bleeds and thromboembolic events.
Methods: DDIs classified as 'significant' on www.hiv-druginteractions.com, when co-administration is not recommended, or 'potential,' requiring close monitoring/dose adjustments were included due to potential of either reduced efficacy or increased bleeding risk.
Five years of data were pulled from an electronic pharmacy database to identify patients taking potentially interacting medicines. Retrospective case note review was performed to collect information on identification of the interaction, documentation of discussion on its management and if any potentially attributable adverse events were reported.
Results: 79 patients were identified as having been co-prescribed ARVs with APs and/or ACs. 36 were included for analysis (see Table P3.1) and compliance with the audit standards (see Table P3.2).
Reasons for exclusion: 39 on non-interacting combinations and 4 transfers of care into the clinic established and stable on warfarin and an interacting combination of ARVs.

Table P3.1. Interactions Identified

	Antiretroviral Class	
Antiplatelet	Protease Inhibitor	Non-Nucleoside Reverse Transcriptase Inhibitors
Clopidogrel	8	8
Ticagrelor	0	1
Anticoagulant		
Rivaroxaban	1	0
Warfarin	7	11

[1]Geometric mean (95% CI).
[2]Median (IQR).

Table P3.2. Documentation

Interaction identified	Discussion documented	Prescribing physician contacted
22(61%)	21 (58%)	12 (33%)

No adverse events were recorded as a result of interacting ARVs and APs and/ or ACs in combination.
Conclusions: A proportion of patients were co-prescribed interacting AC and/ or AP medicines with their ARVs which were not identified. There needs to be increased communication between other specialities and primary care with respect to HIV, specific co-morbidities and the management of DDIs. The Trust will develop a patient alert card detailing the nature of DDIs and how to seek further advice should a patient need to be started on an AP and/or AC.

P4

ARV switches with an undetectable viral load: why and when

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Background: People living with HIV (PLWHIV) now have a near normal life expectancy but may be more likely to develop co-morbidities and require polypharmacy than their HIV negative counterparts. Modern treatment options enable us to provide not just effective treatment but treatment optimised for individual patient requirements. The launch of newer, better tolerated antiretroviral (ARV) treatment options and the advent of generic prescribing resulting in an increased focus on the costs of treatment may impact on why and how often patients have changes to their treatment. In our region ARV regimes are banded by cost to help clinicians understand the variation in price of different treatment regimens and to promote adherence to commissioning guidance. All ARV switches in involving a change to the drugs prescribed are discussed in a formal multidisciplinary team in our centre.
Methods: . We analysed the notes of all patients who had ARV treatment switches between 1st November 2017 and 31st October 2018, evaluated the recorded reason for switch in the patient notes and examined the effects of the switch on ARV prescribing costs.
Results: There were a total of 161 ARV treatment switches in the study period of which 136 (84%) were patients with VL < 40 copies/ml. The primary reasons to switch recorded in the notes is shown in Table P4.1.Overall 33 (24%) of the switches were to a higher band (more expensive) regimen, 53 (39%) of the switches were to a lower band and there was no change in banding in 50 (37%) of the switches. When the cost saving switches are discounted, 40/89 (45%) of switches are within a band, 33 (37%) are switches to a higher band and 16 (18%) are cost saving.
Switches due to CNS side effects involved Efavirenz (EFV) based regimes (9), dolutegravir (4) and rilpivirine (1).The introduction of TAF (Tenofovir Alafenamide) has enabled patients with Hepatitis B co-infection for whom tenofovir disoproxil is contraindicated to intensify their HBV treatment.
The switches due to drug interactions involved proton pump Inhibitors (3), anticoagulants (2), HCV treatment (1), opiates (1), cytotoxic chemotherapy (1) and immunosuppression (1) and were all made proactively enable or simplify co-prescribing. The ARVs changed were EFV (1), Nevirapine (2), Eviplera (2), Kivexa (1), Darunavir/cobicistat (1), Ritonavir(1), Zidovudine (1).
Conclusions: Approximately 10% of our cohort changed their ARV regimen with an undetectable viral load over this 1 year period. The most common reason to switch was cost saving but side effects remain a significant reason to change treatment, implicated in 25% of ARV switches. 76% of switches were to a less expensive or cost neutral regimen.

Table P4.1. ARV switches in patients with undetectable viral load

Reason for switch (n=136)	Reason for switch (n=136)
Cardiovascular risk	4 (3%)
CNS side effects	15 (11%)
Simplification	22 (16%)
Cost saving	47 (35%)
Drug interactions	9 (7%)
Gastrointestinal side effects	11 (8%)
Renal Side effects	11 (8%)
Hepatitis B	3 (2%)
Planning pregnancy or pregnant	5 (4%)
Patient choice	2 (1%)
Swallowing difficulties	2
Others	5

P5

Audit: what happened to patients after Atripla was unbundled?

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Background: In order to meet CQUIN targets designed to improve drug costs we actively switched otherwise stable patients from Atripla to separate FTC/ TDF plus Efavirenz(EFV). We observed a number of patients switching to different regimens as part of these discussions or subsequently to this change. We sought to determine the number of patients who switched to other therapies and to understand the reasons for this.
Methods: Patients' ARV history was captured from the clinic EPR. We identified the patients that had been switched from Atripla to FTC/TDF plus EFV and we determined which drugs these patients were being prescribed in December 2018. If patients had switched away from FTC/TDF plus EFV we recorded the date of switch, if the reason for switch was documented, and if so the reason for switch.
Results: 274 patients were prescribed Atripla in November 2016. 230 (84%) patients had been switched from Atripla to FTC/TDF plus EFV. Switching started in December 2016 and most of the switches were completed by October 2017. Of these 230, 177 (77%) patients remained on FTC/TDF plus EFV at December 2018.
30/230 (13%) patients were provided with an alternative owing to newly-identified EFV toxicity, 19/30 (63%) of these were switched to FTC/TDF plus raltegravir.
4 patients switched due to virological failure. The switch to FTC/TDF was considered to be a contributing factor in the virological failure for 1 patient.
10 patients changed their medication based on off-target effects on kidney or bone. 5 patients switched due to renal impairment (4 of these were switched to a Descovy-based regimen, and 1 was switched to an Abacavir/Lamivudine-based regimen). 5 patients were switched away from FTC/TDF owing to reduced bone mineral density.
Other reasons for switch were: low mood, not attributed to EFV (2 patients), difficulty swallowing tablets (1 patient), drug interactions (2 patients), and GI toxicity (1 patient). No patient changed their treatment purely on the basis of pill burden.
Switches happened between 4 and 24 months post switch to FTC/TDF plus EFV (mean average 14 months). 3 patients were no longer taking ARVs (1 deceased, 2 transferred out)
Conclusions: We observed that the majority of patients who switched to FTC/ TDF plus EFV remained on this regimen. Increasing pill burden was a significant concern for prescribers but this was not reflected in the attitude of patients regarding changes to their medications. Indeed, 22 patients that were

switched away from TDF/TDF plus EFV were switched to a raltegravir-based regimen which resulted in an increased pill burden for the patient. We propose that pill burden is not a major consideration for stable patients and that this exercise was useful in identifying patients with previously undisclosed toxicities.

P6

B/F/TAF versus ABC/DTG/3TC or DTG + F/TAF in treatment-naïve adults with high baseline viral load or low baseline CD4 cell count: week 96 results

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Background: Treatment-naïve, HIV-1-infected individuals with high viral load (HIV VL) and/or low CD4 count may be difficult to treat. In two Phase 3 studies of bictegravir/emtricitabine/tenofovir alafenamide (B/F/TAF) vs. dolutegravir comparators, B/F/TAF was non-inferior to comparator arms by Snapshot at Week (W) 48, and W96. To further characterise efficacy of B/F/TAF, we analysed pooled results from these trials at W96 for those with high viral load or low CD4 count at baseline. Results were similar among treatment groups at W48; herein, we present results at W96.

Methods: Treatment-naïve, HIV-1-infected adults were randomised 1:1 to receive blinded treatment with B/F/TAF (50/200/25 mg) vs. dolutegravir/abacavir/lamivudine (DTG/ABC/3TC) (Study 1489) or DTG (50 mg) + F/TAF (200/25 mg) (Study 1490). To evaluate the real efficacy of B/F/TAF, we conducted a per-protocol (PP) analysis, including all randomised participants who received ≥ 1 dose of study medication but excluded those without on-treatment results in the W96 window (unless discontinued for lack of efficacy) or who had low medication adherence (<2.5th percentile). We present W96 virologic responses by FDA Snapshot algorithm for participants with baseline viral load>100,000 c/ml or CD4 count <200 cells/μl or both.

Results: In this pooled analysis, 184/1274 randomised adults (PP analysis set) had baseline viral load>100,000 copies/ml (B/F/TAF n=95/634 [15%], DTG/ABC/3TC n=43/315 [14%], DTG+F/TAF n=46/325 [14%]), and 122 (B/F/TAF n=65/634 [10%], DTG/ABC/3TC n=26/315 [8%], DTG+F/TAF n=31/325 [10%]) had baseline CD4 count <200 cells/μl. For both high viral load and low CD4 subgroups, virologic suppression (HIV < 50 c/ml) at W96 was similarly high for B/F/TAF, DTG/ABC/3TC, and DTG+F/TAF (Table P6.1). No participant failed with resistance to any components of study drug.

Table P6.1. Week 96 Outcomes (HIV VL < 50 c/ml) by Baseline HIV-1 RNA>100,000 c/ml and CD4 count <200 cells/μl (PP Analysis Set)

Baseline Subgroup	B/F/TAF	ABC/DTG/3TC	DTG + F/TAF
HIV VL>100,000 c/ml	100% (95/95)	98% (42/43)	98% (45/46)
CD4 count <200 cells/μl	100% (65/65)	100% (26/26)	97% (30/31)
HIV VL>100,000 c/ml and CD4 count <200 cells/μl	100% (31/31)	100% (8/8)	93% (13/14)

Conclusions: B/F/TAF demonstrated potent viral suppression with no treatment-emergent resistance in treatment-naïve adults with high baseline viral load and/or low CD4 count through W96.

P7

Comparative efficacy and safety of dolutegravir and lamivudine in treatment-naïve HIV patients

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Background: Randomised controlled trial data have demonstrated that the two-drug regimen Dolutegravir and Lamivudine has similar efficacy to a traditional three drug regimen containing Dolutegravir with emtricitabine/tenofovir disoproxil. However, there are a number of other three drug regimens that are commonly used in clinical practice where no head-to-head data are available. The aim of this study was to conduct an indirect comparison of Dolutegravir and Lamivudine with commonly used three drug antiretroviral regimens using a systematic review and network meta-analysis (NMA).

Methods: A systematic review identified phase 3 RCTs (up to December 4th 2018) of treatment naïve HIV-1 patients. Data were sourced first from the trial publication and also from clinicaltrials.gov or reimbursement documents if required. A network was constructed of recommended core agent antiretrovirals in DHHS & EACS treatment guidelines, plus the new integrase inhibitor bictegravir, using a regimen approach where each individual regimen represented a unique node in the network. Efficacy outcomes analysed were viral suppression and CD4 + cell change from baseline, both at 48 weeks. Safety outcomes included, overall adverse events (AE), serious adverse events (SAE) and drug related adverse events (DRAE) at 48 weeks. A Bayesian network meta-analysis methodology was used to estimate relative treatment outcomes.

Results: The network contains 14 unique regimens based on data from 12 RCTs. The analysis used a fixed effect model based on the DIC and residual deviance. The proportional difference for viral suppression at 48 weeks for Dolutegravir + Lamivudine versus the other 13 regimens included in the network ranged from −2.7% (−11.0%, 5.6%) vs DTG+TAF/FTC to 7.3% (0.6%, 13.8%) vs EFV+TDF/FTC. Dolutegravir + Lamivudine was found to be significantly better than EFV+TDF/FTC and similar to all other regimens analysed in terms of viral suppression at 48 weeks. With regards to other outcomes (CD4, AE, SAE, DRAE) at 48 weeks Dolutegravir + Lamivudine was broadly similar to all regimens analysed.

Conclusions: Through indirect comparisons utilising a network meta-analysis, DTG + 3TC two drug therapy had similar safety and efficacy outcomes over a 48 week period when compared with commonly used three drug regimens.

P8

Durable suppression and low rate of virological failures 3 years after switch to DTG+RPV two-drug regimen: SWORD 1 and 2 studies

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Background: SWORD-1&2 demonstrated efficacy of DTG + RPV, a 2-drug regimen (2DR) for maintenance of virologic suppression, that was non-inferior to continuing current 3DR antiretroviral regimen (CAR) at Week 48 (Wk48). Data through Wk100 demonstrated maintenance of high-level suppression, low rates of virologic failures with few NNRTI resistance associated mutations (RAMs), no INSTI RAMs and improvements in bone and renal biomarkers. Results through Wk148 are presented.

Methods: Two identical open-label, global, phase 3, non-inferiority studies evaluated efficacy and safety of switching from CAR to DTG+RPV once daily in HIV-1-infected adults, with VL < 50 c/ml for ≥ 6 months and no history of virologic failure. Participants (pts) were randomized 1:1 to switch to DTG+RPV (Early-Switch group, ES) or continue CAR. Pts randomised to CAR with confirmed suppression at Wk48 switched to DTG+RPV at Wk52 (Late-Switch

group, LS). Efficacy by Snapshot, virology and safety endpoints were evaluated through Wk 148 (ITT exposed [ITTe] and safety populations, respectively).
Results: The studies randomized and exposed 1024 pts (DTG+RPV 513; CAR 511). Efficacy and key safety for the ES and LS DTG+RPV groups are shown in Table P8.1. Confirmed Virologic Withdrawal (CVW) criterion was low in both groups: ES DTG+RPV 8 (2%), LS DTG+RPV 3 (<1%). The safety profile of the LS DTG+RPV group following 96 weeks of DTG+RPV at Wk148 was comparable to the ES group at Wk100. No INSTI resistance was observed, with limited resistance to RPV (n=5; 0.5%) observed; 1 of these pts had pre-existing NNRTI RAMs.

Table P8.1. Pooled SWORD 1&2 Efficacy and Key Safety Results at Week 148

	Early Switch DTG+RPV (N=513) n (%)			Late Switch DTG+RPV (N=477) n (%)	
Outcomes	Day 1 to Week 48	Day 1 to Week 100[a]	Day 1 to Week 148	Week 52 to Week 100[a]	Week 52 to Week 148
Virologic success	486 (95%)	456 (89%)	432 (84%)	444 (93%)	428 (90%)
Virologic nonresponse	3 (<1%)	13 (3%)	14 (3%)	10 (2%)	11 (2%)
No virologic data[b]	24 (5%)	44 (9%)	67 (13%)	23 (5%)	38 (8%)
Key safety					
AEs leading to withdrawal	21 (4%)	34 (7%)	42 (8%)	15 (3%)	19 (4%)
Drug-related Grade 2–4 AEs	29 (6%)	29 (6%)	31 (6%)	13 (3%)	16 (3%)
SAEs	27 (5%)	58 (11%)	71 (14%)	30 (6%)	43 (9%)
Drug-related SAEs	4 (<1%)	4 (<1%)	4 (<1%)	0	0

[a]AEs from analysis of the safety population who received ≥ 1 dose of DTG+RPV represents cumulative data through Wk100 data cut off; [b]No virologic data due to discontinuation due to AE or death, discontinuation for other reasons, or missing data during window but on study

Conclusions: Switching participants from any 3DR to a 2DR of DTG+RPV was associated with maintenance of viral suppression, low frequency of CVWs, very limited NNRTI RAMs and no INSTI RAMs, over treatment for 3 years in the ES group and 2 years in the LS group. DTG+RPV has demonstrated durable efficacy, is well tolerated and offers a HIV treatment option with less cumulative antiretroviral exposure.

P9

Experience of dolutegravir/lamivudine (DTG/3TC) and dolutegravir/rilpivirine (DTG/RPV) two-drug antiretroviral regimens in a London tertiary centre

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Background: Following the GEMINI and SWORD trials where sustained virological suppression was observed on dolutegravir/lamivudine (DTG/3TC) or dolutegravir/rilpivirine (DTG/RPV), many centres have begun considering these regimens for selected patients. At our institution we first commenced some of our patients on these two drug anti-retroviral regimes in July 2015 and decided to review our experience.
Methods: Database search undertaken of all patients attending our institution for HIV care between 1st January 2018 and 14th December 2018. All patients on two drug anti-retroviral regimens of DTG/3TC and DTG/RPV were selected for inclusion. Demographic data, HIV viral load, resistance data, anti-retroviral history and date of switch to dual regimen were all analysed.
Results: There were 96 patients (2.9%) from our HIV cohort of 3290 patients receiving either DTG/3TC or DTG/RPV. 68/96 (71%) were on DTG/3TC and 28/96 (29%) on DTG/RPV.88 patients were switched during this period with 8 patients entering at 1st January 2018 on these regimens.
Age range of patients on these regimens was 25–72 with a median age of 52 years. 75/96 (78%) were male and 21/96 (22%) female. Time since diagnosis ranged from 2 to 36 years with a median of 16 years.
95/96 (98.9%) of patients had achieved, and maintained, an undetectable HIV viral load <40 copies/ml on two drug anti-retroviral regimens by the end of the study period.The only patient with detectable viraemia had not attended for HIV viral load follow up testing after commencing a two drug anti-retroviral regimen.
Patients on DTG/RPV had received a median of 4 previous regimens. Most common mutations seen were D30N, I84V, L90M, M41L, M184V, T215Y, K103N. Main reasons for switch included cardiovascular disease and renal disease.
Patients on DTG/3TC had received a median of 3 previous regimens. Most common mutations seen were K103N, T69N. Main reason for switch was cardiovascular disease.
Conclusions: The experience from our centre supports the results of the GEMINI and SWORD trials, with sustained virological suppression on two drug anti-retroviral regimens observed in almost all our cohort, with failure to suppress resulting from loss to follow up rather than definitive treatment failure. Further analysis is planned to determine whether other patients in our cohort may be suitable for switching to DTG based two drug anti-retroviral regimens.

P10

From theory to reality: a clinic experience of Symtuza in complex patients

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Background: Recommended antiretroviral (ARV) regimens for treatment naive patients include single-tablet regimens (STR); these may improve adherence but evidence supporting improved efficacy is largely lacking. For those requiring second-line therapy one-pill, once-daily options are more limited as HIV drug resistance may require the higher barrier to resistance offered by protease inhibitors (PI). In September 2017, Darunavir/cobicistat/emtricitabine/ tenofovir-AF (Symtuza), the first PI-based STR, was licensed to treat HIV-1 in adults and adolescents. NHS England commissioning guidance recommends it can be used where tenofovir-AF (TAF) policy applies or where a multi-disciplinary team (MDT) documents requirement for this regimen. We reviewed the outcomes for patients commencing Symtuza after MDT discussion at our central London clinic.
Methods: Patients prescribed Symtuza between 30/10/2018 (Symtuza first available) and 10/01/2019 were identified from electronic patient records. Case note review was undertaken to collect information including demographics, prior ART, resistance associated mutations (RAMs), rationale for use and pre- & post-treatment viral load (VL).
Results: 45 patients were prescribed Symtuza during the study period, (5 due to start treatment). The majority (37/45) met TAF policy criteria whilst 8 commenced Symtuza for other reasons and are described in more detail (Table P10.1):
Conclusions: Many clinics manage complex patients, including adolescents or individuals with complex social issues where adherence is difficult, who often differ from clinical trial participants. Our clinic experience highlights the opportunity to help complex patients achieve viral suppression, including those with previously persistent viraemia, with a PI-based STR. This also supports the potential value of Symtuza in people who do not meet the renal/bone criteria of the TAF policy.

Table P10.1.

		RAMs	ARV prior to switch	VL pre-switch	Rationale for Symtuza	VL post-switch
1	59 M	NRTI: (41LM, 215Y, 215C, M184V, 67N, 210W, 219E, 67DG)NNRTI: (188X, 106I) INI: (N155H, G163GR)	DRV/r/TDF/MVC	16,000, never suppressed (diagnosed Dec 1994)	Poor adherence, 3 class resistance.	VL 98 within 1 month.
2	45 M	INI (S153Y/F)	DRV/r/DTG	10,000, last suppressed Aug 2018	Poor adherence, social and housing issues.	VL < 50 within 1 month
3	66 M	Wild-type	DRV/r/RAL/3TC	407	On methadone, intermittent ARV adherence/multiple treatment interruptions. Struggling with 5 pill burden	VL < 50 within 3 weeks
4	50 M	Wild-type		339	Long-term non-progressor. Predicted adherence difficulties.	VL < 50 within 4 weeks
5	45 F	Wild-type	TDF/FTC/RPV	79	Poor adherence (missing 3–4 tablets a week). Metformin, low mood, increased CVD risk	VL < 50 within 2 weeks
6	25 F	NNRTI: (K103N)	ABC/3TC/DTG	338,000, last suppressed July 2017	Lifelong adherence issues (vertical transmission). ARVs stopped due to pregnancy safety concerns with dolutegravir.	VL 234 within 4 weeks
7	19 F	Wild-type	ABC/3TC/DTG (stopped July 2017)	11,220	Complex psychological and safeguarding issues. Side effects on Triumeq.	VL = 87 within 4 weeks
8	60 M	Unknown	D4T/3TC until 2003	70,000	Stopped ARVs and disengaged with care. Re-engaged with care, CD4 120 but no prior resistance results. Requesting STR.	VL < 50 within 6 weeks

P11

Long-acting (LA), injectable ARVs: two case studies of compassionate access to LA cabotegravir and rilpivirine in young adults with perinatally acquired HIV-1 (PAHIV)

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Background: Poor adherence and pill fatigue are well described in young adults with PAHIV. Stigma can lead to negativity around pill taking, the 'daily reminder'. Poor adherence results in immunosuppression and drug resistance. The emergence of LA injectable options will be life changing and perhaps life saving for some young people. We describe 2 clinical cases with PAHIV, who were accepted for the compassionate use access programme (Jansen and ViiV) in May 2018.
Methods: Case 1: 24 year old woman, PAHIV. Despite excellent clinic attendance had intermittent poor adherence due to pill fatigue, with corresponding viral rebound on Odefsey (rilpivirine/TAF/FTC). She maintained a good CD4>500. Our concern was the risk of resistance to rilpivirine, but the higher pill burden on PI would have worsened adherence.
Case 2: 22 year old man, PAHIV, CD4<50 for 5 years, repeated hospital admissions with cryptococcal meningitis and MAI due to poor adherence and immunosuppression. Never had VL < 20. Complex ARV history with NNRTI and NRTI resistance, but no rilpivirine-specific or integrase mutations. Difficulty swallowing pills, however poor adherence to liquid medication too. Excellent clinic attendance.
Outcomes from the LATTE-2 study and use of off-license medications were discussed with both cases, who were extremely keen to try LA cabotegravir and rilpivirine. Cases approved by the trust drugs and therapeutics board.
Results: Case 1: Oral cabotegravir was commenced on 9th May, VL < 20. She experienced sleep interruption and headache which resolved within 2 weeks. LA injectable cabotegravir and rilpivirine were commenced on 6th June. She developed a 2 cm non-tender nodule at the cabotegravir injection site which was still present at the time of second injections, but then resolved and has not recurred. Monthly injections have continued, VL < 20. She is highly satisfied with this mode of treatment despite monthly hospital appointments.
Case 2: This man was an inpatient with cryptococcal meningitis when oral rilpivirine was commenced on 8th May in addition to his existing Darunavir/r/descovy. Oral cabotegravir was added on 22nd May (VL 1473). First injections given 9th June when VL768. VL < 20 after 28 days, Darunavir/r/descovy was withdrawn. VL < 20 maintained on LA injectable cabotegravir and rilpivirine alone since then. Cryptococcal IRIS has occurred requiring admission, now being managed as an outpatient. He has increased his body weight by 25%, is working and feeling well for the first time in years.
In both cases, pain at the injection site was noted, particularly with rilpivirine, lasting 2 weeks in both cases, decreasing daily. Staff training and clinic planning was required in initiating these medications; this was manageable, however up-scaling this work would require careful mapping.
Conclusions: LA injectable ART was highly sought by these young people with PAHIV, who have treatment fatigue and AIDS defining illness. Both cases described pain at the injection site, however, despite this both were keen to continue LA treatment. Up-scaling of this mode of treatment will require careful planning in terms of staff time, training and refrigeration. Initial findings are that this medication is well tolerated and acceptable to this target population.

P12

Long-acting cabotegravir + rilpivirine as maintenance therapy: ATLAS week-48 results

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Background: ATLAS, a phase 3, open-label, multicentre study, was designed to establish if switching to monthly long-acting (LA) cabotegravir (CAB) + rilpivirine (RPV) LA is noninferior to continuing current 3-drug oral ART in adults with virologically suppressed HIV-1 infection.
Methods: Eligible participants (pts) had HIV-1 RNA < 50 c/ml for ≥ 6 months without virologic failure on oral regimens comprising 2 NRTI + 1 INSTI, NNRTI or PI. Pts were randomly assigned (1:1) to continue

current ART (CART) or switch to the LA arm. The LA-arm pts received oral CAB 30 mg+RPV 25 mg once daily for 4 wks for safety monitoring, then single 3 ml loading doses of CAB LA 600 mg (200 mg/ml) and RPV LA 900 mg (300 mg/ml) by IM injection, followed by 2 ml IM injections every 4 ± 1 wks of CAB LA 400 mg and RPV LA 600 mg. The primary endpoint was HIV-1 RNA ≥ 50 c/ml at W48, using the FDA Snapshot algorithm with 6% noninferiority margin.
Results: 616 pts initiated treatment (308/arm; ITT-E). Median age: 42 yrs (26% ≥50 yrs); 33% female; 68% white. Baseline regimens included 2 NRTI + 1 NNRTI (50%), INSTI (33%) or PI (17%). At W48, 5 pts (1.6%) in the LA arm and 3 (1.0%) in the CART arm had HIV-1 RNA ≥ 50 c/ml, meeting noninferiority criteria for the primary endpoint. Similarly, the LA arm was noninferior to CART for the key secondary endpoint of HIV-1 RNA < 50 c/ml (93% vs 95%). 3 LA and 4 CART pts had confirmed virologic failure (CVF; HIV-1 RNA ≥ 200 c/ml in consecutive samples). The LA CVFs included 1 with RAM E138A, 1 with E138A + V108I (both having E138A in baseline DNA) and 1 with RT-E138E/K and IN-N155H. The 4 CART CVFs included 1 each of RAMs M184I, M184V + G190S, M230M/I, and 1 with no RAMs. In the LA arm, 231 pts (75%) had injection site pain with 4 pts (1%) withdrawing for these events. Incidences of grade 3/4 AEs (excluding injection site reactions) occurred in 1% and <1% pts in the LA and CART arms, respectively, while serious AEs occurred in 4% and 5% pts, respectively. There was 1 death (CART arm). Of the 275 LA-arm pts completing HIVTSQc at W48, 98% were more satisfied with CAB LA+RPV LA compared with their daily oral treatment at study entry.
Conclusions: The regimen of monthly injections of CAB LA+RPV LA was noninferior to continued 3-drug oral ART at W48. The LA regimen was generally well tolerated, with low rates of serious AEs and drug- or injection-related withdrawals. CVF was infrequent in both arms. Overall, these results support the therapeutic potential of once-monthly CAB LA+RPV LA.

P13

Modelling the long-term clinical outcomes of the novel single-tablet regimen bictegravir/emtricitabine/tenofovir alafenamide (B/F/TAF) in the UK

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Background: Bictegravir/emtricitabine/tenofovir alafenamide (B/F/TAF), a new single-tablet regimen for the treatment of HIV, combines the novel integrase strand transfer inhibitor (INSTI), bictegravir, in combination with the guideline-recommended F/TAF backbone. B/F/TAF is highly efficacious whilst possessing a safety profile that may improve short-term tolerability and help reduce the long-term occurrence of non-AIDS related morbidities (NARMs). We aimed to predict the long-term clinical outcomes of B/F/TAF vs alternative commonly used INSTI regimens in the UK setting.
Methods: A cohort Markov modelling approach was used to evaluate B/F/TAF versus other INSTI regimens: dolutegravir/abacavir/lamivudine (DTG/ABC/3TC), DTG+F/TAF, elvitegravir/cobicistat/emtricitabine/tenofovir alafenamide (E/c/F/TAF) and raltegravir+F/TAF (RAL+F/TAF) for treating HIV within the UK national health service (NHS). The model base case used a lifetime horizon and considered both treatment-naïve and treatment-experienced, virologically suppressed patients. UK-specific model inputs were informed by systematic literature reviews, network meta-analyses, targeted searches and discussion with clinicians. Treatment acquisition costs for B/F/TAF and comparators were decreased in regular intervals from list prices, to provide a range of plausible incremental cost-effectiveness ratio (ICER) results.
Results: In the model base case, B/F/TAF was associated with a gain in quality-adjusted life years (QALYs), fewer comorbid events and cost savings associated with disease management, adverse events and NARMs than comparators. Treatment acquisition costs were identified as the primary driver of cost-effectiveness results. In the treatment acquisition cost scenarios, B/F/TAF was estimated to have a cost-effective or dominant ICER in more than half of the tested scenarios at a willingness-to-pay threshold of £20,000/QALY.
Conclusions: Due to enhanced tolerability and/or reduced occurrence of NARMs, B/F/TAF could offer benefits in short- and long-term clinical outcomes compared to other INSTI-based regimens. These benefits could help reduce the present and future burden that HIV management places on both patients and the NHS.

P14

Patient perspectives on switching to generic antiretrovirals to reduce NHS costs

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Background: The advent of generic anti-retroviral therapy means opportunity for substantial cost savings in HIV care. Many clinics will automatically convert a patient's medication to generics where available, but may or may not suggest switching to a different regime purely on basis of cost. Data from a US cohort suggests around half of patients are willing to switch to regimes to save costs to their local HIV service. We sought to establish whether this holds true for a UK cohort.
Methods: Questionnaires were distributed to patients attending two inner city HIV clinics between June and August 2018. Questions were based on the US study and asked patients for their opinions on switching to save cost, increasing their tablet burden or taking different but equally efficacious medication.
Results: Ninety-nine (92%) of the 108 patients agreed that clinics should routinely ask patients whether they would be happy to switch to cheaper but equally effective antiretrovirals to save costs to the NHS. When asked if they would be happy taking generic formulations even if pill burden increased, 58 (54%) said yes. When asked if they would be willing to change regimes, including drug class, to an equally effective but cheaper option, 91 (84%) said yes. Free text comments on the questionnaire showed a strong altruistic tendency amongst our cohort. These figures were comparable to the US cohort where 84% were in favour of clinics routinely de-simplifying to generics, and 48% were personally willing to tolerate an increased pill burden
Conclusions: Patients in our cohort support clinics switching to generic medication purely on grounds of cost, in principle. Patients are less concerned about switching drug classes than they are about increasing their tablet burden, although over half are willing to change even if it increased their pill burden. Since data suggest that it is dosing frequency rather than tablet number which impact most on adherence, clinics could consider switching patients on an individual basis dependent on patient factors.

P15

Pragmatic use of darunavir/cobicistat (Rezolsta) monotherapy in poorly adherent patients

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Background: Due to its high genetic barrier to resistance, Ritonavir boosted protease inhibitor (PI) monotherapy is a recognized strategy in patients with poor adherence. Less evidence exists about the clinical efficacy of Cobicistat boosted Darunavir.
Methods: We conducted a retrospective, observational study of patients taking combined Darunavir/Cobicistat [Rezolsta] single pill over a period of 6 months. Baseline demographic data was collected in addition to clinic bloods for HIV viral load (VL) and CD4 count sampled prior to and 6 months following switch.
Results: Forty seven patients met the inclusion criteria for enrolment, 19 of which were female (40.4%). The median age was 42 years old [IQR 32–48]. Five patients (11.0%) were homeless and a further 2 patients were in prison. Twenty patients (42.5%) had at least one current mental health diagnosis, 10 (21.3%) of whom were persons who inject drugs. Patients were heavily treatment experienced, averaging 5 prior regimens with 57.5% (23/40) of patients having archived resistance. Rezolsta monotherapy was chosen due to a history of poor adherence in 83.0% of patients (39/47).
Thirty nine patients (83.0%) engaged with care and attended for blood tests at 6 months. There was no significant difference in median CD4 counts pre and 6 months post switch, 349 cells/mm^3 (IQR 182–516) and 386 cells/mm^3 (IQR 195–573) respectively (p=0.85). There was a significant reduction in VL following 6 months of treatment (log 2.6 and 1.5 respectively, p=0.01). 17/39 achieved>1 log reduction in VL and a further 17 patients had less than 1 log change in VL pre and post treatment.
Conclusions: This real world, observational study looked at patients that are challenging to manage due to a history of non-adherence, archived resistance, mental illness, substance misuse and detectable viraemia. The findings suggest

that pragmatic Rezolsta monotherapy can help reduce VL and prevent CD4 counts from falling. Ongoing data collection is required to determine whether our findings continue, patients remain engaged in service and whether resistant mutations develop.

P16

Real-world experience of dolutegravir-containing dual antiretroviral (ARV) therapy in people living with HIV (PLWH): a retrospective analysis

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Background: The UK license for dolutegravir (DTG)/rilpivirine (RPV) dual therapy was granted in May 2018. European marketing authorisation for DTG/lamivudine (3TC) is pending approval. Clinical trials have shown the benefits of dual ART as simplification strategies for virally supressed PLWH. The aim of this analysis is to review the characteristics, indications and outcomes of those switching to DTG/RPV or DTG/3TC from previous ART combinations.
Methods: Retrospective analysis looking at PLWH who switched from any ART to DTG/RPV or DTG/3TC between October 2014 to November 2018 at one large HIV unit (3 sites). Patients were identified using the clinic database, collecting information regarding demographics, ART history, viral resistance test (VRT), switch indication and short-term outcomes.
Results: 36 PLWH started on dual therapy during the study period (33 DTG/RPV, 3 DTG/3TC). There were 30 (83%)men, mean age was 53 years, mean time on the prior ART was 184 months (IQR 62–269), mean CD4 count at time of switch 670 cells/mm^3(IQR 512–799). Prior to switch, 34(94%) patients were virologically suppressed, 2 patients (5.5%) were not virologically suppressed (one had a viral load (VL) of 57, and one was restarting ART with VL 35,613) The most frequent reasons for switching were; adverse drug event or intolerance 24(66.6%), drug interactions 6(16%) and simplification 6(16%). Prior regimens were based on PI 25(69.4%), integrase inhibitors 7(19.4%) or NNRTI 4(11%) as a third agent.
Archived VRT were available for 22 (61%) patients. Of the 22 patients with available VRT, 5 (22%) showed no major resistant mutations. 17 (77%) had one or more NRTI resistant mutations (13 with M184V), 4 had one or more NNRTI mutations (2 with K103N alone, 1 with K103N and H221Y and 1 with K103N and V106A). 2 patients had integrase resistance tests, of which – 1 patient showed no integrase mutations and, 1 patient showed 148H and 140S (patient started on twice daily DTG – remained undetectable at week 48).
MDT approval was granted for 33 (91%) patients prior to switching onto DTG/RPV or DTG/3TC.
10 (27.7%) patients completed 48 weeks of treatment (all had VL < 50 copies/ml). 21 (58.3%) patients completed 24 weeks of treatment (20 had a VL < 50 copies/ml, one had a VL of 980 copies/ml and developed NNRTI resistance: K101E, Y181C). 15 (41.6%) patients are still on dual ART and have not completed week 24. 11 (30%) patients discontinued treatment before 48 weeks (7 due to adverse drug events, 2 due to difficulty complying with RPV food restriction and 2 for other reasons).
Conclusions: Although DTG based dual therapy is indicated for the treatment of HIV in adults with no history of treatment failure or INSTI/NNRTI resistance, it was prescribed in certain complex clinical situations in the absence of optimal alternative therapy options. The dual combinations showed to be effective in the majority of treatment experienced PLWH as 95.2% remained virally suppressed at 24 weeks post switch.

P17

Seroconverters: then and now

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Background: Over the last decade evidence has been accumulating around the benefits of the early initiation of antiretroviral therapy (ART), not only in terms of the long term health outcomes for people living with HIV but also in terms of treatment as prevention (TasP). TasP is particularly relevant in seroconverting patients who have very high viral loads. The aim of this project was to assess our practice in the management of those seroconverting to HIV in light of this evidence.
Methods: This service evaluation included all patients accessing HIV services at a large HIV centre in the North West of England, seen over a 12 month period between July 2014 - July 2015 and July 2017 - July 2018. Patients with a documented negative HIV test in the 12 months prior to diagnosis were defined as seroconverters (as per the UK Seroconverters Study) and identified by a search of the electronic patient records. Data collected included; patient demographics, HIV parameters and history of antiretroviral therapy.
Results: 30 patients were identified as seroconverters; 14 diagnosed 2014 - 2015 and 16 diagnosed 2017 - 2018. The demographics of the two groups were similar; primarily consisting of British men who have sex with men (MSM) (79% of patients 2014 - 2015; 75% of patients 2017 - 2018) having acquired their infection at a mean age of 31.9 years (2014 - 2015) and 29.6 years (2017 - 2018). There were no statistically significant differences between the two groups with respect to nadir CD4 counts and CD4 counts 6 months post diagnosis. However there was a statistically significant difference between nadir and 6 month CD4 count in patients diagnosed 2017 - 2018; this was not the case in 2014 - 2015. Patients diagnosed between 2017 - 2018 were commenced on ART on average 201 days earlier and achieved an undetectable viral load 244 days sooner than the 2014 - 2015 group (Table P17.1). No significant adverse effects were identified for patients commenced on ART prior to CD4 decline. All patients identified remained on therapy at the time of data collection.
Conclusions: Our practice has changed in line with new evidence, in our group of patients no harm was caused by earlier initiation of ART compared to previous guidelines and in this small sample there were significant improvements in CD4 counts after 6 months in those who started immediately compared to delayed starters. This combined with the reduced time to virological suppression and thus earlier fulfilment of the Undetectable = Untransmittable criteria reflect the wide reaching benefits of early initiation of ART.

Table P17.1. HIV parameters and ART information (Paired sample T test)

	CD4 Count (mm3)			ART	Viral Load
Patient group	0 months	6 months	P Value	Average days to start ART	Average days to undetectable
2014–2015 (n=14)	536.62 ± 177.66	548.77 ± 147.06	0.121	229 (17–706)	369 (148–563)
2017–2018 (n=16)	406.92 ± 152.13	684.54 ± 228.50	0.014*	28 (0–129)	125 (61–198)

P18

Switching Atripla to Truvada and generic efavirenz: is the saving sustainable?

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Background: The NHS England Commissioning for value scheme in 2016 recommended a cost-effective switch from Atripla (ATP) to Truvada and generic Efavirenz (gEFV) supported by the use of patient information leaflets or other appropriate methods. The switch was to be implemented over 2 years without need for additional clinic visits or monitoring unless clinically indicated. We aimed to evaluate patient tolerability, virological outcomes, retention on generics at 1 year follow up and cost savings associated with switch to Truvada + gEFV switch.
Methods: Between 7/2016 and 12/2017, 113 patients who had switched from ATP to Truvada + gEFV were identified from pharmacy records. Data was collected from the Electronic Patient Record with regard to demographics, patient tolerability, virological control and retention on gEFV at 1 year post-switch. Drug wastage due to intolerance to gEFV and any additional clinic visits or monitoring undertaken after generic switch were recorded. Cost analysis was done to estimate overall savings.
Results: Mean age of this patient sample was 49 years (range 27–76). 18/113 (16%) patients reported new side effects having previously tolerated ATP well. 12 of these 18 patients reported side effects related to the central nervous system (low mood n=4, dizziness n=8). 13 out of 18 patients who were intolerant were of White ethnicity (72%). There were 4 instances of additional clinic visits for monitoring post switch, 3 of which were to investigate a detectable viral load and subsequently re-suppressed. There were no cases of virological failure. 20/113 (18%) were not on Truvada +gEFV at 1 year after switch. 9 of 20 patients requested to switch back to ATP; the remaining 11 were switched to an alternative cART regimen.
The estimated annual saving of £86,784 (if all 113 patients had continued on Truvada/gEFV at 1 year) was not met due to a proportion switching to alternative regimes, additional monitoring costs and drug wastage (actual saving of £67,124)
Conclusions: ATP to Truvada +gEFV switch was overall acceptable, virologically safe and cost effective. However 16% of patients who switched reported new side effects generating unnecessary clinic visits and/or monitoring in a few. 18% of patients switched away from this regime at 1 year thereby reducing the sustainability of cost savings. Subsequent to this study generic ATP has become available in the NHS since September 2018. We suggest that any generic switch should be carefully considered with a strategic view of the timeline of drug patent expiry as patient intolerability and drug wastage can reduce savings made from generic switches.

P19

Tenofovir alafenamide versus tenofovir disoproxil fumarate in women: pooled analysis of seven clinical trials

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Background: Tenofovir alafenamide (TAF) has demonstrated an improved renal and bone safety profile relative to tenofovir disoproxil fumarate (TDF) in multiple randomised trials. We pooled 7 studies to evaluate the efficacy and safety of TAF vs. TDF for ART initiation or switch in women
Methods: Data from cis-women who initiated or switched to TAF- or TDF-based regimens in 7 randomised, double-blind clinical trials (2 treatment-naïve, 5 virologically suppressed adults) were compared. Virologic suppression (VS; HIV-1 RNA < 50 c/ml) rates (FDA snapshot analysis); bone mineral density (BMD) and the renal tubular biomarkers urine beta-2-microglobulin (B2 m):creatinine (Cr) ratio and retinol binding protein (RBP):Cr ratio are reported at W96. Differences were compared using Wilcoxon rank sum test.
Results: 779 women were enrolled (n=429 TAF, n=350 TDF). Treatment-naïve women (WTN) and Women with VS (WVS) had a median age of 37 vs 47 years, and median CD4 365 vs 711 cells/mm^3, respectively. Of WTN, 86% (TAF) and 85% (TDF) achieved VS (p=0.71) at W96. VS was maintained in 86% of WVS switching to TAF and 85% continuing TDF (p=0.99). Overall TAF and TDF were well tolerated. Discontinuation due to adverse event/death was 0% (TAF) vs. 1.6% (TDF) in WTN and 1.3% vs. 2.2% in WVS. Initiating or switching to TAF was associated with significantly less impact on, or improvements in % change in BMD and tubular proteinuria at W96 (Table P19.1).

Table P19.1.

WTN	TAF-Based (n=133)	TAF-Based (n=133)
RBP: Cr	12.1 (−34.3, 68.3)	67.5 (−6.6, 209.9)
B2M: Cr	−37.4 (−64.8, −3.4)	13.1 (−33.9, 125.5)
Spine BMD	−0.292 (−2.500, 2.136)	−2.606 (−5.719, −0.999)
Hip BMD	−1.296 (−3.032, 0.469)	−3.938 (−5.922, −1.827)
WVS	Switched to TAF (n=296)	Continued TDF (n=223)
RBP: Cr	8.0 (−33.6, 68.5)	50.8 (2.2, 142.5)
B2M: Cr	−9.5 (−48.6, 38.8)	29.2 (−15.0, 129.5)
Spine BMD	1.703 (−0.834, 4.435)	−1.055 (−3.252, 1.787)
Hip BMD	1.699 (−0.181, 3.386)	−0.831 (−3.167, 1.435)

Data presented as median (Q1, Q3). All differences p<0.001

Conclusions: Women who initiated or switched to TAF had significantly improved bone and renal safety parameters compared to TDF, with similar rates of virologic suppression through W96. These pooled data demonstrate a safety advantage of TAF compared to TDF in women.

P20

Transmitted NNRTI resistance does not impact the efficacy of EVG/c/FTC/TAF (or TDF) in two randomised clinical trials in treatment-naive patients living with HIV-1

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Background: Transmitted drug resistance (TDR) to non-nucleoside reverse transcriptase inhibitors (NNRTIs) occurs in 3.4 % of newly diagnosed patients in the UK with K103N being the most prevalent. There are limited data to guide choice of treatment in such individuals and boosted protease inhibitor-based regimens are often selected. Here we report week 144 response data from two identically designed, double blind, phase III registrational clinical trials (studies GS-US-292-0104 and GS-US-292-0111) in HIV-1 infected naïve patients with or without NNRTI TDR, who were randomised to receive either elvitegravir/cobicistat/emtricitabine/tenofovir disoproxil fumarate (EVG/c/FTC/TDF, Stribild) or elvitegravir/cobicistat/emtricitabine/tenofovir alafenamide (EVG/c/FTC/TAF, Genvoya)
Methods: HIV-1 genotypic testing was conducted prior to study entry for all patients using a population sequencing assay (Monogram Biosciences, USA). Response to treatment after 144 weeks was assessed using FDA Snapshot algorithm. The list of NNRTI resistance mutations used in this analysis included all WHO 2009 mutations (RT mutations: L100I, K101E/P, K103N/S, V106A/M, V179F, Y181C/I/V, Y188L/C/H, G190A/E/S, P225H, and M230L) + E138A/G/K/Q/R. The proportion of patients with treatment success with or without NNRTI TDR mutations was assessed.
Results: HIV-1 genotypic data was obtained for 1732/1733 participants enrolled in the studies. A total of 188 patients (10.9%) were found to harbour NNRTI TDR mutations at baseline (90 [10.4%] in the Genvoya [GEN] treatment arm, and 98 [11.3%] in the Stribild [STB] arm). K103N/S was the most prevalent NNRTI mutation, occurring in 95 participants (5.5%), followed by E138A/G/K/Q/R (n=70, 4.0%) with similar distribution across the treatment groups. The proportions of patients with treatment success after 144 weeks of treatment were similar in patients with or without transmitted NNRTI-R and with or without K103N /S; results are summarised in Table P20.1.

Table P20.1. Treatment response after 144 Weeks in patients with NNRTI-R mutations

	Treatment Group (Week 144)	
Patient Categories	GEN	STB
All Subjects	728/865 (84.2%)	694/867 (80%)
NNRTI-R	75/90 (83.3%)	80/98 (81.6%)
No NNRTI-R	653/775 (84.3%)	614/769 (79.8%)
p-value	0.76	0.79
K103N/S	38/48 (79.2%)	40/47 (85.1%)
No K103N/S	690/817 (84.5%)	654/820 (79.8%)
p-value	0.31	0.46

Conclusions: The presence of NNRTI TDR mutations reached almost 11% in this cohort, with K103N/S and E138A/G/K/Q/R as the most prevalent. However, in these clinical trials, the presence or absence of NNRTI TDR mutations did not impact on treatment response to GEN or STB indicating that these may be suitable treatment options for such individuals.

P21

Virological failure after switch from twice-daily to once-daily raltegravir: a case series

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Background: Raltegravir (RAL) is an integrase strand transfer inhibitor licensed for the treatment of HIV infection in combination with other antiretroviral agents (cART). RAL was first available as 400 mg tablets dosed twice daily (BD). RAL can now be dosed once daily (OD) using two 600 mg tablets – total dose 1200 mg daily. We describe a case series of patients who were prescribed RAL 400 mg BD as part of their first antiretroviral combination, who switched to RAL 1200 mg OD and then experienced virological failure.
Methods: An electronic patient record database was interrogated for patients who experienced virological failure after switching from RAL 400 mg BD to RAL 1200 mg OD. Virological failure was defined as a confirmed, detectable viral load (>200 copies/ml) whilst taking RAL 1200 mg OD as part of cART in patients having had confirmed virological suppression (HIV viral load <20 copies/ml). Patient records were reviewed. HIV genotypic resistance tests (GRT) results before cART and after virological failure were reviewed.
Results: A total of 165 patients were on RAL-containing cART between October 2017 and January 2019 (of whom 159 (96%) received 1200 mg OD during this period). Four patients (4/159 2.5%) experienced virological failure after switch to RAL 1200 mg OD from RAL 400 mg BD. All patients were male. All were cART naïve, and underwent GRT prior to commencing cART. No reverse transcriptase or protease resistance associated mutations (RAMs) were identified at baseline. Baseline GRT for integrase RAMs was not performed. RAL 400 mg BD was used in combination with either tenofovir and emtricitabine (n=2) or abacavir and lamivudine (n=2). Virological suppression had occurred in all patients with confirmed HIV viral load <20 copies/ml on RAL 400 mg BD + nucleoside backbone for 11, 16, 19 and 30 months respectively. Three patients sequenced to RAL 800 mg OD prior to receiving RAL 1200 mg OD (in accordance with local protocol) for 6, 6 and 24 months respectively and all remained virologically suppressed. All patients subsequently switched to RAL 1200 mg OD with HIV viral load <20 copies/ml whilst continuing the same nucleoside backbone. Virological failure was confirmed after switch to RAL 1200 mg OD after 4, 5, 6 and 8 months respectively. GRT (n=4) revealed RAMs in 3 patients: M184M/V (n=3), K65R (n=1), N155H (n=1). Poor adherence was not suspected in any individual. Sodium valproate co-administration was noted in one individual.
Conclusions: Further investigation is needed to establish why a small number of individuals experienced virological failure in the absence of apparent RAL drug-drug interactions or poor adherence, particularly in patients who had remained suppressed on 800 mg OD. In one patient, an interaction with sodium valproate may have reduced levels of RAL (such an interaction has been demonstrated with dolutegravir and valproate, but not with RAL). Clinicians should ensure that viral load testing is performed in patients early after switching from RAL 400 mg BD to RAL 1200 mg to ensure virological suppression is maintained.

Basic Science: Immunology, Virology and Pathogenesis

P22

Abacavir sulphate and tenofovir disoproxil fumarate/alafenamide differentially regulate endothelial dysfunction

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Background: Cardiovascular disease (CVD) is more prevalent in people living with HIV (PLWH). The role of antiretrovirals (ARVs) in driving cardiovascular risk is unclear. The effects of ARVs upon the vascular endothelium, which has an established role in CVD, are not well characterised. The vascular endothelium expresses adhesion molecules and coagulation factors that are implicated in CVD. In addition, endothelial cells secrete membrane-enclosed microparticles (EMPs) when activated. EMPs can convey inflammatory properties and are instrumental in cardiovascular pathology. We explored the impact of ARVs on endothelial activation and the numbers and phenotype of EMPs in order to better understand the links between ARVs and endothelial dysfunction.
Methods: Human umbilical cord endothelial cells (HUVEC) were pulsed with plasma C_{max} concentrations of abacavir sulphate (ABC), tenofovir disoproxil fumarate (TDF) or tenofovir alafenamide (TAF) 2 days prior to experimentation (90 min/day). Flow cytometry was used to evaluate the expression of adhesion molecules (E selectin, ICAM-1 and VCAM-1), pro- and anti-coagulation markers (tissue factor (TF), CD39 and CD73), and for EMP characterisation.
Results: We observed greater levels of TNF-α induced ICAM-1 and TF expression in ABC-treated cells compared to TDF (+46.1% and + 15.4%, $p<0.05$) and TAF (+46.2% and + 14.0%, $p<0.05$). Baseline ICAM-1 levels were lower in TDF- and TAF-treated cells compared to ABC (−26.6% and −27.3% respectively, $p<0.05$). TAF also increased 'anti-thrombotic' CD39 + CD73 + endothelial populations by 41.8% ($p<0.05$). We also found more 'pro-inflammatory' ICAM-1 + (2.4×10^5 EMP/ml; +51.4% vs TDF, +55.4% vs TAF, $p<0.05$), and TF+ (3.5×10^5 EMP/ml; +60.0% vs TDF, +59.5% vs TAF, $p<0.05$) EMP in ABC-treated cells, whilst TDF- and TAF-treated HUVEC trended to higher numbers of 'anti-thrombotic' CD39 + CD73 + EMP (+19.8% and + 35.2% vs ABC).
Conclusions: We describe differential effects of ARVs on the vascular endothelium. Increased ICAM-1 and TF expression by ABC-treated cells and in EMP may facilitate a pro-inflammatory and pro-thrombotic environment by promoting platelet and leukocyte activation. In contrast, elevated CD39/CD73 expression in TDF- and TAF-treated cells and EMP may reduce CVD risk by degrading ADP and reducing cell-free concentrations of this platelet/leukocyte agonist. Differential regulation of the endothelial TF/ectonucleotidase axis by ARVs may represent one mechanism underlying the reported ABC-associated CVD risk in PLWH.

P23

CD32 expression identifies B cell–T cell doublets in gut-associated lymphoid tissue that are enriched for T follicular helper cells but not for HIV DNA

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Background: Gut-associated lymphoid tissue (GALT) is a key HIV reservoir site and may play a role in HIV persistence on Antiretroviral therapy (ART). T Follicular helper (TFH) cells and CD32 + CD4 + T cells have been proposed to be enriched for HIV DNA. Here, we show that CD32 + CD4 + T cells in GALT are B cell-T cell (B:T) doublets and that sCD40 (a soluble marker shed after B:T cell interaction through CD40/CD154 signalling), but not CD32, is associated with HIV DNA in GALT.
Methods: GALT from the terminal ileum (TI), rectum & tonsil tissue (n=1) was obtained from consenting individuals treated during primary HIV infection (PHI). HIV DNA was quantified in GALT biopsies by qPCR. Concurrent plasma samples were used to measure IL-4, IL-5, IL-6, IL-10, IL-15, MCP-1, MIP-1α,

MIP-1β, IP-10, sCD163, CD40 & CD40L by Luminex (n=23). CD32 expression on GALT CD4 T cells was measured by flow cytometry (n=19) and imaging cytometry assessed CD19, CD3, CD4, ICOS, HLA-DR & CD32 expression in healthy control GALT and HIV+ tonsil. Associations between HIV DNA & CD32 were tested by Spearman's correlation. LASSO regression analyses were used to test for associations between GALT HIV DNA & plasma variables.

Results: 23 HIV+ individuals treated during primary HIV infection were studied; median (IQR) HIV DNA was significantly higher in TI compared to rectum [2.82 (2.58–3.05) versus 2.73 (2.42–2.96) log CPM gut T cells, p=0.03]. CD32 expression on GALT CD4 T cells was not associated with HIV DNA. Imaging cytometry analysis showed that CD32 expression on CD4 T cells in GALT (n=1) & HIV+ tonsil (n=1) was consistent with B:T cell doublets with CD32 expression primarily from B cells, while associated CD4 + T cells expressed ICOS. Plasma (n=23) sCD40 (TI: r=0.36 P=0.04, R: r=0.34 P=0.05) and sCD14 (TI: r=0.39 p=0.04, R: r=0.44 p=0.01) were the variables most strongly association with HIV DNA.

Conclusions: These data show that CD32 expression on CD4 T cells in GALT and tonsil when gated as singlets using standard methodology is due to B cell-TFH cell doublets, with CD32 expression primarily on B cells. The enrichment for TFH cells within these doublets raises the issue of whether they are artefactual or physiological. Plasma sCD40, a marker of the B:T cell interaction, & sCD14, a marker of bacterial translocation, were the factors most associated with GALT HIV DNA, while CD32 expression was not. This suggests that the B:T cell interaction & microbial translocation in GALT may be supporting HIV persistence while CD32 is a surrogate marker of this interaction.

P24

No evidence of neuroaxonal injury following latency reversal with vorinostat and HIV-1 specific vaccination in the RIVER trial

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Background: HIV cure strategies that include latency reactivation and HIV-1 specific vaccination may induce viral transcription and neuroinflammation in the central nervous system, potentially leading to neuronal injury. Plasma neurofilament light chain protein (NFL) is a marker of neuroaxonal injury and strongly correlates with cerebrospinal fluid NFL, which has been shown to be elevated in neurodegenerative conditions including HIV. We investigated plasma NFL over time in Research in Viral Eradication of HIV Reservoirs (RIVER), an open-label, 1:1 randomised trial assessing antiretroviral treatment (ART) alone versus ART with vorinostat (a latency reversing agent), and ChAdV63.HIVconsv prime and MVA.HIVconsv boost T-cell vaccination (ART+V+V) in HIV-positive adults starting ART within 4 weeks of confirmed primary infection.

Methods: Plasma NFL was measured using an ultra-sensitive Single molecule array (Simoa) digital immunoassay and plasma HIV-1 RNA was measured using single-copy assay (SCA) at the following 3 timepoints: (1) baseline (following ≥ 22 weeks continuous ART), (2) week 12 (immediately prior to tenth and final vorinostat dosing and 4 weeks following completion of vaccination in ART+V+V arm), and (3) week 18. Differences in plasma NFL (log_{10}) between study arms at each timepoint, changes in plasma NFL (log_{10}) over time, and associations with baseline clinical parameters (age, ethnicity, duration from seroconversion, mode of HIV acquisition, CD4 T-cell count, and estimated glomerular filtration rate) were analysed using t-test, linear regression and mixed models.

Results: All 58 participants included were male, median age was 32 years (IQR 28 – 40) and 40 (69%) were white. Baseline characteristics were well-balanced by study arm; median ART duration was 26 weeks (IQR 24 – 35), median CD4 + T-cell count was 696 cells/μl (IQR 566 – 785), and 57 (98%) had HIV RNA < 50 copies/ml. There was no significant difference by study arm in HIV-1 RNA via SCA over the three timepoints (Table P24.1). No significant differences in plasma NFL were observed between the three timepoints (p=0.154), and by study arm for each timepoint (Table P24.1), and there was no significant correlation observed between HIV-1 RNA with plasma NFL concentration. In multivariable analysis, higher plasma NFL at baseline was associated only with older age (p=0.004).

Table P24.1. Longitudinal trends in plasma NFL concentration and HIV-1 RNA

	Baseline: >22 weeks continuous ART	Week 12: On final day of intervention in the ART + V + V arm	Week 18
Plasma NFL, pg/ml[1]			
ART	7.4 (6.5–8.4)	8.0 (6.6–9.7)	7.1 (6.2–8.0)
ART + V + V	6.4 (5.4–7.6)	6.9 (5.8–8.1)	6.8 (5.7–8.1)
p-value	0.16	0.22	0.74
Ultra-sensitive HIV RNA, copies/ml[2]			
ART only arm	16.5 (3–30)	9 (1–14)	5.5 (1–20)
ART + V + V arm	13 (5–23)	5 (1–9)	6 (1–14)
p-value	0.56	0.21	0.81

[1]Geometric mean (95% CI).
[2]Median (IQR).

Conclusions: Using plasma NFL as a surrogate biomarker, we saw no evidence of neuroaxonal injury following ART+V+V in the RIVER trial. To date, plasma NFL is the most sensitive biomarker for neuroaxonal injury, and the unchanged plasma NFL concentrations seen may be explained by the lack of effect of the intervention on viral transcription in the plasma and on the HIV reservoir in circulating CD4 + T-cells.

P25

Responses to quadrivalent influenza vaccine reveal the landscape of CD32 expression on circulating T-follicular helper cells in men living with HIV infection

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Background: Inactivated influenza vaccine induces a specialised subset of $CD4^+CXCR5^+$ circulating T-follicular helper cells (cTFH) that provide help to B-cells. Investigations of potential biomarkers for HIV integration have identified rare $CD4^+$ T-cells highly expressing the FC gamma receptor CD32, but with unknown function. We hypothesised that CD32 is upregulated on cTFH in response to influenza vaccine.

Methods: 16 men with treated, suppressed HIV infection and 14 healthcare worker control subjects received quadrivalent influenza vaccine (QIV) during the 2017–18 Northern Hemisphere influenza season. Peripheral blood mononuclear cells (PBMCs) were collected pre and post vaccination. PBMCs were stained with a pre-optimised cocktail of fluorochrome-conjugated antibodies, before acquisition on a BD Fortessa flow cytometer. The data were analysed using T-stochastic neighbour embedding analysis (t-SNE) and spanning-tree progression analysis of density-normalized events (SPADE) in FlowJo v10.4.2 and FCS express v6plus.

Results: cTFH more frequently expressed CD32 at Day 7 post QIV (p=0.0009) and returned to baseline at Day 28 (p<0.0001) with no difference in those with and without HIV infection. t-SNE and SPADE identified three populations of $CD4^+$ T-cells defined by expression of CXCR5 and CD32. Frequency and activation were unaltered pre and post immunisation in two populations of $CD4^+$ T-cells that were $CXCR5^{hi}CD32^{hi}$ and $CXCR5^{mid}CD32^{lo/mid}$. A third population was more frequent at Day 7 post immunisation (p=0.0261) and expressed the cTFH activation markers programmed death 1 (PD-1) and inducible T-cell co-stimulator (ICOS). CD32 positivity was more frequent in this subset at Day 7 post immunisation irrespective of HIV infection.

Conclusions: Circulating $CXCR5^+CD4^+$ T-cells fall into three major related populations including a rare subset of $CD4^+CXCR5^{hi}CD32^{hi}$ T-cells that are not activated post immunisation. cTFH responding to QIV are more frequently CD32 positive post immunisation irrespective of HIV infection. Our data indicate a novel role for CD32 on T-cells in response to inactivated influenza vaccine and support findings that CD32 positivity on T-cells is unrelated to HIV integration.

Behaviour, Transmission and Prevention

P26

Behaviours and perceptions of risk in MSM taking PrEP in Edinburgh

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Background: Pre-Exposure Prophylaxis (PrEP) was made available in Scotland in 2017. There is little existing evidence regarding PrEP disclosure and stigma. Although there has been concern about increased sexual risk behaviours and incidence of sexually transmitted infections (STIs), evidence for the effect of PrEP on condom use, partner numbers and STI rates is mixed.
Methods: An anonymous and self-completed questionnaire was administered to clinic attendees at a single centre between 28/08/18–05/10/18, following revisions after a face-to-face pilot with 16 clinic attendees. Some questions were sourced from a study conducted at the same centre prior to the availability of NHS PrEP, which anticipated possible impacts of PrEP on the behaviours of potential users. Differences between groups were tested using Chi^2 tests. Medical electronic records were used to determine diagnoses of chlamydia, gonorrhoea and syphilis in those prescribed PrEP between 31/07/17–31/07/18, to compare self-reported to diagnosed STI incidence.
Results: 114 participants were recruited by convenience sampling, with 144 attending PrEP review clinics during the same time period, giving a response rate of 79.2%. Results showed high rates of disclosure of PrEP use, with 93.7% (89) and 91.5% (97) disclosing PrEP use to regular and casual partners respectively. Low levels of stigma were reported, with only 9.8% (11) agreeing/strongly agreeing that MSM taking PrEP are stigmatised. However, there was a statistically significant association between age and disclosure of PrEP use to friends, with 88.1% (74) of those under 45 disclosing PrEP use to friends, compared with 51.6% (16) of those over 45 (X^2= 18.591, p=0.01). Where stigma was reported it largely related to an expectation of sexual partners that MSM taking PrEP would engage in riskier sexual behaviours.
69.3% (79) of respondents agreed/strongly agreed that taking PrEP made them more likely to have sex without a condom, which was associated with having 4 or more condomless sex partners (X^2=8.712, p=0.003). However, only 25.7% (17) agreed/strongly agreed that they had increased their number of sexual partners since starting PrEP.
Despite 79.2% (83) of participants agreeing/strongly agreeing that taking PrEP had reduced their concerns around HIV, only 33.9% (39) agree/strongly agree that they are more likely to have sex with people they know are HIV positive, suggesting stigma towards people living with HIV by individuals using PrEP.
25.4% (29) reported diagnosis with gonorrhoea, chlamydia or syphilis, similar to the data from medical electronic records where 25.2% (122) of individuals prescribed PrEP from 29/07/17–29/08/18 had at least one diagnosis. Of those 122, 9.1% (44), were diagnosed with>1 STI, which accounted for 65.6% of all diagnoses. 16.7% (81) had positive syphilis serology prior to initiating PrEP.
Conclusions: Further qualitative work is required to examine age-related patterns of PrEP disclosure. Results support other studies suggesting that STIs and changes in condom use are concentrated in a small proportion of participants, which may have implications for behavioural counselling. However, further data is required to assess changes in STI diagnoses in PrEP users due to a lack of baseline data.

P27

Dried blood spot (DBS) and segmental hair analysis drug level testing to investigate HIV seroconversions in a PrEP programme with genotypic resistance to TD/FTC

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Background: Two seroconversions in individuals prescribed pre-exposure prophylaxis (PrEP) with TD/FTC were investigated in one clinic cohort of 559 individuals on PrEP in the NHS Scotland PrEP programme.
Methods: PrEP was provided according to national eligibility criteria according to protocols based on BHIVA Guidelines. Dosing advice included details on both daily and on-demand (IPERGAY 2:1:1 regimen) options. Seroconversion on PrEP was confirmed by HIV antibody testing. Baseline HIV genotyping was performed by Sanger sequencing and objective adherence adjudicated by measuring tenofovir or tenofovir-diphosphate levels via segmental hair analysis and dried blood spots (DBS), respectively.
Results: Case 1:
A 25-year-old MSM was prescribed PrEP with negative HIV serology on the day of prescribing. Two months later he was HIV antibody positive. Quantitative HIV viral load was 671 copies/ml, HIV subtype C. Sequencing showed the NRTI mutation M184V.
DBS and hair analysis indicated good adherence over the prior month, but segmental hair analysis confirmed levels below the level of protection over the first month of PrEP.
Case 2.
A 38-year-old MSM self-sourced PrEP taking 4 doses weekly ('TTSS') for cost reasons, switching to NHS-funded PrEP after 8 months. HIV serology was negative on 3 occasions over 14 months but was positive at month 17. He reported taking at least 4 doses of PrEP weekly. Quantitative HIV viral load was 10,421 copies/ml and sequencing showed the NRTI mutation K65R. Adherence was good per DBS testing over the 6 weeks prior to sampling, but segmental hair analysis confirmed 3–4 doses a week between 4 months and 1 month prior to diagnosis.
Detailed sexual contact histories in both cases at baseline and following seroconversion did not confirm a transmission source
Conclusions: Algorithms that include immediate sampling for evaluation of possible PrEP failure, including objective adherence metrics, should be included in PrEP implementation programmes. Failure can result from inadequate adherence (which can select for NRTI resistance) or transmission of NRTI-resistant virus. Segmental hair analysis allows assessment of adherence over specific time periods and supplements self-report. Breakthrough cases of seroconversion on PrEP are infrequent in clinical trials and cohort studies of PrEP. These cases suggest that on-demand dosing requires every exposure to be protected and the timing of each dose when taking 4 doses per week may be critical. Dosing advice available to PrEP users in UK guidelines and patient information requires careful consideration.

P28

Ethical dilemmas of submitting detailed street maps showing areas of risk behaviours to healthcare journals

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Background: Public injecting drug use continues to be an ongoing problem in most urban areas of western towns and cities leading to ongoing morbidity and mortality and harm to the community, families, friends and colleagues. Individuals who are Injecting Drug Users (IDUs) to obtain a 'high' or inebriation often result in risk taking behaviours including anti-social, criminal, sexual and further drug use. IDUs tend to congregate for group activity although it is difficult to ascertain rates and levels of such activities. Non-public IDUs further compound the difficulties in acquiring accurate data for health and social care interventions. IDUs are less likely to be aware of such interventions or pathways for related healthcare e.g. Addiction Specialist review or Blood Borne Virus (BBV) screening and this often chaotic and marginalised group are difficult to engage in general and specialised healthcare initiatives and a lack of awareness of appropriate disposal sites or areas of safe needles wastage sites is also well documented. Despite the increasing provisions for needle exchange programmes, there are still ongoing sightings and reports of discarded, used syringes and needles. Risks to the surrounding community are clearly hazardous particularly those from sharps injuries and it is clear that multi-disciplinary actions are needed to create more concerted initiatives to tackle these issues.
Methods: In response to concerns about the numbers of used needles being abandoned in Milton Keynes (MK), UK in conjunction with a high number of BBV diagnoses, the Community Safety Partnership and Public Health drugs & alcohol lead collaborated to pull together a multi-agency working group, initially with the aims of analysing data to understand the scale and spread of the problem, identifying what each agency could do to address the issue, improving data collection and preventing/reducing the incidence of abandoned needles. The agencies involved were public health, community safety, police, housing, waste management, the Parks Trust and the Drug Dependency Unit (DDU). Through data mapping, the group was able to identify hotspot areas where the majority of used needles were being abandoned.
Results: It is deemed acceptable to produce diagrams showing numbers of abandoned needles found monthly or even a table showing needles found in

each estate with a comparative Index Multiple Deprivation (IMD) score in an anonymised way between January 2015 and November 2015.The data drawn upon for this analysis was provided by the waste management department at MK Council, the housing team and the Parks Trust. It should be noted that a 'report' refers merely to an incident of abandoned needle(s), rather than the quantity found as many reports clearly suggested group activities.
Conclusions: With respect to a detailed, Google street map with area and street names, this was rejected for submission by our public health team for reasons of confidentiality, public backlash and stigma of residing in named areas. Tackling the issue of abandoned needles needs to be done through a multi-agency approach. An ethical approach is needed to see if such maps could be submitted to medical journals for the purposes of education without prejudice.

P29

High prevalence of abandoned needlesticks from injecting drug users in Milton Keynes, UK: analysing access to needle exchange centres and drug dependency services

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Background: In 2015, Milton Keynes (MK) Council waste management team regarded a rise in the numbers of abandoned used needles being found across MK. MK is an area of high Human Immunodeficiency Virus (HIV) prevalence and high Hepatitis C (HCV) in People Who Inject Drugs (PWID), the overriding concern was for the safety of the public
Methods: Analysis of data collection to understand the scale and spread of the problem, preventing/reducing the incidence of abandoned needles and looking at access to the designated Drug Dependency Unit (DDU) and the Blood Borne Virus (BBV) service. Through data mapping, hotspot areas of used needles abandonment were analysed.
Results: Peak needlestick finds were in March and June 2015 mainly in areas of social deprivation and marginalisation where designated needle exchange points were identified. 174 reports of abandoned needles were reported between January 2015 and November 2015 with a total of 2379 individual needles. 87% of the total numbers of needles were found in just 8 estates.
Conclusions: Tackling the issue of abandoned needles effectively should be done through a targeted, multi-agency approach. Reductions in needlestick abandonment can be strengthened through improving access to needle exchange points, DDU and BBV services, delivering high quality harm reduction interventions and using data mapping in order to identify and target hot spot areas.

P30

HIV infection with baseline M184MIV resistance mutation following self-sourced pre-exposure prophylaxis (PrEP) outside a health system-delivered PrEP programme

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Background: The effectiveness of oral Tenofovir Disoproxil/Emtricitabine (TDX/FTC) as Pre-exposure prophylaxis (PrEP) in reduction of acquisition of HIV infection is established in clinical trials.
A health service delivered HIV Pre-Exposure Prophylaxis (PrEP) programme was launched in NHS Scotland in July 2017. The care pathway includes baseline and three-monthly HIV/STI testing, monitoring, adherence support and other prevention interventions. However, some individuals may opt to self-source TDX/FTC for use as self-administered PrEP, without interaction with sexual health services. It is difficult to ascertain how many individuals do this. In other countries, access to PrEP and interval monitoring through the health service may be restricted, requiring the need for self-sourcing.
Resistance mutations have been reported in HIV positive individuals in PrEP studies. However, there is little data regarding patients outwith clinical trials. We describe circumstances where we believe an individual probably self-administered PrEP without being aware that he had already acquired HIV infection.
This case demonstrates potential risks of patients sourcing PrEP outwith a health service and supports the widening of NHS-delivered PrEP services, as well as patient education to reduce the risk of this complication.
Methods: The individual was identified after HIV diagnosis and data was collected retrospectively from the case notes. This abstract was prepared with patient consent.
Results: The individual was a man who has sex with men (MSM) who recently moved to the UK. His most recent negative HIV test was performed overseas 6 months previously. He commenced PrEP (branded Truvada) in Scotland sourced through a friend two months later. He did not have any baseline investigations or routine monitoring. He took PrEP using daily dosing for six weeks and reported good adherence. During this period, there were episodes of condomless anal intercourse. He then discontinued PrEP and used a condom for a further episode of anal intercourse. There was no reported seroconversion illness. Two months after stopping PrEP, he presented to NHS sexual health services and was diagnosed HIV-1 seropositive. Avidity testing was equivocal. The HIV subtype was CRF33-like. Genotypic resistance testing showed an M184MIV reverse transcriptase mutation with high level resistance to Emtricitabine and Lamivudine. We believe it is probable that the individual was already HIV-infected during the period he self-medicated with PrEP.
After careful consideration and adherence counselling, he was commenced on antiretroviral therapy comprising TDX/FTC with Dolutegravir and achieved an undetectable plasma HIV viral load within 4 weeks of treatment initiation. His viral load remains undetectable at time of abstract submission.
Conclusions: The M184V mutation has been identified in TDX/FTC PrEP studies and linked to sub-optimal adherence. This case report highlights the importance of baseline HIV testing and ongoing monitoring, including for individuals who have self-sourced PrEP. It also highlights the importance of promoting community PrEP awareness and understanding, in additional to the availability of a full health service delivered PrEP programme with monitoring and adherence support.

P31

Lost to follow up: a key minority group

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Background: The UK has already surpassed the UN's 90-90-90 target which was set for 2020 with 92% of people living with HIV diagnosed; 98% of those on treatment; and 97% of those have an undetectable viral load. However, there are significant numbers of people who are lost to follow-up (LTFU). Retention in care is vital if treatment outcomes are to be further improved and sustained. There are serious consequences for patients who are LTFU such as discontinuation of ART, drug resistance, increased mortality and onward transmission.
Methods: We reviewed the case notes of all HIV patients who were LTFU. LTFU was defined as those who had not attended clinic for at least 365 days and had not been transferred to another clinic or died.
Data gathered included demographics, CD4 and viral load, ART, mental health, social factors and attempts made to contact the patient.
Results: 10 cases were identified (5% of the total cohort) (Table P31.1). 5 were taking ART before disengaging. 1 was an IVDU with hepatitis C co-infection. There were no drug/alcohol issues in the remaining 9 patients. Multiple attempts to establish contact through telephone calls and letters to the patient as well as their GP had been made periodically. A Black African married couple, diagnosed by their GP, were successfully contacted and stated that they did not wish to seek care at the present time.

Table P31.1.

Total LTFU	Total LTFU
Sex	Male 6, Female 4
Median age (years)	43.5 (range 26–63)
Sexuality	1 MSM, 9 heterosexual
Ethnic origin	5 Black African, 4 White British, 1 Mixed
No. born in UK	5
IVDU	1
Mental health issues	4
Unemployed	4
Partner notification completed	5
On ART at last visit	5
Median CD4	381 (range 159–847)

Conclusions: There was a trend for male heterosexual patients to be LTFU although numbers were too small to analyse any association.
The treatment interruptions in 5 patients are concerning as viral rebound will lead to increased morbidity, increased risk of drug resistance and risk of HIV transmission. In addition, there were 5 cases where the partner notification process was incomplete, which potentially contributes to the number of people living with undiagnosed HIV.
There is a strong need to retain all patients in care to achieve better patient outcomes and prevent the transmission of HIV through sustained viral suppression.
Our study highlights the need to prioritise further larger studies of LTFU patients in order to increase our understanding of the contributing factors and ensure retention in care. A national audit, based upon the 2018 BHIVA Standards of Care for People Living with HIV (Section 3: Access to and retention in care), would be of paramount importance.

P32

Pre-exposure prophylaxis (PrEP): review of current clinical practice

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Background: We have been providing and monitoring PrEP in our service since July 2017. PrEP has been shown to reduce the risk of HIV transmission by 86%. In the 2018 BHIVA PrEP guidelines, PrEP is recommended for HIV negative men who have sex with men (MSM) and trans women who have had condomless anal sex in the previous 6 months and ongoing and for those who are HIV negative and have a partner with HIV not on antiretrovirals or on them for less than 6 months and have a viral load of>200 copies/ml. PrEP is also advised on a case by case basis for those who are HIV negative and have other risk factors that put them at high risk of HIV. It is important to review PrEP in clinical practice to monitor for any related issues.
Methods: A total of 156 eligible notes were reviewed for any sexually transmitted infections (STIs) when they first attended PrEP clinic and whether they had had any STIs whilst they were taking PrEP. The reasons for stopping PrEP and failure to attend (DNA) the follow up clinics were also recorded.
Results: All of the patients taking PrEP are MSM apart from 1 who has sexual partners from a high risk country for HIV. 17% of patients had an STI when they first attended and 6% of patients had an STI whilst taking PrEP. 8 patients have stopped PrEP though 3 have since restarted. Of the 5 who have stopped and not restarted, 2 were due to being in new monogamous relationships, 2 were due to low eGFR and 1 there was no reason recorded. Of the 3 who stopped but have since restarted, 3 had stopped due to low eGFR and 1 stopped due to abnormal LFT's. Due to low eGFR 1 patient also decided to take event based PrEP. 30 (19%) patients have not attended their follow up appointments and have been lost to follow up.
Conclusions: PrEP is a useful tool to help reduce the HIV epidemic. It is important to monitor it in clinical practice and assess any issues. At present in our service it does not appear there have been many significant adverse effects in those taking PrEP or a significant rise in other STIs. We have also found that several patients are attending for PrEP who have otherwise not attended for a sexual health screen for several years, which is important for other health promotion, such as offering help for those undertaking chemsex and human papillomavirus and hepatitis A vaccination. In order to reduce the DNA rate, we could consider measures such as sending reminder texts to patients the day before their appointments.

P33

We'll meet again . . . but where, when and how? Re-engagement with HIV care and retention in care 2014–2018

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Background: Disengagement with HIV care results in increased patient morbidity, higher healthcare costs and risk of onward HIV transmission. UK CHIC data suggested that over 20% of patients were lost to care over a 10 year period.
Methods: Patients attending their consultant who disengaged from HIV care for over 9 months were identified from electronic clinic records during a 5-year period from 2014 to 2018. Patient records were scrutinised to ascertain whether these patients had re-engaged with the clinic, transferred care, died or moved abroad. All known GPs were contacted for further information. Analysis was carried out on all patients who remain lost to care (LTC) and all patients who were previously LTC from any HIV service who have now returned to care (RTC).
Results: There were 2871 clinic attendances involving 396 HIV patients (201 men, 195 women) during this 5-year period. The active cohort attending their consultant increased by 2.8% per year from 290 (2014) to 330 (2018). 32 transferred care, 15 moved abroad and 8 died.
10 patients from this cohort were identified who remain lost to care (LTC) (0.5% per year). 4 women (2 Black-African (BA), 1 Black-Caribbean (BC), 1 Asian) 6 men (4 BA heterosexual (het) and 2 White MSM). 6/10 are still local (3 refused contact, 3 under recall). 5/10 were not contactable with no recent GP contact. 3/10 LTC had Baseline (BL) CD4<350, 4/10 BL VL>100,000, 6/10 BL VL < 10,000 and 3/4 (75%) of female patients were diagnosed during pregnancy. 3/10 became LTC within 1 year of diagnosis. 5/10 had started HAART (5 men, 0 women). Only 1/10 patient had a CD4<350 before disengagement. 3/10 had previous depression and 2/10 used recreational drugs.
44/330 (13%) of the active cohort are patients previously LTC who returned to care (RTC) at this clinic.2 patients are known to have returned to care elsewhere. RTC included 18 men (13 het, 5 MSM), 28 women (3 vertically infected). Country of origin 12/46(26%) UK, 25/46(54%) Africa, 7/46 (15%) Caribbean. 22/46 (48%) RTC patients were diagnosed late. 4/46(9%) patients disengaged within a year of diagnosis. At re-engagement CD4<50 11/44 (25%) CD4<100 14/44 (32%) CD4<200 24/44 (54%). 23/44 (52%) RTC patients were known to us, 18/44 (41%) were from other UK hospitals(3 from Africa).18/46 (39%) RTC via hospitalisation, 16/46 (35%) had ADIs. 21/46 (46%) previous depression, 10/46 (22%) HIV denial, 8/46 (17%) drugs/alcohol addiction, 9/46(20%) unresolved partner notification or children testing, 2/46 Prison incarceration. 8/44 (18%) have drug resistant virus (3 dual,1 triple class). 7/44 have not started HAART. 26/37 VL < 50 (70%) 11/37 (30%) inconsistent adherence. HAART: PI (57%), NNRTI (27%), INI (16%).
Conclusions: Retention in care was high with only 0.5% patients LTC per year. Patients returning to care have a high rate of hospitalisation and are often not known to the admitting hospital. There is a high rate of complexity and maintaining engagement is challenging. Good co-ordination of care between HIV teams, GPs, community and mental health teams is vital to successful retention in care.

P34

What is the acceptability of using phylogenetic data in clinical and public health practice?

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Background: The use of phylogenetics to guide HIV public health interventions (PHI) is a growing area of interest, and has potential applications in the UK with recent evidence its implementation may have interrupted a large outbreak amongst people who inject drugs in Scotland. There has been little exploration into the acceptability of this data usage amongst patients or healthcare workers. We employed a qualitative approach to determine:
- How phylogenetic data can be used acceptably in the context of HIV PHI
- What safeguards are required
- Negative outcomes that may result from unacceptable use.

Methods: We conducted focus groups and in-depth interviews with people living with HIV, HIV-negative men who have sex with men (MSM) and healthcare staff in two major UK cities. Illustrated explanations of phylogenetic concepts and clinical vignettes describing various potential uses of phylogenetic data to guide PHI were presented. Audio recordings were transcribed verbatim and analysed thematically.
Results: We recruited 49 participants. (Table P34.1) Although views differed both within and between demographic groups, the use of phylogenetics for PHI was generally considered acceptable, with significant caveats. We identified three underpinning themes; stigma, blame and prosecution, and public health responsibility. Acceptability was determined by the balance of

perceived personal risk (stigma or blame) vs. public benefits. Acceptability was highest when the potential prevention effects were greatest, and/or data were used anonymously. Despite the use of identifiable data pushing this balance towards personal risk, we identified several factors that were found to make even de-anonymised analyses more acceptable. These included:

- Data only being used for public health benefit
- Restriction of access to identifiable data to the direct healthcare team
- Confidence in robust security measures
- Protection of data from use in criminalisation cases
- Informed consent
- Increased understanding of the limitations of phylogenetics
- Drawing parallels with standard uses of data for prevention purposes.

Without adequate protections or understanding, many participants felt the use of phylogenetics for PHI risks discouraging HIV testing and engagement in care.

Table P34.1. Demographics of participants in focus groups and interviews

	Focus groups (participants/ group)	Interviews
HIV-positive black African men	1 (n=6)	3
HIV-positive black African women	1 (n=7)	2
HIV-positive MSM diagnosed ≤5 years ago	1 (n=7)	2
HIV-positive MSM diagnosed >5 years ago	1 (n=5)	2
Healthcare workers within the field of HIV	1 (n=9)	
HIV-negative MSM	1 (n=6)	

Conclusions: When implementing phylogenetics to guide PHI, patient understanding and confidence must be ensured in order to address concerns and avoid disengagement from HIV testing or care. Although we identified key factors influencing acceptability within this geographically limited sample, expanding our investigation alongside the development of phylogenetic approaches would be advisable given the ongoing exploration of novel strategies and potential for widespread use.

BHIVA Research Awards winner 2017, Larissa Mulka

P35

Who is diagnosed with HIV infection in the era of effective combination prevention?

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Background: New HIV diagnoses in the UK have been declining since 2015 as a result of increased HIV testing, early antiretroviral therapy (ART) and pre-exposure prophylaxis (PrEP). Our open access sexual health service provides HIV prevention interventions including condoms, PEP, PrEP, and behavioural interventions. This clinic saw a 30% drop in new HIV diagnoses from 2015 to 2017. We aimed to describe patients diagnosed with HIV within our NHS Trust in the current era of combination prevention, and in doing so try to identify potential barriers to preventing new infections.
Methods: A list of all new HIV diagnoses in 2017 in this Trust was obtained, and data from paper and electronic records were collected, including demographic information, HIV testing history and prior risk reduction interventions, and baseline HIV parameters.
Results: Of the 88 new HIV diagnoses in 2017, a majority (52, 59%) were diagnosed in our sexual health clinic, 22 (25%) at presentation to accident and emergency or during a hospital admission, 3 (3%) by the GP and the remainder (11, 13%) in other outpatient clinics. The median age at diagnosis was 38 years (range 18 – 77). 59 (67%) were male (of which 80% were MSM), and 29 (33%) female (3 transwomen). 39 (44%) were white, and 23 (26%) of black ethnicity. 27 (31%) reported recreational drug use and 12 (14%) had pre-existing mental health diagnoses. 19 (22%) had a rectal STI, 19 (22%) had syphilis and 1 had HCV co-infection at diagnosis. 68 (77%) patients were new to this service. 9 patients (10%) had never previously tested for HIV (5 cis-female, 2 heterosexual male and 2 MSM; median age 51 years). Of the 58 (66%) who had a previous HIV test documented, the last test was 3 years before diagnosis (mean; range 3 weeks to 29 years). 26 (30%) reported having an HIV test in the previous year (6 at our clinic, of which 2 had been referred for further risk reduction interventions at the time). 1 patient reported PEPSE use in the year prior to HIV diagnosis, and none had previously taken PrEP. Of the 18 (20%) with confirmed primary HIV infection, 11 had tested within the last year, but only one was known to have been referred for further risk reduction intervention. The mean CD4 count at diagnosis was 427 cells/mm^3, and 25 (28%) had a CD4 count below 350. Of those retained in care at our clinic (72, 82%), the median time to starting antiretroviral therapy (ART) was 22 days (range 0 – 368 days), with two electing not to start ART.
Conclusions: Patients diagnosed with HIV at our Trust in 2017 were not previously engaged with regular HIV testing or prevention interventions and notably, none had previously accessed PrEP. London is signed up to the Fast Track City initiative committed to eliminating HIV transmissions by 2030. Easy access to HIV testing for those who are undiagnosed, and active targeted prevention interventions for those attending services identified to be at risk of HIV infection is vital to achieve this goal.

Children and Pregnancy

P36

An evaluation of the tolerability and efficacy of the off-licence use of Rezolsta and Evotaz in children

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Background: Darunavir/cobicistat (c) [Rezolsta®] and atazanavir/c [Evotaz®] are licenced as fixed dose combinations (FDC) for adults. Off licence paediatric prescribing occurs to reduce pill burden, however published outcome data is lacking. Cobicistat at adult dosing is licensed from 6 years/25 kg for Genvoya®, 12 years/40 kg for Symtuza® yet 18 years for Rezolsta® and Evotaz®. We evaluated the tolerability and efficacy of Rezolsta® and Evotaz® initiated in children aged less than 18 years at two NHS Trusts.
Methods: Retrospective data collection included: demographics, weight, creatinine (Cr), alanine aminotransferase (ALT), immunology, viral load (VL), duration of treatment, and reason for subsequent termination/switch. Data was entered in Microsoft Excel and summarised descriptively.
Results: A total of 30 children were included in analysis; 14 (47%) female, 23 (77%) Black British/African ever received Rezolsta® (n=15) or Evotaz® (n=15) (Table P36.1).

Table P36.1.

	Rezolsta® Median (range)	Evotaz®
Age at initiation (years)	16(14-17)	14(9-17)
Duration (months)	15(2-27)	12(2-26)
Weight change (kg)	+1.69 (−1.7 to +4.7)	+5.1 (−1.45 to +14.25)
CD4 (cells/μl)		
At initiation	673 (397–995)	823 (92–1488)
Latest	719 (169-1180)	756 (259- 1285)
ALT (% change)	−5.2%	+1.1%
Rise above ULN*	0	1
Cr (% change)	+14%	+4.5%
Rise above ULN*	0	0
VL [% <200 copies/ml]		
At initiation	60% (<20–60321)	100%
Latest	67% (<20–9822)	93% (<20–1585)

ULN*- upper limit of normal, 3/30 ALT 40–50 at initiation; 2 resolved; 1 persisted – atypical mycobacteria co-infection.

Of the patients starting Rezolsta®, 6/15 (40%) the only change in their regimen was the switch from ritonavir to cobicistat. This was the case for 10/15 (67%) of patients switched to Evotaz®.
All 15/15 (100%) patients received Rezolsta® with a dual NRTI backbone; tenofovir disoproxil (TD)/emtricitabine (FTC) (10/15 [67%]), tenofovir alafenamide fumarate (TAF)/FTC (3/15 [20%]) and abacavir (ABC)/lamivudine (3TC) (2/15 [13%]). One patient also received dolutegravir.
Similarly 15/15 (100%) of patients received Evotaz® with a dual NRTI backbone; ABC/3TC (11/15 [73%]), TD/FTC (3/15 [20%]), TAF/FTC(1/15 [7%]).
At time of data collection, 8/15 (53%) had stopped Rezolsta®; nausea/taste (3), poor adherence (3), simplification (1) and pill size (1). 4/15 (27%) stopped Evotaz®; simplification (2) and jaundice (2).
In those with virological failure no new HIV-1 associated resistance mutations were documented.
Conclusions: In this small paediatric cohort Evotaz® and Rezolsta® appeared safe and maintained viral suppression in those suppressed at switch, and remains an option to reduce pill burden for adolescents. However tolerability and adherence was an issue for one third. The variable licencing for FDCs containing cobicistat remains a challenge for paediatric prescribers.

P37

Audit of sexually transmitted infection (STI) screening in HIV-positive pregnant women

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Background: British HIV Association (BHIVA) guidelines recommend that pregnant women living with Human Immunodeficiency Virus (HIV) should be offered screening for sexually transmitted infections (STI) and bacterial vaginosis (BV) early in pregnancy and consider repeating at 28 weeks. Positive results should be managed as per British Association for Sexual Health and HIV (BASHH) guidelines and include partner notification.
Our local protocol recommends screening HIV positive pregnant women on two occasions (early in pregnancy and in the third trimester) to include syphilis, *Chlamydia Trachomatis* (*CT*), *Neisseria Gonorrhoea* (*GC*) and *Trichomonas Vaginalis* (*TV*). BV is not routinely tested for in asymptomatic women. All patients are discussed at a monthly multidisciplinary team (MDT) meeting including HIV doctors, nurses, pharmacists, health advisor, obstetrician and midwife.
This audit aimed to ascertain if pregnant women attending our HIV service were undergoing STI screening and management as per national guidance.
Methods: Retrospective audit from electronic patient records of 50 pregnancies between December 2015 and March 2018 excluding early miscarriages or patients undergoing termination of pregnancy. Demographics and pregnancy outcome data was collected. Gestation of the pregnancy at time of STI screen was recorded alongside test results and management.
Results: The average age was 33.6 years (range 19 to 43 years) and the majority of patients identified as black British African. Of the 50 pregnancies, 49 resulted in live births and one in late miscarriage. There was no HIV transmission.
There was 100% uptake of first screen of which 28% took place at $\geq$ 15 weeks' gestation. 6% were positive for *CT*, 4% positive for *TV* and 1 had positive syphilis serology. All 6 patients with positive results were treated and followed up appropriately. 6% did not have *TV* testing on first opportunity but were screened at a subsequent appointment.
84% had a second screen in the last trimester. 8% were not offered it (4 women did not require a 2nd screen due to late miscarriage, delivered before third trimester, or transferred care), 6% did not attend any further appointments and 1 patient declined. All women who did not have a second screen had negative first screens.
One patient tested *TV* positive on second screen, having also tested positive on first screen, because of incomplete treatment secondary to vomiting. She was followed up by the obstetrician.
Conclusions: All women receive an initial STI screen but a significant proportion are undertaken late. We will advise women of reproductive age, known to our service, to present earlier in their pregnancy. All STIs that were identified were managed appropriately.
TV screening is not recommended in national guidance. As we picked up two positive results in asymptomatic women we are considering whether to remove this from our local protocol.
None of our HIV pregnant women were screened for BV. There is limited evidence of the benefits of screening for BV in HIV positive pregnant women who are fully supressed on antiretroviral therapy. Following discussion at our local MDT meeting we will continue our current protocol of testing for BV in pregnant women with symptoms.

P38

Breastfeeding with HIV: a retrospective case review

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Background: In the UK, formula feeding is recommended as the safest way to feed infants born to women with HIV due to the on-going risk of HIV exposure. BHIVA guidance also recommends that women who have an undetectable viral load (VL) on anti-retroviral therapy (ART) who wish to breastfeed should be supported to do so. We describe our experience of breastfeeding in women with HIV.
Methods: A retrospective case review of mothers living with HIV who breastfed between 2012 and 2018 was conducted. Demographics, viral load data, breastfeeding duration and infant outcomes were collected.
Results: 206 babies were born to mothers living with HIV between January 2012 and Nov 2018. 9 (4.3%) were breastfed. 90% of mothers choosing to breastfeed were of Black-African ethnicity. 8/9 (90%) were diagnosed prior to conceiving; one woman was diagnosed at antenatal screening. 6/9 (67%) conceived on ART and continued during pregnancy. 3 started ART during pregnancy. All had an undetectable viral load (<20 copies/ml) at delivery. None of the mothers were nulliparous. 55% of mothers had breastfed previously while living with HIV. Reasons for breastfeeding included fear of HIV stigma, a wish to bond with baby, socio-economic circumstances and pressure from family. The mean duration of breastfeeding was 7 weeks (36 hours-13 weeks). All had an undetectable viral load throughout breastfeeding apart from one, who stopped due to a viral load of 86 copies/ml at 36 hours post-partum. All others stopped by choice. One baby was still being breastfed at time of writing. All other babies (90%) tested negative for HIV antibody at 18 months.
Conclusions: Mothers choosing to breastfeed represented a very small proportion of our cohort. It is important to recognise that this series describes women who planned to breastfeed, following discussion with our team. It is likely that some mothers breastfeed without disclosing, which may increase the risk of transmission. Although the case series is small, it suggests that women who had breastfed previously with HIV are more likely to do so again. Women may breastfeed due to external pressures rather than a wish to do so, however abstaining from breastfeeding can also have negative social, psychological, and financial implications for women. There were no transmissions in our cases but formula feeding remains the recommended method of feeding in high-income settings.

P39

Dolutegravir in pregnancy safety alert: how did we do?

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Background: In May 2018, BHIVA released a statement following early reports from a birth surveillance study in Botswana. This study reported an increased risk of neural tube defects amongst infants of women who became pregnant on dolutegravir (DTG)-based regimens. This abstract reports how our service responded.
Methods: Our nurse specialist and pregnancy MDT coordinator contacted women to establish plans for conception and arrange earlier review if necessary. Risk of pregnancy and contraception was also discussed and documented. Case notes were reviewed retrospectively.
Results: In our HIV cohort of approximately 1200 individuals, 77 women aged 50 years or under were on a DTG-based regimen. Of these, 32 (42%) were contacted by phone or e-mail between 3 and 28 days following the statement (mean 18.3 days). A message was left for 14 (18%) women. Attempts to contact 12 (16%) women failed and 19 (25%) women did not receive any early notification. This included women known to have intrauterine contraception, those who were postmenopausal, sterilised, on chemotherapy or had had a

hysterectomy. Following early notifications, 43 (56%) later had documentation of a face-to-face discussion.
Of 77 women, 47 (61%) had had no risk of pregnancy. Of 5 (6%) women that had had a pregnancy risk, 2 were trying to conceive, 2 were signposted for long-acting reversible contraception and 1 had used condoms intermittently. For 24 (31%) women, pregnancy risk was not documented. This included four women who have not attended clinic since the statement.
At the time of the statement, 15 (19%) women were not sexually active. However, for 5 of these women there was no documentation of a discussion in anticipation of a new pregnancy risk.
Since the statement was issued, 12 (16%) women switched to other HIV treatment regimens. Three women switched to boosted atazanavir. Three women switched to raltegravir: one pregnant, one trying to conceive and one with abnormal LFTs before TB treatment. One woman switched to rilpivirine. Two switched to darunavir/cobicistat-containing regimens. This was before the alert on using darunavir/cobicistat in pregnancy. Of these 2 women, one is trying to conceive and has since been advised to change to darunavir/ritonavir. Two women have defaulted and 1 has transferred care.
Table P39.1 summarises method of contraception or other fertility status:

Table P39.1.

	No.	%		No.	%
Intrauterine contraception	7	9	Pregnant	1	1
Oral contraception pill	5	6	Trying to conceive	3	4
Implant	2	3	No contraception	3	4
Depo injection	1	1	WSW	1	1
Condoms	13	17	Hysterectomy	2	3
Sterilised	5	6	Postmenopausal	2	3
Not sexually active	15	20	Not documented	17	22

Conclusions: With no additional time resources, our team responded effectively to this BHIVA statement. However, some women who may be at risk of pregnancy may not yet be aware. The whole team has been alerted and electronic database prompts used. This will be reviewed in 6 months. There was a good level of documentation of contraception and pregnancy risk. However, in line with BHIVA guidelines, a contraceptive history should be taken at every visit.

P40

Dolutegravir use in adolescents with perinatally acquired HIV: is weight gain an issue?

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Background: Dolutegravir (DTG) an integrase strand transfer inhibitor (INSTI) is licensed for use in children 6 years and over, with adult dosing from 25 kg. There is emerging evidence that INSTIs, in particular DTG, in adults are associated with excessive weight gain, however there is no data in children and adolescents. We audited change in weight and body mass index by antiretroviral therapy (ART) regimen comparing DTG, non-nucleoside reverse transcriptase inhibitors (NNRTIs) and boosted regimens (ritonavir/cobicistat) amongst a single centre cohort of adolescents living with perinatally acquired HIV(PaHIV).
Methods: A retrospective cohort analysis by database and electronic record review of all PaHIV age 10–19 years receiving ART between June 2017 and December 2018. Data collected from the patients' latest review and 12 months previously. Parameters recorded included age, sex, ethnicity, HIV viral load (VL), CD4 count, height and weight. Data was anonymised and analysed in Microsoft excel.
Results: 92 PaHIV, 55 (60%) female, 60 (65%) black African, median age of 17 years (IQR 14 to 18, range 10 to 19) of whom 48 (52%) were post pubertal, Tanner stage 5 (Table P40.1).
39 patients were excluded from further analysis; insufficient data (14), VL>400 c/ml suggesting suboptimal adherence/exposure to ART (13), CD4 count<200 cells/ul (1) regimen both protease inhibitor and INSTI (3), and Raltegravir (1). Seven switched to DTG<12 months previously; median age 14 and median BMI prior to the change 22.1 (IQR 18.7 to 25.5) increasing after a median of 8 months (IQR 1–11 months) to 22.6 (IQR 19.8 to 25.7). 53 PaHIV on stable suppressive ART with a dual nucleoside backbone were included for subsequent analysis:

Table P40.1.

	DTG	Boosted Regimen	NNRTI
Number	16 DTG 100%	19 Atazanavir 60% Darunavir 35% Elvitegravir 5%	18 Nevirapine 72% Rilpivirine 17%Efavirenz 11%
Median age	17 (IQR 16–19)	13 (IQR 13–18)	16 (IQR 13–18)
Female	50% (8)	63% (12)	61% (11)
Black African Ethnicity	81% (13)	58% (11)	56% (10)
Initial Median BMI	23.3 (IQR 20.9–28.2)	23.4 (IQR 18.0–31.6)	20.6 (IQR 19.2–23.7)
Median BMI at 12 Months	24.0 (IQR 20.3–27.4)	24.5 (IQR 20.3–31.2)	21.3 (IQR 19.7–24)
Change in BMI	0.7	1.1	0.7

Conclusions: In this small adolescent cohort on suppressive therapy an increase in BMI occurred over 12 months irrespective of ART group. There was a trend towards a higher BMI in those receiving boosted and DTG based regimens. This requires further investigation in larger perinatal cohorts as NNRTI based regimens fall out of favour in global guidelines but concerns regarding cardiovascular health in adults with PaHIV increase.

P41

'Don't forget the children': 10 years on. Late HIV diagnosis in a 14-year old with perinatally acquired HIV

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Background: The 'Don't Forget the Children' initiative (2009) followed the avoidable death of an untested 10 yr old whose parents were in HIV care. The report highlighted the need to identify and test all children at risk of HIV regardless of age and absence of symptoms. Whilst the welfare of children is paramount, the law also protects parents' rights to privacy regarding their own medical information. Referral to safeguarding services when parents refuse testing is required, but risks parental disengagement from care.
Methods: Retrospective case note review.
Results: A Black African healthcare worker living with HIV transferred her care in 2012: CD4>500 cells/μL, viral load (VL)<700 c/ml, antiretroviral therapy (ART) naive and declined GP correspondence. She agreed initially to testing of her partner and two UK born children, but follow-up was unsuccessful. She subsequently reported a negative HIV test at antenatal booking with her youngest child, but the result was unconfirmed. The family was referred to the child testing multidisciplinary team (MDT) in 2014. Father enrolled in HIV care in 2015, also declined child testing. Parents were informed of MDT decision to consider safeguarding referral, and discussions with social care and the legal team regarding likelihood of court order to test followed. There was subsequent poor parental engagement with services and ART declined. In 2018 they agreed to blood born virus screening of the youngest child, aged 14, but were reluctant to disclose their HIV diagnoses. Parents were advised that information would not be withheld if asked directly about HIV.
The boy, age 14 years, 185 cm, 80 kg, never hospitalized, asymptomatic, no prior blood products and not sexually active, agreed to HIV and hepatitis screening. HIV serology was positive and he attended for confirmatory testing and assessment; CD4 31 cells/μl, CD4:CD8 0.1 and VL 10.565 c/ml. At attendance with mum, he was informed of his diagnosis, transmission route, family status and has been well supported by both parents. Keen to start ART immediately, he commenced dolutegravir, emtricitabine and tenofovir alafenamide, whilst awaiting resistance results. VL<20 c/ml from 4 weeks, CD4 76 cells/μl at 12 weeks with no side effects or immune reconstitution syndrome to date. Older sibling now to be tested.

Conclusions: 10 years on this case highlights the dangers in delaying testing with clear risk factors despite age and apparent good health. Meticulous family history taking, joint working and clear boundaries are needed to ensure further deaths are avoided.

P42

First report of maternal donor in haemopoietic stem cell transplantation for lymphoma associated with perinatal HIV

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Background: Adolescents and young adults living with perinatally acquired HIV (AYAPaHIV) are at increased risk of malignancy, principally lymphoma. Whilst response to conventional therapy approaches their HIV negative peers, relapsing disease frequently requires haemopoietic stem cell transplantation (HSCT). We present the first reported case where a mother living with HIV donated haemopoietic stem cells to her perinatally infected son following an unsuccessful search for a matched unrelated donor (MUD).
Methods: Descriptive case report.
Results: A UK born male of black African origin diagnosed with PaHIV on screening aged 13 commenced antiretroviral therapy (ART) in 2007 age 15, nadir CD4 count 180 cells/ul. He achieved sustained virological suppression on Atripla, CD4 count>500 but in 2013 a biopsy of his cervical lymphadenopathy revealed stage IVA nodular sclerosis classical Hodgkin lymphoma.
Disease progression followed 6 cycles of doxorubicin, bleomycin, vinblastine and dacarbazine (ABVD) and 3 cycles of dexamethasone, cytarabine and cisplatin (DHAP). He was then managed with 12 cycles of Brentuximab, an anti-CD30 toxin-conjugated monoclonal antibody, until March 2015 with a partial remission and following this, in July 2015 he had high dose therapy with autologous stem cell support followed by radiotherapy to the right iliac blade. He relapsed in August 2017 and was given 3 cycles of ifosfamide, carboplatin and etoposide (ICE) chemotherapy with a view to having a reduced intensity conditioning (RIC) allogeneic HSCT. He had no siblings and no matched unrelated donor. His mother was able to provide stem cells for a haploidentical HSCT. He and his mother were CMV positive. He was negative for hepatitis B virus (HBV), had been vaccinated and had post vaccination HBV surface antibody titres of >1,000 mIU/mL, his mother was co-infected with HBV and was suppressed on first line ART for HIV/HBV. Pre-HSCT he switched from Atripla to dolutegravir and emtricitabine/tenofovir alafenamide.
Stem cells were given on 19/12/17(day 0) and his transplant course included treatment for neutropaenic fevers, CMV reactivation, BK virus haemorrhagic cystitis, candidaemia positive blood cultures and he had a 2 day intensive care admission for generalised tonic clonic seizures. He was given a stem cell top up on day + 59 for immune related primary graft failure. Prior to stem cell top up he was plasma exchanged 3 times, given rituximab, intravenous immunoglobulin, anti-thymocyte globulin (ATG) and 2 Gy of total body irradiation. He was discharged on day + 94 and has had 2 short admissions for management of haemorrhagic cystitis.
He is currently 13 months post HSCT and remains in remission. HIV viral suppression was maintained throughout with no evidence of HBV.
Conclusions: Whilst unrelated HIV+ donor and HIV+ recipient solid organ transplants are increasing and reflect an important improvement in equity of care for those living with HIV, we believe this is the first case where a mother living with HIV has donated to her perinatally infected offspring. Family members who share the same virus remain a donor option for AYAPaHIV where alternatives are lacking.

P43

Management of women on dolutegravir: an audit against 2018 BHIVA recommendations on prescribing in women of reproductive age

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Background: In May 2018 BHIVA published recommendations on the use of Dolutegravir (DTG) in women of reproductive age. This followed the preliminary unscheduled analysis of an on-going birth surveillance study showed increased signal for neural tube defects in infants of women conceiving on DTG.
Aims and objectives: To evaluate local performance against these recommendations at three clinic sites:

- Women on DTG up to 50 years old should have a documented contraception method
- Women trying to conceive (TTC) on anti-retroviral therapy (ART) should be prescribed folic acid 5 mg
- All women at risk of pregnancy on DTG should be contacted for discussion, if TTC an appropriate alternative regimen should be prescribed, or discussion documented regarding contraception. Pregnant women taking DTG in first trimester should be advised to switch.

Methods: Clinical records of all women under 55 who were prescribed DTG at the time of the position statement were reviewed.
Results: At baseline 82 women were on DTG, 74 of whom under age 50 at time of statement release. 76% (56/74) had documented contraception or pregnancy status, 37%(28/74) were on contraception at last clinic visit or postmenopausal, 7%(5/74) TTC, and another 5%(4/74) not on contraception, 5%(4/74) pregnant, 20%(15/74) reported they were not sexually active.
Contact for discussion was needed in 95%(70/74) and was successful in 76% (53/70) women. Of 27 TTC or without documented contraception at last visit, 89%(24/27) were successfully contacted. All pregnant women were beyond 1st trimester and remained on DTG.
Following discussion, 11 women reported either TTC or not using any contraception, 9 elected to switch treatment. Recommendation of 5 mg folic acid was documented in one case. Switches were raltegravir(5) atazanavir(2) efavirenz(1) darunavir(1). One woman who said she was not using contraception and was open to idea of conception however not actively TTC chose not to switch following a detailed discussion of the risks. Another had complex resistance and intolerance and had agreed to use contraception until the outcome of discussion in a virtual clinic. Reasons for non-first line switches were patient preference, resistance or intolerance. A further 5 women started contraception, and current contraceptive method was updated for 9 women.
Conclusions: Patients were contacted appropriately in majority of cases and the outcomes of discussion documented. Switches onto appropriate treatments were made on an individualised basis. As per guidelines, no pregnant women beyond first trimester were switched off DTG. However our documentation of baseline contraception status can be improved, as can our recommendation of 5 mg folic acid to women TTC on ART. This audit is a reminder that we should routinely discuss contraception and plans for conception to optimise treatment and ensure appropriate clinical advice is given.

P44

Responding to the BHIVA statement on potential safety signal in infants born to women conceiving on dolutegravir: a service evaluation

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Background: In May 2018, a preliminary unscheduled analysis of an ongoing birth surveillance study reported an increased risk of neural tube defects (NTD) in children conceived on Dolutegravir (DTG)-based regimens. The study, looking at babies born to 11,558 HIV-infected women in Botswana, showed 0.9% of babies (4/426) whose mothers conceived on DTG-based regimens had a NTD, compared with 0.1% (14/11,173) conceived on non DTG-based regimens. Whilst awaiting further evidence, on 22nd May 2018, BHIVA released a statement with recommendations on how to manage women at risk of pregnancy on DTG-based regimens. We wanted to assess our service's response to this BHIVA statement.
Methods: Our service immediately reviewed DTG prescriptions for the 12 months prior to June 2018. We then identified and risk stratified women $\leq$ 50 years old on DTG by database and case-note review (Table P44.1):

Table P44.1.

Category	Risk	Time to contact	Contact method
Red	Early pregnancy or high risk of pregnancy	Within 1 week	Urgent telephone call
Amber	Patients requiring clarification of partner and contraception status	Appointment within 1 month	Alert on patient record
		Appointment greater than 1 month away	Email to clinician to contact patient
Black	Patients with documented contraception, no sexual partner or late pregnancy	Within 6 months	Inform patient at next consultation

A second case-note review was performed in January 2019.

Results: 141 of 221 DTG prescriptions were dispensed to women ≤ 50 years old. 29/141 were repeat prescriptions (Table P44.2). Five patients were excluded (1 trans-female, 2 temporary patients, 2 deceased) leaving 107 case-notes requiring review and risk stratification.

Table P44.2.

	Time to contact & documented discussion of BHIVA statement				
Category	< 1 month	< 3 months	< 6 months	Not documented	Total (n)
Red	8	2	0	0	10
Amber	19	12	3	12	46
Black	23	12	5	11	51
	50	26	8	23	107

Three pregnancies were identified at baseline review, all>12 weeks gestation, with no evidence of NTD at delivery. Two women presented subsequently; one with miscarriage at 8 weeks despite having been informed of the BHIVA statement. The second, at 8 weeks, switched third agent to raltegravir. She was initially stratified within the 'Black category' reporting consistent condom use in February 2018. Detailed anomaly scan is awaited.
5/107 (<5%) switched from DTG-regimens as planning pregnancy. Third agent switches complied with BHIVA Pregnancy Guidelines and all remained virally suppressed. No pregnancies followed.
84/107 (79%) were contacted within 6 months and have documented discussions regarding the BHIVA statement. Of the 23 whereby risk discussion was not documented, 6 had disengaged with care, 9 were not sexually active and 3 had irreversible or long-acting methods of contraception. Only 5 (<5%) patient records did not comply with BHIVA statement recommendations. These patients have scheduled appointments in the next four months and alerts have been added to their records.
Conclusions: Over 95% of women on DTG-based regimens complied with the BHIVA statement recommendations. Since May 2018, three healthy babies have been born to women on DTG-based regimens. One first trimester miscarriage was identified, but this cannot be causally linked to the DTG-regime.

P45

Therapeutic drug monitoring of darunavir levels in pregnancy

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Background: Several studies have shown reduced darunavir levels in pregnancy. The BHIVA guidelines suggest twice daily darunavir if initiating darunavir-based antiretroviral therapy in pregnancy or if there is known resistance. These guidelines suggest considering therapeutic drug monitoring (TDM) in pregnant women taking protease inhibitors.
Methods: We conducted a notes audit of all pregnancies on our antenatal multi-disciplinary team clinic database between January 2017 and June 2018. Those taking darunavir during pregnancy were studied in more detail.

Results:
- 21 pregnancies/20 women
- Mean age of those on darunavir: 31 years
- There were 9 pregnancies with darunavir as part of their regimen.
- Of these 9, eight had a TDM performed. The one patient who did not have a TDM performed had switched to darunavir 1 week before delivery due to a detectable viral load therefore there was no time for a TDM. One patient had 2 TDMs performed in one pregnancy. One patient had 2 pregnancies during the audit time period.
- Of the 9 pregnancies with darunavir, all were dosed as 800 mg once per day (with 100 mg ritonavir once per day) before the TDM was performed.
- 7 of the 9 TDMs (78%) were performed in the 3rd trimester.
- Results of the TDMs: The estimated percentiles for the trough level of darunavir (Table P45.1):

Table P45.1.

Percentile	Number of TDM results that were within this percentile range
Below 10th	2 of 9
10th to 25th	1/9
25th to 50th	3/9
50th to 75th	1/9
75th and above	1/9
Other	1/9

- 8 of the 9 (89%) results were reported as adequate levels for wild type virus; 1/9 results were reported as not adequate for wild type virus
- 7 of the 9 (78%) results were reported as adequate levels for resistant virus; 2/9 results were reported as not adequate for resistant virus.
- In the 2 patients with results below the 10th percentile their darunavir regimen was changed to 600 mg twice daily plus ritonavir 100 mg twice daily. In neither case was the TDM repeated after the switch.
- On 3 occasions the viral load was over 50 cp/ml at the time of the TDM. Neither of the pregnancies with 'below 10th percentile' on TDM result had detectable viral load at the time of the TDM.
- For 1 pregnancy the viral load was over 50 cp/ml at the last measurement prior to delivery.
- The baby's outcome for the darunavir-pregnancies (Table P45.2):

Table P45.2.

HIV status of baby for those on darunavir	Number	% of darunavir-pregnancies
Negative so far	4	44
Not recorded in sexual health notes	4	44
Not delivered yet	1	11

Conclusions: Most women in this audit who were taking once daily darunavir had adequate levels of darunavir during pregnancy. In those with lower levels of darunavir the viral load was undetectable.

Comorbidities, Co-infections and HIV/ART Complications

P46

'I'm 51 but living in the body of a 65-year old': exploring the experiences and needs of those with HIV and multiple comorbidities

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Background: The cohort of people living with HIV in the UK is ageing; comorbidities are more common and more challenging to control compared to the general population. This qualitative research study was designed to explore

the lived experiences and perceived health needs of people living with HIV and comorbidities.
Methods: Research interviews were conducted with adults living with both HIV and diabetes. Recruitment was aided by both NHS and community organisations. Sampling methodology ensured the diversity of the UK's HIV positive population was represented by geography, gender and ethnicity. Thematic analysis followed the Framework approach.
Results: The 22 participants interviewed were 53.0 ± 7.7 years old, characterised by a long duration of HIV infection (18.1 ± 6.9 years), and were living with between 3 and 10 chronic health comorbidities (median 5). Based on thematic analysis and using NICE guidelines for management of multiple health conditions as a model, we recommend this stepwise approach (Table P46.1):

Table P46.1.

Task	Rationale	Example
Identify patients with multiple comorbidities	Patients may not be immediately apparent	Patients may be relatively young and working
List the primary provider for each comorbidity	HIV patients may have multiple primary providers	A participant living with 9 comorbidities had 6 specialist providers
Establish disease and treatment burden	Specialists may be unaware of total and HIV-related burden	Participants reported chronic fatigue and poor mental health issues resulting from comorbidities
Maximising benefit from existing treatments	Drug interactions and synergistic treatments should be considered	Participants report periods of months / years before drug errors rectified
Can any treatments be stopped?	Polypharmacy is a significant burden. Consider potential for non-drug therapies	Regular review of medications led to rationalisation
Rationalise follow up appointments	Coordination of follow ups across specialties reduces investigation burden	Some patients remain in work.
Establish patient goals values and priorities	May range from remaining in employment to coping with pain	Participants report priorities not being addressed, and being unsure who to question
Agree an individualised management plan	Care plans can be complex. Consider HIV-specific factors	Some participants feel ignored
Plans for future care	Discuss future care with patients approaching milestones	Participants reported fears for their longevity secondary to comorbidities
Establish who coordinates care	The coordinator should be fluent regarding impact of HIV	Few participants reported effective coordination
Establish how the plan is communicated to all professionals	Communication plan should be individualised. Include assessment of HIV stigma	Participants reported ineffective letter writing, and specialists changing each other's plans
Agree communication plan with patient	Patients may have experienced communication failures	Participants describe communicating care plans themselves
Coordinate phlebotomy	Multiple phlebotomy across services is a burden	Blood work repeated three times each month and results not shared
Follow up any agreed actions	Follow up should time specific	Participants report plans not actioned

Conclusions: HIV patients living with multiple comorbidities should be identified, and a stepwise care approach used. Collaborative care with a health professional fluent in HIV-related issues coordinating, and enablement of self-care should both be encouraged.

BHIVA Research Awards winner 2016, Alastair Duncan

P47

A balance of risks: an audit of lipid and renal outcomes in patients prescribed tenofovir alafenamide

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Background: Tenofovir alafenamide (TAF) is an alternative to tenofovir disoproxil fumarate (TDF) with a preferable renal safety profile. However some studies have shown that TAF can detrimentally affect lipid profile, contributing to a higher cardiovascular risk. The lipid and renal outcomes of patients prescribed TAF-containing regimens in our service were audited to assess these risks in a real world setting.
Methods: All patients prescribed TAF-containing regimens between 2016 and 2018 were included in this retrospective audit. Data was extracted from National Sexual Health System and Trakcare for baseline demographics, lipid-lowering treatment and pre/post-TAF lipid profile and serum creatinine, which were assessed against the duration of TAF exposure. A ratio paired t-test was used to compare outcomes pre/post TAF.
Results: A TAF-containing regimen was prescribed in 177 patients; 112 with complete data were included for analysis. 82% were male with a mean age of 51 (21–84 years). Median duration of TAF exposure was 59 weeks (3–131 weeks). Total cholesterol (TC), LDL-cholesterol and triglycerides increased post TAF in 67.0%, 58.0% and 59.8% of patients respectively. Overall TC, LDL-cholesterol and triglycerides were elevated by 9.3%, 9.3% and 10.4%; for TC and LDL-cholesterol this was most significant in patients switching from TDF (Table P47.1). TC to HDL-cholesterol ratio was increased in 47.3% however the change in ratio was non-significant. Statins were initiated in 10.7% of patients post TAF and 11.2% of those switching from TDF. Improvement in creatinine was non-significant post TAF.

Table P47.1. Pre- and post-TAF differences in lipid and renal outcomes

	Pre- and post-difference (ratio)	p-value
Triglyceride (n=112)	1.104 (95%CI 1.008–1.210)	0.0333*
Naïve to TAF (n=12)	1.285 (95%CI 1.041–1.585)	0.0237*
TDF to TAF (n=89)	1.101 (95%CI 0.9945–1.220)	0.0635
Non-tenofovir to TAF (n=11)	0.9576 (95%CI 0.6252–1.467)	0.8254
Total Cholesterol (n=112)	1.093 (95%CI 1.051–1.137)	<0.0001****
Naïve to TAF (n=12)	1.181 (95%CI 0.9996–1.396)	0.0504
TDF to TAF (n=89)	1.105 (95%CI 1.062–1.151)	<0.0001****
Non-tenofovir to TAF (n=11)	0.9171 (95%CI 0.7946/1.059)	0.2085
LDL-cholesterol (n=112)	1.093 (95% CI 1.031–1.160)	0.0034**
Naïve to TAF (n=12)	1.182 (95% CI 0.9668–1.444)	0.0943
TDF to TAF (n=89)	1.113 (95%CI 1.049–1.180)	0.0005***
Non-tenofovir to TAF (n=11)	0.7572 (95%CI 0.4895–1.171)	0.1621
Total Cholesterol to HDL-cholesterol Ratio (n=112)	0.9887 (95%CI 0.9537–1.025)	0.5317
Naïve to TAF (n=12)	0.9923 (95%CI 0.8933–1.102)	0.8745
TDF to TAF (n=89)	1.002 (95%CI 0.9632–1.043)	0.9051
Non-tenofovir to TAF (n=11)	0.8817 (95%CI 0.7603–1.022)	0.0873
Creatinine (n=112)	1.047 (95%CI 1.019–1.075)	0.0009***
Naïve to TAF (n=12)	1.123 (95%CI 1.038–	0.0076**

Table P51.1. Continued.

	Pre- and post-difference (ratio)	p-value
TDF to TAF (n=89)	1.214)	0.0600
Non-tenofovir to TAF (n=11)	1.028 (95%CI 0.9988–1.058) 1.120 (95%CI 1.010–1.242)	0.0352*

Conclusions: TAF therapy significantly increased TC and LDL-cholesterol and also increased in statin prescribing. This is compared to a non-significant improvement in renal outcomes and highlights the need to consider these factors prior to commencing TAF, particularly in patients switching from TDF.

P48

A review of inpatients admitted with HIV encephalopathy in an inner-city London teaching hospital

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Background: The mechanism of HIV encephalopathy (HIVE) is not fully understood but forms part of the complex of HIV-associated neurocognitive disorders (HAND). Risk factors include low CD4 nadir, duration of HIV infection and persistent or intermittent HIV viraemia. HIVE is diagnosed based on clinical, radiological and virological findings in the serum and cerebrospinal fluid (CSF).
Methods: We conducted a retrospective analysis of all inpatient admissions diagnosed with HIVE as their final primary diagnosis between 2015 and 2018. Data was collected using electronic patient records, radiological findings, blood and CSF results and discharge summaries.
Results: 15% of all neurological admissions in people living with HIV (n=94) had a primary diagnoses of HIVE. This was made up of 14 admissions, including 3 readmissions. 5 were female and 6 male, with a median age of 48 years (range 24–54). 3 patients were newly diagnosed with both HIV and HIVE on admission, all 3 of whom were 'very late' presenters with a CD4 count of<200. In the remainder of patients known to be living with HIV, 3 had been diagnosed between 5–10 years previously, 4>10 years ago, with one>20 years (HIV since birth). The median length of stay was 29 days (range 1–368).
In total 7 patients (64%) had a CD4 count of≤350; 6 of these patients had CD4 counts<200. Excluding new diagnoses, all other 8 patients had detectable viraemia (>200 copies) despite 5 of them reported to be taking ART. Of the patients on ART all had resistance mutations to at least 1 class of drug with the most common mutation documented as M184V. All 5 were either X4 or mixed X4/R5 tropic in the serum.
The commonest presentation was confusion or a cognitive decline. All patients had an MRI brain scan on admission, with all showing diffuse symmetrical white matter changes consistent with HIVE. In one patient there was radiological evidence of viral meningitis in addition to HIVE. A lumbar puncture was conducted in all patients (excluding 1 readmission), with a high CSF viral load in all but one sample.
All patients not on ART or poorly adherent were restarted on triple therapy. For those already on ART, regimens were either intensified or modified to according to genotyping. One patient was also treated with steroids for presumed immune reconstitution inflammatory syndrome (IRIS).
Conclusions: Detectable viraemia either due to intermittent adherence or late diagnosis and a low CD4 count were common findings in our patients diagnosed with HIVE. All patients on ART in this cohort had evidence of drug resistance, requiring either intensification of ART or regimen change. Late diagnosis and incomplete adherence to ART remain a significant challenge, and were major contributing factors to the diagnosis of HIVE.

P49

Accelerated atherosclerosis and myocardial injury in people living with HIV

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Background: Observational studies in the United States and Europe demonstrate the overall risk for developing coronary heart disease in people living with HIV (PLWH) is increased by 1.5 to 2.0 fold. Controversially in England this was not validated by Q-Risk 3.
The national average for coronary stent insertion is 64.2 years old according to British Coronary Interventional Society national database in 2018. The indication for stent insertion is either due to a myocardial infarction or new onset angina.
Methods: This is a single centre retrospective analysis of our HIV cohort. We searched our pathology results system over a 3 year period looking for high sensitivity Troponin T (hsTropT) results. We used<52 ng/l as a negative result. We then analysed patient's notes to confirm if they had a myocardial infarction, classify the type and attribute a cause.
Results: 490 results we reported, 16 samples were haemolysed, on 208 PLWH. 119 tests were positive (> 52 ng/l) in 36 patients. The average age was 56.5 years, 24.3% women. 47% were Afro-Caribbean and 42% white British. 7 PLWH had a peak hsTropT>500, 16>100<500 and 13>54 but<100. Interestingly none of the PLWH who had a hsTropT<100 had a coronary event. There were 10 acute coronary syndromes (ACS), but 29 PLWH had other causes for their raised hsTropT.
All of the ACS were men with 50% being ST elevation Myocardial infarctions. 42% had end stage renal failure as a cause for their raised hsTropT, 14% heart failure, 11% arrhythmia and 8% pericardial disease.
Conclusions: PLWH develop kidney disease and this accounts for a significant proportion of raised hsTropT. One cannot fully and blindly rely on hsTropT in diagnosing acute MI since many other conditions are associated with elevation of troponin. Failure to acknowledge the differential diagnosis of elevated troponin may lead to over-diagnosis of MI and, accordingly, misdiagnosis of the real cause.
From our UK data it does appear that PLWH are developing atherosclerosis and plaque rupture at a younger age than the general population (56 yrs Vs 64 yrs). Of those patients who have a coronary event, it appears PLWH are at higher risk of having a STEMI than the normal population.

P50

Anti-NMDA receptor encephalitis, a rare cause of acute confusion in an HIV-positive patient

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Background: We present a case of anti-N-methyl-D-aspartate (anti-NMDA) receptor encephalitis in a 49 year old gentleman with a known diagnosis of HIV. following an admission with acutely worsening confusion and inattention. This is the fourth reported case of anti- NMDA receptor encephalitis in an HIV positive individual, highlighting the importance of considering auto-immune conditions as a cause of acute confusion in HIV positive patients.
Methods: Our patient was diagnosed with HIV in 2015 with symptoms of advanced immunosuppression, including extensive cutaneous Kaposi's Sarcoma. His nadir CD4 count was 43 cells/mm³ (4%). He was commenced on Truvada, Darunavir-Ritonavir at diagnosis and made a good immune recovery. He remained virally suppressed until early 2018 when a viral blip of 50 copies/ml was noted at a routine appointment. Two months later, and one month prior to admission, he had a first seizure, after which he became confused with marked behavioural changes.
On admission he was noted to be agitated and inattentive, and was uncooperative with attempts to examine him. A CT scan of the brain was performed with and without contrast which showed mild generalised mass effect when compared to imaging from the seizure episode. A lumbar puncture (LP) showed: clear, colourless cerebro-spinal fluid (CSF), protein was 122 mg/dL, with a white cell count (WCC) of 160 WCC/cmm. His admission CD4 count was 180 cells/mm³ (25%) and his viral load was 916 copies/ml. He was commenced on empiric antibacterial, antifungal and antiviral treatment for meningo-encephalitis. Over the following 5 days he absconded from the hospital twice for extended periods of time.

No organism was cultured on the original CSF sample which also tested negative for *Cryptococcal antigen, herpes simplex* 1 & 2, *varicella zoster, cytomegalovirus, John Cunningham virus, human herpes type 6, enterovirus* and *echovirus*. Clinically non-significant levels of *Epstein-Barr virus* were detected. HIV viral load in the CSF was raised at 42,635 copies/ml
The Neurology service was consulted prior to a repeat LP and autoimmune screening of the CSF was recommended. The patient was also commenced on Levetiracetam due to suspected focal seizures contributing to the state of confusion. 24 hours after commencement of anti-epileptic medication there was a significant improvement in the patients condition notably his attention span. We were contacted by the Immunology service 2 days following the second lumbar puncture with a positive result for anti-NMDA receptor antibodies in the CSF. The patient started on Methylprednisolone at an adjusted dose due to interactions with antiretroviral medication along with intravenous immunoglobulins (IVIG).Later the Rezolsta was switched to Dolutegravir for better CNS penetration. A CT TAP showed no signs of occult malignancy. Following two cycles of IVIG and an impressive cognitive recovery the patient was discharged to the care of his family and followed up in the outpatient clinic.
Conclusions: Anti-NMDA encephalitis is a rare cause of encephalitis in patients with HIV, but with a growing number of cases being reported in the literature, it is important to investigate patients for autoimmune causes alongside infectious aetiologies.

P51

Antiretroviral central nervous system toxicity

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Background: Pre-clinical and clinical data suggest central nervous system (CNS) toxicity for many antiretrovirals, particularly the non-nucleoside reverse transcriptase inhibitor (NNRTI) efavirenz. We assessed the relationships between exposure to different 'third agents' and biomarkers of brain structure and function.
Methods: Virally suppressed people living with HIV (PLWH) from the COmorBidity in Relation to HIV/AIDS (COBRA) study receiving third agents ($n \geq 30$ to permit adjusted analyses) underwent cognitive function testing, T1- and diffusion-weighted MRI scans. PLWH receiving efavirenz (n=30), nevirapine (n=30) or ritonavir-boosted darunavir (n=31) were included for these analyses (13 participants were taking raltegravir and none dolutegravir at the time of enrolment). Plasma and CSF drug concentrations were measured using high-performance liquid chromatography and extrapolated trough concentrations were calculated assuming consistent plasma and CSF kinetics. Relationships between drug exposure, cognitive function and neuroimaging measures were determined using non-parametric regression, adjusted for potential confounders.
Results: Plasma and CSF concentrations of efavirenz and nevirapine were both negatively associated with cognitive T-scores, particularly in the domain of attention (plasma nevirapine $rho_{adj} = -0.54$, $p<0.01$, Table P51.1), whereas there was no association between darunavir exposure and cognitive function ($p>0.1$ for all, Table P51.1).

Table P51.1. Cerebrospinal fluid and plasma antiretroviral exposure and their associations with cognitive function

	Cerebrospinal fluid						Plasma					
	Efavirenz		Nevirapine		Darunavir/r		Efavirenz		Nevirapine		Darunavir/r	
Cognitive domain	rho_{adj}	p	rho_{adj}	p	rho_{adj}	p	rho_{adj}	p	rho_{adj}	p	rho_{adj}	p
Language	−0.26	0.16	−0.22	0.25	0.16	0.38	−0.24	0.20	−0.10	0.59	−0.07	0.72
Attention	−0.37	0.04	−0.54	0.002	−0.07	0.70	−0.45	0.01	−0.46	0.01	0.12	0.53
Processing speed	−0.13	0.48	−0.43	0.02	0.16	0.39	−0.18	0.34	−0.35	0.06	0.13	0.47
Executive function	−0.26	0.16	−0.15	0.45	0.04	0.82	−0.23	0.23	−0.15	0.42	0.21	0.26
Memory	−0.04	0.84	−0.24	0.20	0.06	0.74	−0.23	0.22	−0.20	0.30	0.12	0.52

Table P51.1. Continued.

	Cerebrospinal fluid						Plasma					
	Efavirenz		Nevirapine		Darunavir/r		Efavirenz		Nevirapine		Darunavir/r	
Cognitive domain	rho_{adj}	p	rho_{adj}	p	rho_{adj}	p	rho_{adj}	p	rho_{adj}	p	rho_{adj}	p
Motor function	−0.17	0.37	−0.40	0.03	0.20	0.29	−0.18	0.33	−0.40	0.03	0.10	0.58
Global	−0.32	0.08	−0.39	0.03	0.19	0.31	−0.41	0.02	−0.31	0.09	0.19	0.31

Plasma efavirenz exposure was associated with reduced mean cortical thickness (left: $rho_{adj}=-0.46$, p=0.03; right: $rho_{adj}=-0.55$, p=0.01) and CSF efavirenz exposure was associated with multiple white matter microstructural abnormalities. Greater plasma nevirapine exposure was associated with reduced grey matter volume ($rho_{adj}=-0.44$, p=0.02). Darunavir exposure was not associated with any neuroimaging abnormalities ($p>0.1$ for all).
Conclusions: In this small observational cohort we observed evidence of CNS toxicities associated with both efavirenz and nevirapine but not with darunavir exposure. Future work assessing the clinical implications of these findings with longitudinal data are justified as well as assessing associations with newer third agents.

P52

Assessment of bone health of women living with HIV aged>50 years in clinical practice: are we doing enough?

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Background: Osteoporosis predominantly affects postmenopausal women worldwide and yet there are few data about bone health in women living with HIV (WLWH). We aimed to evaluate adherence to BHIVA guidelines which recommend:

- 3 yearly fracture risk assessment using the FRAX tool on women>50 years or postmenopausal
- Women at increased risk of fracture have their bone mineral density (BMD) measured, vitamin D levels optimised and antiretrovirals (ARVs) reviewed

Methods: Electronic patient records of WLWH aged>50 years were reviewed. Data were collected about: those risk factors required to calculate a FRAX score; risk stratification by FRAX; whether or not a DEXA was performed and the results; age at menarche, age at menopause; discussion and exposure to hormone replacement therapy (HRT), current ARVs; vitamin D assessment.
Results: Among 250 women attending for HIV care, 44 women aged>50 years were included. Mean age was 56.2 years (range 51–76) with 28/44 (64%) of black African and 9/44 (20%) of white ethnicity. 24/44 (54.5%) had a documented date of commencement of their menopause with 2/24 (8.3%) reporting an early menopause (≤ 45 years). Of the remaining 20, 5/20 (25%) had a hysterectomy, 3/20 (15%) were pre-menopausal, 7/20 (35%) were peri-menopausal. No information about menopausal status was recorded for 5/20 (25%) women. Age at menarche was not recorded for any of the women. HRT had been discussed in 10/44 (23%) and 3/44 (7%) were receiving HRT. 2 women had a history of a fragility fracture (2/44=4.5%) and 1/44 (2.3%) reported parental hip fracture.
29/44 (66%) had a documented FRAX score which was calculated in the remainder by the authors. Based on the FRAX score, 27/44 (61%) were at intermediate risk, with 21 of those (78%) becoming intermediate risk solely through inputting HIV as a secondary cause of osteoporosis. Of the 27 women at intermediate risk, 7 (27%) had been referred for a DEXA scan. Among 9 women who had a DEXA, all had evidence of osteopenia at ≥ 1 skeletal site but only one had osteoporosis (spinal).
Vitamin D was not checked in 18/27 (67%) of women at intermediate risk. 3/27 were already on supplements, 6/27 had levels checked of which 4 had deficiency (<30 nmol/l). 3 of those were subsequently prescribed supplements. 20/44 (45%) were currently on a Tenofovir-DF (TDF) based ARV regimen of which 8/20 (40%) had a documented reason for failure to switch; predominantly due to patient choice. Almost all 20/24 (83%) who switched were to a regimen containing Tenofovir alafenamide (TAF). The patient with osteoporosis was switched away from TDF.

Conclusions: Menstrual enquiry to ascertain postmenopausal state was suboptimal. A third of women did not have a documented FRAX score. A high proportion of women requiring a DEXA did not have it. The one osteoporotic patient was appropriately receiving bisphosphonates. We found a high prevalence of osteopenia amongst these women, most of who were switched from TDF to TAF. Our results suggest that an effective FRAX evaluation in post –menopausal WLWH could better identify those at risk of low BMD allowing for timely intervention.

P53

Audit of type 2 diabetes in people living with HIV: performance against NICE guidelines targets

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Background: The prevalence of Type 2 Diabetes Mellitus (T2D) in people living with HIV (PLWH) is higher than in the HIV-negative population. We conducted a clinical audit to identify patients with T2D amongst our cohort of PLWH, and evaluate whether diabetic control and standard of care meet current NICE guidelines.

Methods: PLWH seen at Chelsea and Westminster Hospital clinical sites with T2D were identified via an electronic search of laboratory tests (up to December 2015), using the following criteria: Hb1Ac>48 mm/moL (or >/=6.5%); fasting glucose>6.9 mmol/l; glucose level>11.1 mmoL. Electronic and laboratory records of patients were individually reviewed to confirm T2D and gather clinical data.

Results: Across 9131 available patient records, a T2D prevalence of 3% was observed. Of these 256 patients with T2D, 224 (88%) were males and 47% White British; 85.2% had suppressed HIV RNA (<40 c/mL) and median CD4 + cell count of 637 cells/mm3. Current ARV treatment included darunavir (35.1%), efavirenz (23.8%) and/or raltegravir (20.4%). TDF/FTC was used in one third of patients (32.8%), followed by ABC/3TC (15.6%).

Prevalence of past exposure to older ARVs was: 38.7% for zidovudine, 33.2% for stavudine, 29.7% for didanosine, 13.3%, for saquinavir and 7.42% for indinavir.

The most common comorbidities were cardiovascular disease (54.3%), dyslipidaemia and chronic kidney disease (17.2%). Sixty-two percent of patients were on treatment with metformin, followed by sulphonyureas (31.3%), insulin (25.0%), peptide analogues (17.2%), and 15.6% on diet control only.

Almost half (48%) of PLWH were not meeting desirable blood pressure targets and approximately 70% did not have LDL-cholesterol within T2D desirable ranges; 23.4% had Hb1Ac levels checked every six months; 48% had yearly checks of urine protein:creatinine ratio (uPCR), but only 4.3% had their urine albumin:creatinine ratio (uACR) checked yearly.

Conclusions: The majority of PLWH affected by T2D did not meet NICE targets nor were monitored appropriately. Many subjects were receiving ART associated with potentially increased renal or cardiovascular risk as well as drug interactions. Improved monitoring, modification of/or review of ARV treatment and updating of anti-diabetic prescribing (such as use of SGLT-2 inhibitors) in combination with better communication with primary care physicians may improve management.

As a result of this audit and to ensure better management and monitoring of PLWH diagnosed with T2D, we have initiated a specialist metabolic/HIV clinic.

P54

Body composition, bone mineral density and metabolic parameters in well-controlled ART-experienced HIV-positive men

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Background: Although lipodystrophy (in particular facial lipoatrophy, increased upper trunk fat, lipoatrophy of the arms and legs, and truncal lipohypertrophy) was common with older antiretroviral therapy (ART), metabolic syndrome (hypertriglyceridaemia, low HDL-cholesterol, hyperglycaemia and insulin resistance) and central obesity are becoming more common as people with HIV live to older ages. We investigated changes in trunk fat mass (TFM), limb fat mass (LFM) and total fat mass (ToFM), and factors associated with>10% increase in fat mass at week 48, including bone mineral density (BMD) at the hip and spine, in well-controlled ART-experienced HIV-positive men.

Methods: TFM, LFM, ToFM, glucose and lipids (cholesterol, triglycerides, HDL-cholesterol, LDL-cholesterol, cholesterol:HDL ratio) of HIV-positive men enrolled in a prospective study evaluating BMD were analysed for mean percentage change from baseline to week 48 using paired t-tests. Linear regression identified factors associated with TFM, LFM and ToFM at baseline. Logistic regression identified factors associated with>10% increase in TFM, LFM and ToFM at week 48.

Results: 422 men (mean age 47 [SD 9.8] years, 94.3% white, median HIV duration 9.6 [IQR 5.0–15.5] years, 90.3% on ART, 86.5% with HIV RNA<40) were included and 334 returned at week 48. There was a mean percentage increase in TFM (8.7 [95% CI 6.1,7.1], p<0.0001), LFM (5.3 [95% CI 3.7,7.0], p<0.0001), ToFM (6.4 [95% CI 4.5,8.4], p<0.0001) and glucose (3.9 [95% CI 2.1,5.7], p=0.002) and a mean percentage decrease in fat mass ratio legs:trunk (−0.26 [95% CI −1.06,0.53], p=0.01). But changes in total lean mass and lipids were non-significant. In multivariable analyses adjusted for ethnicity and body mass index (BMI), older age was associated with higher TFM and ToFM (0.41 [95% CI 0.24,0.59], p<0.0001 and 0.47 [95% CI 0.05,0.89], p=0.02, respectively). Higher non-dominant femoral neck BMD was associated with higher LFM and ToFM (2.66 [95% CI 0.51,4.80], p=0.02 and 5.34 [95% CI 0.84,9.85], p=0.02, respectively) but was borderline with TFM (2.54 [95% CI −0.30,5.39], p=0.08). There was no association between HIV-related factors and TFM, LFM or ToFM. Lower cholesterol:HDL ratio was associated with>10% increase in TFM, LFM and ToFM, higher nadir CD4 count with>10% increase in TFM and LFM, shorter tenofovir exposure with>10% increase in TFM and ToFM and longer protease inhibitor exposure with>10% increase in TFM and ToFM (see Table P54.1). There was no association with age, ethnicity, reduced BMD at any site or BMI with>10% increase in TFM, LFM or ToFM.

Conclusions: In this well-controlled ART-experienced HIV-positive cohort, there was an increase in TFM, LFM and ToFM over time. A>10% increase in both trunk and limb fat was associated with lower cholesterol:HDL ratio, higher nadir CD4 count, shorter duration of exposure to tenofovir and longer duration of exposure to protease inhibitors. An association with these modifiable risk factors suggest general fat gain different to lipodystrophy. Addressing these risk factors and careful choice of ART could mitigate adverse metabolic consequences, which are important co-morbidities to address as patients age.

Table P54.1. Factors associated with >10% increase in fat mass parameters

	Trunk fat mass (TFM)				Limb fat mass (LFM)				Total fat mass (ToFM)			
	OR (95% CI)	P-value	aOR¶(95% CI)	P-value	OR (95% CI)	P-value	aOR*(95% CI)	P-value	OR (95% CI)	P-value	aOR* (95% CI)	P-value
Age, per 5 years	0.90 (0.80, 1.01)	**0.07**	0.89 (0.73, 1.09)	0.27	0.89 (0.78, 1.01)	0.06	1.06 (0.85, 1.32)	0.61	0.90 (0.79, 1.01)	**0.08**	0.90 (0.79, 1.01)	0.08
Ethnicity												
White	1.00	-	1.00	-	1.00	-	-	-	1.00	-	1.00	-
Other	0.71 (-0.50, 1.92)	0.25	2.13 (0.29, 15.44)	0.45	-0.08 (-1.42, 1.27)	0.91	-	-	0.49 (-0.72, 1.70)	0.43	2.27 (0.32, 16.28)	0.42
BMI												
<25	1.00	-	1.00	-	1.00	-	1.00	-	1.00	-	1.00	-
25-30	0.52 (0.31, 0.85)	**0.01**	0.76 (0.37, 1.53)	0.44	0.45 (0.26, 0.78)	**0.004**	0.72 (0.32, 1.60)	0.42	0.46 (0.27, 0.79)	**0.003**	0.67 (0.32, 1.37)	0.27
>30	0.53 (0.26, 1.10)	**0.08**	1.15 (0.35, 3.85)	0.82	0.17 (0.06, 0.51)	**0.0003**	0.46 (0.09, 2.46)	0.36	0.47 (0.22, 1.01)	**0.05**	1.36 (0.41, 4.50)	0.62
Reduced BMD at hip or spine*												
No	1.00	-	1.00	-	1.00	-	1.00	-	1.00	-	1.00	-
Yes	0.69 (0.06, 1.31)	**0.03**	1.46 (0.57, 3.75)	0.43	0.55 (-0.10, 1.20)	**0.09**	1.69 (0.63, 4.55)	0.30	0.67 (0.04, 1.30)	**0.04**	1.12 (0.44, 2.86)	0.82
Cholesterol:HDL ratio	0.72 (0.59, 0.88)	**0.002**	0.65 (0.46, 0.90)	**0.01**	0.64 (0.51, 0.80)	**<0.0001**	0.65 (0.44, 0.95)	**0.03**	0.75 (0.61, 0.93)	**0.01**	0.64 (0.46, 0.90)	**0.01**
Nadir CD4, per 10 cells/uL	1.01 (1.00, 1.03)	**0.09**	1.03 (1.00, 1.06)	**0.05**	1.01 (1.00, 1.03)	**0.06**	1.04 (1.01, 1.08)	**0.01**	1.01 (0.99, 1.02)	0.29	1.03 (1.00, 1.06)	0.07
Cumulative tenofovir exposure, years	0.90 (0.81, 1.01)	**0.07**	0.83 (0.71, 0.97)	**0.02**	0.98 (0.87, 1.10)	0.71	0.99 (0.85, 1.16)	0.90	0.92 (0.82, 1.03)	0.14	0.84 (0.72, 0.98)	**0.03**
Cumulative protease inhibitor exposure, years	1.03 (0.95, 1.11)	0.31	1.12 (1.01, 1.24)	**0.03**	1.02 (0.94, 1.12)	0.60	1.07 (0.96, 1.19)	0.20	1.05 (0.97, 1.14)	0.22	1.14 (1.03, 1.26)	**0.01**

BMD: bone mineral density; BMI: body mass index; LFM: limb fat mass; TFM: trunk fat mass; ToFM: total fat mass
*Reduced BMD measured as a composite variable (T-score <-2.5 if ≥50 years or Z score <-2.0 if <50 years)
¶Adjusted for ethnicity and cumulative PI exposure
*Adjusted for cumulative TDF and PI exposures
Adjusted for ethnicity, nadir CD4 count and cumulative TDF and PI exposures

P55

Chronic liver disease assessment in HIV mono-infected individuals: HeAL (HIV non-virAl Liver disease) study update

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Background: In view of advances in treatment of viral hepatitis, future chronic liver disease (CLD) in people living with HIV (PLWH) is likely to be due to non-viral hepatitis aetiologies. Potential contributors include antiretrovirals (ARV), metabolic syndrome (MS), alcohol consumption or HIV-infection itself. Understanding risk factors and early recognition of CLD is essential to prevent long-term morbidity and mortality. This study investigates the prevalence and predictors of CLD in people with HIV infection alone and abnormal liver function.
Methods: This prospective cohort study commenced in December 2015. Inclusion criteria were PLWH, negative viral hepatitis serology and elevated transaminases over 6 months. Consenting individuals completed an Alcohol Use Disorders Identification Test (AUDIT) questionnaire, underwent MS assessment and transient elastography. Study definitions: significant hepatic steatosis (SHS) – controlled attenuation parameter (CAP) $\geq$ 237 dB/m; significant hepatic fibrosis (SHF) and cirrhosis – liver stiffness measurement $\geq$ 7.1 kPa and>11.5 kPa respectively. Those identified with cirrhosis were referred to a combined liver/HIV clinic. SHF risk factors consisted of MS, hazardous drinking (AUDIT $\geq$ 8) and hepatotoxic ARV use (didanosine, stavudine, nevirapine and efavirenz). Data presented as mean $\pm$SD, or numbers (percentage).
Results: Out of 429 eligible individuals, 194 have been recruited to date. Mean age was 51 $\pm$ 10.1 years, 178/194 (91.8%) being male, 188/194 (96.9%) having undetectable viral load, mean HIV duration being 16 $\pm$ 7.1 years. Overall prevalence of SHS was 61% (n=119), and SHF was 21% (n=42), of whom 29 (69%) had SHS and 14 (33%) had cirrhosis.
On binary logistic regression predictors of SHF included: CAP (per unit increase, hazard ratio (95% CI) 1.007 (1.001–1.013); p=0.031) and number of metabolic risk factors (1.379 (1.045–1.820); p=0.023). 65/91 (71.4%) of individuals with MS had SHS compared to 49/95 (51.6%) without (p=0.005). The only independent factor associated with SHS was BMI (1.144, (1.049–1.248); p=0.002).
No classical risk factors were identified in 8 (19%) individuals with HSF. Despite these individuals having shorter HIV duration, peak ALT and AST were higher and CAP lower compared to those with risk factors for SHF (Table P55.1). Although not statistically significant, there was a trend towards lower baseline CD4 despite comparable baseline viral loads.

Table P55.1. Characteristics of patients with SHF with/without risk factors

	No risk factors (n=8)	Risk factors (n=34)	Significance
Age, years	47.3 $\pm$ 9.6	54.2 $\pm$ 8.6	p=0.064
HIV duration, years	9.3 $\pm$ 4.8	17.4 $\pm$ 8.1	p=0.016*
Baseline viral load (copies/mL)	463131 $\pm$ 1087213	491909 $\pm$ 838625	p=0.956
Baseline CD4 (10^6/l)	360.1 $\pm$ 249.2	621.0 $\pm$ 1474.3	p=0.672
ALT peak (iu/l)	138.4 $\pm$ 41.8	62.9 $\pm$ 3.33	p $<10^{-6}$*
AST peak (iu/l)	104.2 $\pm$ 79.7	38.1 $\pm$ 3.53	p=0.045*
CAP (dB/m)	232.6 $\pm$ 48.5	298.8 $\pm$ 60.2	p=0.01*

Conclusions: There is considerable liver disease burden in PLWH with elevated transaminases, with approximately two-thirds having SHS and one fifth SHF. MS risk factors appear to predict both SHS and SHF. However, one fifth of individuals with SHF have no identifiable risk factors, raising the real possibility of immune dysregulation or direct hepatotoxicity of HIV in this subpopulation. Our data highlights the need to implement screening strategies for CLD in PLWH alone to ensure timely Hepatology input.

P56

Clinical events and outcomes among an HIV-2 positive cohort in a central London HIV clinic

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Background: Virological and immunological responses to ART among HIV 2 cohorts are not well described by systematic studies. Unlike HIV 1,no RCT evidence is available on starting ART based on CD4 count (Gilleece et.al, 2010). Studying clinical events before and after the initiation of ART in HIV 2 in our clinic cohort can provide a retrospective review of HIV 2 care outcome.
Methods: A single centre retrospective review of patients living with HIV 2 (PLWH2) under follow up in our HIV clinic. Data was collected from electronic patient records on age, sex, gender,baseline CD4 count, HIV viral load, CD4 recovery following ART initiation, clinical events before and after ART initiation and lost follow up profile to determine outcomes following ART initiation.
Results: 24 PLWH2 (15 Female, 8 Male) registered with our HIV clinic were included. All were heterosexual and are of black African ethnicity. 5 had HIV 1 co-infection. Of the 24, 12 remain under follow up, 6 had died and 6 (33%) were lost follow up.
Among those on regular follow up (n=12, Mean age 57 years), 2 were ART naive with undetectable HIV 2 viral load. Among those on ART (n=10), 9 have a

current CD4 count>200 cells/ul, 6 have CD4 count>350 cells/ul and 4 have CD4 cell count>500 cells/ul. Eight of the 10 on ART had baseline CD4 counts>350 cells/ul. A mean increase in CD4 count of 34 cells per year (n=4) was achieved among those on long term ART (Range: 3 to 13 years). Four of the 12 under follow up had a HIV related comorbidity prior to ART initiation, 2 had AIDS defining illnesses including 1 with Kaposi sarcoma at a higher CD4 count of 723 cells/ul. None of them developed an AIDS defining illness post ART initiation. HIV 2 viral load was undetectable in 8 of the 10 on ART.
Among those lost to follow up (n=6, Female 4, Male 2), 2 were ART naïve and 4 had discontinued ART. None had an AIDS defining diagnosis and 2 had CD4 counts<200 cell/ul.
Among those who died (n=6), 4 had AIDS defining illnesses and 4 had CD4 counts less than 200 cells/ul. 3 were on ART.
Conclusions: HIV2 infection in our clinic cohort was associated with comorbidities and mortality when CD4 count was<200 cells/ul irrespective of ART status. Immunological recovery was slow. No AIDS defining illnesses were observed following the introduction of ART at higher CD4 counts. The lost to follow up rate was high in this clinic cohort.

P57

Discontinuation of dolutegravir-containing regimens due to adverse reactions: real-world data

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Background: As integrase inhibitors increasingly become part of first line antiretroviral (ARV) therapy, we have observed a number of people living with HIV (PLWH) discontinuing dolutegravir (DTG) containing regimens due to adverse drug reactions (ADRs). Rates of discontinuation in phase III trials were low (2%), but post-marketing data show higher rates, particularly due to central nervous system (CNS) effects. These have thought to be more frequent in females, older patients and when DTG is co-administered with abacavir.
We present real world data of DTG use in our 10,371 patient cohort with the aim to assess ADR-related discontinuation rates, influence of NRTI backbone and whether stopping DTG led to resolution of symptoms.
Methods: All PLWH prescribed DTG from April 2011 to September 2018 were identified using the electronic patient records and data was collected through retrospective case note review.
Results: 2543 patients were prescribed a DTG-containing regimen over the 7.5 year period. The median age was 44, 91% were male and 75% were White. The median CD4 count closest to the time of starting was 651 cells/mm^3.
308 (12%) patients discontinued DTG due to ADRs. Median time to discontinuation was 132 days. Sixty-nine patients stopped DTG due to other reasons and were thus excluded from this analysis. Reasons for discontinuation are summarised in Table P57.1:
72% (1831) of PLWH prescribed DTG-based regimens were given Triumeq. 13.9% (255) of these discontinued Triumeq due to ADRs, compared to 7.4% (53) who discontinued other DTG-based regimens due to ADRs. Higher discontinuation rates were also seen in women compared to men (15.7% vs. 11.7%) and in women>60 compared to women<60 years of age (23% vs. 14.7%).
69% of PLWH who switched off DTG showed full or partial improvement of symptoms at follow up.

Table P57.1.

Adverse drug reaction category	n (%) (n=308)	n (%) of which were on Triumeq
CNS – sleep disturbance	106 (39.4)	90 (85)
CNS – psychiatric	55 (20.4)	48 (87)
Gastrointestinal	34 (12.6)	31 (91)
Nervous system	19 (7.1)	15 (79)
General	13 (4.8)	8 (62)
Dermatological	12 (4.5)	12 (100)
Musculoskeletal	11 (4.1)	10 (91)
Hepatobiliary	9 (3.3)	7 (78)
Metabolic	4 (1.5)	3 (75)
Ear, Nose & Throat	3 (1.1)	2 (67)
Other	3 (1.1)	2 (67)

Conclusions: In our large urban cohort, we observed higher rates of ADR-related discontinuation than those reported in the literature. CNS related ADRs led to over half of all discontinuations. This could be due to higher rates of mental health issues and recreational drug use in real-world cohorts. The higher rate of discontinuation in women, especially if older, requires further analysis. However, this was also demonstrated in a previous cohort study. Our data highlight the need for inclusion of underrepresented populations in clinical trials. As Triumeq was associated with higher rates of discontinuation compared with other regimens, further work is needed to directly compare tolerability of DTG when coupled with different NRTI backbones.

P58

Eligibility of patients in a community HIV setting for switching rilpivirine/emtricitabine/tenofovir disoproxil fumarate (R/F/TDF) to tenofovir alafenamide(TAF)

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Background: NHS(E)guidance recommends switching TDF regimens to TAF, based on NICE classification of kidney disease and estimates 20–30% of these patients could benefit clinically. Definite contraindications are GFR<60 ml/min and/or ACR>30 mg/mmol, with relative C/I of moderately reduced renal function (GFR 60–90 ml/min) in presence of recognised chronic kidney disease risk factors. We conducted an audit of all patients commenced on R/F/TDF (Eviplera) since 2011 to assess renal parameters against guidance to identify those either subsequently switched to R/F/TAF (Odefsey), or considered eligible.
Methods: Retrospective cross-sectional audit of patients on R/F/TDF for 12 months or more was undertaken. Electronic patient records were used to collect CKD risk factors, eGFR, serum phosphate, urine dipstix, urine protein creatinine ratio(UPCR), urine albumin creatinine ratio (ACR) and other urinary markers of tubular function. Sub analysis of association of serum phosphate with intention to switch to TAF was included. Post switch data on renal function was recorded.
Results: 40 adults were recruited 47% on 1st regimen and 53% switch regimen due to prior drug toxicity. Mean age 42 years with 20% female and 25% black ethnicity. Mean duration on R/F/TDF was 4.2 yrs. eGFR ranges were: Normal(>90 ml/min) 40%, mild reduction (61–89 ml/min) 50%, CKD-3 (<60 ml/) 10%. 38% had CKD risk factors – with age>50, high cardiovascular risk and hypertension the commonest. 5 patients (12.5%) were switched due to CKD-3, 2 had heavy proteinuria and moderately reduced eGFR including one suspected proximal renal tubulopathy. To date subsequent renal parameters are improving in this cohort with increasing eGFR/reduced proteinuria. Of the 20 pts with mildly reduced eGFR (no proteinuria) 45% had no CKD risks and remained on TDF, 35 % had 2 or more risks and considered eligible for TAF. Very low phosphate levels(<0.6 mm/l) were associated with CKD-3 in 100% and moderately low levels (0.6–0.8 mm/l) in 41% considered for TAF.
Conclusions: This audit reflects NHS(E) estimate of TDF to TAF switch eligibility of around 30% with 12.5% definite and further 17.5% with relative C/I. Whilst CKD is often multifactorial in origin it would appear in this cohort that improvement in renal function does occur following TAF switch. And that reduced phosphate levels should always be evaluated alongside other markers of renal dysfunction.

P59

FRAX is a good predictor of bone mineral density in people living with HIV of black ethnicity and/or low fracture risk

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Background: People living with HIV (PLWH) are at higher risk of reduced bone mineral density (BMD) and fragility fracture compared to the general population. Possible causes include: an increased prevalence of general fracture risk factors (GFRFs) in PLWH; a direct effect of HIV; and a contributory role of antiretroviral therapy.
HIV guidelines recommend FRAX® (www.sheffield.ac.uk/FRAX) for fracture risk assessment in PLWH. FRAX®, however, incorporates GFRFs but not HIV disease-specific factors.
Hypotheses:: 1. Both HIV disease-specific factors and GFRFs contribute to reduced BMD and fracture risk in PLWH.

2. FRAX® correlates poorly with BMD in PLWH.
Methods: Patients were recruited from Sheffield Teaching Hospital's HIV outpatient clinics.
Study Phase One:: The prevalence of GFRFs and fractures were recorded in PLWH. FRAX® 10-year osteoporotic fracture probabilities (FRAX® scores) were calculated.
Study Phase Two:: A subset of the Phase One cohort were recruited proportionately by race, gender and FRAX® scores (low, intermediate and high) for dual-energy X-ray absorptiometry BMD measurements, vertebral fracture risk assessment and blood and urine sampling for biochemical and immunological markers. T-cell and monocyte subsets were assessed using flow cytometry.
Results:
Study Phase One:: 625 patients were recruited: 53% black (of whom 65% female) and 47% non-black (of whom 81% male), mean age 40.7 $\pm$ 9.6 years, mean body mass index (BMI) 26.6 $\pm$ 5.1 kg/m^2. GFRFs were prevalent, but FRAX® scores and fragility fracture prevalence were low.
Study Phase Two:: 114 patients were recruited: 46% black (71% female) and 54% white (84% male), mean age 47.9 $\pm$ 10.8 years, mean BMI 27.6 $\pm$ 5.4 kg/m^2. FRAX®-incorporated GFRFs and increased cumulative protease inhibitor exposure (but no other HIV disease-specific factor) were significant independent determinants of reduced BMD. A higher percentage of peripheral blood non-classical monocytes was also associated with reduced BMD. There was a significant negative correlation between FRAX® scores and BMD in black patients (p=0.003 for lumbar spine and total hip) and between FRAX® hip scores and total hip BMD in white patients (p=0.030). Total hip BMD differed significantly between patients with low FRAX® hip scores (0.999 $\pm$ .113 g cm^{-2}) and high FRAX® hip scores (0.882 $\pm$ .136 g cm^{-2}) (p<0.001). Incorporation of femoral neck BMD measurements into FRAX® increased predicted fracture risk in higher risk white patients, but without alteration in clinic management derived from FRAX® calculated without femoral neck BMD.
Conclusions: FRAX®-incorporated GFRFs were the predominant determinants of reduced BMD. FRAX® correlated well with BMD and may be of value for fracture risk assessment in specific HIV-positive patient subgroups.

P60

Haemophagocytic lymphohistiocytosis in a UK adult population living with HIV

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Background: Haemophagocytic lymphohistiocytosis (HLH) is a syndrome characterised by severe systemic inflammation and abnormal immune activation. HIV, and associated opportunistic infections, is a recognised cause of HLH. Furthermore it has a high reported mortality in people living with advanced HIV.
Methods: The database of a single UK HIV centre was searched for all ferritin results>2,500 μg/l between January 2008 and January 2016. We investigated whether these patients had other markers of HLH tested and, if so, whether these fulfilled the criteria for a diagnosis of HLH (HLH-2004 guidelines). We also reviewed which other investigations were performed, and determined process and outcome measures, including length of hospital stay, ICU admission, and death.
Results: In total, 35 predominantly male (85%) patients [median CD4 count 121 cells/mm3, 37% suppressed on antiretroviral therapy, ARV] were identified. The median ferritin was 4,812 (IQR 4,689 – 11,593). All had a full blood count (FBC), 86% had abdominal imaging, 74% had either triglycerides/fibrinogen measured and 43% had a tissue biopsy (bone marrow or lymph node). 14 (40%) had all five other HLH criteria measured (temperature, spleen size, FBC, triglycerides +/- fibrinogen, biopsy).
Of these 14 patients, 4 (29%) fulfilled 4 or more HLH diagnostic criteria (out of a total of 6). All 4 had advanced HIV (median CD4 count 21) and were off ARV therapy (median HIV load 518,000) with a median ferritin of 15,784. Two (50%) had haemophagocytosis on biopsy and were treated using the HLH-2004 protocol. Extra-HIV triggers were identified in two of four – disseminated TB in one and Multicentric Castleman's (with known pulmonary Kaposi's sarcoma) and disseminated *Mycobacterium kansasii* in the other.
Three of 4 (75%) required ICU admission. All died after a median of 17.5 days from admission to hospital. The other 10 patients who didn't meet HLH diagnostic criteria had a lower median ferritin level (8,141) and all survived.
Conclusions: This study confirms the high mortality in PLWH with diagnostic criteria for HLH and advanced HIV. Despite ferritin being a non-specific marker, when it is significantly elevated in this population the possibility of HLH should be considered and a structured set of investigations carried out to investigate this. Measuring the other markers of HLH is important to ensure prompt diagnosis and treatment that may reduce the chance of death.

P61

Hepatic safety of bictegravir/emtricitabine/tenofovir alafenamide (B/F/TAF)

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Background: Integrase strand transfer inhibitors (INSTIs) are recommended internationally in treatment guidelines for patients with HIV-1 infection, and the class is recognised for its potency and safety. Dolutegravir and raltegravir, however, have warnings for hepatotoxicity. Bictegravir (BIC) is a novel, unboosted INSTI co-formulated with FTC and TAF (B/F/TAF) that is approved for treatment naïve and suppressed people living with HIV switching therapy. Here we examine the hepatic safety profile of B/F/TAF.
Methods: Laboratory and adverse events were pooled from two ongoing, randomised, double-blind studies of treatment-naïve adults treated with B/F/TAF vs. DTG + 2 NRTIs through 96 weeks of therapy (Studies 1489 & 1490). Participants with HCV infection were allowed to enroll in either trial, and those with HBV were allowed to enroll in Study 1490, since TAF was used in both treatment arms. Overall safety and efficacy have been reported previously. Any participant who received at least 1 dose of B/F/TAF was included in the safety analysis set.
Results: 634 participants were randomized and treated with B/F/TAF equaling over 1183 person-years of exposure. There were no discontinuations of study drug due to hepatic adverse events (AEs). Serious hepatic AEs were reported for 2 participants on B/F/TAF, 1 with hepatocellular injury due to acute hepatitis A and 1 due to acute cholecystitis. Overall, five participants had Grade 3 or 4 hepatic AEs, including the 2 serious AEs noted above. There was 1 AE of acute hepatic failure/hepatic encephalopathy due to an overdose (including acetaminophen), and 2 instances with transaminase elevations reported as Grade 3 AEs: 1 ALT increase associated with Grade 4 CK elevation, and 1 with simultaneous ALT, AST, and GGT elevation. Transaminase elevations in both were transient and resolved on study drug. No participant met criteria for drug induced liver injury. Grade 3 or 4 ALT or AST elevations were seen in 18 participants on B/F/TAF (2.9%); most had alternative medical etiologies, and those of unclear etiology were transient and resolved on therapy. Safety for those with HBV (n=8) or HCV (n=5) infection at baseline was similar to the full study population.
Conclusions: There were no treatment related hepatic adverse events and no discontinuations due to hepatic AEs in over 600 treatment-naïve participants treated with B/F/TAF through 96 weeks. B/F/TAF provides a safe and efficacious treatment for HIV infection without evidence of hepatotoxicity.

P62

Hepatitis HIV co-infection clinic: is a specialised service worth implementing in medium sized HIV cohorts?

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Background: 8% of our HIV cohort is co-infected with hepatitis C. Chronic infection with both HIV and Hepatitis C (HCV) has a potential adverse bidirectional impact. Widespread use of antiretroviral therapy (ART) has resulted in a dramatic decline in AIDS related mortality. With patients living longer, the complications associated with long term HCV infection has emerged as one of the most important clinical issues for people living with HIV (PLWH). Treatment barriers, polypharmacy, drug-drug interactions and liver toxicity are few of the common challenges encountered in this cohort. By integrating Hepatitis and HIV care pathways, patients are offered a more streamlined service with fewer clinic appointments, and real-time decisions can be made on drug switches and complications to improve the quality of care that co-infected patients receive. For these reasons, a specialist bimonthly co-infection clinic, managed jointly by a HIV specialist and a hepatologist was set up in November 2014.
Methods: We analysed the data of the co infection clinic lists done in 2016 and 2018 for the reasons of referrals, treatment administered if any and outcome of the attendance.
Results: Out of the 95 co-infected cohort, 65 referrals were made between 2016 and 2018. 30 of these were for hepatitis C (46.1%).14 patients were seen in view of hepatitis B infection (21.5%), 10 for suspected non alcoholic fatty liver disease (NAFLD) (15.3%), 7 because of alcohol related liver disease (10.7%), 2 in view of portal hypertension secondary to drugs or portal vein thrombosis (3%) and 1 in view of autoimmune hepatitis (1.5%). 6% had more than 1 pathology identified.
83% of our Hepatitis C positive cohort successfully completed direct acting antiviral treatment (DAAs) and have reached SVR (12 weeks). The treatment regimens used were various. The most common prescribed DAA regimens were Sofosbuvir/ ledipasvir, elbasvir/grazoprevir and Ombitasvir/ paritaprevir+ritonavir. 2 patients (3%) failed first line DAA and have been retreated with second line therapy. They have both successfully eradicated Hepatitis C.
The remaining untreated co-infected patients have either been declining treatment, not engaging with our services or are being investigated for other complex medical issues, hence putting the hepatitis C treatment on hold
Conclusions: Now that hepatitis C is curable with a relatively short course of DAA with minimal to none side effects, getting our co-infected patients engaged in our services is more important than ever before. A Joint HIV-Hepatitis clinic allows patients to receive a comprehensive and consistent approach to evaluation for treatment, support during treatment and careful monitoring and management of treatment response and complications in a timely and efficient manner. This type of streamlined service not only improves the quality of care but also the patient experience.

P63

HIV is not associated with sleep-disordered breathing

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Background: Sleep-disordered breathing (SDB) and related intermittent hypoxaemia are associated with increased risk of cardiovascular disease, cognitive dysfunction, malignancy, and impaired quality of life. Although high SDB prevalence has been reported in persons living with HIV (PLWH), studies have been small, lacked relevant HIV-negative controls, relied on risk scores or self-reported sleep apnoea rather than objective testing, and/or selectively enrolled PLWH with sleep symptoms potentially biasing findings. We compared overnight oximetry measures in PLWH and HIV-negative persons with similar lifestyles participating in the Pharmacokinetics and Clinical Observations in People Over Fifty (POPPY) study.
Methods: We recruited a subset of POPPY participants (PLWH $\geq$ 50 y/o, PLWH<50 y/o, and HIV-negative controls $\geq$ 50 y/o) without regard to sleep symptoms or sleep apnoea risk. Participants undertook overnight finger pulse oximetry with centralized quality control,with oxygen desaturation index (ODI) defined as number of oxyhaemoglobin desaturation events $\geq$ 4% per hour of sleep and SDB as>5 ODI events per hour. Associations between HIV status and ODI were assessed using linear regression; multivariable models included HIV-status/group, age, race, BMI, marital status and hypertension.
Results: 453 of 475 (95%) participants provided analysable data: 231 older PLWH (median age 60y), 102 older HIV-negative (60y) and 120 younger PLWH (45y). SDB was present in 42%, 41% and 28% of the groups, respectively. Older PLWH had a median (IQR) ODI of 3.7/h (1.8, 7.5), which was similar to that of the older HIV-negative group (4.2/h [2.1, 7.9]; p=0.76) but higher than that of the younger PLWH (2.7/h [1.5, 5.7]; p=0.02). In multivariable analysis (Table P63.1), increased ODI was associated with higher BMI, older age, and marital status, but not HIV status (difference in ODI of −0.02/h [95%CI: −1.4 to + 1.4; p=0.97]).
Conclusions: SDB is prevalent in older individuals, both with and without HIV. More severe overnight hypoxaemia is associated with expected risk factors such as obesity and older age, but not with HIV status. Further research will determine the effect of SDB and hypoxaemia on relevant HIV outcomes such as cognition, systemic inflammation, and immune activation.

Table P63.1. Multivariable linear regression model of relationship between covariates and oxygen deaturation index (ODI).

Variable	Increase/decrease in ODI (95% CI)	p-value
HIV-status		
PLWH vs HIV-negative	-0.02 (-1.41 to 1.36)	0.97
Male vs female	1.53 (-0.19 to 3.25)	0.08
Age [per 5-year]	0.34 (0.02 to 0.66)	0.04
Black-African vs white	1.56 (-0.60 to 3.73)	0.16
BMI [per 5 kg/m^2]	1.77 (1.11 to 2.42)	<0.001
Marital status		0.04
Single vs. Married/In a partnership	-0.27 (-1.46 to 0.92)	0.66
Divorced vs. Married/In a partnership	1.89 (-0.51 to 4.29)	0.12
Widow/Widower vs. Married/In a partnership	5.05 (0.59 to 9.52)	0.03
Hypertension	1.00 (-0.48 to 2.48)	0.18

P64

Homelessness among people living with HIV: a hospital inpatient cohort review

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Background: The prevalence of homelessness in London is high, with an estimated 4751 people having slept on the streets in autumn 2017 (Fransham, 2018). Homeless people have a shorter life expectancy (47 years) compared to the UK general population (Thomas, 2011). There are recognised HIV-related health inequalities among homeless individuals. Multiple co-morbidities often exist and depression are high. The management of co-morbidities, mental health problems, HIV, and possible drug dependence in this cohort is complex. Whilst it is recognised that homelessness is associated with poorer levels of engagement with HAART and poorer treatment outcomes, the health impact of homelessness on people living with HIV (PLWH) in London is not well explored.
Methods: Objectives: To study our cohort of homeless PLWH admitted to our central London hospital trust between November 2017 to October 2018. Data on demographics, comorbidities, coinfections, HIV related illness and ART outcome variables (CD4 count and HIV viral load) were collected.
Data was collected from HIV team ward lists and inpatients referred to the homeless team were included to the study. Data was analysed according to our study objectives. Excel software was used for statistics.
Results: 268 PLWH were admitted at our central London trust during the study period. Of these, 36 (13%) were referred to homeless team. Their mean age was 44 years (Range: 29 to 58 years), 29 were male (80%), 7 were female

(20%), 17 (47%) were Caucasian and 19 (53%) were of non-white ethnicity. 21 (59%) had CD4 count<350 cells/ul during the study period.
35 of the 36 were on ART. 75% (n=27) had poor adherence and 57% (n=20) had existing drug resistance. 62% (n=22) on ART had detectable HIV viral load>200 copies/ml. 36% (n=13) of the patients failed to attend their HIV Follow-up clinic appointments multiple times.
47% (n=17) of all had existing or previous AIDS defining illness and 13% (n=5) had an existing cancer diagnosis. 55% (n=20) were injecting drugs users and 36% (n=13) had chronic Hepatitis C. 58% (n=21) had mental health illness and there were adult safeguarding concerns for 30% (n=11).
Reasons for their recent hospital admission were bacterial infections (36%), Mental Health issues (19%), CNS pathology (16%), Substance misuse (13%), GI tract pathology (9%) and Malignancy (7%).
The average length of inpatient admission during the study period of 1 year for problems excluding mental health, substance misuse and cancer treatment was 34 days (Range: 4 to 109 days). 59% (n=13) of the cohort had multiple inpatient admissions and 34% of those given a follow up appointment in the post-discharge clinic did not attend.
Conclusions: In this cohort of homeless PLWH there were high rates of poor ART adherence, failing to turn up for clinic appointments, unsuppressed HIV viremia, ART drug resistance, low CD4 count (< 350 cells/ul), recreational drug use, Hepatitis C co-infection, mental health illness, and vulnerability to bacterial infections and AIDS associated illness. Homeless individuals may benefit from a person-centred multidisciplinary and multiagency approach towards their care, addressing both medical and psychosocial issues for their wellbeing and to prevent morbidity and early mortality both in hospital and in the community.

P65

Impact of application of new American hypertension guidelines to a UK HIV cohort

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Background: People living with HIV (PLWH) are at increased cardiovascular risk with international studies quoting a 1.5–2 fold relative risk compared to peers, controversially this was not validated in the UK by Q-Risk3.
Hypertension (HTN) is the leading risk factor for cardiovascular disease, accounts for 6% of adult deaths worldwide and is responsible for 45% and 51% of deaths due to heart disease and stroke respectively. In 2018 the American College of Cardiology (ACC) updated guidance stating high blood pressure (BP) should be treated at a lower threshold of 130/80 mmHg rather than 140/90 mmHg. The first reclassification of hypertension in over 20 years and UK guidelines are due to be addressed in 2019
Methods: Prospective audit of patients attending a large London HIV clinic. Excluded were emergency visits, as anxiety levels may have led to an elevated BP. We retrospectively collected data on HTN medications, ART regime, creatinine, cholesterol.
Findings were presented to staff and then we re-audited BP, HTN control.
Results: Initially we collected data on 111 PLWH, female 27% (n=30), mean age 49.6 yrs and mean BP 135/82 mmHg. Almost a quarter (23%, n=26) were on hypertensive medication but only 58% were well controlled. 37% of PLWH had a systolic BP>140 mmHg which increased to 57% using the ACC guidelines of>130 mmHg. Only 21% had a diastolic BP>90 mmHg, this increased significantly to 62% when using>80 mmHg.
Post feedback, 129 PLWH were audited; noted mean BP was lower: 128/78 mmHg Vs 135/82 mmHg, with more on BP medication: 33 (26%) Vs 26 (23%). Of those on medication only 12 (36%) were poorly controlled Vs 11 (42%)
Conclusions: Hypertension is common in PLWH with estimates up to 54.4% in high-income countries. Using the ACC guidelines a significant proportion of our patients (57% and 62%) will be diagnosed with systolic and diastolic hypertension respectively, significantly higher than the nationally recorded hypertension rates of 13.8%.
Many cardiovascular related deaths could be averted by the simple application of basic knowledge about blood pressure for which there has been broad consensus for decades. The ACC guidelines support a lower threshold for BP intervention and targets. By increasing awareness and informing staff we have been able to reduce average BP and increase adherence to current UK Guidelines.
We propose that the ACC Guidelines be applied to PLWH on ART in order to reduce long term cardiovascular risk.

P66

Multimorbidity burden in an HIV population aged over 50 in South East England

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Background: HIV is now a chronic illness with people living with HIV (PLWH) expected to achieve near normal life expectancy. However, PLWH are ageing with high comorbidity burden. Multimorbidity (MM), is usually defined as the presence of two or more comorbidities. MM has negative outcomes – increased mortality rates, poorer quality of life and increased healthcare costs. This study aimed to determine the comorbidities present, MM prevalence and MM associations among PLWH aged>50 receiving HIV care in South-East England.
Methods: Cross-sectional data was collected from Oct 2014-Oct 2015. Comorbidities were self-reported with confirmation via medication records/laboratory results. MM was defined as two or more chronic health conditions in addition to HIV. Descriptive analyses and bivariate statistics (chi-squared, t-test and Mann-Whitney U tests) were used to explore MM associations.
Results: 253 participants with HIV were recruited (90.9% male, median age 59.6 years, mean duration HIV infection 14.9 years). MM was present in 62.9% of participants. Common comorbidities included hyperlipidaemia (47.8%), depression (28.5%), neuropathy (27.3%), osteoarthritis (24.1%) and hypertension (24.0%). MM was associated with increasing age (p=0.023), male gender (p=0.044), longer HIV duration (p<0.001) and markers of greater prior immunosuppression in lower nadir CD4 count (p=0.040) and prior AIDS diagnosis (p=0.049) but not current CD4 count. MM was associated with frailty (Fried phenotype) (p<0.001) and current symptoms of mood disorder (p<0.001). Those with MM had a higher burden of non-antiretroviral polypharmacy (p<0.001).
Conclusions: MM in this cohort of older adults with HIV was common. Age, gender, frailty and HIV-factors were associated with MM. These may help identify those in whom proactive management and optimisation of comorbidities are most needed. Additionally, clinicians should be alert to guidance around MM which focus on patient-centred and coordinated care plans over historical single organ condition management.

P67

Neurological admissions in people living with HIV: a review of inpatient admissions to an inner-city teaching hospital

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Background: In 2018 the UK became one of the first countries to reach the UNAIDS 90/90/90 target. Although there has been a decrease in new HIV diagnoses over the last 2 years, both late diagnoses (defined as a CD4 count<350) and morbidity associated with this remains a challenge. Neurological presentations in people living with HIV (PLWH) can be due to an AIDS defining illness, encephalopathy, cerebrovascular accidents, psychiatric conditions or other comorbidities, and may result in cognitive impairment.
Methods: We conducted a retrospective analysis of inpatient admissions in PLWH (or diagnosed on admission) presenting with a neurological complaint over the last 3 years in a London-based inpatient unit. Information was gathered using electronic patient records, radiological findings, virological and immunological markers.
Results: Between 2015 and 2018, neurological admissions made up 16% of the total inpatient admissions in PLWH. In total there were 94 admissions with a neurological complaint, including 12 readmissions. 57% were male and 43% female, with a median age of 45 years (range 18–67 years). The median length of stay (LOS) was 7 days (range 1–386 days). 68% of patients had a CD4 count of<350 on admission. All of the 8 new diagnoses were 'very late' presenters (defined as CD4 count of<200). 61% of patients had detectable viraemia (VL>200 copies) despite 63% of patients reported to be taking antiretroviral therapy (ART) at the time of admission.

The most common presentations were headache (+/- signs of meningism) in 28 patients (30%), focal neurological deficits in 26 patients (28%), acute confusional state in 10 patients (11%), psychiatric presentations in 9 (10%) and seizures (with no focal deficit) in 8 (9%). The remainder of patients (13) had other presentations including cognitive decline (non-acute) and collapse. 49 patients (52%) had a CT brain scan, and 72 (77%) also had an MRI brain scan, 60% of which were reported as acute changes. 63% of patients had a lumbar puncture during admission.
In 51 patients (54%) the final diagnoses was directly attributable to HIV, including 24 AIDS-defining illnesses and 14 diagnoses of HIV encephalopathy (HIVE). Other diagnoses included psychiatric conditions (7 patients) and admissions related to drugs and alcohol (9 patients).
Conclusions: Neurological admissions were common in our cohort of inpatients living with HIV. A large proportion of people had low CD4 counts with high viral loads. Neurological diagnoses can have a significant impact on quality of life and patient outcomes. These are important factors in addressing adherence and earlier diagnosis, representing challenging targets for the future.

P68

No bones about it: high rates of osteoporosis in women living with HIV

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Background: Low bone mineral density (BMD) is more common in people living with HIV (PLHIV), but particularly in women and with an even higher prevalence post menopause. There is no published UK data. Current BHIVA guidelines suggest that risk factors for reduced BMD should be assessed at first HIV diagnosis and prior to ART commencement and then every 3 years in individuals on ART who are $\geq$ 50 years of age. BMD assessment initially by FRAX is advised with DXA scanning being performed in all women aged $\geq$ 65 years and women>50 years old if they have an intermediate to high FRAX score and/or additional risk factors We have identified osteopenia in 46% and osteoporosis in 8.5 % in our male HIV population, median age 47 years. As part of our specialist women's HIV clinic, which aims to manage the many facets of care needed for women living with HIV (WLHIV), we also assess bone health of all women and now present our data.
Methods: Women were screened using DXA (Dual-energy X-ray absorptiometry) scanning based on age, menstrual status and the presence of additional risk factors for low BMD. BMD was defined using WHO classification T scores as normal >−1.0, osteopenia −1.0 to −2.5 and osteoporosis <−2.5. We analysed demographic and menstrual data of all women screened with DXA scanning.
Results: 40 women underwent DXA scanning. Results were available for 37 women with a mean age of 51 years (range 36–84). 14/37 (38%) of women had normal BMD, 15/37 (41%) were osteopenic and 8/37 (21%) of women had osteoporosis. The median age was 51 years (42–58) for women with normal BMD, 48 years (36–60) for women with osteopenia and 53 years (46–84) for women with osteoporosis. Women with osteoporosis were mostly postmenopausal (7/8, 88%) but one was not. Women with osteopenia were also predominantly postmenopausal (8/15, 53%) but 6/15 (40%) were still menstruating regularly. Women who identified as Black African were more likely to have osteopenia (9/15, 60% vs 5/15, 33% White UK, 1/15 Thai, 17%) but otherwise equal numbers of women were White UK or Black African in the other two groups.
Conclusions: Although our study is small we have found high rates of osteopenia but more importantly more double the rate of osteoporosis in women vs men in our population with a median age of only 53 years. This data shows WLHIV are at high risk of low BMD at a younger age than women without HIV. Each standard deviation loss in BMD and age increase of 5–7 years has been shown to double fragility fracture rates putting women at high risk of frailty as they age One-third of the UK HIV population are female and the average age of women with menopause in the UK is 52 years. Larger studies are needed to explore this further as current BHIVA monitoring guidelines may be failing women putting them at risk of increased frailty as they age.

P69

People living with HIV in the UK have a higher risk of progression to CNS disorders and other comorbidities than matched counterparts

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Background: Survival rates of people living with HIV (PLHIV) have dramatically improved in the last two decades, resulting in an increasing number of people ageing with HIV as a direct result of treatment effectiveness. Building on previous database analyses in the UK, the purpose of this study was to assess the real-world risk of progression to central nervous system (CNS) disorders and other pre-specified comorbidities in people diagnosed with HIV versus non-HIV controls.
Methods: The Clinical Practise Research Datalink (CPRD) was analysed to provide anonymised linked primary care records for this prospective open cohort study. CPRD captures approximately 10% of UK general practitioners records and is representative of the UK as a whole/ Year of HIV diagnosis was used as an index date for matching non-HIV controls. PLHIV were matched 1:2 with adult controls according to age, gender, GP practise and Hospital Episodes Statistics (HES) eligibility. People with a comorbidity of interest on or prior to the index date were excluded, along with their matched case. Comorbidities of interest were: CNS disorders (depression, sleep disorders and anxiety), renal disease, osteoporosis, diabetes, cardiovascular disease, hypertension, stroke, cancer and infection. Relative risk of developing the comorbidity was estimated using the Cox proportional hazards model (hazard ratio (HR), 95% CI).
Results: There were 2,945 HIV cases matched to 5,890 non-HIV controls. The risk of progression to CNS disorders was significantly higher for HIV cases than non-HIV controls, with hazard ratios of 1.7 (1.3–2.1 CI) and 1.5 (1.3–1.8 CI) for sleep disorders and depression, respectively. Statistically significantly higher HR's were also observed for osteoporosis (2.6, 1.6–4.2), stroke (1.9, 1.3–2.9), cancer diagnosis (1.9, 1.6–2.3) and serious infections (1.5, 1.3–1.8). No statistical difference was observed for end stage renal disease, diabetes, hypertension and cardiovascular disease.
Conclusions: HIV cases, compared to their matched controls, had a significantly higher risk of progression to CNS disorders, including depression and sleep disorders, as well as other notable comorbidities such as osteoporosis, stroke and cancer. This shows that although survival has improved over time in both cases and controls, the risk of developing CNS complications and other comorbidities remains elevated in PLHIV. Whilst HIV-associated comorbidities such as renal and cardiovascular disease in PLHIV are well documented, the risk and management of CNS disorders is less well discussed. Sleep disorders and depression have been linked to poor mental health, and with this being at the forefront of the NHS strategy, better awareness of the risk of CNS disorders for PLHIV is needed in order to make more informed treatment decisions and maintain good quality of life as people age with HIV.

P70

Poor virological control in young adults with perinatally acquired HIV (PAHIV): could modern antiretroviral therapy (ART) options provide a ray of hope for the future?

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Background: Young adults with PAHIV are reported to have poorer control and outcomes than others with HIV. We report the results of a single center retrospective study at a tertiary referral center.
Methods: Patients with PAHIV who attended a dedicated young adult HIV service between January 2010 and October 2018 were identified through electronic records. We reviewed demographics, ART and resistance history, co-morbidities and viral load (VL) suppression.
Results: We identified 57 patients, with median age 22 (range 17–32), of whom 40% (n=23) were male and 87% of black ethnicity (n=51). Median age at transition from paediatric services was 17 (range 15–22).

Median CD4 count at last measurement was 489 cells/μl (range 10–1,034), CD4<200 cells/μl 12% (n=7), CD4<50 cells/μl 7% (n=4); 38% (n=22) had a nadir CD4<200 cells/μl.
Only 61% (n=35) had a VL<50 copies/ml when last measured, 73% (n=42) VL<200 copies/ml. There was no significant difference in VL measured 1 year pre vs. 1 year post transition to adult clinic (median 61 vs 19, paired t-test p=0.29).
Median number of changes in ARV regimen: 4/patient (range 1–15); 56/57 (98%) were on ART, of whom 93% (n=52) were on a three drug NRTI-based regimen, including PI 62% (n=32), NNRTI 10% (n=5) and INI 29% (n=15). One patient was on a four drug regimen. Of the three on a NRTI-sparing combination, two were receiving the compassionate access long acting injectable combination of cabotegravir and rilpivirine (both VL<20 copies/ml), one was on PI plus INI. 23% (n=13) were on a single tablet regimen (STR) and 16% (n=9) were on a combination of Descovy and darunavir/cobicistat and therefore potentially eligible for STR Symtuza.
58% of patients (n=33) had genotypic resistance to at least one drug class (single class, 36% [n=12]; dual class 45% [n=15]; triple class 18% [n=6]). There were no documented INI resistance mutations. Of the 16 patients with NNRTI resistance, 11 (69%) were fully sensitive to rilpivirine and therefore potentially eligible for long acting injectable therapy.
Lifetime admission frequency was median 3/patient (range 0–26) and 36% (n=21) had previous AIDS defining illness.
Of the 16 patients with a recorded cognitive assessment, we identified a high rate of morbidity: learning impairment (n=4), ADHD (n=1), autism (n=1) and memory impairment (n=4). Of 24 patients with a recorded psychiatric assessment, 70% (n=17) had anxiety and/or depression, three had a history of suicide attempt or self-harm.
Conclusions: Our data add to growing evidence that characterises this group as having poor virological control, complex resistance and suboptimal outcomes. We identify a striking prevalence of psychological morbidity that likely contributes to and may also arise from poor disease control. Pill burden is an issue for many young people; our data show that despite resistance mutations, most patients may be able to achieve virological suppression on injectable ART, and new STR Symtuza could provide a ray of hope for those who need a PI.

P71

Reclassification of renal failure using modified KDIGO classification and comparison between a UK versus Japanese HIV cohort

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Background: HIV-1 positive individuals face adverse consequences beyond HIV itself, including traditional risk factors for the development of chronic kidney disease (CKD) and additional nephrotoxic effects of antiretroviral therapy. Therefore, CKD remains an important comorbid condition in people living with HIV (PLWH) and an emerging concern among HIV-negative persons receiving pre-exposure prophylaxis.
Methods: A retrospective analysis from a large London HIV outpatient clinic over a 20 month period (02.2017 – 09.2018). Urine protein creatinine ratio (uPCR) data was retrieved from the hospital pathology laboratory database, along with demographic data and estimated Glomerular Filtration Rate (eGFR) within 6 months of the uPCR result; eGFR was adjusted for the Afro-Caribbean population (x1.21).
Patients were categorised according to the modified Kidney Disease Improving Global Outcomes (KDIGO) 2012 classification, replacing Albumin Creatinine Ratio (uACR) with Protein Creatinine Ratio (uPCR). (Table P71.1.)
Results: 8,400 uPCR tests were performed in 2941 PLWH during this period; 94 patients were excluded due to urine contamination/leakage, or absence of recorded eGFR within 6 months of a uPCR result, leaving 2847 PLWH with data to be analysed. Mean age was 49.7 years (SD ± 10.3), 24.9% were female, 56.7% white caucasians and 29.6% were of black African/Caribbean ethnicity.
Using the traditional methods of proteinuria an eGFR we were able categorise our cohorts of patients indiually (Tables P71.2 and Table P71.3 respectively). This shows that using proteinuria alone 2107 (74%) PLWH would be classed as normal, and using eGFR only 50 PLWH (1.8%) had high to severe renal disease (i.e. CKD G3b to G5). The modified KDIGO classification uses a combination of proteinuria and eGFR and demonstrates the percentage of patients that fall into each catergory (Table P71.4.) Using the reclassification (Table P71.5) demonstrates that using uPCR overestimates the normal/low risk category (74% V 69.9%). eGFR underestimates severe renal disease 1.8% V 5.9% (Table 5. High + Very High Risk). Table 5 also compares results with that of a Japanese HIV population who were also able to analyse the kidney function of a large HIV cohort.
Conclusions: Using the modified KDIGO 2012 classification we were able to identify more PLWH with moderate, high and very high CKD than with eGFR measurement alone. We identified PLWH who require further medical intervention, and those who require closer monitoring. Compared to a Japanese cohort we have higher attrition rate of CKD in our HIV clinic population.

Table P71.1. How to use proteinuria to classify severity of renal disease

Measure	Normal to mildly increased (A1)	Moderately increased (A2)	Severely increased (A3)
ACR (mg/mmol)	< 3	3 – 30	> 30
PCR (mg/mmol)	< 15	15 - 50	> 50
Protein reagent strip	Negative to trace	Trace to +	+ or greater

Table P71.2. Distribution of severity of CKD using uPCR

PCR	mg/mmol	Number	Percentage
Normal	<15	2107	74.0%
Moderate	15-50	645	22.7%
Severe	>50	95	3.3%
	Total	2847	

Table P71.3. Distribution of severity of CKD using eGFR

CKD	eGFR	Number	Percentage
G1	>90	1299	45.6%
G2	60-89	1328	46.6%
G3a	45-59	170	6.0%
G3b	30-44	21	0.7%
G4	15-29	13	0.5%
G5	<15	16	0.6%
	TOTAL	2847	

Table P71.4. CKD distribution of PLWH determined by the modified KDIGO 2012 classification

CKD Grading	eGFR	A1	A2	A3
G1	>90	35.0%	9.8%	0.9%
G2	60-89	34.9%	10.6%	1.1%
G3a	45-59	3.8%	1.8%	0.5%
G3b	30-44	0.2%	0.3%	0.2%
G4	15-29	0.1%	0.1%	0.3%
G5	<15	0.0%	0.1%	0.5%

Table P71.5. Prevalence using KDIGO classification. UK Population (n=2, 847) vs Japanese (n=1,447) of PLWH.

Risk	Prevalence of CKD	
	UK	Japan
Low	69.9%	85.9%
Moderate	24.2%	11.0%
High	3.9%	2.1%
Very High	2.0%	1.0%

P72

Renal disease in HIV: early experience with tenofovir alafenamide in Worcestershire, UK

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Background: With an aging population of people living with HIV in the UK, comorbidities of chronic kidney disease (CKD), heart disease and osteoporosis become increasingly important. Tenofovir Alafenamide (TAF) has been demonstrated to carry a lower risk of kidney disease when compared to Tenofovir Disoproxil Fumarate (TDF). Since 2016 NHS England approved the use of TAF for patients with CKD stage 3, or stages 1 and 2 where additional risk factors for renal disease exist. We present our experience with TAF in an ageing cohort in Worcestershire NHS Trust, including audit of compliance with current guidelines.
Methods: Patients treated with TAF-containing regimes, and all patients with CKD stage 3 were identified through existing databases. The cohort was assessed for features of existing renal disease and factors including cardiovascular risk (Qrisk), diabetes and hypertension. Screening for renal disease was through urine dipstick, creatinine and eGFR measurement, with urine protein:creatinine ratio for patients at high risk. Progression, stabilisation or improvement of CKD after commencing TAF was identified, and the compliance of our service with NHSE standards was analysed.
Results: 257 patients are managed with antiretroviral therapy by the Worcestershire HIV service (median age 55; 77% male), of whom 43 (17%) are on TAF. Of the entire population 14% (36 patients) have CKD stage 3; 81% of these patients are on TAF, 17% are on other TDF-sparing regimes. The cohort of patients on TAF have high rates of comorbidities (64% diabetic or hypertensive). Kidney disease was the most common reason for switching to TAF, with NHSE criteria being fully met in 91% of cases. Progression of CKD occurred in 4% switching to TAF, with improvement in 36% and stabilisation in 60%.
Conclusions: In this ageing cohort of people living with HIV and multiple comorbidities, TAF has become an important therapeutic option, in accordance with NHSE guidance. We have observed improving renal function in patients switched to TAF, however the causes of CKD in this cohort are multi-factorial. With growing successful experience using TAF in these populations, we must consider whether to extend its use to patients without CKD, but with risk factors for renal disease.

P73

Risk of hospitalisation in people living with HIV in the UK according to demographic, socioeconomic, mental health and lifestyle factors

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Background: Little is known about the rate, causes and factors associated with hospitalisations in people with HIV in the UK in the recent ART era.
Methods: Participants of a questionnaire study recruited at a single hospital site who consented to data linkage were included. A medical record review identified occurrence and ICD-10 classified causes of hospital admissions from questionnaire completion (2011–2012; baseline) until 1 June 2018. Poisson regression was used to calculate rate ratios (RR) of all-cause hospitalisation/death according to clinical, demographic, socioeconomic, mental health and lifestyle factors.
Results: 293 events (276 hospitalisations and 17 deaths) occurred in 798 individuals (162 had ≥1 event): an overall rate of 6.2/100 person-years. 80% of hospitalisations were emergencies. Being a non-black woman or heterosexual man, financial hardship, no stable partner, having children, smoking, high alcohol use, non-disclosure of HIV status, injection drug use (IDU) and depressive symptoms predicted hospitalisation/death (Table P73.1).

Table P73.1. Baseline factors and risk of hospitalisation/death

	RR (95% CI)		
	Unadjusted	Age-adjusted	Adjusted***
Gender / sexual orientation / ethnicity (vs. MSM*)			
Black MSW**	1.6 (0.9, 2.6)	1.4 (0.8, 2.3)	–
Non-Black MSW	2.8 (2.0, 3.9)	2.7 (1.9, 3.7)	–
Black women	0.7 (0.4, 1.1)	0.7 (0.4, 1.2)	–
Non-Black women	1.8 (1.3, 2.7)	1.9 (1.3, 2.8)	–
Money for basic needs (vs always)			
Mostly	1.2 (0.9, 1.6)	1.2 (0.9, 1.7)	1.3 (0.9, 1.7)
Sometimes	1.7 (1.2, 2.3)	1.8 (1.3, 2.4)	1.7 (1.2, 2.4)
No	2.3 (1.6, 3.1)	2.3 (1.7, 3.2)	2.3 (1.6, 3.2)
No stable partner	1.9 (1.5, 2.4)	1.8 (1.4, 2.3)	1.9 (1.5, 2.5)
Has children	1.9 (1.5, 2.4)	1.7 (1.4, 2.2)	1.7 (1.2, 2.4)
Current smoking	1.6 (1.2, 2.2)	1.7 (1.3, 2.3)	1.7 (1.3, 2.2)
High alcohol use (AUDIT C)	1.6 (1.2, 2.2)	1.5 (1.1, 2.0)	1.5 (1.1, 2.1)
Non-disclosure of HIV status	1.8 (1.2, 2.6)	1.8 (1.2, 2.7)	1.5 (1.0, 2.4)
Drug use past 3 mo. (vs. none)			
Non-IDU	0.8 (0.7, 1.1)	0.9 (0.7, 1.1)	1.0 (0.7, 1.3)
IDU	3.1 (2.1, 4.7)	3.6 (2.4, 5.5)	4.2 (2.7, 6.4)
PHQ-9 depression (vs. none)			
Mild	2.0 (1.5, 2.7)	2.0 (1.5, 2.7)	1.9 (1.4, 2.6)
Moderate	2.3 (1.7, 3.2)	2.4 (1.7, 3.3)	2.3 (1.6, 3.1)
Severe	2.6 (1.9, 3.6)	2.6 (1.9, 3.6)	2.6 (1.9, 3.6)
CD4/mm^3			
Per 150 higher	0.9 (0.8, 0.9)	0.9 (0.8, 0.9)	0.9 (0.8, 0.9)
Viral load			
>50 copies/ml	1.8 (1.4, 2.3)	1.9 (1.5, 2.5)	1.8 (1.4, 2.3)

*MSM=men who have sex with men
**MSW=men who have sex with women.
***Adjusted for gender/sexual orientation/ ethnicity and age.

Conclusions: Socioeconomic hardship, poor mental health and adverse lifestyle factors are important predictors of hospitalisation/death in people with HIV. Better understanding of causal mechanisms is needed to inform possible interventions. Given the high costs of hospitalisation such interventions could be cost effective.

BHIVA Research Awards winners 2017, Fiona Lampe and Colette Smith

P74

Routine IGRA testing of people with HIV provides few opportunities to prevent TB

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Background: BHIVA guidelines (2017) recommend testing people with HIV (PWH) from high- and medium-Tuberculosis (TB)- incidence countries for latent TB infection (LTBI) regardless of their CD4 cell count and receipt of antiretroviral therapy, and those from low-incidence countries if they have additional TB risk factors. Our clinic, which cares for a large cohort of people who were raised in high TB-incidence countries, introduced routine Interferon Gamma Release Assay (IGRA) testing at first presentation to the HIV service for all new patients in January 2018.
Methods: We conducted an audit of IGRA implementation and IGRA results. PWH new to the service were identified from monthly HIV and AIDS Reporting System reports. Demographic and clinical data were abstracted from electronic patient records. In people with positive or borderline IGRA test results, opportunities for TB prevention were explored. In people without IGRA results, reasons for this were ascertained and summarised.
Results: From January to September 2018, 100 PWH met the criteria for IGRA testing (new HIV diagnosis n=48, re-presentation for care n=7, transfer of care n=45). The median (IQR) age was 42 (34, 52) years, 34% were female, 50% of black ethnicity, 13% had a history of intravenous drug use, median CD4 cell count 353 (194, 603) cells/mm^3, and median HIV RNA<20 (<20, 485) c/mL. An IGRA result was available for 56 individuals; 3 (5.4%) had a positive IGRA test result, a further 3 had indeterminate test results, and 50 had a negative IGRA test. All 3 persons with positive IGRA tests, and 2 of 3 with indeterminate IGRA tests, had a history of treated TB. The sixth person attended once and was then lost to follow up. Reasons for not having an IGRA test (n=44) included logistic issues (aged samples, incorrect samples; n=15), IGRA testing not being part of the transfer/inpatient pathway (since included; n=19), or alternate pathways into care (prison, specialist clinics, clinical trials, nursing home, other; n=10).
Conclusions: We report a low IGRA positivity rate among this ethnically diverse population of PWH, many of whom had risk factors for LTBI. Despite IGRA tests forming part of the "baseline" and "transfer" set, achieving complete IGRA testing cover of all new patients proved challenging.

P75

Routine monitoring of adults with HIV-1 over 40

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Background: As antiretroviral treatment is progressing, HIV patients are increasing becoming an ageing population with other co morbidities which can be HIV related or non-related. Older patients also can be more likely to be subjected to polypharmacy and therefore have more risk of drug interactions. According to the 2016 BHIVA HIV-1 monitoring guidelines HIV patients over 40 should have an annual cardiovascular risk assessment and those over 50 should have a fragility fracture risk assessment every 3 years. In order to provide optimal patient care for older HIV patients it is important to ensure we are following the BHIVA guidelines for routine monitoring. Our service undertakes QRISK 2/3 and FRAX score for cardiovascular risk and fragility fracture risk respectively.
Methods: A retrospective review of 20 HIV-1 patients over 50 who had recently attended our service was performed to assess whether a cardiovascular risk assessment and fragility fracture risk assessment was undertaken according to the 2016 BHIVA HIV-1 monitoring guidelines.
Results: The age range of the patients was 50–74. 40% of patients had a cardiovascular risk assessment performed in the previous year. Of those who did not have a cardiovascular risk assessment performed 67% had lipids performed and 33% had lipids and HbA1c performed in the previous year. No patients had a FRAX score performed in the previous 3 years and only 15% were assessed for a DEXA scan.
Conclusions: It is important to ensure patients are being managed according to current guidelines to provide optimal care. To ensure this a HIV proforma has been designed which prompts for cardiovascular and fragility fracture risk assessment. Allied health professionals such as our HIV pharmacist could also undertake the cardiovascular and fragility fracture risk assessments as it may also affect antiretroviral prescribing.

P76

Switching to tenofovir alafenamide fumarate (TAF) in the over 60s: has it made a difference?

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Background: Co-morbidities including osteoporosis, chronic kidney disease (CKD) and cardiovascular disease are of increasing concern in the elderly population of people living with HIV (PLWH). The introduction of Tenofovir alafenamide-Emtricitabine (FTC-TAF) fixed dose combination provides an alternative NRTI backbone for PLWH with multiple co-morbidities. We assessed the impact on renal markers, lipid profile and bone mineral density in a cohort of PLWH aged over 60 attending clinic, following the introduction of FTC-TAF NHS commissioning guidelines in July 2016.
Methods: Using a database of PLWH aged over 60 regularly attending one HIV clinic in London in September 2017, a retrospective review of electronic notes and routine investigations was conducted. We collected biochemical results including estimated glomerular filtration rate (eGFR) using MDRD4 equation adjusted for ethnicity, urinary protein creatinine ratio (uPCR), lipid profile, bone mineral density (BMD) results. Antiretroviral history was collected. Analysis was stratified into two groups: Patients who switched from any antiretroviral regime to FTC-TAF based regimes with baseline results taken closest to time of FTC-TAF switch and current results from January 2019; and comparator group of patients on non-FTC-TAF antiretroviral regimes, with baseline results taken from September 2017 to current results in January 2019. Univariate analysis was performed using one way ANOVA and chi-square tests for continuous and categorical data respective, and multivariate analysis using multinomial logistic regression in SPSS.
Results: 279 patients (76% male and 24% female) were analysed, 164 (59%) had switched to FTC-TAF and 115 (41%) remained on non FTC-TAF regimes. Median duration on FTC-TAF regimes was 10 months (IQR 11–15 months) and median follow up time in comparator cohort was 12 months (IQR 5–16 months). Mean change in eGFR from baseline to current was higher in the FTC-TAF arm (+4.2 ml/min vs. +1.56 ml/min, p=0.049). After adjusting for switches to renal tubular transport inhibitors and duration on TAF, the improvement in eGFR remained significant (p=0.011). Switching to FTC-TAF resulted in a improvement in CKD stage in 34 (29.5% people compared to 7 (13.4%) in the comparator group (p=0.0012). The improvement in eGFR trended towards the baseline over time.
FTC-TAF switch was not associated with a significant difference in either mean uPCR change (FTC-TAF −19.79, 95% CI −35.88 to −3.71 vs. comparator group −2.31, 95% CI −26.76 to 22.14, p=0.239), mean change in total cholesterol (FTC-TAF+1.46, 95% CI 1.22–1.70 vs. comparator group +1.56, 95% CI 1.29–1.83, p=0.604) or number of new diagnoses of low BMD (T < −1.5) (FTC-TAF 15 (9.3%) vs. comparator group 11 (9.7%) p=0.908).
Conclusions: In PLWH aged over 60 switching to FTC-TAF based regime resulted in statistically significant improvements in eGFR and CKD stage, however eGFR appeared to trend towards baseline over time. There was minimal impact with lipid profile, and longer follow up is required to assess BMD changes over time. FTC-TAF may be beneficial in slowing rate of renal function decline in high-risk groups such as older PLWH. Long term follow up is required to assess impact of FTC-TAF in renal, bone and other co-morbidities.

P77

Withdrawn.

P78

A changing pattern of HIV inpatient admissions and complexity: from late diagnoses to defaulters

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Background: Following a noticeable shift in the nature of HIV inpatient admissions we undertook a review of HIV inpatient care. A previous review at our hospital between 2005 and 2010 showed the majority of inpatient work was related to those patients undiagnosed prior to admission (35% of total inpatients, requiring 53% of total inpatient days). 16% admissions were

in patients who had defaulted care, representing 13% of total inpatient days.
Methods: We investigated all hospital admissions at our centre in people living with HIV (PLHIV) from a prospectively recorded database from January 2017–December 2018 for clinical details and outcomes (pregnancy admissions were excluded).
Results: Over the review period there were 217 episodes, involving 142 patients, with a total of 2034 inpatient days:
Those patients newly diagnosed during that admission represented 13 (9.2%), with an average stay of 34.9 days accounting for 454 (19.7%) of the total inpatient days. 2 (15.4%) required ITU and 3 died during admission.
7 (53.8%) of these newly diagnosed were late diagnoses. 2 (15.4%) patients had an unknown CD4 as they died soon after the HIV test was taken. 6 (46.2%) had an AIDS defining illness during admission.
Those recently diagnosed in the preceding 6 months made up 9 (6.3%) of the admissions, with 12 (5.5%) admissions. 6 (66.7%) patients had AIDS defining illnesses, 1 of whom died.
Known defaulters comprised 45 (31.7%) patients, representing 83 (38.2%) inpatient admissions. Their average length of stay was 13.8 days but they accounted for 1363 (59.2%) total inpatient days, often self-discharging. 25 (52.1%) had an AIDS-defining illness. 9 (18.8%) required ITU admission and 9 (18.8%) died during admission.
Patients who engaged in care and virologically supressed comprised 75 (52.8%) patients, representing 121 (55.8%) episodes, with an average stay of 7.2 days, accounting for 856 (37.2%) total inpatient days. 10 (12.5%) patients were admitted with an AIDS-defining illness. None of these died during their admission.
46 (32.4%) patients were from other HIV centres, with 72 (33.2%) admissions, accounting for 779 (33.8%) bed days.
Overall, 37 (26.1%) patients presented with an AIDS-defining illness and 11 of whom died over the 2 year period, 4 with non-Hodgkin lymphoma (NHL). The average CD4 count of those who died was 65.8 cells/ml and all patients who died with a known CD4 count had advanced disease, 5 of whom (45.5%) had a CD4 <50.
Conclusions: The majority of our inpatient workload has shifted from looking after patients who are newly diagnosed with HIV during admission to those not regularly attending for HIV care.
Patients who default care accounted for 59% of our total hospital inpatient stays, with 19% requiring ITU care.
Many of these may not be known to the admitting centre and can be very challenging to engage. They often have a high degree of complexity, morbidity and mortality.
The benefits of universal HIV testing in promptly diagnosing new HIV cases is well-recognised, but also important in identifying those who have defaulted care and not disclosed their HIV status to the admitting hospital.

P79

The prevalence of liver fibrosis in patients living with HIV with abnormal liver function tests

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Background: Liver fibrosis is a predictor of mortality in many liver diseases including non-alcoholic fatty liver disease (NAFLD) and hepatitis B infection. However, screening for liver injury in people living with HIV infection largely relies on inclusion of liver function tests (LFTs) as part of routine blood monitoring. This project aimed to identify the prevalence of liver fibrosis in HIV infected patients with abnormal LFTs.
Methods: Data were collected retrospectively on all registered persons living with HIV infection who had an abnormal alanine transferase (ALT) and/or aspartate transferase (AST) and/or gamma-glutamyltransferase (GGT) between 1st January 2014 and 30th November 2017 as part of a local audit. Patients who had undergone fibrosis assessment with FibroScan® were identified and their electronic record reviewed.
Results: 106 of 536 (19.8%) patients with an abnormal LFT had a recorded FibroScan® assessment, of which 72 (67.9%) had an abnormal ALT. The ALT abnormality was mild (≤grade 1) in the majority (88.9%) of cases (ALT rise <1.25 × upper limit of normal (ULN)=23; ALT rise1.25-≤3 × ULN=41). An additional 6 patients had a grade 2 ALT abnormality (>3-≤5x ULN), 1 patient grade 3 (>5-≤10x ULN) and 1 patient grade 4 (>10x ULN). 57 (53.8%) patients were on combination antiretroviral therapy at the time of first abnormal LFT, of whom 46 (80.7%) had a viral load <50 copies/mL.
78 (73.6%) patients had a median FibroScan score of <7 kPa and were not thought to have significant liver fibrosis. The cause of abnormal LFT for each patient is presented by FibroScan® score in Table P79.1. 9 patients (32.1%) predicted to have significant liver fibrosis by FibroScan (>7 kPa) had a normal ALT and 15 (53.6%) had an ALT rise ≤1.25-≤3 × ULN (mild).

Table P79.1. Cause of abnormal LFT by fibrosis score

FibroScan score/Predicted fibrosis stage (Number of patients)	Attributed cause of abnormal LFT (Number of patients)
<7 kPa/F0-F1 (n=78)	NAFLD (n=38)
	No cause identified (n=15)
	Viral hepatitis (n=13)
	Alcohol (n=8)
	Antiretroviral therapy (n=3)
	Autoimmune hepatitis (n=1)
7–9 kPa/F2 (n=13)	Viral hepatitis (n=9)
	NAFLD (n=2)
	No cause identified (n=2)
9.1–14 kPa/F3 (n=6)	NAFLD (n=3)
	Viral hepatitis (n=3)
>14 kPa/F4 (n=9)	Viral hepatitis (n=6)
	NAFLD (n=2)
	Alcoholic liver disease (n=1)

Conclusions: 26.4% of this small cohort with abnormal LFTs had significant liver fibrosis predicted by FibroScan®. Viral hepatitis and NAFLD were the most common causes identified for each stage of liver fibrosis. ALT appeared to correlate poorly with presence of liver fibrosis and significant and reversible liver disease may be missed if fibrosis assessment tools are not included in screening algorithms.

P80

The road to eliminating hepatitis C virus in individuals living with HIV

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Background: The British HIV Association (BHIVA) have established elimination targets for Hepatitis C in patient's living with HIV. The aim is to cure HCV in 80% of those co-infection by April 2019, 90% by April 2020, and 100% by April 2021. Our objectives were to analyse the number of patients treated for hepatitis C in NHS Lothian (Regional Infectious Diseases Unit and Chalmers Sexual Health Centre) since 2014 and determine the proportion of HCV and HIV co- infected patients who remain untreated and the challenges facing treating the remaining cohort of individuals as well as monitoring for new cases.
Methods: We created a list of individuals who are known to be HIV and Hepatitis C co infected using the NHS Lothian database. From this list all individuals were included who had detectable Hepatitis C Virus RNA PCR, had attended clinic appointments within the last 12 months and were still living within NHS Lothian
Results: From January 2014 to December 2018 there were 92 HIV HCV coinfected individuals with positive HCV RNA. 81 have been treated for HCV, all of them had achieved an End of treatment response and 76 have a sustained virological response 12 weeks post treatment. Of the five not confirmed 4 have not yet reached 12 weeks post treatment and 1 has received follow up elsewhere post treatment. Cure rate is 82.6% (76/92) to 100% if the remaining 5 treated individuals achieve an SVR. There remain 11 individuals with positive HCV RNA who remain untreated. The reasons for the remaining untreated patients are often multifactorial; they include frequent clinic non attendance (N3), active mental health problems requiring stabilisation prior to treatment initiation (N5), temporary living accommodation resulting in

logistical challenges to treatment initiation (N2), incarceration with uncertainty surrounding duration and post release location (N1), on going challenges with establishing and maintaining HIV treatment (N2).
Conclusions: We plan to treat HIV HCV coinfected individuals if they are willing to pick up their HCV DAA from the community pharmacist once the choice of DAA has been made based on Drug drug interaction. Resistance to initiate HCV treatment is mostly due to individual's psycho-social factors; their willingness to engage and start DAA. We believe that we are on track to meet BHIVA's elimination targets for HCV in the HIV positive individuals.

P81

The use of specific antiretroviral agents in persons with HIV with relative contraindications

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Background: BHIVA guidelines recommend either avoidance or cautious use of some antiretroviral agents in persons with HIV (PWH) in specific circumstances. We examined whether PWH in the Pharmacokinetic and Clinical Observations in People Over 50 (POPPY) study were receiving antiretroviral therapy (ART) with the following relative contraindications: 1) abacavir (ABC) in those with high cardiovascular disease (CVD) risk, 2) tenofovir-DF (TDF) or atazanavir (AZV) in those with renal impairment and 3) efavirenz (EFV) in those with cognitive impairment (CI) and/or a history of mental health conditions.
Methods: Participants in the POPPY cohort were recruited from April 2013 to December 2015. High CVD risk was defined as 10-year predicted risk >10% on QRISK2/Framingham, or a history of ischaemic heart disease (IHD). Renal impairment was defined as eGFR (based on CKD-EPI calculator) <60 mL/min/1.73 m^2. CI was defined where cognitive function scores met the HIV-associated neurocognitive disorders (HAND) definition and symptomatic CI was defined where subjects with HAND answered 'yes' to ≥1 Simioni cognitive symptom questions. Mental health conditions included clinical diagnosis of depression, anxiety, psychiatric disorders or sleep disturbances. Simple, descriptive statistics were used to analyse baseline characteristics and the relative contraindication parameters.
Results: In total, 156, 783 and 273 POPPY participants were receiving ABC, TDF and/or AZV, and EFV, respectively (Table P81.1). High CVD risk criteria was met by 64 (41.0%) participants on ABC (QRISK2 >10%: n=44; Framingham >10%: n=54; and history of IHD: n=10). In this subgroup of individuals with high CVD risk on ABC, median (interquartile range, IQR) 10-year predicted CVD risk was 14.1% (3.8%–68.3%), n=56 on QRISK2 and 12.5% (2.8%–62.6%), n=57 on Framingham . Of those on TDF and/or AZV, 28 (3.6%) had renal impairment: 3/70 (4.3%), 2/37 (5.4%) and 23/676 (3.4%) of those on TDF+AZV, AZV without TDF, and TDF without AZV, respectively. Of those on EFV, 105 (38.5%) had CI, 36 (13.2%) had symptomatic CI and 73 (26.7%) had a history of mental health conditions. Median (IQR) cumulative years of exposure to EFV was 6.0 (3.8–9.5), 7.8 (5.3–10.7) and 6.4 (3.8–10.9) in those with CI, symptomatic CI and mental health conditions, respectively.
Conclusions: Whilst few PWH with renal contraindication were receiving TDF or AZV, high proportions of those with high CVD risk and cognitive problems/mental health conditions were receiving ABC and EFV, respectively. Limitations of this study include the subjective nature of the cognitive symptomatology, the relative contraindications being collected as part of clinical research procedures and a lack of longitudinal data.

P82

Trends in liver function test (LFT) derangement in those living with HIV: causes, consequences and considerations for future practice

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Background: Management of the HIV– infected cohort is becoming increasingly complex, with earlier commencement on antiretroviral treatment (ART) resulting in an ageing comorbid population.
We aimed to evaluate specific causes of LFT derangement present in our cohort, and draw conclusions regarding the nature, progression and correlation of LFT derangement with HIV control.
Methods: Retrospective case notes review of HIV patients attending follow-up between October-December 2017. 118 records were reviewed. Patients with LFT derangement on 2 consecutive visits during any stage of their care were recorded.
Results: 53 cases were identified. 35/53 (66%) were male. 22/53 (41%) were aged 41–50 years, and overall 49/53 (92%) were aged under 60. 47/53 (89%) had a viral load <50 copies/mL when their LFTs were abnormal. Similarly, 89% had a CD4 count >200 cells/μl. The pattern of derangement varied between isolated hyperbilirubinaemia (8/53,all secondary to atazanavir use), obstructive LFTs and marked transaminitis. Hepatotoxicity was defined as an ALT five times the upper limit of normal, and this was noted in 6/53 (11%) cases. Of these, 3/6 (50%) were caused by acute hepatitis C infection, with other causes secondary to antiretrovirals (dolutegravir) and alcohol/fatty liver disease. In these cases, 4/6 (67%) had resolution of LFTs after a median of 2 months once the underlying cause had been treated, and were undetectable on ART.
Conclusions: Abnormal LFTs may affect up to half of attendees at HIV clinic. Whilst the rate of incident Hepatitis C infection remains high amongst HIV infected MSM, within our cohort the overwhelming majority of cases (87%) were due to non-infective causes. In an ageing HIV population it is likely this will be a continued trend. This reinforces the need for heightened awareness and monitoring of metabolic dysfunction. In this context, we also recognise the potential impact of polypharmacy and therefore need for a comprehensive drug history.
It is worth noting liver imaging was undertaken in all hepatitis cases, and was rarely carried out to investigate non-infective causes. Imaging seldom yielded a significant abnormality.
Alcohol excess and substance misuse contributed to 19% of cases and reiterates the need to address these issues as part of a holistic approach to patient care.

Table P81.1. Baseline characteristics (n (%) or median (IQR) as appropriate) of subjects in the POPPY study

	POPPY participants on ART	On ABC	On ABC with high CVD risk	On TDF or AZV	On TDF or AZV with eGFR <60	On EFV	On EFV with CI	On EFV with symptomatic CI	On EFV with mental health conditions
No. subjects	1046	156	64 (41.0)	783	28 (3.6)	273	105 (38.5)	36 (13.2)	73 (26.7)
Age, years	53 (47 – 59)	51 (47 – 59)	58 (51 – 63)	52 (46 – 58)	60 (54 – 70)	53 (46 – 59)	50 (46 – 58)	50 (46 – 57)	52 (47 – 58)
Male	891 (85.2)	117 (75.0)	58 (90.6)	672 (85.8)	24 (85.7)	228 (83.5)	79 (75.2)	25 (69.4)	61 (83.6)
White	879 (84.0)	117 (75.0)	56 (87.5)	658 (84.0)	26 (92.9)	228 (83.5)	72 (68.6)	24 (66.7)	65 (89.0)
MSM	800 (76.5)	100 (64.1)	51 (79.7)	596 (76.1)	20 (71.4)	196 (71.8)	59 (56.2)	19 (52.8)	57 (78.1)

P83

Utility of a medicines optimisation review (MOR) compared with standard pharmaceutical care in people with HIV on cART

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Background: Older people living with HIV (PLWH) are particularly at risk of medicine-related problems (MRPs), due to longer life expectancy, increased prevalence of comorbidities, and polypharmacy at younger ages. However, evidence that medicine reviews reduce MRPs in HIV outpatients is limited, and many clinics have struggled to meet this standard due to staffing capacity constraints. We aimed to examine the utility and acceptability of a Medicines Management Optimisation Reviews (MOR) in HIV outpatients.

Methods: This is multicentred randomised controlled open study in 4 HIV outpatient services. PLWH were randomly allocated to receive either a MOR (intervention) or standard pharmaceutical care (control). Inclusion criteria included cART use and aged ³49 *or* aged <49 with another health condition requiring medication. Intervention patients received MOR consultations at baseline, 6 and 12 months. MOR consultations consisted of patient-orientated questionnaire promoting self-review and adherence and a MOR form designed to aid a structured patient consultation lasting approximately 30 minutes. Changes in health-related quality of life (EQ-5D-5L), acceptability, healthcare utilisation and intervention cost will be examined at 12 months. The primary outcome measure was the difference in number of MRPs between intervention and control groups at each time interval.

Results: Baseline data was collected from 200 patients; median age 58 (range 35–88) years, time on cART 15 (1–30) years, time since HIV diagnosis 20 (1–34) years, CD4 count 606.5 (98-1868), 97.5% had a VL<40 copies/mL, mean number of non-ART medications 6.6 (3.4), with the most common being statins (31%), antidepressants (25%) and analgesics (21%). A significantly greater number of MRPs were identified in patients on the intervention group, mean (SD)=1.27 (1.3) compared to controls, mean=0.5 (0.22), $t(89.26)=8.6$, $p < 0.001$. The most common MRP observed at baseline were drug-drug interactions (Table P83.1). Pharmacists fully resolved 45 (40%) MRPs at baseline consultation with 48 (42%) resolved within 6 months.

Table P83.1. Type of MRPs identified at baseline

Medication related problem	Intervention n=114	Control n=4
Potential adverse drug reaction	21	0
Potential drug-drug interaction	42	2
Dose adjustment	21	0
Problem with handling or administration	13	1
Unnecessarily complex regimen	5	0
Inappropriate off label use	4	0
Undertreatment	7	1
Other	1	0

Conclusions: MOR identified a significant number of MRPs compared to standard pharmaceutical care in PLWH attending outpatient services. Follow-up phases will explore the acceptability, cost and clinical implications of increased MRPs detection to guide recommendations for services.

P84

Utility of HCV core antigen for the diagnosis of acute HCV in high-risk individuals

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Background: To achieve micro-elimination of HCV in high-risk groups, early detection of acute HCV is important in order to link individuals into care/treatment and harm-reduction programmes. Current guidelines suggest regular anti-HCV screening with additional HCV-RNA for high-risk individuals with unexplained elevated serum aminotransferases. HCV core antigen (HCV-cAg) offers an alternative to HCV-RNA testing to confirm HCV viraemia. We describe the use of HCV-cAg testing for early diagnosis of acute HCV in high-risk individuals attending for sexual health screening (SHS) at a large central London Sexual Health/HIV clinic.

Methods: Architect HCV-cAg testing (Abbott Diagnostics) was introduced in 5/2015 replacing anti-HCV to screen all high-risk patients attending for a SHS. High-risk HIV+ patients were offered 3–6 monthly screening in addition to routine 6-monthly HIV-monitoring blood tests (inclusive of liver function tests). All HCV-cAg positive samples were tested for HCV-RNA. We reviewed all acute HCV diagnoses screened with HCV-cAg from 5/2015–7/2018. Data were collected on patient demographics, HIV status, HCV reinfection, HCV genotype, anti-HCV and seroconversion, transmission risk factors and serum ALT.

Results: 83 acute HCV infections diagnosed; all men, 98.7% MSM, 80% Caucasian, median age 45 years, 82% (68/82) HIV co-infected. 12 (14%) HCV re-infections. 80/83 (96%) diagnosed with a positive HCV-cAg test; 3/83 (4%) had negative HCV-cAg but HCV RNA+ (all 3 had raised ALT >300 at diagnosis). Median ALT at HCV-cAg+ was 138 IU/l (IQR 67-313). 14 (17%) had ALT<50 IU/l at time of first HCV+. All were HCV RNA+. Median time to peak ALT was 36 days (IQR 7-74) from first HCV-cAg+. 43/71 (61%) had anti-HCV testing at HCV+; 20 (44%) were anti-HCV+; 22/23 seroconverted a median 44 days (IQR 22-66) later. Table P84.1 summarises risk factors and characteristics. If acute HCV diagnosis was dependent on anti-HCV seroconversion and HCV-RNA testing with raised ALT, 37 (45%) infections may have been missed at the visit diagnosis was made.

Table P84.1.

	05/2015–05/2016	06/2016–6/2017	07/2017–07/2018	Total (%)
Total	29	33	21	83
Risk				
MSM	10 (34)	21 (64)	10 (48)	41 (49)
MSM+Chems	15 (52)	7 (21)	0	22 (27)
MSM+Chems+IDU	4 (14)	5 (15)	10 (48)	19 (23)
Heterosexual+IDU	0	0	1 (4)	1 (1)
Alcohol excess	5 (7)	3 (10)	2 (10)	10 (13)
HCV reinfection	2 (7)	3 (10)	7 (33)	12 (14)
Genotype				
1a	23 (79)	26 (79)	17 (80)	66 (80)
1b	1 (3)	1 (3)	2 (10)	4 (5)
3	2 (7)	4 (12)	0	6 (7)
4	3 (10)	2 (6)	2 (10)	7 (8)
ALT<50 IU/l at HCV+	6 (21)	2 (6)	6 (26)	14 (17)

MSM = Men who have sex with men, IDU = intravenous drug use.

Conclusions: Screening for acute HCV infection with HCV-cAg test provides an effective tool for early detection of HCV in high-risk populations. HCV-cAg tests are cheaper, with a quicker turnaround time than HCV-RNA tests. The addition of ALT testing to a screening strategy based on HCV-cAg maybe a cost-effective method to reliably detect acute HCV cases.

P85

Waist:hip ratio (WHR): a better predictor of cardiovascular risk (CVR) than body mass index (BMI) in people living with HIV (PLWH)

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Background: Antiretroviral therapy (ART) has dramatically reduced morbidity and mortality among people living with HIV (PLWH), including wasting syndrome. Metabolic and cardiovascular diseases are leading causes of death for PLWH in high-income countries.

Obesity is increasing in the HIV population but a lack of data exists in PLWH, and the association with cardiovascular risk. The aim to determine if central obesity (measured using waist to hip ratio) is a better predictor of CV risk than Body Mass Index (BMI) which is the current standard to define obesity in PLWH.
Methods: Single centre, prospective study performed in a large metropolitan HIV unit. 129 PLWH had weight, height, waist and hip circumference, and blood pressure (BP) recorded. Data on sex, age, ethnicity, past medical history including CV risk factors and kidney disease, smoking status and postcode was used to calculate waist to hip ratio (W/H), BMI and Q-Risk2 (Table P85.1).

Table P85.1. Waist to Hip Ratio Chart

Waist to Hip Ratio Chart		
Male	Female	Health Risk Based Solely on WHR
0.95 or below	0.80 or below	Low Risk
0.96 to 1.0	0.81 to 0.85	Moderate Risk
1.0+	0.85+	High Risk

Results: The study population included 30 (23%) women and 98 (77%) men; 76 (59%) Caucasian, 38 (30%) black African/Caribbean and 14 (11%) another ethnicity. In total, 43 (34%) were overweight and 31 (24%) obese using BMI measurement, this changed to 25 (20%) and 39 (30%) when using WHR. Q-Risk2 demonstrated that 82 PLWH (64%) had mild risk, 25 (20%) moderate, and 21 (16%) were high cardiovascular risk (excluding HIV as a risk factor). There was significant correlation between WHR and Q-Risk2 ($r=0.44$, $p<0.01$) but not between BMI and Q-Risk2 ($r=0.13$, $p=0.15$). ROC analysis demonstrates that WHR is able to predict Q-Risk2 (AUC 0.74, 95% CI 0.66–0.82, $p<0.01$) with a cut-off of 0.98 having 67% sensitivity and 81% for predicting Q-Risk2 >20 (high risk). WHR performed significantly better than BMI (AUC 0.58, 95% CI 0.49–0.67, $p=0.24$) at predicting Q-Risk2 ($p=0.02$ for difference).
Conclusions: Temporal change in waist circumference can indicate change in abdominal fat, with increased abdominal fat being associated with increased CV risk. WHR is superior to BMI at predicting high risk (Q-Risk >20%). It should be included as part of routine clinical assessment and lifestyle intervention implemented to reduce CV risk in PLWH.

P86

What is the significance of abnormal liver function tests in people living with HIV infection?

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Background: Current guidelines recommend screening persons living with HIV infection for liver injury with liver function tests (LFTs) as part of routine blood monitoring. Local protocol recommends investigation of abnormal alanine transferase (ALT) with aspartate transferase (AST), gamma-glutamyltransferase (GGT), autoimmune liver disease profile (antinuclear antibody and anti-smooth muscle antibody), viral hepatitis screen (hepatitis B and C), body mass index (BMI), and ultrasound scan.
Methods: The local guideline for management of abnormal LFTs in people living with HIV infection was audited. Data was retrospectively gathered on all registered persons living with HIV infection with an abnormal ALT and/or AST and/or GGT between 1st January 2014 and 30th November 2017.
Results: 536 patients with HIV-1 infection had a verified abnormal LFT during the audit period. The median number of patients tested per year of audit was 1475 (IQR 61). 294 (54.9%) had recorded abnormal LFTs prior to the start of the audit period. 345 (64.4%) were on combination antiretroviral therapy at the time of first abnormal LFT, of which 292 (84.6%) had a recorded HIV viral load <50 copies/mL. 318 patients (59.3%) had an abnormal ALT. The ALT abnormality was mild (≤grade 1) in the majority (90.9%) of cases (ALT rise <1.25 × upper limit of normal (ULN)=120; ALT rise1.25-≤3 x ULN=169). However 14 patients had a grade 2 abnormality (>3-≤5x ULN), 9 patients grade 3 (>5-≤10x ULN) and 6 patients grade 4 (>10x ULN).
Of the 536 patients with abnormal LFTs, 321 (59.9%) had a liver immune profile performed, 536 (100%) a viral hepatitis screen, 286 (53.4%) an ultrasound scan and 531 (99.1%) a recorded BMI. Only 241 patients (45.0%) underwent a complete liver screen. A cause was attributed in 232 patients (43.3%, Table P86.1) but was higher in patients who underwent a complete liver screen (68.0%).

Table P86.1. Cause of abnormal LFTs

Attributed cause (N=232)	Number of patients (%)
Non-alcoholic fatty liver disease	85 (36.6%)
Viral hepatitis	64 (27.6%)
Excessive Alcohol consumption	49 (21.1%)
Antiretroviral medications	13 (5.6%)
Drugs (medication/recreational drug use)	8 (3.4%)
Cancer	3 (1.3%)
Acute infection	3 (1.3%)
Non-cirrhotic portal hypertension	2 (0.9%)
Cardiopulmonary disease	2 (0.9%)
Autoimmune hepatitis	1 (0.4%)
Genetic haemachromatosis	1 (0.4%)
Trauma	1 (0.4%)

Conclusions: Adherence to local protocol for management of abnormal LFTs was poor however a significant and modifiable cause was identified in the majority of patients who did undergo investigation despite most patients having low-grade abnormalities.

HIV Testing, Epidemiology and Surveillance

P87

A descriptive study of British South Asians living with HIV

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Background: Asians are the largest ethnic minority group in the UK comprising 7.5% of the population and making up 3.7% of people attending HIV clinics in 2017. Recently there has recently been a focus on culturally specific HIV prevention campaigns for British South Asian (SA) men who have sex with men (MSM), in response to data that this demographic has had the smallest decline in new diagnoses amongst MSM and have less HIV knowledge than other ethnic minority MSM. However, there is a paucity of data on the broader British SA community living with HIV with the most recent study was published in 2003. Here we describe an SA cohort attending two HIV centres in an ethnically diverse area.
Methods: Retrospective case note review of patients self-identifying as South Asian (Indian, Pakistani, Bangladeshi or Sri Lankan) seen at 2 HIV centres between 1st January and 31st December 2017. Data were collected from clinical notes on demography, mode of presentation, HIV outcomes, co-morbidities and socioeconomic factors.
Results: 131 patients were identified: 58 of Indian ethnicity, 44 Bangladeshi, 28 Pakistani and 1 Sri Lankan. The median age was 43 years (range 25–72). Gender: 106 cis men, 24 cis women and 1 trans woman. 18.3% (24/131) heterosexual women, 36.6% (48/131) heterosexual men and 45.0% (59/131) MSM. More than half were Muslim (73/131), 39/131 Hindu and 19/131 Sikh. A minority were born in the UK (35/131) with 37 born in India, 34 in Bangladesh, 17 in Pakistan, 1 in Sri Lanka and 7 elsewhere. Most (90.1%) had a secure immigration status. The majority (87.0%) were diagnosed in the UK (Table P87.1)

Table P87.1.

Reason for testing	Heterosexual Men (%)	Heterosexual women (%)	MSM (%)
Symptomatic	60.4	29.1	33.9
Routine screen	27.0	45.8	62.3
Partner notification	10.4	25.0	1.8

The median CD4 count at diagnosis for women was 286 cells/mm^3, heterosexual men 257 and MSM 448. Reason for testing varied between groups; more MSM were diagnosed on routine screen than heterosexual men or women. Almost all (97.7%) were prescribed antiretroviral therapy; the median recent CD4 count was 642 cells/mm^3 (range 279–1259). Most (86.3%) had an undetectable HIV viral load. Almost two thirds (79/131) had at least one co-morbidity, of which the most common conditions were hyperlipidaemia (25/131), hypertension (21/131) and diabetes mellitus (15/131). 51 (38.9%) had experienced a mental health problem with depression the most common (44/131). Most (90.0%) had secure accommodation and 17.6% had accessed a third sector organisation for advice or peer support.

Conclusions: We report an ethnically diverse cohort of British SA people living with HIV where the majority were born abroad, but tested HIV positive in the UK. Although most were now on effective antiretroviral treatment, there was variation in the mode of presentation, with heterosexual women and men diagnosed with lower CD4 counts than MSM, and more diagnosed due to symptoms or partner notification rather than routine screening in sexual health. We recommend that culturally specific campaigns encouraging routine HIV testing in the general British South Asian population be developed.

P88

An audit of new HIV diagnoses in an urban setting of extremely high prevalence and missed opportunities for testing

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Background: Late diagnosis of HIV is associated with increased morbidity and mortality and likelihood of onward transmission. National HIV testing guidelines recommend opt out HIV testing in acute medical settings where the prevalence of HIV is greater than 2:1000 as a cost-effective way of reducing late diagnosis. Our Trust is situated in an area with HIV prevalence higher than 5:1000 and does not currently offer routine opt out HIV testing in acute care. To support implementation of testing locally, new HIV diagnoses were audited to explore rates of late diagnosis and missed opportunities for testing.

Methods: Clinical data of patients newly diagnosed with HIV between 1 January and 31 December 2017 were collected from electronic patient records. Those who were transferring care or diagnosed prior to 2017 were excluded.

Results: 118 people were identified with a median age of 38 years (range 15–68); 81 men, 37 women. Mode of acquisition: 41% MSM, 54% heterosexual, 5% IVDU; ethnicity 36% Black African/ Caribbean, 46% White UK/European, 12% Asian, 5% South American. Site of diagnosis: 46% sexual health services, 36% within secondary care, 9% primary care, 4% antenatal services, 4% outreach/ self-testing services.

31% required an inpatient admission at diagnosis with a mean length of stay of 18 days. 55% were diagnosed with a CD4 count of <350 cells/mm^3 (late diagnosis) and 32% with a CD4 count <200 cells/mm^3. 38% presented with AIDS-defining illness.

In the 24 months prior to HIV diagnosis, 24% accessed primary care, 42% secondary care, and 26% had been reviewed in the Emergency Department of our Trust. Of those reviewed in the Emergency Department, 52% were subsequently diagnosed with a CD4 <350 cells/mm^3.

1 year after diagnosis 89% were engaged in HIV care, 5% transferred care, 3% lost to follow up, and 2 patients deceased.

Conclusions: Rates of late HIV diagnosis (55%), higher than the national (48%) and local average (38%), have been demonstrated within our Trust. There were multiple missed opportunities for HIV testing in patients who attended acute medical care settings. Had our Trust been following national guidelines for opt out testing in acute care, several late diagnoses may have been averted and inpatient admissions reduced highlighting the associated patient morbidity and cost to health care economy of missed HIV diagnosis. Opt out testing in acute care has been shown to be acceptable to patients and staff, cost effective and provides opportunities for re-engaging people in care. We therefore recommend introducing opt out HIV testing in our Trust Emergency Department.

P89

An evaluation of the national rollout of the HIV and AIDS Reporting System (HARS)

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Background: Introduced in 2014, the HIV and AIDS Reporting System (HARS) is a surveillance and commissioning dataset managed by Public Health England which collects information on people seen for HIV care at specialist HIV outpatient clinics in England. HARS was approved as an Information Standard in 2012 and subsequently updated in 2016 to reflect developments in diagnosis and treatment (HARS v1.2). We evaluate the national rollout of the HARS dataset, highlighting key successes and challenges.

Methods: HARS implementation was assessed by the status (submitted/not submitted) and timeliness of data submissions, as well as data completeness and data quality for the years 2014–2018. Where data was not submitted to HARS, clinics completed an Excel form to report people receiving HIV specialist care.

Results: In 2014, 180 HIV service providers were eligible to report to HARS. Due to service reconfiguration, this dropped to 172 by 2018. To date, there have been 96,955 individuals reported to HARS, for a total of 1,288,574 consultations. The proportion of sites submitting HARS data increased from 72% (130/180) in 2014 to 99% (170/172) in 2017 (2018 not yet complete). Timeliness of reporting (proportion of clinics submitting data within 4 weeks of the end of the quarter) improved steadily from 20% (36/180) in 2014 to 68% (117/172) in 2018. Completeness of key variables has been consistently high over the 5 years (Table P89.1). HARS submissions are facilitated by a variety of system suppliers in 2018: IDOX Lilie (56%); Mills Systems (13%); INFORM (10%); AxSys (3%); Climate HIV (3%); IMS (2%); other/in-house system (13%). By the end of 2018, 70% of providers had transitioned to HARS v1.2.

Table P89.1. Completeness of key variables in HARS, 2014–2018

Variable	2014	2015	2016	2017	2018
Gender identity	100%	100%	100%	100%	100%
Ethnicity	98%	97%	96%	95%	95%
Exposure	90%	95%	91%	89%	93%
Country of birth	97%	95%	96%	97%	97%
Diagnosis setting	82%	75%	72%	60%	75%

Several key challenges in the rollout of HARS were reported by providers and systems suppliers, including: the strict requirements of XML formatting, changes to service structures and IT systems, and issues with self-validation of submitted files due to file format.

Conclusions: The rollout of HARS has been challenging for providers, system suppliers, and PHE however, data quality and timeliness have improved significantly over time. Complete and timely HARS reporting is essential to monitor the clinical outcomes of people in HIV care and to inform the commissioning of HIV services.

P90

Chemsex-related drug use and its association with health outcomes in men who have sex with men: a cross-sectional study of Antidote clinic service data

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Background: Chemsex-related drug use (CDU), is an escalating public health issue amongst men-who-have-sex-with-men (MSM), associated with significant physical and psychosocial harm, including the transmission of HIV, drug dependency, and death. Few interventions exist to help MSM engaging in chemsex and little data exist on which to build. This cross-sectional analysis, using data from Antidote, the UK's only LGBT specialist drug service, forms the largest study of men presenting to services for problematic CDU, and aims to remedy this paucity of data.
Methods: Modified poisson regression producing prevalence ratios were used throughout the analysis. Associations were assessed between CDU and a range of health outcomes; CDU+ sub-analysis disaggregated MSM by primary chemsex drug of concern; and HIV+ sub- analysis investigated whether CDU was associated with self-reported treatment adherence, HIV seroconversion and other HIV-specific issues.
Results: Compared to MSM presenting for drugs not associated with chemsex, MSM presenting for CDU were more likely to be HIV+, current or previous injectors, to have used post-exposure prophylaxis in the last year, and have had ≥6 sexual partners in the last 90 days, though less likely to be hazardous alcohol consumers or to have experienced previous suicidal ideation (all $p<0.0005$). CDU+ sub-analysis revealed marked health outcome differences – those selecting mephedrone were less likely to be hepatitis C+, HIV+, current or previous injectors, or to have experienced previous suicidal ideation (all $p<0.0005$), whereas those selecting methamphetamine were more likely (all $p<0.0005$, except suicidal ideation $p=0.009$). Interestingly, no differences in self-reported adherence or attribution of HIV seroconversion were found between CDU groups.
Conclusions: This analysis constitutes the world's largest analysis of MSM seeking help for CDU to date and reveals that treatment-seeking MSM are a high-risk population with substantial unmet health need. There is a need for standardised chemsex surveillance and for improved intersectorial working between sexual health and drug treatment services. Future research should investigate typological differences between MSM presenting for CDU.

P91

Does setting of diagnosis impact time to link to HIV care following diagnosis in England, Wales and Northern Ireland?

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Background: Over the past decade, HIV testing in the United Kingdom (UK) has been scaled up across a variety of settings in an effort to reduce late diagnosis and undiagnosed infection. In these analyses, we explore trends in time to link to HIV outpatient care following diagnosis and investigate the extent to which setting of diagnosis has impacted on the time to linkage in recent years.
Methods: Analyses of national HIV surveillance data were restricted to adults (aged ≥15 years) diagnosed between 2005 and 2014 in England, Wales and Northern Ireland (n=63,599). Linkage to care was calculated using the time between the HIV diagnosis date and first CD4 count date, as a proxy for date of entry into HIV care. Individuals were excluded if they had been previously diagnosed (n=511), died within 3 months of diagnosis (n=1,392), had no follow-up after diagnosis by the end of 2017 (n=1,808) or were in care but with no first care date (n=926). Trends in timeliness of linkage to care were examined overall and by diagnosis setting. Logistic regression was used to identify factors associated with delayed linkage to care (care entry ≥3 months after diagnosis) in recent years (2012–2014).
Results: There were 58,962 adults included in these analyses. Over the decade, 88% (52,113/58,962) were linked within 3 months of diagnosis, increasing from 85% (5,892/6,926) in 2005 to 92% (4,795/5,201) in 2014. Linkage was relatively high across all diagnosis settings (≥85%). In multivariable analysis, delayed linkage to care among people diagnosed 2012–2014 was associated with: being infected by injecting drug use (adjusted odds ratio (adjOR): 2.84, 95% confidence interval (CI): 1.98–4.05), heterosexual contact (adjOR: 1.53, 95% CI: 1.33–1.76) or other exposure routes (adjOR: 3.69, 95% CI: 2.46–5.54), being diagnosed after 2012 (2013: adjOR: 0.86, 95% CI: 0.74–1.00; 2014: adjOR: 0.62, 95% CI: 0.52–0.72) and having a first CD4 count ≥200 cells/mm^3 (200–349: adjOR: 1.51, 95% CI: 1.22–1.87; 350–499: adjOR: 1.66, 95% CI: 1.34–2.05; ≥500: adjOR: 1.77, 95% CI: 1.46–2.15). Delayed linkage to care was also associated with being diagnosed outside of healthcare settings: adjOR: 1.49 (95% CI: 1.14–1.95) including prisons, drug services, the community and other settings not specified. Sex, age at diagnosis and ethnicity did not significantly impact time to care.
Conclusions: Encouragingly, linkage to care following HIV diagnosis was timely across all healthcare settings. However, our findings highlight a need to ensure testing venues outside of healthcare have well-defined referral pathways in place to facilitate access to care and treatment following a positive HIV test result. These analyses also highlight inequalities across exposure groups.

P92

Frequent stable attenders: is HARS missing true complexity in stable patients?

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Background: In 2013, the HIV and AIDS reporting system (HARS) was introduced to facilitate the commissioning of HIV outpatient services. HARS groups patients as: 1 – New (to the clinic/treatment/both), 2 – Stable (on treatment with HIV viral load <40c/mL), 3 – Complex (8 subcategories according to specified comorbidities). The British HIV Association (BHIVA) monitoring guidelines recommend 6 month follow up of stable patients. Patient pathway mapping in HIV clinics identified more regular attendance than this, resulting in a pilot study looking at reasons. The pilot study (50 patients) reported that most of the visits were due to mental health, new symptoms and recreational drug use. The current study expands on the pilot study to investigate factors contributing to more frequent attendance.
Methods: The study was done at a large HIV specialist centre. Using patient pathway mapping we identified 'stable' patients who attended more frequently than 6 monthly from April 2017 to March 2018. From this group, 200 patients were randomly selected and reasons for their increased attendance explored. Data was collected using paper and electronic patient notes. Patients were split into group A (<4 months between appointments) and group B (4–6 months).
Results: Table P92.1.

Table P92.1.

Demographics	Group A (n=163)	Group B (n=37)
Mean age yrs (range)	50 (24–78)	52 (28–84)
Male	146 (90%)	29 (78%)
Mean duration of HIV diagnosis yrs (range)	13 (1–34)	15 (2–32)
Mean CD4 (cells/mm^2)	713	657
HIV VL<40 c/ml	152 (93%)	0 (0%)
On cART	163 (100%)	36 (95%)
Reason for attendance		
ARV related issues	127 (78%)	7 (19%)
New symptoms under investigation	60 (37%)	19 (51%)
Mental health issues	55 (34%)	12 (32%)
Virtual/Joint clinic	29 (18%)	9 (24%)
Alcohol related	20 (12%)	5 (14%)
Recreational drugs	17 (10%)	5 (14%)
Complex comorbidities	12 (7%)	0 (0%)
Domestic abuse/complex social needs	10 (6%)	2 (5%)
Recent hospital admission	9 (5%)	4 (11%)
Chem sex & STIs	8 (5%)	2 (5%)
Previous AIDS defining illness	2 (1.2%)	0 (0%)

Conclusions: Higher attendance in both groups is predominantly due to issues with ARVs such as side effects and switches, investigation of new symptoms and mental health issues. These factors led to more visits which are not accounted for by HARS, thus underestimating commissioning needs. Furthermore; the study mirrors changes in the NHS as a result of loss of access to services such as GP and mental health. These findings indicate that some stable patients have increased healthcare needs and that there is a need for a 'Stable Plus' HARS category.

P93

HIV testing in OPAT: a missed opportunity

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Background: The Outpatient Antibiotic Therapy (OPAT) service at our hospital treats approximately 300 patients per year and is run by a team of three specialist nurses with supervision by clinicians in infectious diseases (ID) and microbiologists. There is currently no routine practice of HIV testing within this service. British HIV Association guidelines on HIV testing (2008) recommend universal testing be considered in general medical patients presenting to hospital, where the prevalence of HIV is greater than 2 per 1000 population. HIV prevalence in our region is 2.15 per 1000, above this threshold. Several pilot studies have shown that HIV testing in medical admissions is feasible and acceptable, however this has not been determined in an OPAT setting. This study aimed to determine the current level of testing in our OPAT service and to assess how routine testing may be implemented.
Methods: We conducted a retrospective review of HIV tests performed within this service by interrogating OPAT records from 1st January to 31st July 2018. This was cross-referenced with our pathology system for any HIV tests in the preceding 3 years and at the time of entry into the OPAT service. From the data gathered and feedback from the team, sessions were organised for local HIV specialist nurses to train the OPAT nursing team in HIV counseling and testing.
Results: 190 patients were treated in the OPAT service with a mean age of 60.4 years (range 18–97 years; SD ± 17.4 yrs). Of the 190 patients, 183 (96.3%) did not have a recorded HIV test prior to referral to the service. Of these, 46 (25.1%) patients were tested before or during therapy leaving 137 (74.9%) patients untested. There were no positive HIV tests in this period.
Conclusions: OPAT services offer a valuable opportunity for HIV testing and highlight the importance of utilising 'non-traditional' settings for HIV testing. OPAT teams are often run by, or have close links to, ID physicians. This provides continuity of care and minimises loss to follow up for newly diagnosed patients. In addition, they work closely with acute care portals and can thereby increase awareness, educate and train staff around HIV testing. Universal HIV testing is now being rolled out in our OPAT service as part of a continuous quality improvement project.

P94

HIV testing survey to ascertain and encourage local compliance with NICE HIV testing guidelines

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Background: District General Hospital covering population with low HIV prevalence (< 1/1000) but high proportion late HIV diagnosis (50%). Local annual increase in new HIV positive diagnoses (from 6 to 21 cases) in 2016/17 due to increased HIV testing in Primary and Secondary care. HIV/GUM and Trust Audit teams were keen to ascertain and encourage compliance with NICE HIV Testing Guidelines (Published Dec 2016).
Methods: Project approved by Trust Clinical Management Board (May 2018)

1 Survey Monkey® Questionnaire designed, with objectives: i) assess baseline knowledge of NICE recommendations for HIV testing, ii) ascertain reported current HIV testing practice, iii) obtain suggestions for interventions to increase cost-effective HIV testing. Questionnaire web-linked to NICE Guidelines and list of HIV Indicator Conditions for education.
2 Questionnaire link emailed by Trust Audit team to all non –GUM/HIV doctors and Nurse Specialists in the hospital in Nov 2018 – 3 weeks to complete, weekly email reminders.
3 Plan to conduct similar survey of GPs/Practice Nurses with local CCGs in Feb 2019.

Results: 385 clinicians were emailed, of which 85 (22%) completed questionnaires. 30% (55/185) of Consultants and 31% (25/81) of Nurse Specialists submitted responses, compared with only 4% (5/119) of Junior or SAS doctors. Reasons for non-response included being on nights/leave or checking work email infrequently. Surgeons and paediatricians questioned relevance to their practice, but did identify opportunities for testing e.g. HPV-related cancer, adolescents.
Knowledge: 72% (58/81) of Nurse Specialists rated their knowledge of HIV high risk groups and/or indicator conditions as poor compared with 26% (48/185) of Consultants. 62% (13/21) of Consultants in Medical Specialties rated their knowledge as good compared with 25% (1/4) in Acute Medicine.
Practice: NICE guidance is currently being followed in local HIV testing protocols for patients with TB, Lymphoma, HCV/HBV, pregnancy. Protocols are in place for testing those starting immunosuppressants/ biologics in dermatology, gastroenterology and rheumatology. No local HIV testing protocols or guidelines exist in acute medicine. Nurses reported HIV testing was outside their remit unless specified in a protocol.
Suggestions: Clear department/Trust protocols for HIV testing patients with specific HIV indicator conditions and corresponding grouping of tests, including HIV serology, on electronic test request portal.

1 Additional face to face training on HIV indicator conditions and clarification of level of pre-test discussion/consent needed. NB:- Trust Intranet and e-learning resources were rarely accessed and less valued.
2 Routinely screening all Medical admissions to destigmatise and normalise testing (currently not recommended by NICE locally due to low HIV prevalence).
3 Greater clarification and assurances regarding funding: – uncertainties re impact on Department and Trust budgets is a barrier.

Conclusions: Online questionnaire promoted engagement with Trust Executives and clinicians across specialties. Highlighted need for training of Nurse Specialists and developing HIV testing protocols in acute medicine. Caveats: Requires audit to clarify accuracy of self-report. Poor overall response rate, particularly by junior and SAS doctors. Greater targeted face to face training and discussion planned.

P95

Investigating HIV testing preferences in black, Latin American and other minority ethnicities to inform the co-design of digital vending machines for HIV self-testing kits

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Background: The proportion of undiagnosed HIV in black, Latin American and other minority ethnicities remains stable despite large decreases in other populations. The use of HIV testing vending machines in men who have sex with men (MSM) has shown high acceptability and accessed those previously untested for HIV.
We surveyed these populations to identify their attitudes and perceptions towards community HIV testing and vending machines for HIV self-testing.
Methods: A structured survey was developed with community groups, with English, French and Spanish translations. Outreach volunteers surveyed black, Latin and other minority ethnicity service users in South-East London from September 2018 to January 2019 in a range of venues. The survey was available online through community websites and social media communications. Results were analysed using Pearson's chi-squared test for categorical data in Minitab.
Results: Of 193 respondents, 156 (82%) were African Caribbean (AC), 19 (10%) Latin American (LA), and 15 (8%) other non-white ethnicities (ONWE). 3 did not provide ethnicity data. Median age (AC 40, interquartile range (IQR) 28–50; LA 36, IQR 32–40; ONWE 32, IQR 28–40) and gender composition differed between groups (AC 60% male; LA 90% male; ONWE 53% male).

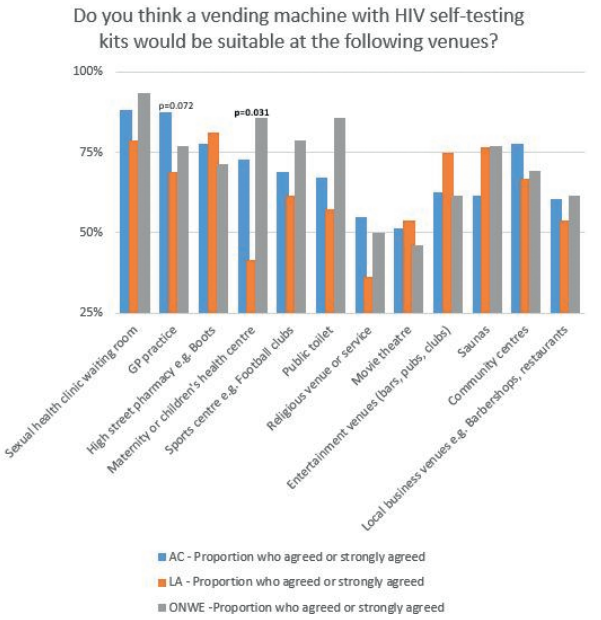

Figure P95.1.

Most AC and ONWE respondents were heterosexual (87% and 67% respectively),but 95% of LA respondents were MSM (95%).
59/193 (31%) had never tested for HIV, reasons for never testing include 'I am not at risk of HIV' (63%), 'never had the opportunity to test which I was comfortable with' (31%), 'I do not want to know my HIV status' (7%) 'Do not know where to go' (2%). Of those who had a HIV test previously, 68 (51%) had tested within the past year.
74% were willing to use a HIV self-testing kit from a vending machine, with no significant differences between populations (AC 74%, LA 79%, ONWE 67%, p=0.718).**Figure P95.1.**
While sexual health clinics were favoured by all groups (Figure 95.1), AC respondents also preferred community centres and high street pharmacies; LA respondents preferred high street pharmacies, saunas and entertainment venues; ONWE respondents preferred maternity or children's health centres, public toilets, and sports centres.
Most important factors influencing the vending machines placement within a venue were: non-crowded areas (33%), high visibility (29%), nearby trained staff (24%) and easy access (18%). Concerns varied from 'being seen using a machine for HIV self-testing kits'(AC 42%, LA 21%, ONWE 53%), 'not being able to use the self-test kits correctly' (AC 49%, LA 32%, ONWE 47%), 'not being able to use the vending machine correctly' (AC 32%, LA 42%, ONWE 33%), 'Someone finding out I had a HIV test' (AC 26%, LA 26%, ONWE 20%), and 'cost of HIV self-testing kits' (AC 33%, LA 53%, ONWE 20%).
Conclusions: The concept of vending machines to distribute HIV self-testing kits were highly acceptable amongst respondents. To extend HIV testing coverage, differences in concerns and location preferences will inform and tailor development of the vending machine interface and choice of venue to maximise reach in black, Latin American and other minority ethnicity populations.

P96

Latin Americans in the UK: a key population for HIV prevention

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Background: With increasing Latin American migration to the UK in recent years, there is a need to better understand the sexual health of this group. In 2013, just under 250,000 Latin Americans were living in the UK, with a diagnosed HIV prevalence of 5.3 per 1,000 population, 3.5 times higher than in the general population. Here we describe the population of Latin American-born people in the UK diagnosed with HIV over the past 10 years, and those accessing HIV care in 2017.
Methods: UK HIV surveillance data for 2008–2017 were analysed to describe trends in new diagnoses, late diagnosis (CD4 count <350 cells/mm^3 within 3 months) and HIV care outcomes among adults (≥15 years) born in Latin America. Current UK data collection systems do not capture data on Latin American ethnicity and therefore there is no data on second generation Latin Americans.
Results: Latin Americans accounted for 2,127 (3.8%) of the 55,556 UK adults diagnosed with HIV over the decade with country of birth reported. The number and proportion of new diagnoses each year increased from 189 (2.8%) in 2008 to 264 (5.6%) in 2016, before dipping to 209 (5.5%) in 2017.
Among all Latin Americans diagnosed between 2008 and 2017, Brazil was the most common country of birth (57%), followed by Colombia (13%), then Venezuela (6%). Median age at diagnosis was 33 (interquartile range (IQR): 28–39). Most diagnoses were among men who have sex with men (MSM) (86%), with 176 diagnoses among women (8%). The vast majority were living in London (81%), where more than 1 in 6 MSM newly diagnosed with HIV in 2017 were Latin American.
For 47% (799/1,689) of Latin American diagnoses in 2008–2017 with data reported, the UK was the probable country of infection (range by year: 36%–58%). The proportion of Latin Americans diagnosed late was 33% (603/1,840) (range by year: 20%–51%). Late diagnosis rates were higher in heterosexuals (men: 60%; 61/103 and women: 43%; 53/123) compared to MSM (30%; 464/1,532).
In 2017, 2.2% (2,019/93,029) of all people receiving HIV specialist care in the UK with country of birth data were Latin American: 1,820 men and 195 women, with a median age of 41 (IQR 35–49). 81% resided in London, where they accounted for 7.2% (1,332/18,540) of MSM in care. 98% (1,979/2,019) were on treatment, of whom 98% (1,701/1,734) had achieved viral suppression.
Conclusions: Whilst Latin American adults make up a relatively small proportion of all new HIV diagnoses in the UK, this proportion has increased rapidly since 2008, and is substantive among MSM in London. With around half having acquired their HIV after arrival in the UK, reducing transmission within this population will be important for London to end new infections by 2030: its aim as part of the Fast-Tack Cities initiative. Encouragingly, high rates of treatment and viral suppression illustrate good engagement with HIV care among this group. Continued monitoring will be useful to examine trends in Latin Americans as HIV declines in the UK.

P97

Mind the gap: new diagnoses of HIV in a London clinic (2016–2018)

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Background: Since 2016, there has been a steep fall in the number of new HIV diagnoses in London, particularly in men who have sex with men (MSM). However, this reduction has not been evenly distributed across London, and the demography of newly diagnosed individuals has changed. We wished to examine new diagnoses at our clinic, which sees >40,000 patients per annum.
Methods: The electronic patient record was interrogated to derive all patients who were newly diagnosed with HIV in our clinic between 1/4/16 and 31/12/2018 (look back period: 33 months). We reviewed age, country of birth, sexuality, previous HIV testing history and CD4 count.
Results: There were 91 new diagnoses of HIV over the look back period. The rate of new diagnoses remained stable, with a median of eight per quarter (range: 3–18). The HIV testing rate in the clinic remained stable at c.5500 tests per quarter.
The majority (80/91 (88%)) of diagnoses were in MSM. The age range was 19 to 57 years (median 32 years) and 17/80 (21%) were under 25 years. Just under a third (24/80 (30%)) were UK-born MSM. 21/80 (26%) were EU-born MSM, of whom 8/21 (38%) were from Poland. Of under 25s, 10/17 (59%) were British (of whom 40% were Black), and overall 10/17 (59%) were BME.
64/80 (80%) of diagnoses in MSM were made in the GUM clinic.
The majority of MSM (73/80 (91%)) had previously tested for HIV. The median time since the last test was 10 months (range 1–280 months) and 44/73 (60%) had tested within the previous year. Of the 67/80 (84%) MSM that had an HIV incidence test, the estimated duration of infection was <4 months for 29/67 (43%) and >4 months for 38/67 (57%).

The median CD4 count at diagnosis in MSM was 454 cells/uL (range: 24–1430 cells/uL) and 23/80 (29%) had a CD4 <350 cells/uL.
There were 11 patients who were non-MSM. This group was older, with a median age of 48 years (range: 21–67 years), and 9/11 (81%) were Black (6/9 being Black African). 8/11 (73%) had previously tested for HIV, a median of 66 months (range: 5–191 months). The median CD4 at diagnosis was 290 cells/uL (range: 109–1027 cells/uL).
Conclusions: HIV diagnoses in our unit have remained stable over the last 33 months. The majority were in MSM, notably in non-UK born MSM, chiming with trends seen across London. We also identified Poland as a common country of origin for newly diagnosed MSM. There is a cohort of young MSM, of whom a disproportionate number are from BME backgrounds. The majority of MSM had previously tested for HIV, and nearly half were diagnosed within 4 months of infection. Thus, this is a population accessing testing, but non-UK, and non-white younger UK-born MSM do not seem to be benefiting from the combination prevention effect observed elsewhere. Health literacy, problems navigating the NHS, or inequitable access to PrEP and other prevention methods may underlie this trend. We must endeavour to address these possible disparities.

P98

Mortality and causes of death among HIV patients in London in 2017

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Background: Since 2013, the London Mortality Study Review Group has conducted annual reviews of deaths among people with HIV to reduce avoidable mortality and improve patient care.
Methods: London trusts commissioned by NHS England to provide HIV care were invited to report 2017 data on patient deaths. Data were submitted to Public Health England using a modified Causes of Death in HIV reporting form. Cause of death was categorised by an epidemiologist and two HIV clinicians.
Results: All 17 trusts provided data, reporting 166 deaths; 75% (124) deaths were among men and median age of death was 52 years (IQR: 44–64). Cause of death was ascertained for 88% (146) of patients, with the most common cause being non-AIDS cancers (28%) followed by AIDS (20%), non-AIDS infections (18%), substance misuse (9%), cardiovascular disease (CVD)/stroke (8%), accident/suicide (7%), respiratory disease (4%), liver disease (1%) and other causes (4%). Death was expected for 66% (98) of patients and of these, 72% (71) had a prior end-of-life care discussion.
Median time from diagnosis to death was 13 years (IQR: 7–19); 13 patients died within a year of diagnosis (at diagnosis: CD4 <350 cells/mm^3: 69%; AIDS: 54%). Reported risk factors in the year prior to death included: tobacco smoking (29%; 38), excessive alcohol consumption (18%; 25), injecting (10%; 14) and non-injecting (14%; 20) drug use. Several co-morbidities were reported: CVD (39%; 53), mental illness (36%; 47), cancer (33%; 51), liver disease (30%; 39), respiratory conditions (26%; 31), diabetes mellitus (23%; 30), renal disease (21%; 26) and other chronic conditions (43%; 46). Common mental illnesses included: depression (39), psychosis (10) and anxiety (11), while the most common cancers were non-Hodgkin's lymphoma (13) and lung cancer (11). Treatment coverage (95%; 157) and viral suppression <200 copies/ml (73%; 116) among patients were high.
Conclusions: Despite free care and treatment, HIV patients continue to die from AIDS in 2017, as a direct result of late diagnosis; HIV testing must increase to reduce these preventable deaths. However, encouragingly, most deaths among HIV patients reported as part of the audit were not directly HIV-related. For people living with HIV longer term, health promotion must be improved through risk reduction, including modifying cardiovascular risk factors and addressing psychological needs and substance misuse.

P99

New HIV diagnoses in a London sexual health clinic: missed opportunities?

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Background: New HIV diagnoses are falling in England, particularly in men who have sex with men (MSM), likely due to combination prevention including frequent HIV testing, treatment-as-prevention and pre-exposure prophylaxis (PrEP). Around half of the newly diagnosed individuals at our service have previously engaged with us. We reviewed their clinical records to examine the offer of HIV risk-reduction interventions at attendance with us prior to their HIV diagnosis.
Methods: We performed a retrospective case note review of all patients newly diagnosed with HIV at an urban service in 2018.
Results: Of 177 new HIV diagnoses in 2018, 77 (44%) had previously attended our service and 50 (28%) in the 12 months prior to HIV diagnosis. Of the 50 seen within the past 12 months, 94% were MSM with median age 33 years and median 3 (IQR 2–11) sexual partners in the previous 3 months. 38% disclosed previous chems use, with 10% injecting. In the 12 months up to the HIV diagnosis, most had an indicator of high risk of HIV acquisition: 52% had previously accessed PEP from our service, 30% had early syphilis and 50% rectal gonorrhoea or chlamydia.
60% had been offered PRIME membership, a web-based risk reduction tool developed by our service. 56% had a documented PrEP discussion. Only 12% had used PrEP.
Conclusions: Despite the fact that the majority of newly diagnosed individuals with prior attendance at our service accessed at least one risk-reduction intervention in the preceding 12 months, this was insufficient to prevent their HIV acquisition. Several studies of PrEP have demonstrated significant reductions in HIV infection in individuals at risk. Although there was documentation of PrEP discussion in 56%, the service did not have places available on the PrEP IMPACT trial for the majority of the period studied. Only 12% of these users had ever used PrEP. In order for new HIV diagnoses to continue to fall, it is crucial that PrEP is taken up by individuals at risk.

P100

NHS healthcare utilisation of people living with HIV compared to matched, HIV-negative controls

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Background: As an aging cohort, people living with HIV (PLHIV) are at greater risk of comorbidities and other complications, with an uncertain impact on resource use. Previous studies investigating the burden of HIV on healthcare resources have been constrained due to database limitations. The purpose of this study was to evaluate NHS resource use attributed to PLHIV compared with matched controls using the Clinical Practice Research Datalink (CPRD).
Methods: CPRD was analysed to provide anonymised longitudinal patient records for this study. Year of HIV diagnosis was used as an index date for matching non-HIV controls. PLHIV were matched 1:2 with adult controls according to age, gender, GP practice and Hospital Episodes Statistics (HES) eligibility. The primary endpoint was resource use determined by hospital admissions, outpatient visits, and GP attendances in the year following index date and all observed time.
Results: There were 2,315 HIV cases matched to 4,630 non-HIV controls. Significantly higher frequencies of GP visits, inpatient and outpatient admissions were observed between cases and controls, both 1 year following index and long term (Table P100.1).

Table P100.1.

	Time after index date	Group	Rate per person year	Rate ratio (95%CI)	P-value
GP visits	Up to 1 year	Non-HIV controls	3.96	1.86 (1.74 – 1.98)	<0.0001
		HIV cases	7.58		
	Total period	Non-HIV controls	4.46	1.22 (1.13 – 1.31)	<0.0001
		HIV cases	6.01		
Outpatient visits	Up to 1 year	Non-HIV controls	0.25	3.72 (3.25 – 4.26)	<0.0001
		HIV cases	0.95		
	Total period	Non-HIV controls	0.27	1.34 (1.19 – 1.51)	<0.0001
		HIV cases	0.40		
Inpatient admissions	Up to 1 year	Non-HIV controls	0.88	5.05 (4.56 – 5.59)	<0.0001
		HIV cases	4.60		
	Total period	Non-HIV controls	1.00	2.73 (2.47 – 3.02)	<0.0001
		HIV cases	3.03		

Conclusions: Healthcare resource utilisation was significantly higher for PLHIV in all three care settings, most notably for inpatient and outpatient care. PLHIV had, on average, around 9 contracts per year with healthcare services, compared with 6 for non-HIV controls. With most routine HIV care occurring in the outpatient setting, the differences observed in primary care and inpatients may be a result of the increasingly complicated clinical needs of this ageing cohort. The changing healthcare needs of PLHIV are likely to require cross functional working at a national and local level to ensure immediate action on long term health outcomes.

P101

Opt-out HIV testing in the primary care setting: are our expectations realistic?

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Background: Public health England data shows the prevalence of HIV in Stoke-on-Trent is 2.15 cases per 1000. Based on this, in accordance with NICE guidelines, the recommendation is that all new registrants to GP practices should undergo HIV testing. As a community integrated sexual health service, we introduced this in partnership with a local GP practice, the end objective being eventual roll-out of opt-out HIV testing to several practices within the area. This introductory phase has posed some interesting challenges, which will be detailed further below.

Methods: This initiative was introduced in August 2018 following an initial meeting between the HIV clinicians and the primary care team (comprising medics and the practice manager). We aimed to target adults aged 18 and above. As new registrants to the practice often underwent blood testing for other conditions, it was agreed this would be the opportune time to offer HIV testing.

Leaflets were handed out prior to attendance to address any consent issues. Recognising there would be an increase in the number of HIV tests being processed in the local laboratory, communication was vital to ensure numbers could be accommodated. A robust results management pathway was established, including the use of a unique identifier for samples originating from this practice. This ensured any positive results would be flagged directly to the HIV team. Regular progress updates are essential in ensuring timely resolution of issues as they arise.

Results: At the 5-month-mark 87 HIV tests have been offered, with 54 patients declining a test, representing a 38% uptake. There have been no positive results thus far. Ages ranged between 19–65 years. Reasoning behind patients declining tests included: perceived low risk, recently being tested for HIV in another setting, and needle-phobia. We also noted that request forms for testing were handed to the patient but subsequently not taken to the phlebotomy service.

Conclusions: Although this is an ongoing piece of work, initial numbers highlight the barriers that need to be overcome in order to increase the uptake of testing. Patient perception of their risk is a large contributory factor and addressing this requires time and perhaps more specialist expertise. Geographical separation between the sexual health service and primary care is a hindrance in this respect, and only further highlights the need to ensure a continuous dialogue between the two settings.

P102

Promoting and creating awareness of HIV/AIDS in the black African communities in Luton, United Kingdom

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Background: Across Luton, HIV rates among men who have sex with other men as well as heterosexual black African men and women continue to go up. In 2015, 622 Luton residents were HIV positive accessing care, of which 470 were seen and treated in Luton, 409 were of Black African origin (PHE, 2015). Many black African people are staunched members of black African Churches in Luton. The leading Pastor is a very influential figure within these communities. His role is pivotal in encouraging HIV/AIDS patients to take prescribed medicine as well as participating in prayer. Sadly, recent investigation by health agencies and the media exposed major concerns that some Pastors are advising their church members not to take a HIV test and to refrain from taking anti-retroviral therapy. Some Pastors prefer to teach that prayer alone will provide a cure. Those who adhered to this ignorant approach were not well served by their Pastors. In 2011, the BBC reported that Pastors claims that prayer alone could cure HIV/AIDS caused three deaths. Black African men and women are advised to have an HIV test regularly. However, the uptake in HIV testing remains relatively low partly due to stigma around the virus. In view of this, 'Take Action Now and U Test 4 Life' project was designed that aimed at reducing new infection rate of HIV, promoting early diagnosis, setting up testing clinic, challenging stigma associated with HIV /AIDS in the black African communities in Luton.

Methods:

- Organised HIV Health & Multi – Faith Conferences.
- Engaged some of the participants on face-to-face and group discussions.
- Set up free and confidential HIV testing clinics.
- Advertised the project in the target communities, churches and on social media.
- Had interviews and presentation on radios.
- Collected and analysed data on the number of people engaged and tested for HIV.

Results: 2961 black African people in Luton were engaged and tested for HIV. 77% and 73% of the black African men and women aged over 19 years had been tested previously within the last 12 months and know their status. 23% and 27% of black African men and women were tested for the first time. 1% of black African men and women testing categories had reactive results. The results also indicated that some pastors and their leaders were not interested and unhappy for us to visit their churches to do a presentation on HIV due to their perceived sensitive health condition of HIV and stigma associated with HIV.

Conclusions: U Test for Life project completed successfully and achieved about 90% of the project outcomes. HIV is often a topic that people avoid talking about, which leads to a culture of shame and misinformation. HIV is a virus. It doesn't define anyone and doesn't contribute or take away anything from an individual's worth. It is a health problem that we all need to discuss and tackle together. It is important to adopt effective anti-stigma approaches to include improved information on HIV treatment and prognosis, engagement with faith communities in anti-stigma and anti – discrimination work.

P103

Routine HIV testing in the Emergency Department in a major trauma centre: the first 8 weeks

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Background: NICE guidelines recommend young people and adults should be offered HIV testing when admitted to hospital or attending Emergency Departments (ED) in areas of high HIV prevalence. We implemented an opt-in system of HIV testing in adults aged 18–59 years having blood tests in the ED.

Methods: Opt-in HIV testing on the biochemistry samples of adults aged 18–59 was implemented in the ED on 1st October 2018. Reactive results were emailed to HIV Health Advisors for follow up. A retrospective data analysis was carried out of all HIV tests performed in the ED from 1st October until 30th November 2018. Demographics of patients were collected and the number of full blood counts taken over the same period as a marker of total number of

blood tests performed. A survey was conducted to assess patient's views towards HIV testing and opt-in versus opt-out strategies.
Results: 1935 HIV tests were performed. 3684 patient had a blood test amounting to a testing rate of 52.5% with no drop off rate (50% October, 54.6% November). Mean age 43 years (range 18–59). Number of females testing 1195 (61.8%), and males 740 (38.2%). Most common ethnicity: white (45%) (Table P103.1). There were 31 reactive results (1.6%), 10/31 likely false positive, 4/10 confirmed negative and 6/10 were signposted to retest with unknown final results. 18/1935 patients were known HIV positive, 13/18 were engaged in care, 1/18 had disengaged from care and was successfully re-engaged, 1/18 was lost to follow up but later found to be receiving care in prison and 3/18 were uncontactable but medical notes identified that they were known HIV positive. 3 patients were newly diagnosed, 2 male, one of whom was seroconverting and 1 female who was pregnant. Of the new diagnoses mean CD4 480 (163–912), viral load range 1180- 10×10^7 copies/ml. Our data gives an HIV prevalence of 10.9 per 1000 population, in an area with estimated local prevalence of 5.8 per 1000 population.173 patients were surveyed about their views towards routine HIV testing, 90.7% were happy to be routinely tested in the ED. The majority of patients were comfortable with testing being done on an opt-out, rather than opt-in, basis as routine with other blood tests.

Table P103.1. Ethnicities of those testing for HIV

Ethnicity	Number
White	874 (45%)
Not known/stated	304 (16%)
Asian	266 (14%)
Any other ethnic group	216 (11%)
Black any other	89 (5%)
Black African	86 (4%)
Black Caribbean	61 (3%)
Mixed ethnicity	39 (2%)

Conclusions: Early data shows that testing in our ED provides an excellent opportunity to diagnose HIV with a prevalence rate higher than the estimated local prevalence. There is also data to suggest that patients both overwhelmingly support and are comfortable with routine HIV testing, with the majority happy for routine opt-out HIV testing in ED.

P104

Routine HIV, hepatitis B and C testing in patients starting chemotherapy for solid organ tumours at a London district general hospital: screening uptake and management of results

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Background: Patients with HIV infection are at higher risk of developing AIDS defining and non-AIDS defining cancers. The use of antiretroviral treatment in patients undergoing chemotherapy has been shown to reduce morbidity associated with opportunistic infections and improve overall survival. Routine HIV testing for all oncology patients has been recommended, however few institutions implement this.
Hepatitis B (HBV) and Hepatitis C (HCV) infection is associated with increased morbidity and mortality in patients undergoing chemotherapy. Immmunosuppression may cause disease reactivation requiring close monitoring and antiviral prophylaxis in some instances. London Cancer guidelines recommend routine screening for HBV and HCV infection.
Methods: We implemented screening for HBV, HCV and HIV infection for patients starting chemotherapy in September 2017. Uptake was defined as those screened for HBV surface antigen and core antibody, HCV antibody and HIV antibody/p24 antigen. Protocols were developed to guide screening, monitoring, antiviral choice and referrals.
Data collection was undertaken for patients starting chemotherapy between September and December 2017 and repeated from April to July 2018. Between data collection, audit findings were presented to our oncology department with hepatology teaching. In addition, a pre-chemotherapy bloods orderset was introduced.
Results: 133 patients started chemotherapy from September to December 2017, of which 69% (92/133) had virology screening. 14% (13/92) had a cleared HBV infection, of which one was previously diagnosed: 15% (2/13) were either monitored for reactivated (n=1) or started on pre-emptive Lamivudine (n=1). One patient was diagnosed with chronic HBV infection.
From April to July 2018, 94% (103/110) patients had virology screening. 5% (5/103) patients had a cleared HBV infection, of which 40% (2/5) were started on Lamivudine and monitored for reactivation. There were no new HIV diagnoses and one patient with cleared HCV infection in each sample.
Conclusions: Screening rates of HBV, HCV and HIV for patients undergoing chemotherapy have improved significantly, and importantly, no patients declined screening tests. We identified a proportion of patients with chronic and cleared HBV at risk of reactivation, of which management can be further improved. Following discussion with hepatology and oncology departments, protocols are being modified to facilitate changes to practice.

P105

Routine opt-out HIV testing in gynaecological oncology pre-admission clinic

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Background: The NICE guideline 2017 recommends HIV testing be offered to all adults admitted to hospital in areas of high (>2/1000 population) and extremely high (>5/1000 population) prevalence. Tower Hamlets has a prevalence of 5.7 per 1000. There is a 5-fold increase in the incidence of cervical cancer in women who are HIV positive and this is AIDS defining. HIV treatment can interact with chemotherapy drugs for other gynaecological cancers. Early detection is the most important prognostic factor in improving HIV outcomes and will ensure cancer patients receive optimal treatment. In June 2018, a pilot was launched for opt out HIV testing of all patients attending the gynaecological oncology pre-admission clinic. A detailed protocol was written with input from the genitourinary medicine team. The preadmission leaflet was amended to include HIV as a routine blood test and verbal consent was taken.
Methods: We prospectively recruited all patients attending pre-admission clinic from June 2018 to September 2018. Data were collected on demographics, site of cancer, primary diagnosis, treatment modality, HIV antibody status and reasons for declining if declined.
Results: 188 patients attended preadmission clinic. 170/188 (90.4%) were tested for HIV antibody, all of whom were negative. 18 of these 188 patients (9.5%) did not have an HIV test. In 10 patients, the HIV test was not requested due to lack of staff awareness of the pilot. 2 patients were known to be HIV positive on anti-retroviral therapy and were not tested. 6 patients declined HIV screening, 1 patient declined in view of her cultural background, 5 did not disclose the reason for declining.
120/188 (63.8%) subsequently were diagnosed with cancer. 14 women had cervical cancer who all tested negative for HIV. 10 had vulvar cancer, 9 tested negative and 1 was already known to be positive. 49 women had ovarian cancer, 37 endometrial, 3 vaginal, 3 synchronous ovarian and endometrial, 3 cancers were of another primary site and 1 breast cancer, all of whom were HIV negative. The other patient known to be HIV positive had benign disease.
Conclusions: From the data collected between June and September 2018, there were no new diagnoses of HIV. The opt out approach has been acceptable to the majority of our patients and staff found it easy to integrate it into the pre-assessment clinic. We have not yet had a positive result. We are collecting further data to re-audit in 4 months.

P106

Substantial decline in HIV incidence between 2015 and 2018 among a prospective cohort of men who have sex with men in England

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Background: Recent data reveal that new HIV diagnoses in the UK have declined among men who have sex with men (MSM). There are no data from UK prospective studies assessing HIV acquisition risk. We estimated trends in HIV incidence between 2015 and 2018 in a prospective cohort study of initially HIV undiagnosed MSM.
Methods: Participants self-completed a baseline paper questionnaire at one of three large UK sexual health clinics (Nov 2014-Apr 2016), and subsequent four-monthly and annual online questionnaires, including information on HIV status, sexual behaviours, and PrEP use to March 2018. We used Poisson regression with robust standard errors to evaluate trends in incident HIV infection, adjusted for age. We considered additional adjustment for condomless anal sex (CLS) with two or more partners in the last three months, and use of PrEP (took PrEP in the past year, as reported in the most recent annual questionnaire), to assess whether these factors explained any incidence trends.
Results: This analysis includes 622 participants (median age 34 years; 94% gay; 84% white; 77% uni-education) completing ≥ one online questionnaire (median number completed 6; IQR:3–7). The total follow-up time at risk was 1044 person-years; total for 2017/18 was 298 person-years. Of the 622 men, 13 reported HIV seroconversion during follow-up, with an overall incidence rate of 1.24 (95% CI 0.66–2.12) per 100 person-years. Incidence rates per 100 p-y in 2015, 2016, 2017/18 (95% CI) were 1.75 (0.57–4.07), 1.74 (0.75–3.43) and 0 (0–1.24), respectively. Incidence rate declined significantly from 2015 to 2018; age-adjusted incidence rate ratio (IRR) 0.30 per calendar year; 95% CI 0.13–0.68; p=0.004. CLS with ≥2 partners (reported in 36%, 35%, and 40% of questionnaires in 2015, 2016, 2017/18) was associated with higher risk of HIV infection (age-adjusted IRR 3.59; 95% CI 1.1–11.7; p=0.03). PrEP use (reported by 6%, 12% and 25% in 2015, 2016, 2017/18, and by 1 of 13 seroconverters) was not significantly associated with incidence risk (age-adjusted IRR 0.58; 95% CI 0.07–4.96 p=0.62). The decreasing trend over calendar time in HIV incidence remained similar after additional adjustment for CLS≥2 partners and PrEP use (adjusted IRR 0.31 per year; 95% CI 0.13–0.76; p=0.01).
Conclusions: In a prospective cohort of MSM closely followed over time, there was a substantial decline in HIV incidence from 2015–2018. This could well be partially driven by changes in prevalence of infectious HIV in the community. The contribution of PrEP use was difficult to ascertain due to limited power.

P107

Their story, your choice: a series of interactive films aimed at targeting HIV stigma in black African communities in the UK. Funded by Comic Relief and the MAC AIDS Fund

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Background: Black Africans (BA) are disproportionately affected by HIV in England, making up 38% of heterosexuals diagnosed in 2017, 57% of whom were diagnosed late. Late diagnosis was even higher in BA men (69%).
Stigma significantly limits uptake of HIV prevention and testing tools and services (NICE, 2017). People living with HIV (PLWHIV) experience more depression and anxiety than the general population (33% and 26%, compared to 19% and 15% respectively) (Auzenbergs et al, 2018).
Research shows that effective stigma interventions "allow the exploration of the personal experience through a story" (NAT, 2016). This project addressed HIV stigma among BA PLWHIV and other BA through storytelling, a strong tradition in many BA cultures.
Methods: Method: Working with Brown Boys Productions, Terrence Higgins Trust (THT) held interviews and focus groups with BA PLWHIV about their experiences of stigma and how it affected their life and relationships.
We produced three interactive videos based on these experiences, covering disclosure in relationships, late diagnosis, dating, and abuse. Each video had eight possible outcomes. They were hosted on the THT website, with information on HIV and referral to testing services.
To ensure they were realistic, culturally appropriate, appealing, and medically accurate we:

- user tested during production with BA PLWHIV and other BA
- engaged a BA writer living with HIV as a consultant
- conducted medical peer reviews.

We promoted the videos via targeted social media advertising.
Results: As of 6 January (with 2 of the 3 films launched)

- 32,565 landed on the first video
- 184 had conversations on social media. Data showed a significant proportion were impacted, learnt something new, and had engaged online.
- 110 visited 'where to get a test' page
- 169 looked at the testing page
- 41 self tests ordered
- 948 looked at other pages on THT's site.

From the way people watched multiple strands, chatted online, and ordered tests we can tell they learnt from the films, behaviour was influenced, and attitudes about HIV were altered.
Conclusions: Using storytelling and drama coupled with social media advertising has enabled us to reach a high volume of BA people disproportionately affected by HIV to address HIV stigma, demonstrating that this is an effective educational prevention tool.

P108

UNAIDS 90-90-90 targets are achievable in small urban clinics

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Background: The UNAIDS calls for the following goals to be reached by 2020: 90% of people living with HIV are diagnosed; 90% of those diagnosed are on antiretroviral (ART); 90% of individuals on treatment are virologically suppressed. We examined the outcomes of all patients receiving care at a small urban clinic
Methods: Case-note review of all patients accessing care between 1st January 2017 and 31st May 2018.
Results: Public Health England data revealed that in 2017, 92% of people living with HIV in the UK have been diagnosed. An estimated total of 102,000 people were living with HIV in the UK in 2017, with 8% (8,200) unaware of their infection. 98% of the 550 patients notes reviewed, (541/550) were on ART. 96% of patients on ART (518/541) were virally suppressed and achieved a viral load <200 copies/mL. The median age of patients was 44 years old (age range 21–84). 439 male and 111 females were audited with 340/439 males being MSM (62% of all patients accessing care). The 9 patients who were not recorded as taking ART, 1 was an elite controller and declined treatment, 5 were discussed regularly at MDT's and 3 were lost to follow up.
Conclusions: At our service, we have achieved the UNAIDS goals for patients living with HIV by being on treatment and virologically suppressed.

P109

Understanding the factors that influence late HIV diagnosis: a retrospective review

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Background: Individuals diagnosed late with HIV have a mortality within the first year of diagnosis that is ten times higher than those diagnosed promptly. Late diagnosis also represents a missed opportunity to initiate treatment which prevents onward transmission of HIV. Furthermore, late diagnosis is expensive – direct medical costs in the first year after HIV diagnosis are twice

as much for late diagnosed individuals, largely due to higher inpatient costs. The aim of this study was to identify the factors (including demographics and health service use) that are associated with lateness of diagnosis in an HIV clinic situated in an urban high-prevalence area.
Methods: A retrospective review of the clinical records of the last 100 diagnoses was performed. Time of diagnosis was defined at the first positive HIV test in the UK. CD4 count at diagnosis was used as a proxy for 'lateness' of diagnosis. Multiple linear regression was performed to identify if any of the following risk factors were associated with lateness of diagnosis: age, sex, ethnicity, country of birth, time in the UK, sexual orientation, location of diagnosis and self-reported history of seroconversion. A further qualitative analysis of very-late diagnoses (CD4 <200), including reviewing GP records to identify missed opportunities, is ongoing.
Results: Five individuals were excluded prior to analysis due to missing data. 63 of the 95 (66.3%) remaining patients were late diagnoses (CD4 <350), 34 (35.8%) were very-late diagnoses (CD4 <200) and 13 (13.7%) had an AIDS-defining illness. Age was the only risk factor that was statistically significantly associated with CD4 count, with a one-year increase in age at diagnosis associated with a lower CD4 count of almost 6 cells/mm^3 [β coefficient −5.66 (95% CI −9.98 to −1.34) p=0.011]. The other factors that were also associated with a lower CD4 count at diagnosis were male sex, African country of birth and no self-reported history of seroconversion, however these did not reach statistical significance due to the small sample size. In an analysis restricted to males, men who had sex with men had a CD4 count 15 cells/mm^3 lower (that is, later diagnosis) however this was of borderline statistical significance (β coefficient −14.72, p=0.08).
Conclusions: Better understanding of late diagnosis is critical to improving clinical pathways aimed at detecting early HIV, initiating prompt treatment and preventing onward transmission. This study highlighted that older people are more likely to be diagnosed later with HIV – some of this association may be due to stigma, both from health professionals less likely to consider HIV and offer testing in older populations, and from older individuals themselves less likely to seek or consent to HIV testing. The ongoing qualitative analysis of clinical records of the very-late diagnoses identified in this review will shed more light on missed opportunities for diagnosis and offers a unique shared learning opportunity which extends beyond the HIV clinic, to all clinical care settings.

P110

What can be learnt from mapping new HIV diagnoses across a high prevalence city?

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Background: We have previously reported a 50% fall in new HIV diagnoses from 2013 to 2017 in a single centre outside London. This compares to national data where new cases fell by 28% in the UK, and 46% in the London large fall clinics from 2015 to 2017. This city has an extremely high HIV prevalence, where 82% of the diagnosed population are men who have sex with men. The city holds Fast Track City Status and is working towards zero new HIV infections by 2025. In order to achieve this and better understand our local epidemic we are conducting geographic, demographic and clinical mapping of all new diagnoses.
Methods: New diagnoses of HIV were identified from electronic records and cross checked with paper and computerised notes for 2017–2018. Data were collected on patient and GP postcode, demographics, baseline CD4 count, viral load and avidity. Results were plotted on a city map to look for clusters.
Results: The number of new diagnoses declined from 76 in 2013 to 33 in 2018 (57% reduction). The proportion of new diagnoses that were incident fluctuated from 28 to 44% per annum with no obvious pattern. Postcode mapping revealed a diffuse distribution geographically with clustering in Kemptown (8), the central seafront area (14) and central Hove (6). Higher numbers than expected in the west of the city were noted (Figure P110.1).
The 74 new diagnoses within the city in the last 2 years were registered with 22 GP practices, of which 4 had 3 or more new diagnoses. Clustering was noted in the primary care centres located by the main train station (which serves a large transient population with a walk in policy), near the gay venues and the seafront. 35% did not give GP details to the HIV clinic. The median baseline CD4 count was 433 cells/mm^3; 37% presented late (CD4 of <350 cells/mm^3) compared with 43% nationally in 2017. The median baseline viral load was 688,310 copies/ml.

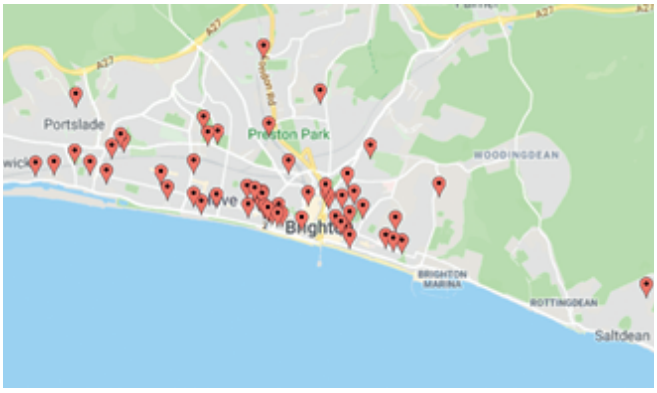

Figure P110.1.

Conclusions: Mapping these data will be useful in planning future HIV testing interventions, and directing resources to where they will be most effective. This information will be used to encourage GPs to increase testing in areas where clusters of new cases are resident. We will compare HIV testing rates in individual practices with new diagnoses rates to understand better whether we are missing opportunities in seemingly low diagnosis areas. Further analysis of patient demographics (age, ethnicity, sexuality) will help us more fully understand our epidemic and will be beneficial in working towards zero new HIV infections and zero HIV-related deaths by 2025.

Psychosocial Issues and Quality of Life

P111

A sexual empowerment group for women living with HIV

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Background: Women living with HIV (WLHIV) commonly report relationship difficulties (including sexual health concerns, cultural issues, the impact of abuse/trauma & disclosure difficulties). High levels of HIV-related stigma are also commonly reported within this group, with associated levels of low self-esteem. Low self-esteem levels subsequently affect mood, with mood disorders commonly reported in this population e.g. depression (22%) and anxiety (16%). This abstract therefore outlines a group-based intervention for WLHIV who have self-referred because of concerns about their relationships, sexual health, abuse & well-being. The aim of the group (6 x 3-hour weekly sessions) was to improve self-esteem levels and lower depression and anxiety scores.
Methods: Sessions provided:

- what is important in relationships
- cultural influences on sexual relationships
- sexual problems and solutions (including the impact of trauma)
- female anatomy/female genital mutilation
- sexual pleasure/sexual health/sexual violence
- communication and HIV disclosure

Participants:

- N=10 (Female)
- Age range: 24–59

Measures:

- Rosenberg Self Esteem Scale, PHQ-9, GAD-7, Clinical interview
- Qualitative self-reports of self-esteem/confidence

Results:

- Self-esteem levels increased by a 6.5 average bringing women from a low to a normal score (measured by the Rosenberg Self Esteem Scale).
- Depression levels decreased by a 4-point average bringing women from a 13 to a 9-point score (measured by the PHQ-9).
- Anxiety levels decreased by a 3-point average bringing women from a 11 to an 8-point score (measured by the GAD-7).
- Qualitative interviews corroborated these findings.

Conclusions:
- **Reduced distress**: This group had positive results and provided increased self-esteem levels and lowered both depression and anxiety scores.
- **Increased knowledge**: Participants were able to make the link that mood/stress/stigma may underpin many of their self-esteem issues.
- **Increased skills**: Participants reported an increase in the use of strategies for managing low mood/anxiety/self-doubt. Also evidenced by an increase in daily activities and community engagement.
- **Growing need:** This group meets a growing need for relationship issues to be addressed for WLHIV, particularly given that these concerns were never acknowledged during their care previously.

P112

An evaluation of quality of life through educational, vocational and housing outcomes for adults living with perinatally acquired HIV

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Background: Adolescents and young adults living with perinatally acquired HIV (AYAPaHIV), particularly those who ever had a CDC-C diagnosis are at increased risk of cognitive impairment and mental health disorders compared with HIV-negative peers. We evaluated educational and employment outcomes in AYAPaHIV using a modified HEADSSS assessment.
Methods: PaHIV aged ≥16 years attending a specialist service self-completed a modified HEADSSS questionnaire of educational, vocational and housing measures from August – December 2018. Results were compared with age and geographically-matched population data from the Office for National Statistics (ONS).
Results: 78 completed questionnaires were analysed; 44 (56%) female, 62 (79%) Black, median age 23 (IQR 20–26), 61/78 (78%) VL<200, 22 (28%) prior CDC-C diagnosis. Fewer AYAPaHIV aged 16–24 had Level 4 qualifications than the general population (p=0.0017), but this was not significant in those aged 25–34 years (p=0.19) (Table P112.1).

Table P112.1.

Highest level of qualification	AYAPaHIV age 16–24 % (n=x/50)	2011 ONS Census age 16–24 %	AYAPaHIV age 25–34 % (n=x/28)	2011 ONS Census age 25–34 %
0- No qualifications	16 (8)	9	11 (3)	7
1 (<4 GCSEs/ equivalent)	10 (5)	15	4 (1)	8
2 (5+GCSEs/ equivalent)	32 (16)	23	21 (6)	9
3 (2+A Levels/ equivalent)	36 (18)	24	21 (6)	9
4 (University degree/ equivalent)	4 (2)	23	43 (12)	56
Other (Foreign degrees)	2 (1)	6	0	12

23/50 (46%) AYAPaHIV aged 16–24 were employed, comparable to the 55% of 16–24 year olds employed in the general population. However, fewer AYAPaHIV aged 25–34 (19/28, 68%) were employed compared with 84% in the age-matched general population (p=0.0245). More AYAPaHIV (28/42, 67%) were employed in Standard Occupation Classification (SOC) tiers 6–9 (service/sales/elementary occupations – cleaners and wait staff), than the general population aged 16–34 (31%, p<0.0001). Fewer (10/42, 24%) AYAPaHIV occupied managerial or professional roles (SOC 1–5) than in the general aged matched population (69%, p<0.0001).10/14 (71%) of AYAPaHIV aged 18–21 earn less than £10,000 yearly, and 12/25 (48%) of AYAPaHIV aged 22–29 earn less than £20,000 yearly. This is not significantly different from the income of their age-matched peers nationally.More AYAPaHIV (49/78, 63%) live with parents or older relatives compared to 34% of 16–34 year olds in London (p<0.0001).

Conclusions: In this cohort, AYAPaHIV achieved significantly lower educational and employment outcomes in adult life when compared to UK age-matched controls. The potential impact on quality of life warrants additional investigation and support.

P113

Association with side effects to antiretroviral treatment and health-related quality of life: a population study of people living with HIV in England and Wales

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Background: Studies have reported that side effects are a major reason why people living with HIV may discontinue antiretroviral treatment (ART). We examine population-level association between health-related quality of life (HRQoL) and side effects as well as other sociodemographic factors.
Methods: Positive Voices is a cross-sectional, probability survey of 4,422 people with HIV attending 73 HIV clinics in England and Wales, conducted between January and September 2017 (51% response rate). Participants were asked whether they experienced side effects to ART in the past 4 weeks. HRQoL was measured using the generic Euroqol (EQ-5D-5L) instrument. Utility values were calculated from the weighted Positive Voices dataset and ranged from 0 to 1, where 0 represents death and 1 represents the best possible health. Multivariable linear regression analysis was used to explore the association between side effects and HRQoL.
Results: Overall, 17% of people living with HIV reported experiencing side effects to ART within the last four weeks. The HRQoL utility scores for this group was 0.67. This was significantly lower in comparison to 0.86 in those who did not report side effects (r=−0.09; p<0.001; CI_{95}=−0.11, −0.08). After adjustment for other social, demographic and health factors, HRQoL was also negatively associated with the number of diagnosed chronic conditions (r=−0.05; p<0.001; CI_{95}=−0.06, −0.05); living in London (r=−0.01; p=0.04; CI_{95}=−0.02, 0.00); living in social housing (council or housing association) (r=−0.06; p<0.001; CI_{95}=−0.08, −0.05); being homeless or in temporary accommodation (r=−0.05; p<0.001; CI_{95}=−0.09, −0.02); living in sheltered accommodation or residential care (r=−0.15; p=0.02; CI_{95}=−0.28, −0.02); avoiding healthcare due to fear of discrimination in the past year (r=−0.04; p=0.03; CI_{95}=−0.08, −0.01); not being up-to-date with bills (r=−0.03; p<0.001; CI_{95}=−0.05, −0.01); not always having money for basic needs (r=−0.05; p<0.001; CI_{95}=−0.06, −0.03); drinking alcohol (r=−0.03; p<0.001; CI_{95}=−0.05, −0.02); and being of white ethnicity (r=−0.03; p<0.001; CI_{95}=−0.04, −0.02).
Conclusions: Experience of side effects was strongly, independently associated with poorer HRQoL, along with factors like unstable housing, financial insecurity, fear of discrimination, co-morbidities, ethnicity and alcohol use. Interventions to improve management of side effects and living situations for people living with HIV may reduce experience of ART side effects and improve adherence.

P114

Disability prevalence, domains and associations with age, among people living with HIV accessing routine outpatient HV care in London, UK: a cross-sectional self-report study

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Background: HIV is a chronic condition with episodic disability. As people living with HIV (PLHIV) live longer they may face new or worsening disability, defined as impairments, activity limitations and participation restrictions. However the nature and extent of disability experienced by PLHIV in the United Kingdom (UK) is unknown. Our aim was to investigate disability prevalence, and domains, and their associations with age, among PLHIV in London, UK.
Methods: A quantitative, cross-sectional study was conducted. PLHIV aged ≥18 years, stable on HIV treatments for ≥6 months, accessing routine outpatient HIV care were recruited. The self-reported WHODAS 12-item questionnaire (6 domains), HIV Disability Questionnaire (HDQ) (6 domains),

and demographic questionnaire including two disability classification questions from the Equality Act 2010, were administered. Median and interquartile ranges (IQR) for i) WHODAS complex sum (range 0–100), and ii) HDQ domain and total presence, severity and episodic scores (range 0–100) were derived. Prevalence of disability was reported as proportion (95% confidence interval (CI)), defined as achieving severe or moderate thresholds, by i) responding "yes" to both UK Equality Act 2010 items, and ii) scoring ≥2 mild/moderate, or ≥1 moderate/severe activity limitation on any WHODAS items. Disability domains were reported as i) presence of activity limitations (score ≥1) as a percentage per WHODAS domain, and ii) highest median presence, severity, and episodic, domain (subscale) scores. Analysis was explorative and bivariate. Associations between categorised age (<50 and ≥50 years) and all disability variables were examined with Mann-Whitney U and Chi-Squared tests. Critical level of significance adjusted from 0.05 with Bonferonni correction.

Results: Of the 201 participants, 88% were male, mean age of 47 years, 97% were virally suppressed, and living with a median of 2 comorbidities. Median (IQR) WHODAS complex sum (10.4 (IQR 2.1–25.6)), HDQ total presence (36.2 (21.7–59.4), severity (13.4 (6.3–28.8)) and episodic (17.4 (5.8–36.2)) scores. Prevalence of disability ranged from 40% (79/201) [CI 0.33,0.46] to 71% (141/200) [CI 0.64,0.77] defined by UK Equality Act 2010 and WHODAS presence of activity limitations respectively. Domains of disability experienced included participation (52%), life activities (42%), getting along (38%), cognition (37%), mobility (36%), and self-care (23%), as measured by WHODAS. Highest presence, severity and episodic subscale scores were in the uncertainty (57/100), uncertainty (23/100), and physical symptoms and impairments (20/100) domains, respectively. Compared to younger participants (<50 years), older participants (≥50 years) reported greater presence ($p<0.001$) and severity ($p<0.001$) of physical symptoms and impairments, and greater presence ($p<0.001$) and severity ($p<0.001$) of difficulty performing day-to-day activities, as measured by HDQ.

Conclusions: Prevalence of self-reported disability ranged from 40–71% in a sample of PLHIV accessing routine outpatient HIV care in London, UK. Disability experienced by PLHIV is multi-dimensional and episodic in nature, spanning all WHODAS domains, and experienced most in HDQ uncertainty and physical domains. Exploratory analysis demonstrated that participant's ≥50 years reported different disability domains compared to younger participants. Results can help providers better understand the nature and extent of disability experienced by PLHIV in the UK. Next steps include multivariate analysis to explore further associations with disability.

P115

Evaluation of the psychometric properties of the HIV Disability Questionnaire (HDQ) among adults living with HIV in London, UK: a cross-sectional self-report measurement study

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Background: The HIV Disability Questionnaire (HDQ) is a patient-reported outcome measure developed from the perspectives of people living with HIV (PLHIV) in Canada to describe the presence, severity and episodic nature of disability. The HDQ measures across six domains: physical, cognitive and, mental and emotional health symptoms and impairments, uncertainty, difficulty with day-to-day activities and challenges to social inclusion. However, the ability of the HDQ to measure disability in the United Kingdom (UK) is unknown. Our aim was to assess the measurement properties of the HDQ with PLHIV in London, UK.

Methods: This is a cross-sectional self-report measurement study. We recruited adults living with HIV during routine outpatient HIV care in London, UK. We administered the HDQ paired with seven criterion measures and a demographic questionnaire. We calculated median and interquartile ranges (IQR) for HDQ disability presence, severity and episodic scores. For internal consistency reliability, we calculated Cronbach's alpha (α) and Kuder-Richardson-20 (KR-20) statistics for disability and episodic scores, respectively (>0.80 considered acceptable). For precision, we calculated the smallest detectable change (SDC) for each HDQ severity domain. For construct validity, we tested 36 *a priori* hypotheses assessing correlations between HDQ and criterion measure scores (>75% confirmed hypotheses demonstrated construct validity).

Results: Of the 243 participants, all identified as male, median age 40 years, and 19% were living with ≥2 concurrent health conditions. Highest disability presence and severity scores were in the uncertainty domain. Cronbach's alpha for the severity scale ranged from 0.85 (95% CI: 0.80–0.90) in the cognitive domain to 0.93 (95% CI: 0.91–0.94) in the mental-emotional domain. The KR-20 statistic for the episodic scale ranged from 0.74 (95% CI: 0.66–0.83) in the cognitive domain to 0.91 (95% CI: 0.89–0.94) in the uncertainty domain. The SDC ranged from 7.3–15.0 points for the difficulties with day-to-day activities and cognitive symptoms domains, respectively. Thirty of the 36 (83%) construct validity hypotheses were confirmed.

Conclusions: The HDQ possesses internal consistency reliability and construct validity with varied precision when administered to men living with HIV accessing routine outpatient HIV care in London, UK. Future research should examine international comparisons of disability among PLHIV.

P116

Factors associated with depressive symptoms among women living with HIV (WLHIV) in England, 2017: data from the 2017 Positive Voices survey

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Background: As women living with HIV (WLHIV) lack representation in research and depression impacts on quality of life and other health outcomes, this study aims to identify risk factors for depressive symptoms among women living with HIV (WLHIV).

Methods: The study used cross-sectional national Positive Voices survey data from WLHIV seeking care in 2017. Univariable and multivariable logistic regressions were used to identify crude and adjusted associations for demographic, lifestyle, health-related risk factors associated with depressive symptoms defined by the general health questionnaire (GHQ-12 score ≥4). Directed acyclic graphs (DAG) were used to identify confounders for consideration in multivariable logistic regression.

Results: Of 1,016 WLHIV, the median age was 45 years, 62% (624) were of Black African ethnicity, and 57% (405) earned under £20,000.

Overall, 27% (274) WLHIV had depressive symptoms. The strongest risk factors associated with depression in WLHIV were loneliness and isolation (60% vs. 19%, AOR 5.51, CI 3.54–8.59) and lower ART adherence (59% vs. 27%, AOR 4.95, CI 1.53–16.00).

These were followed by not always having enough money for basic needs (49% vs. 17%, AOR 4.46, CI 2.71–7.35); self-reported pain (45% vs. 9%, AOR 4.56, CI 3.01–6.89); disengagement from partner (51% vs. 18%, AOR 3.92, CI 1.94–7.92), mobility problems (55% vs. 18%, AOR 2.06, CI 1.30–3.27); not having a partner (42% vs. 18%; AOR 1.81, CI 1.25–2.62); avoiding healthcare in the previous year (42% vs. 23%; AOR 1.75, CI 1.12–2.73); and higher burden of diagnosed chronic conditions (27%, AOR 1.53, CI 1.18–1.55).

Depression was not associated with substance use or other demographic factors.

Conclusions: Economic, health and social factors were associated with depression in WLHIV. These modifiable risk factors can be mitigated through targeted, bespoke, holistic interventions to acknowledge, address and improve the mental health and well-being of WLHIV.

P117

Healthcare needs beyond HIV in a changing NHS: participant exploration of Positive Voices data

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Background: Managing multiple health conditions is common among people living with HIV (PLHIV). Three quarters (73%) reported diagnosis of another long-term condition in the Positive Voices survey (completed by 4,400 people

living with HIV randomly sampled from 73 clinics in England and Wales in 2017). Positive Voices showed long-term conditions cluster and increase with older age. By 2023 over half of people with HIV will be over 50 and healthcare needs will be increasingly complex. This has implications in a changing NHS where the HIV clinic has traditionally been at the centre of providing care.
Methods: Survey participants who indicated that they wanted to be further involved in Positive Voices were contacted in early 2018. From these, 28 people from around the country attended two peer lead workshops in London in May 2018. Here they reviewed initial findings, discussed key themes, shared their own insights and directed how the Positive Voices data should be further analysed. They discussed the further analysis and communication of the findings a follow-up workshop one month later. Two further workshops, one with black African men and women and a women-only workshop, were held to ensure a good representation of the diversity of PLHIV and that people were in a 'safe space' to contribute.
Participants explored the long-term condition management needs reported and were especially concerned with how these were managed within the NHS, stigma and other barriers to care.
Results: The survey found high levels of satisfaction with HIV clinics (on average rated 9.3 out of 10). Over 95% felt involved in decisions about their HIV care and enabled to self-manage their HIV. In contrast, 77% reported other health needs not related to HIV, but only half had these met. This was often due to obstacles in accessing services and difficulty navigating health system.
It was indicated that, outside of HIV, healthcare providers can lack knowledge or confidence to treat and prescribe for conditions when HIV is also present. Many PLHIV feel responsible for educating non-HIV clinicians and researching drug interactions and side-effects, sometimes avoiding seeking healthcare.
"It was primarily up to me and my HIV clinic to intervene and advise the specialists. . ." Johannes, 49
"Without my HIV doctor, I would not have had access to other types of secondary and tertiary care. . ." Nicholas, 40
Anticipated or experienced stigma was a key issue. One in 3 (35%) had been worried that they would be treated differently, 14% had experienced discrimination in healthcare and 11% had been denied or refused a treatment or procedure.
Conclusions: Robust communication and referral pathways are vital to ensuring that clinical needs beyond HIV are met. Improved communication between HIV clinicians and other NHS providers is vital. Clinicians in other specialities should have easy access to up-to-date advice on HIV and drug interactions. National commissioners and NHS leaders must address HIV stigma in healthcare; all NHS staff should be trained on HIV have links to their local HIV expertise and services.

P118

Improving patient engagement and medication adherence in young adults with perinatally acquired HIV (PAHIV)

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Background: Lack of engagement in healthcare and poor adherence to medication in young adults with PAHIV results in poor quality of life, morbidity and mortality, whilst also increasing the risk of onward transmission. Identifying and addressing the barriers to effective engagement is required to improve outcomes in this high risk group. Through a patient engagement quality improvement initiative in a dedicated young adult HIV service in a central London teaching hospital, we aim to develop an intervention designed alongside our target population, to improve patient experience and adherence to medication.
Methods: A questionnaire was administered alongside a focus group to ascertain service satisfaction and opinions on potential interventions. By identifying recurring themes and obtaining qualitative data, a reflective patient diary including a "pill tracker" was formulated. The reflective diary was reviewed in a second focus group and information on support organisations, the clinical team and useful definitions and explanations were included. Renamed 'The Journey', it was circulated to 'high risk' patients in conjunction with a questionnaire to provide a baseline of pre-intervention satisfaction and adherence. High risk patients were identified from clinic database by criteria including: high HIV viral load (VL), low CD4 count, multiple missed appointments and hospital admissions. An initial trial period of five weeks will be followed by a post-intervention questionnaire to measure success.
Results: 57 patients with PAHIV attend the young adult HIV service, age range 17–32 years, of whom: 21 (36%) had previous AIDS defining illness, 7 (12%) had CD4 <200 and 4 (7%) had CD4 <50. We identified 7 high risk patients with CD4 <200, with an average VL of 100,561, 4 of whom had a history of, or current AIDS defining illnesses. Of note, 30/58 (52%) of patients are currently receiving psychosocial input for mental health and social support. Themes from focus groups included: medication not being a top priority as many other social factors to contend with; patients know they have to take medication, they don't like to be told repeatedly; dislike of taking medication in front of other people, fear of disclosure; importance of support organisations outside the clinical setting; dislike of clinical setting and waiting area; need for more psychological support; need for information about medical terms. The 7 patients identified were keen to use 'The Journey', with 100% uptake. Baseline questionnaire revealed that despite poor control of HIV, patients felt fairly confident in how to take their medication; when asked if they ever feel down or frustrated about having to take medication, answers ranged from 'never' to 'every day'. Further results will be obtained after the ongoing intervention trial period, to assess impact.
Conclusions: A need has been highlighted from this young adult cohort for interventions that address personal aspects of patients' lives, which in the long term could see an improvement in medication adherence, appointment attendance and encourages discussions surrounding psychosocial factors. We hope that by introducing 'The Journey', patients can reflect on difficulties and a more person-centred approach is adopted, in order to optimise treatment and support.

P119

New models of care with specialist women's clinics can provide better support for women living with HIV

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Background: Women living with HIV have different care needs to men. In our predominantly male cohort of 2,350 patients we developed a user feedback based clinic to tackle all the issues women with HIV face to ensure their needs were being met. Our specialist women's clinic started in October 2016 to address the additional health needs women living with HIV may have including sexual and reproductive health which may be difficult to comprehensively assess in a routine clinic appointment. One clinic visit provides specialist HIV care, bone and cardiovascular health assessment DXA scan, cardiovascular risk assessment, sexual health screening services, cytology, domestic violence, social and mental health assessments. Our team comprises an HIV consultant, Sexual Reproductive Health doctor, specialist HIV nurses and a Women's Health Advisor and a Community Women's worker. the aim is for every woman to attend this clinic at least once during her HIV follow up
Methods: We aimed to assess the impact the specialist clinic had on women's sexual and reproductive health in comparison with women who only attended routine HIV outpatient's services. A case note review was performed on 50 women each who attended our Specialist Clinic (SC) or Routine HIV Clinic. Data was collated on demographics and sexual & reproductive health as well as psychological and domestic violence issues. We audited our practice against BHIVA Standard 7 (2018) for people living with HIV and the current draft BHIVA/BASHH/FSRH guidelines (2017).
Results: Table P119.1

Table P119.1.

Demographics	Specialist Women's clinic n=50	Routine HIV clinic n=50
Median age (range)	44 (21–84)	48 (26–64)
Ethnicity		
Black African	28 (56%)	33 (66%)
White UK	19 (38%)	4 (8%)
White Non UK	1 (2%)	9 (18%)
Asian	1 (2%)	2 (4%)
CD4 count cells/mm^3 (range)	666 (147–2277)	548 (233–1589)
Viral load <40 c/mL (% of pts)	44 (88%)	46 (92%)
Issue addressed		
Sexual health screen	49/50 (98%)	34/50 (68%)
Cytology	50/50 (100%)	35/50 (70%)
Domestic violence	50/50 (100%)	7/50 (14%)
Psych assessment	43/50 (86%)	32/50 (64%)
Contraception	37/41 (90%)	25/44 (56%)

Conclusions: Our specialist Women's clinic is more effective in addressing the needs of women living with HIV. It is well documented that women living with HIV are at higher risk of domestic and intimate partner violence than women with out IV but attention to this is not being reflected in our routine HIV clinic. If women are not referred or choose not to attend this service or such a service is not available, staff within generic HIV services need to ensure that these issues are addressed in an annual health check. Training of staff within routine HIV outpatient services regarding domestic violence needs to be a priority.

P120

Patient-reported outcomes among adults living with HIV-1 who were randomly allocated to B/F/TAF versus DTG/ABC/3TC in two Phase 3 controlled clinical trials over 48 weeks

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Background: As efficacy of triple antiretroviral therapy remains high, patient wellbeing (e.g. patient-reported outcomes) has become an important differentiator among regimens. Bictegravir is a novel, unboosted integrase strand transfer inhibitor, coformulated with emtricitabine and tenofovir alafenamide (B/F/TAF). We aimed to characterise change in symptoms of adult patients with HIV-1-infection after initiating or switching to B/F/TAF versus ABC/DTG/3TC.
Methods: Treatment-naïve adults were randomised 1:1 to receive blinded B/F/TAF or ABC/DTG/3TC (study 1489). Virologically suppressed adults were randomised 1:1 to switch to B/F/TAF or continue ABC/DTG/3TC in blinded fashion (study 1844). Across studies, HIV Symptoms Distress Module (HIV-SI) was administered at baseline (BL), W4, W12, and W48 with responses dichotomised as bothersome/not. Treatment differences were assessed using logistic regression models adjusted for BL HIV-SI count, age, sex, BL Veterans Aging Cohort Study Index, medical history of serious mental illness, BL Short Form [SF]-36 Physical Component Summary [PCS], BL SF-36 Mental Component Summary [MCS], and years since HIV diagnosis (study 1844 only). Longitudinal modeling of bothersome symptoms was conducted using generalised, mixed model including treatment, time, time-by-treatment, and additional covariates. Pittsburgh Sleep Quality Index (PSQI), administered with same frequency as HIV-SI, with total score dichotomised as good/poor sleep quality. Similar models to HIV-SI were applied using BL sleep quality and BL SF-36 MCS as covariates.
Results: Bothersome symptoms were reported by fewer participants on B/F/TAF than ABC/DTG/3TC in both studies. For treatment-naïve adults, fatigue/loss of energy, nausea/vomiting, dizzy/lightheadedness, and difficulty sleeping significantly favoured B/F/TAF at ≥2 timepoints. Fatigue and nausea were significantly less common for B/F/TAF in longitudinal models. For virologically suppressed participants, nausea/vomiting, sad/down/depressed, nervous/anxious, and poor sleep quality (from the PSQI) significantly favoured B/F/TAF at ≥2 timepoints and in longitudinal models. No symptom favoured ABC/DTG/3TC at ≥2 timepoints in either study.
Conclusions: Results suggest that patient-reported wellbeing may be better with B/F/TAF compared to ABC/DTG/3TC. B/F/TAF was associated with significantly lower prevalence of multiple bothersome symptoms across gastrointestinal disorders, neuropsychiatric events, and sleep.

P121

Psychosocial factors affecting mortality in patients living with HIV: a retrospective audit and case presentation

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Background: People living with HIV experience higher rates of psychological difficulty which impacts both physical and mental health, leading to increased morbidity and mortality. We had observed 4 deaths within the last 12 months from our cohort that all seemed to have been linked to poor mental health. Consequently an audit was conducted to determine the rate of mortality in our patients, and where adverse psychosocial factors appeared to play a key role whether adequate psychosocial support had been put in place.
Methods: All patient records are kept in an online electronic database. Records were reviewed between 1st January 2013 and 1st October 2018. Auditing standards were taken from: BHIVA guidance for psychological support for patients living with HIV.
Results: There were a total of 19 deaths. The median age was 55 and 90% were male. 4 (21%) of these deaths were unexpected. All 4 deaths occurred during 2018 and were in men aged between 35–55. One patient had recently re-engaged with services following intermittent IV drug use and homelessness. He died as a consequence of heroin use. He was known to the drug-liaison services but had not been referred for psychological support. The second patient had been admitted following an intentional overdose of benzodiazepines, following which his mental health had deteriorated and he had dis-engaged from HIV services. He died from a stimulant overdose. He was already under regular review by psychiatry services. The third patient was known to suffer with mild depression and had become increasingly withdrawn, self-neglected, refusing food over a 3 month period. He dis-engaged from services and consequently was not referred for psychological help. He was found collapsed at home and had an out of hospital cardiac arrest. The final patient was known to have a complex medical and psychosocial history and had seemed well from a mental health perspective when last seen in HIV clinic 2 months prior to his death. Circumstances around his death are unclear. In all 4 cases patients had been adequately screened for psychosocial issues. Only 2 of the 4 patients were offered and had access to special support services. 3 of the 4 patients dis-engaged with HIV services prior to their deaths.
Conclusions: As a result of this audit, dis-engagement from our service was recognised as a significant event and males between 35–55 years may be particularly at risk of death related to poor mental health. Our service now plans to offer additional support to these patients, including: early specialist referral, consideration of HIV specialist nurse community visits and more frequent clinic review.

P122

Quality of life along the continuum of care for HIV in England

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Background: Across the continuum of care, ensuring a good health related quality of life (HRQoL) is important as it relates holistically to general health and overall well-being. We present an analysis of population-level variations in HRQoL at each point of the care pathway among people living with HIV in England by risk group.
Methods: Positive Voices is a cross-sectional, probability survey of 4,422 people with HIV attending 73 HIV clinics in England and Wales, conducted between January and September 2017 (51% response rate). Participants were asked whether they experienced side-effects to ART in the past 4 weeks. HRQoL was measured using the generic Euroqol (EQ-5D-5L) instrument. Utility values were calculated from weighted Positive Voices dataset and ranged from 0 to 1, where 0 represents death and 1 represents the best possible health. National HIV surveillance data was used to generate the cascade of care.

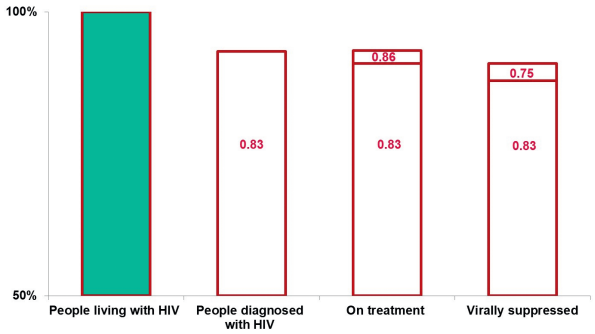

Figure P122.1.

Results: Figure P122.1.
Overall, HRoL (utility score) for the population of people in HIV care in England was 0.83 (this compared to 0.86 in the general population). This was similar for gay and bisexual men (0.82), heterosexual men (0.84), and heterosexual women (0.83), and lower for people who inject drugs (PWID) (0.77). Of the 98% of people on treatment, HRQoL was similar for people on treatment (0.83) compared to those not on treatment (0.86) – this was similar among gay and bisexual men (0.82 vs. 0.81), heterosexual men (0.84 vs. 0.87) and heterosexual women (0.83 vs. 0.89). PWID who were not on treatment reported a poorer quality of life (0.62) compared to PWID on treatment (0.77). Among those on treatment, the 97% who were virally reported consistently higher HRQoL than those on treatment and not virally suppressed: overall, this was 0.83 vs. 0.75; gay and bisexual men 0.83 vs. 0.64; heterosexual men 0.85 vs. 0.74; PWID 0.79 vs. 0.63. Heterosexual women were the exception, and reported similar HRQoL whether they were virally suppressed or not (0.83 vs. 0.84) (Figure P122.1).
Conclusions: Supporting people with HIV to maintain a good quality of life is increasingly important to safeguard good clinical HIV outcomes into the future. We show good quality of life among the majority of people living with HIV in England, regardless of treatment status. Among the 3% of people who are on treatment and not virally suppressed, we see a significant decline in HRQoL. Services that address the wider determinants of treatment adherence and non-suppression are needed to address this disparity.

P123

The unmet mental health needs of people living with HIV: participant exploration of the Positive Voices data

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Background: People living with HIV (PLHIV) are around twice as likely to have mental health problems compared to the general public. In the recent Positive Voices survey (completed by 4,400 people living with HIV randomly sampled from 73 clinics in England and Wales in 2017) the most common mental health conditions reported were depression (33%) and anxiety (26%). Standards of care for HIV in the UK recognise the importance of access to mental health services. But accessibility depends on resources and systems outside of the HIV commissioning framework.
Methods: Survey participants who indicated that they wanted to be further involved in Positive Voices were contacted. From these, 28 people from around the country attended two workshops in London in May 2018. Here they reviewed initial findings, discussed key themes, shared their own insights and directed how the Positive Voices data should be further analysed. They discussed the further analysis and communication of the findings a follow-up workshop one month later. Two further workshops, one with black African men and women and a women-only workshop, were held to ensure a good representation of the diversity of PLHIV and that people were in a 'safe space' to contribute.
Participants identified mental health as a key issue and chose to explore how the mental health needs of PLHIV were being met.
Results: In the past year one in three (33%) PLHIV needed support managing stress, but for 53% this need went unmet. One in three (31%) also reported need for a psychologist or counsellor, but this went unmet for 38%. Participants' stories revealed the pivotal role of HIV clinics in securing mental health care as well as individuals in advocating for themselves.
"Accessing the clinical psychology support services at my HIV clinic was fundamental to me coping with the loss of my relationship when first diagnosed with HIV." Bernard, 52
"The fact that my mental health needs are not being met means I am unable to get back to work and fully participate in society." Nicholas, 40
Many of the other needs of PLHIV were also interrelated with mental health, e.g. loneliness and isolation, poverty, alcohol and drug use, and managing multiple health conditions. In this context the diminishing access to peer support, information and advice through HIV support services that was also shown, is especially concerning.
Conclusions: The link between HIV and poor mental health varies, but having HIV is clearly connected to how mental health is experienced. PLHIV should be regularly offered mental health screening, with timely assessment and management by qualified professionals as needed. Mental health services must be equipped with knowledge about HIV and create stronger links and referral pathways with HIV specialist services. HIV commissioners should ensure there is a clear pathway for mental healthcare for PLHIV. This could include mental health services that are part of or connected to the HIV clinic, primary care, and local mental health services.

P124

Use of peer-led research design model in HIV policy research

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Background: In peer-led research, people with personal experience of the topic or from the target population are proactively involved in doing the research. This approach, founded in community-based participatory research, moves away from traditional 'top down' models. It accepts and employs the inherent subjectivities in the researcher's perception, as well as utilising the perceived need for social action. This model is suited to the HIV sector which has a history of community-based action since the start of the epidemic.
Methods: This model was piloted in a research project looking at the first generation growing older with HIV. Twelve volunteer peer researchers were recruited to the project team and were involved throughout. Following the success of the pilot, this model has now been replicated in two further projects, focusing on women and relationships and sex education.
Results: This robust way of working has resulted in better quality output/research findings in a range of contexts.
Aspects which worked particularly well include:

- Involvement in question writing, which helped to ensure all surveys and interviews were relevant and appropriate for the target audience.
- Peer researchers were able to quickly build rapport and understanding with participants during the qualitative phase, leading to rich and insightful data being collected.
- Holding data summits at the end of the analysis phase allowed findings to be interpreted and recommendations set relevant to the real-world.
- Involvement in the dissemination, including presenting at launch events, enabling peer researchers to have a direct impact on policy and practice.
- Peer researchers reported benefits of the model included the opportunity to build research skills and use their experiences of the research topic in a professional context.

This form of research, although eliciting positive results, was time and resource demanding. Ensuring the peer team was representative of the target population was a key challenge. The required time commitment restricted potential peers with employment or carer commitments from being involved. As we integrate this model into our routine working, the challenge will be to involve peers earlier in the setting of the research agenda.
Conclusions: The model has successfully shown to be a robust approach to research within the HIV policy context. The research has been given greater recognition and credence across the sector due to the meaningful involvement of the community.

Service Development, Education and Training

P125

A human rights approach to successfully change national aviation laws to enable people living with HIV to train as pilots

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Background: People living with HIV are restricted from gaining required certification to train as Commercial Airline Pilots (CAP) based on medical assessment guidelines set out by the European Aviation Safety Authority (EASA). Although EASA allows for member states to deviate from these guidelines, whilst maintaining a high level of safety, the United Kingdom had refused to grant medical certificates to first time applicants living with HIV. Without coordinated efforts toward updating the policies on medical assessment, the Civil Aviation Authority (CAA) would be in opposition of the Equality Act 2010.
Methods: HIV Scotland, the national HIV policy NGO, worked with community members, clinicians, media, and politicians to outline the human rights implications and identifying existing evidence that illustrated that the CAA policies were not in accordance with current medical evidence and international best practice. The British HIV Association and the National Gay Pilots Association provided national and international evidence that supported a change in this policy that people living with HIV on effective treatment did not have neurocognitive impairments that would impact on safety, and therefore should be granted a medical certificate to enable applicants to become a pilot.
Through work with journalists and community activists who were directly impacted by this policy, we were able to raise the profile of this story, whilst highlighting contemporary information HIV. The campaign created opportunities for political leadership and was supported by Scotland's First Minister.
Results: This community-led work illustrated that by using human rights principles, and partnering with relevant organisations, we were able to advocate to change policy to be in accordance with current medical evidence. This approach allowed the CAA to deviate from the EASA regulations by awarding medical certificates to people living with HIV who would otherwise pass a medical examination. This has resulted in people living with HIV being able to take up training programmes to become CAPs in the UK.
Conclusions: By creating links between human rights legislation and the CAA policy, and by building an effective media strategy, we were able to place this discriminatory policy high on the agenda of policy-makers and stakeholders which lead to the discrimination being overturned.

P126

An audit on accuracy of baseline investigations on newly diagnosed adult HIV-1-positive individuals

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Background: An audit was conducted to assess how well our HIV service adhered to the 2016 British HIV Association (BHIVA) guidelines for the routine investigation and monitoring of adult HIV-1-infected individuals in a cohort of newly registered patients.
Methods: Retrospective case-note review of all newly registered patients during a three-month period. Electronic patient records were examined and data on 22 discrete investigations were gathered to assess adherence to the monitoring guidelines.
Results: 53 patients were included in the audit: 72% male, 28% female, 45% aged 16–39, 34% aged 40–49 and 21% aged 50 or over. Areas where the service performed well and 100% of patients received testing included: HIV viral load, CD4+ cell count, HIV drug resistance, HLA B5701 and Hepatitis B and C status. Areas where the service performed less well: 77% and 75% respectively were offered a sexual health and mental health screen. 11% and 18% respectively had their cardiovascular and fracture risks assessed. 81% of patients who were considered at risk of latent TB infection (LTBI) were tested.
Conclusions: Key areas for improvement are in measuring and recording data on cardiovascular and fracture risk in eligible patients. Recommendations made included the following: an updated and accurate baseline investigation panel, a new electronic medical HIV assessment proforma which includes a link to the FRAX calculator and a prompt to test for LTBI. Increased BP machines and weighing scales in clinical areas to improve cardiovascular risk recording. Strict adherence to a four-appointment pathway for a new patient: HIV nurse, HIV health advisor, HIV doctor and HIV peer support to improve capture of key information and relevant support and signposting of patients. The new HIV diagnosis and monitoring pathway in the service is currently being redesigned and the findings from this audit will inform the design.

P127

Annual viral load monitoring in virologically suppressed patients

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Background: For patients established on antiretroviral therapy (ART) with virological suppression, BHIVA 2016 guidelines for routine monitoring and investigation, recommends six monthly viral load monitoring and for patients taking a protease inhibitor based regimen, up to 12 months between visits. Stable patients with an undetectable viral load (VL) for more than one year were offered either six monthly or annual visits irrespective of their ART regimen. The aim of this audit is to establish whether stable patients who attend the clinic once a year for viral load monitoring remain virologically suppressed.
Methods: The clinic database 'Lilie' was reviewed for HIV monitoring attendances between December 2016 and November 2018. Patients included in the analysis had 2 VL results within this period at least 10–14 months apart or if appointments were booked 10–14 months since their last blood tests. Patients attending annually had an appointment with the clinical nurse specialists for routine bloods including viral load, annual health checks and STI screen if applicable. Medication reviews were conducted via email, telephone or face to face consultations but patients could also request advice about their medicines or deliveries by directly contacting the specialist HIV pharmacist. Patients were asked to register for home delivery rather than collecting their medication from the clinic.
Results: 360 patients attended the service in the 24 month period. 356/360 (99%) were prescribed ART and 324/360 (90%) had an undetectable viral load. 234/360 (65%) attended for 6 monthly viral load monitoring, 75/360 (21%) had $\geq$3 viral load tests and 51/360 (14%) patients either had a viral load test done or an appointment booked, 10–14 months since their last result. 51 patients had $\leq$2 viral load tests performed within the 24 month period. However the following were excluded from the analysis: 2/51 patients who had an undetectable viral load without ART required and 3/51 patients did not attend (DNA) their appointments. 46 patients were enrolled onto the annual viral load monitoring service and two viral load test results were available for 17/46 (37%). All 17 patients were virologically suppressed and prescribed the following ART regimens: 11/17 (65%) patients were taking an NNRTI based regimen, 5/17 (29%) a protease inhibitor based regimen and 1/17 (6%) an integrase inhibitor based regimen. 15/17 (88%) received their medicines from the homecare provider either every 6 months (14/17) or 3 monthly (1/17). 2/17 collected their medication from the clinic every 6 months.
Conclusions: Annual viral load monitoring should be considered for virologically suppressed, stable patients reporting long term good adherence to medication regardless of the ART regimen. Patients should have access to support and advice between appointments and a robust pathway is required to allow for changes in prescribing practice, NHS England prescribing initiatives and switching because of clinical need.

P128

Antiretroviral use in the Midlands and East of England: baseline data on over 10,000 HIV-positive patients

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Background: The Midlands and East HIV Improving Value Network (MEHIVN) was established mid-2018, using the first regional ARV prescribing guidance from 2016 as the basis. The group consists of consultant physicians, pharmacists, specialised commissioners, patient representatives and representatives of the National HIV CRG, BHIVA and HIVPA. The remit of the group is to develop guidance on rational ARV prescribing that aims to deliver cost-effective and high-quality patient care for the NHS, whilst respecting the importance of National Guidelines and patient and clinician choice.
Methods: The Midlands and East ARV treatment guidance have evolved so that ART regimens are grouped into "cost bands" calculated according to the sum of the prices of constituent drugs at the time of data collection. There are 8 costing bands (0, 1a, 1b, 2a, 2b, 3a, 3b and 4) with the price for Bands 0 regimens being <£100 per month, up through to Band 4 regimens being > £700 per month. Band cost ranges were defined in 2016 following an ARV procurement process. The depiction of only average regimen costs within bands allows for preservation of commercially sensitive information.
Basic principles are that starting therapy use drugs within the lower bands unless compelling clinical reasons not too.
The guidelines consider patients needing to switch ARV regimens for clinical reasons. Switching to regimens in lower cost bands are encouraged whereas moving to regimens in higher cost bands require peer review by HIV Multidisciplinary teams (MDT).
Because of price changes in branded and generic drugs, a patient's drug regimen can change bands over time due to price reductions of the individual components or may be an individual has switched to an alternative regimen.
In this abstract, we describe a baseline data set, derived from drug regimen costs on the 1st of April 2018 in the Midlands and East region. We describe the distribution of ARV regimens according to cost bands. All data analysis was performed on aggregated anonymised, non-identifiable patient information as per GDPR regulations
Results: 28 of 40 HIV clinics in the region participated and provided baseline data on a total of 10,286 patients of which 9,987 (97%) were taking ARV at the time of data collection.
Distribution of regimens by band were as follows; Band 0=626 (6%), Band 1a=2426 (24%), Band 1b=1456 (15%), Band 2a=1672 (17%) Band 2b=215 (2%), Band 3a=1113 (11%), Band 3b=2255 (23%), Band 4=212 (2%)
The top 10 most commonly prescribed regimens accounted for 65% of all ARV usage. The estimated regional spend on ARVs was £4,082,190 per month.
Data has been formulated into a dashboard such that regimen use and distribution can be compared across regions and individual clinics can view their own data in comparison to the region as a whole.
In 2016 there were only 2 BHIVA approved starting regimens in Band 1 this has increased to 8 potential regimens as of April 2018. This increased choice encourages cost conscious prescribing opportunities.
Conclusions: This data can inform Improving Value Networks of where and how potential future cost savings could be targeted whilst preserving clinical choice.

P129

Audit review: adherence to the national recommendation of annual cervical screening for women living with HIV, 2015–2018

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Background: Cervical cancer is almost always associated with human papilloma virus (HPV) infection – HPV types 16 and 18 account for over 60% of cases – and is more common in women living with HIV. National guidelines, recommend that pregnant women living with HIV should be offered cervical screening annually. In the UK, cervical smear testing is mainly carried out by the GPs.
Subsequent to the audit conducted in 2014, this audit aimed to ascertain if there has been an improvement in the uptake of annual cervical screening among women living with HIV attending a tertiary centre between 2015 and 2018.
Methods: We identified women aged between 24 and 64 attending HIV clinics in a tertiary HIV centre. We searched for the dates and results of the cervical screens tested for each woman on the national database (Open Exeter) held on the National Health Application and Infrastructure Services (NHAIS) systems between 2015 and 2018.
Results: We identified 466 women who were diagnosed before 2015. There were 83 white European women including 75 from the UK. The median age of audited women was 44 (IQR 38, 50) years. Their median CD4 count was 686.5 (IQR 493.5, 849.75) cells/mm3. Of these women 427 (92%) had a plasma viral load count of less than 50 copies/mL.
Among the audited women 55 (12%) women had regular annual screening as per the national guidelines. Two hundred and twenty eight (49%) women had at least one repeat screening within 12 months.
Following 712 screenings in the audit period, 62 (8%) were referred for colposcopy and 43 (6%) had HPV infection, A total of 300 (64%) women did not have a cervical screen between 2015 and 2018.
Conclusions: Significant numbers of women living with HIV in our centre have not had cervical screening during a three year interval. Small numbers of women living with HIV underwent annual screening as per the UK guidelines. Our audit suggests that the recall process for cervical screening may require significant improvement for all women (irrespective of their HIV state) in our city. A significant proportion of screened women required further investigation by colposcopy.

P130

Can patient satisfaction be maintained after provider switch?

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Background: In April 2018 our HIV service was asked to take over a second HIV service adjacent to our own with only 3 weeks' notice. This was due to the current provider giving notice on the contract.. Despite numerous challenges, we were able to provide an excellent service to this new cohort encompassing a choice of clinics at two sites and a five day a week telephone advice service.
Methods: All patients being seen for the second time were asked to fill in an anonymised patient satisfaction survey designed to assess satisfaction with both the transfer of their care as well as the service they are now receiving. Patients were asked 19 questions. 4 of these were demographic questions and the other 15 assessed the patients views on a range of things including communication about the transfer, how medication is managed, how confident and comfortable the patients felt with our service and how they would rate the service overall (from very poor to excellent). The survey has been running since October 2018 with 32 responses so far. The survey will finish on 31st March 2019 to give a representational response rate from the cohort (185 patients).
Results: The survey results appear to indicate that satisfaction with how our service has managed the transfer and delivered care is high. 5 (16%) patients rate our service as very good and 27 (84%) as excellent. 8 (25%) patients view the communication from us regarding the service transfer as very good with 24 (75%) seeing it as excellent. The feedback regarding ours staffs attitude is overwhelmingly positive with 28 (87.5) seeing it as excellent and 4 as very good. All other questions elicited positive responses only apart from the question about the clinic environment (The clinic is a comfortable and pleasant place to be?) in which 2(6%) patients disagreed, 9 agreed and 20 strongly disagreed.
Conclusions: Taking over the running of a second service at short notice, as well as continuing to manage our existing cohort of 500 patients has presented many challenges. This has been a period of dynamic change and problem solving. We have endeavoured to keep the patient's needs at the centre of the process. Despite the short notice, and high reported levels of patient anxiety, the satisfaction survey responses indicate that patients have accepted the change and feel comfortable with their new provider. Verbal

responses from patients have told us that they miss the rapport they had built with their original doctors but are confident that our service is meeting their needs and that they will build a relationship with our team

P131

Designing Looped In: using qualitative research in the development of an online tool to support interpersonal communication on HIV

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Background: People living with HIV are powerful advocates and educators in the fight against stigma. But taking on this role can lead to experiences of 'educators fatigue' and is impacted by the type of interaction or interpersonal relationship involved. Informed by interviews held with people living with HIV in Summer 2018, a prototype for an online tool was developed to help support these conversations. *Looped in* is a website that allows individuals to curate the information included within a custom one-page website about life with HIV. Users first choose from content that has been sorted based on common relationship types (e.g. family, sexual partner, employer). The tool then gives users control over what information they share, the order it appears, and how it is delivered. The tool aims to empower people living with HIV to realise their rights by aiding interpersonal communication and challenging misinformation and discrimination in the fight against stigma. An evidence-based process has been used to develop *Looped in*.
Methods: In November 2018, a focus group in Manchester was held with nine people living with HIV to evaluate the *Looped in* concept and prototype. Two groups alternately participated in two 30 minute activities paired with semi-structured interviews. Through these activities the tool was evaluated both as a service concept through discussion about storyboarded use scenarios, and as a product through UX testing of an interactive mobile prototype. Both groups were then brought together for a 30-minute discussion. Participants were purposively sampled by the hosting HIV community support organisation to reflect the gender, age, and ethnic diversity of its user base. Each participant was given a £10 Amazon voucher for their time.
Results: Participants responded positively to *Looped in* as both service concept and prototype. The use scenarios presented were seen as realistic, with some commenting on similar scenarios in their own lives for which the service would be useful. Privacy considerations, such as not needing to set up an account, and the mobile-first design of the prototype, were highly valued by all participants. Various participants described how they might potentially use the tool and noted that the customisation worked well for them to put together the desired information unique to various relationships. Participants valued being able to both create a URL link and downloadable PDF as distribution options, and remarked that they would use them for different situations/recipients. Participants also raised the possibility for expansion to the service in the future, such as a tool with content specific to speaking to children about HIV.
Conclusions: Our study helped validate both our initial concept and prototype for an online service to support people living with HIV through individualised information sets. Participants felt that the tool would be useful and accessible in their own lives, and supported the further development of online interpersonal tools to help educate others about HIV. *Looped in* has since been further developed and is published online for use by people living with HIV.

P132

Disclosures: rewriting the narrative about HIV through creative activism

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Background: HIV-related stigma impacts on the life and health outcomes of people living with and affected by HIV. Given there has been no wide-spread public campaign to tackle HIV-related stigma since the dark tombstone advert of the 1980s, the Positive Stories Project was established with the purpose of empowering people living with and affected by HIV to tell the real stories of the virus, using their creative activism to end HIV-related stigma.
Methods: Throughout 2018, a series of creative writing workshops for people living with HIV were organised to empower people living with HIV to use their experiences to write fiction and non-fiction stories about life living with HIV. A mentorship programme that paired people living with HIV with professional writers was also established to further develop the skills of participants, and meaningfully bring out their voice in the stories. Each story was paired with a policy topic so that readers of the final product could learn facts about HIV.
Results: This community-led work has touched many readers. The final product was a book, *Disclosures*, that explores the themes of joy, grief, love, fear and hope – and the stories contained within were written by people living with and affected by HIV. The book gathered widespread coverage in the press, and support by Members of the Scottish Parliament which amplified the message: being HIV positive today is completely different from how it was thirty years ago. 19 people were able to use their own voices to reshape the narrative around HIV and take part in creative activism.
Conclusions: *Disclosures* is a book that displays a snapshot of the experiences from a diverse group of people living with and affected by HIV. Many stories that were created during the process never made it on to the pages of the book, because the impact of HIV-related stigma and the fear of retribution was too large a burden for many participants. This book and the work that will continue will empower people affected by HIV to use their words in creative activism against the myths and misconceptions of HIV and truly end HIV-related stigma. Our next steps are to broaden the scope of the work, moving from the pages of a book into the digital world – utilising podcasts, video and online blogs to expand our reach. This work is the beginning of a movement, not an endpoint.

P133

Do HIV patients find remote services acceptable? A survey of attitudes towards digital HIV care

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Background: The digitalisation of the NHS provides valuable opportunities for the engagement with 'hard-to-reach' populations. Our service has developed an online 'HIV Patient Portal' for an enhanced and secure communication of medical advice and blood results to HIV patients. We aimed to evaluate the acceptability and attitudes towards remote HIV services in order to deliver the highest standards of care in a cost-effective and patient-centred manner.
Methods: Between July and December 2018, a questionnaire survey was given to HIV patients attending a large urban outpatient service for routine care. The functionality of the 'HIV Patient Portal' was discussed during their routine consultation. Patients were asked to complete the survey and hand them in a sealed envelope to the researchers. The questionnaire consisted of 32 items exploring demographic and attitudinal questions examined using Likert scales. Binary logistic regressions were performed to identify the correlates of acceptability.
Results: In total, 195 HIV patients responded (65% aged 35–54 years, 73% men, 58% White). The acceptability of remote HIV services was: telephone consultations (76%), video-call via Skype (47%), online web-chat platform (51%), HIV Patient Portal (61%) and email (51%) compared to face-to-face consultations (92%). The predictors of HIV Patient Portal acceptability were: female OR=0.24 [95% CI: 0.77–0.73], having a university degree OR=2.7 [CI: 1.03–7.12], digital literacy OR=18.2 [CI: 4.01–81.6], not being concerned about digital security OR=5.51 [CI: 1.14–26.6] and the lack of digital self-efficacy OR=0.27 [CI: 0.01–0.15]. The perceived likelihood of utilising digital services for HIV care were: mobile phone app (42%), a specialist website about HIV (66%), an online form for symptoms (52%), access to patient record (69%), access to blood test results (75%), a communication platform with HIV care team (72%), and a platform for booking appointments (74%).
Conclusions: There is moderate acceptability of digital services for HIV care. Patients who were more confident about the usability and security of online services were more likely to accept them. As a substantial proportion of HIV patients would still prefer face-to-face interactions, patients' concerns should be taken into consideration when developing remote digital services. Future research needs to evaluate the impact of those services on care delivery and overall satisfaction.

P134

Don't forget the DNA: a descriptive analysis of female patients who do not attend HIV clinic appointments and their uptake of annual cervical smears

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Background: Failure to attend a hospital clinic appointment can result in financial implications in the form of a loss of income to the providing trust. The HIV tariff for our trust is currently set at £665 for a new patient appointment and £478 for a follow up appointment. More importantly, it often results in a missed opportunity to optimize a patient's care. The aim of this project was to improve understanding of the female cohort of patients who do not attend their scheduled HIV clinic appointments and assess the uptake of annual cervical smear testing within this group.
Methods: All female patients who did not attend appointments to a weekly HIV clinic held during the time interval of 15 January 2018 to 15 January 2019 were identified using clinical coding on Lilie. Data regarding the patients was collected from various clinical databases (Lilie, ICE, iLab) which are used within the trust. This data included demographic details, number of missed appointments and hospital admissions during the preceding 3 years, cervical smear history, current anti-retro viral regimen and latest VL (viral load). Data was recorded and analyzed using Microsoft Excel. Patients were grouped according to frequency of missed appointments in the preceding 3 years (<4, 4 and >4 missed appointments)
Results: 46 women were identified. Many of whom had multiple missed appointments during this time period. 33/46 (71%) were of Black ethnicity, 10/46 (22%) were White and 3/46 (7%) were Asian. The median age was 42 years (30–75 years). 96% were on antiviral therapy. In terms of missed appointments, 61% (28/46) had missed less than 4 appointments, 9% (4/46) missed 4 appointments and 30% (14/46) missed greater than 4 appointments in the preceding 3 years (range 0–17 missed appointments). More than half (25/44) of the women eligible for an annual cervical smear test were overdue for a cervical smear test. 89% (41/46) had an VL which was undetectable and performed within the last 6 months. This indicates that the majority of the patients attended for a review post missing a clinic appointment. There did not appear to be an association between the number of missed appointments and being overdue a cervical smear or having a hospital admission.
Conclusions: Women of black ethnicity tend to make up the majority female patients who do not attend HIV clinic appointments. In addition, a large proportion of the female non-attenders do not meet the BHIVA recommendations regarding ensuring annual cervical smears for HIV positive women aged from 25–65 years. From the collected data, this cohort of patients does not have frequent hospital admissions and thus taking opportunistic cervical smears in an inpatient setting may not necessarily increase the uptake of cervical smears. It appears that most of the patients will return for a review after a missed appointment. This offers a potential role for on-site cervical screening at an HIV clinic appointment as an alternative to requiring an additional appointment in general practice. This could increase the uptake of cervical smear tests amongst women who attend clinic appointments sporadically.

P135

Enhancing service quality for stable HIV patients through nurse-led, technology-enabled annual review clinics

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Background: Chelsea & Westminster Hospital NHS Foundation Trust and ViiV Healthcare undertook a Joint Working Agreement to pilot a nurse-led, technology-enabled service centred around an Annual Review (AR) consultation to provide an all-round 'health MOT' for stable HIV-positive patients. Advances in HIV care have led to a growing patient cohort living with HIV as a long-term condition. These patients present a new set of clinical needs due to an increase in age-related co-morbidities. Presently, stable patients predominantly receive their care through consultant-led, onsite visits despite the presence of a specialised nursing workforce. Furthermore, for patients with no complex clinical needs, convenient methods of accessing and delivering care that do not require frequent onsite visits should be explored. The change in the nature of this population and its associated needs has increased the pressure on outpatient services in providing both quality and sustainable care.
Methods: A Band 6 nurse-led Annual Review service enabled through a clinic-facing web-based app (MyClinic™) and a patient-facing mobile application was piloted from April to October 2018. The Annual Review comprised an electronic medical proforma, aligned to BHIVA monitoring guidelines, which was completed in consultation alongside routine blood tests. Patients managed their appointment and set their communication preferences using the mobile application. Following the consultation, patients received either an SMS indicating their results did not require further action, or a nurse phone consultation if results warranted further discussion.
A mixed methods approach was used to establish patient acceptability, service outcomes and to understand implementation factors. Methods included a patient survey with complete responses, patient depth interviews, interviews with clinic staff including nurse specialists conducting the Annual Review, case note reviews, clinic observations and analysis of Annual Review patient records on the MyClinic™ database.
Results: 92 patients participated in the pilot (98% male, 2% female; mean age=50 years). Using a patient survey (n=43), 91% patients reported that they were very satisfied or satisfied with the service and 84% indicated they would definitely or would be likely to continue with the service.
In patient interviews, convenience (e.g. online booking and combined blood tests and consultation) was the most significant driver of satisfaction. 92% of patients also rated the Annual Review as an important service feature with many expressing benefits in allowing them to surface new and broader health discussions.
A BHIVA monitoring audit was conducted using the Annual Review patient records (n=92) to assess quality care indicators. CVD risk (QRISK3) and bone health (FRAX) was recorded for 95% and 100% of patients respectively. This compared favourably with national BHIVA monitoring audit data rates of 67% for QRISK3 and 45% for FRAX. Improvements were also observed when compared with national BHIVA audit data for mental health screening (100% vs. 28%), sexual health screening (92% vs. 62%) and vaccination signposting (influenza 100% vs. 60%; pneumococcal 98% vs. 34%).
Conclusions: Integrating technology within a nurse-led Annual Review service demonstrated the potential to deliver positive patient-related and service outcomes with high levels of patient satisfaction and significant improvement in quality indicators versus the national BHIVA audit in 2018.

P136

Identification of the frailty syndrome in people living with HIV (PLHIV) using a multiple deficit model

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Background: An increased burden of frailty in people living with HIV (PLHIV) has been reported [1]. Specific services for PLHIV with frailty have been developed but no consensus exists as to the best tool(s) to identify HIV patients as frail. In advance of planning a dedicated HIV frailty service we conducted an audit to determine the extent of frailty within our cohort. Although frailty may not be age specific, we chose to focus on those PLHIV over 70 years of age. We also evaluated the feasibility of using an electronic frailty index (eFI) in this population.
Methods: A retrospective analysis of all PLHIV aged over 70 years registered on 01/11/2018 was conducted. Comprehensive review of inpatient medical notes, clinic letters and medications dispensed by our specialist HIV pharmacy and via their GP (where available) was undertaken. Baseline demographics, date of diagnosis, most recent CD4 count and viral load, and deficits as defined in the electronic frailty index (eFI) were collected and an eFI score calculated.[2]
Results: 105 patients met the inclusion criteria: 83 (79%) were male; mean age 73 years (range 70–90); mean duration of living with diagnosed HIV was 17 years (1–36); mean CD4 579 (114–11,562). Almost all (98%) had an undetectable viral load (<40 copies/ml). A mean number of 4.7 deficits (0–13) as per eFI were identified; most common deficit indicators were polypharmacy (67%), hypertension (47%) and respiratory disease (32%). Half of the cohort met frailty criteria with 33% defined as 'mild', 12% 'moderate' and 4% 'severe' frailty.
Conclusions: These results show that 50% of our PLHIV over 70 meet the criteria for frailty. The eFI used is well established in primary care and is a robust measure. We have demonstrated the applicability of this methodology to the outpatient HIV population and detected rates comparable of that found

in the general population [2]. Frailty represents a novel challenge for those working in HIV and whilst this work has identified patients who may benefit from multidisciplinary assessment and comprehensive care plans further work needs to identify the best tool(s) for this purpose.

References:

1 Levett TJ, Cresswell FV, Malik MA *et al.* Systematic review of prevalence and predictors of frailty in individuals with human immunodeficiency virus. *J Am Geriatr Soc* 2016; **64**: 1006–1014.

2 Clegg A, Bates C, Young J *et al.* Development and validation of an electronic frailty index using routine primary care electronic health record data. *Age Ageing* 2016; **45**: 353–360.

P137

Improving testosterone testing in people living with HIV

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Background: Symptomatic testosterone (T) deficiency is common in people living with HIV (PLWH); despite this, specific guidelines are lacking.
Total T (free and protein-bound) is the most common measurement reported when a T test is requested. In PLWH, raised sex hormone binding globulin (SHBG) levels are common, and so calculation of free T more accurately reflects T levels in this group of people. T also varies by circadian rhythm and should be measured at peak time in the morning. There is insufficient evidence to support measurement and replacement of T in asymptomatic males, so investigation should also be limited to those with symptoms of deficiency.
At a London HIV clinic, assessment for hypogonadism has historically been ad hoc, based on clinical suspicion. We aimed to introduce a robust systematic policy for assessing T deficiency in PLWH attending our services, with a view to earlier diagnosis and more efficient use of resources. Local practice was reviewed and new guidance for the investigation and management of hypogonadism was developed by the MDT comprising Sexual dysfunction, HIV and Endocrinology specialists. Referral pathways were agreed and guidance was disseminated to the HIV team. An audit of practice was conducted following launch of the new guidance.
Methods: A retrospective notes review was completed on all patients who had a T test between 01/06/17 and 30/11/17, and 17/09/18 to 14/12/18, before and after guideline implementation, respectively. The following auditable outcomes from the guideline were assessed:

- T test should be performed in PLWH with symptoms suggestive of T deficiency (erectile dysfunction, low desire, fatigue, low mood and/or reduced muscle mass)
- T test should be performed before 10:30 am
- Calculated free T should be documented in the notes.

Results: Table P137.1

Table P137.1.

	Before guideline (n (%))	After guideline (n (%))
T tests in symptomatic men	34/54 (63%)	26/38 (68%)
T tests before 10:30 am	25/54 (46%)	5/38 (13.5%)
Free T calculated	9/54 (17%)	2/38 (5.3%)
Free T calculated appropriately (with up to date albumin and SHBG on the same day, before 10:30 am in symptomatic men)	4/9 (44%)	0%
Patients with a low total T (<11 nmol/L) (before 10:30 am)	4/25 (16%)	1/5 (20%)
Referrals of patients with low T who had a T test before 10:30 am	1 referred to Endocrinology, 1 to Andrology and 2 to the GP.	No referral yet.

Conclusions: Review of local practice of T testing for androgen deficiency identified timing inaccuracies, frequent testing in asymptomatic patients, and a lack of free T calculation, limiting the interpretation of T results. Consequently, a comprehensive guideline & referral pathways were developed in conjunction with the MDT. Following guideline implementation, practice has not improved although the numbers analysed were small. Additionally, apparent lack of symptoms may be driven by poor documentation. Further education of staff groups, and guideline promotion is required, and we are planning to implement alerts within the electronic patient record prior to re-audit.

P138

Meaningful involvement to design solutions for ensuring people living with HIV live well into older age

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Background: The Positive Person's Forum (PPF) is an annual conference that brings people living with HIV in Scotland together to connect them with decision makers through a manifesto that is published to influence the design and delivery of services. The Positive Person's Manifesto (PPM) highlights their experiences and sets out actions that must be taken to bring about the change they need to live long, healthy lives. We know that people living with HIV are living into old age. A large body of evidence highlights that with complex health concerns, fewer financial resources, and greater isolation, many people with HIV face major challenges later in life. In addition, older people are being diagnosed for the first time.
Key statistics for people living with HIV aged 50+:

- 58% of individuals are defined as living below the poverty line (£283.80 per week).
- 22% report quality of life and well-being as 'bad' or 'very-bad'.
- Roughly eight in ten were concerned with cognitive issues and how they would cope with managing multiple health conditions.
- 82% experience loneliness.
- 58% experience high levels of stigma and discrimination.

Methods: Over 100 people, representing the full diversity of those living with HIV in Scotland attend on an annual basis. The opinions, perspectives, and concerns of people living with HIV that attend the PPF are condensed in to a manifesto and disseminated for consultation among the wider networks of people living with HIV in Scotland. These experiences and priorities are then connected to key policy areas through the experience of the organisation. Annually, each PPM is sent to Members of the Scottish Parliament, key clinicians and policy makers, and used as a tool to influence change.
Results: In every PPM since 2014, aging has been highlighted as a concern for people living with HIV in Scotland. The recommendations included in those PPMs have included:

- Research should be undertaken to identify whether services for older people in Scotland are equipped to meet the needs of people aging with HIV.
- Staff within care homes need to be given consistent training in working with patients living with HIV.
- Public messaging and awareness-raising campaigns about HIV must be relevant to and targeted at older people.

Conclusions: Despite each PPM containing clear recommendations resulting from the concerns and experiences of people living with HIV, there has been no significant change from policymakers or services. Therefore, we have developed our own project – Living Well: 50+, to meet the needs of people living with HIV in Scotland. This innovative project will develop and deliver training to social care service providers, as well as develop key research to ensure services are aware of emerging issues relating to people living well into older age with HIV. The project will deliver a series of webinars targeted to ensure that appropriate training and resources are available for those working with older people living with HIV. We will also develop a suite of factsheets for people living with HIV, to ensure they can be confident about accessing services as they age.

P139

Measuring the impact of specialist HIV community nursing

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Background: Two community-based clinical nurse specialists (CNS) based out of an inner-London district general hospital provide care to people living with HIV (PLWHIV) resident in Hackney and the City of London (C&H) whose care is complex and whose engagement in care is more fragile. The responsibility for commissioning for such services in the NHS in England is unclear. Such services have been decommissioned in some parts of England, and there is therefore a pressing need to demonstrate the benefit of those services which remain. This retrospective service evaluation sought to characterise the multi-morbidity and vulnerability factors in this patient sub-population, and to assess whether the impact of CNS care could be demonstrated in clinically relevant outcomes.
Methods: The records of all patients under CNS care between 1/7/15 to 1/2/18 were reviewed and scrutinised for medical and psychosocial vulnerability factors. The proportion of time under follow-up covered by an active prescription was calculated as a measure of engagement in care. Patients' records were cross-referenced with the hospital electronic record for emergency department (ED) attendances over the same time period. ED attendances for non-CNS PLWHIV resident in C&H were analysed as a comparison group.
Results: From 1/7/15 to 1/2/18, 115 patients received care from a CNS: the majority (70%) attend the Homerton HIV service. Of these 115, 80 patients remain under active follow-up. Of those no longer under follow-up with the CNS, 69% were discharged or moved away from C&H. However, 8 of the 115 (7%) died.
The patients have a range of vulnerability factors, medical co-morbidities or infections such as TB, adding to the complexity of care. These are summarised in Table P139.1.

Table P139.1.

Complexity factor	n	%
Mental health diagnosis	89	77%
Substance use or Alcohol	51	44%
Sex work	10	9%
Homelessness or housing insecurity	50	43%
Criminal justice involvement†	21	18%
IPV*/Safeguarding/Exploitation	35	30%
Medical co-morbidities	99	86%
Physical disability	54	47%
History of TB	20	17%

*IPV = Intimate Partner Violence. †This includes 8 perpetrators of crime.

Patients generally have more than one of these factors: 77% of patients had between 2 and 5 of the factors described above.
Considering the year before CNS involvement and the year after, for the Homerton patients, the mean prescription coverage increased from 42% to 77%.
During the study period 26 of 102 CNS patients attended the ED, while 345 of 938 non-CNS patients attended the ED. The relative risk of ED attendance for the CNS group was 0.69 (0.49–0.97), p=0.03.
Conclusions: The CNS cohort is a highly vulnerable group with multi-morbidity and social predictors of poor health outcome. CNS care is associated with greater prescription coverage and reduced ED attendance. The analysis is limited by the lack of a control group and multiple confounding factors. We have been unable to allow for patients' attendances at other hospitals. We have also not been able to compare adherence or virological control. Future work should establish how to consistently offer CNS support to those at greatest need.

P140

Missed doses of antiretroviral therapy in the context of acute admissions to hospital for HIV-positive patients: an audit conducted retrospectively across 2 months of acute admissions in Brighton

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Background: Despite multiple advances across previous decades to simplify dosing regimens and minimise polypharmacy for people living with HIV, antiretroviral therapy (ART) regimens still require consistent adherence to be efficacious. Moreover it is often important that ART be taken at the same time of day. It has been identified anecdotally that acute admissions to hospital are a key time when patients are missing ART doses. In order to investigate this further we conducted an audit at The Royal Sussex County Hospital in the vibrant city of Brighton to investigate whether patients living with HIV were missing doses of ART during acute admissions to hospital. We audited against the BHIVA standard that "High and consistent adherence to ART is required to maintain viral suppression and minimise transmission risk"[1]. Our institution does not require ethics for audits such as this.
Methods: Medical notes and drug charts were analysed retrospectively from all HIV positive patients admitted to hospital via the Accident & Emergency department from 27th July to 9th October 2018 over a two month period. 25 patients were identified. 7 patients were excluded due to notes being unavailable or no drug chart being filed in the notes.
We identified whether ART had been written in the clerking documentation and whether ultimately the dose had been given within the first 24 hours. We also recorded which specialty was admitting the patient.
Results: Table P140.1.

Table P140.1.

Admitting specialty	Number of patients	ART included in drug history in clerking	ART dose given to patient within 24 hours of admission or clearly documented reason why drug was held eg.AKI	% patients admitted by that specialty receiving ART within 24 hours of admission/clear documentation of why held
Medicine (includes Gastro, Resp, COTE)	5	1	1	20%
Neurosurgery	1	1	0	0%
Stroke	1	1	1	100%
Haematology	1	1	1	100%
Cardiology	1	0	0	0%
Ortho	1	1	1	100%
Cardio-thoracics	1	1	1	100%
Clinical infection (HIV team)	5	3	5	100%
Total	18	9	10	55%

Conclusions: Results show only 55% of patients received their ART (or had a clearly documented reason why it was held) in the first 24 hours in hospital which demonstrates clear need for improvement.
Possible reasons for this include limited knowledge around ART amongst junior doctors who complete the clerking process, no ART physically stocked in drug cupboards on the 'Acute floor' and lack of knowledge as to where information about a patient's HIV drug regimen can be found as separate computer systems are used between the main hospital and the HIV clinic.
We intent to write a "Guide to prescribing ART" on the *Microguide* app which is widely used amongst junior doctors in Brighton signposting where information can be sought about patient prescriptions, potential interactions and also information to be relayed to 'Acute floor' nursing staff about where drugs can physically be sourced in and out of hours.

P141

Patient recommendations for developing care pathways for HIV-related metabolic comorbidities

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Background: Our care pathway for management of HIV-related metabolic comorbidities, originally designed in 1998 in response to emerging dyslipidaemia and lipodystrophy associated with early therapies, remains essentially unchanged in structure. Patients are referred to an outpatient clinic led by an HIV consultant physician supported by specialist dietitians and physiotherapists. Additional onward referral to specialist care for complex dyslipidaemia, diabetes, osteoporosis and morbid obesity is available.
Given the increasing burden of comorbidities associated with an ageing cohort and increasing rates of obesity, consultation with healthcare colleagues and patient representatives led to initiating a redesign of the care pathway. Additionally, opportunities for prevention of comorbidities were proposed. Patient representatives recommended consultation with service users to inform the project.
Methods: Patients referred to the metabolic outpatient clinic over a two-month period were invited to take part in a focus group facilitated by a research dietitian and a consultant physician. A topic guide designed by the project team and patient representatives was used, although participants were encouraged to speak freely. Thematic analysis followed a standard approach, organised to inform future recommendations.
Results: Eight patients volunteered to participate: five White men and three Black African women. Participants (mean age 55.1 $\pm$ 11.7 years old) had been living with HIV for between 10 and 32 years and all were treated with antiretroviral therapy. The focus group had a duration of 95 minutes (Table P141.1).

Table P141.1

Issue	Patient views	Actions
Framing the Pathway	The term "metabolic" was meaningless. The service should focus on health and wellness and avoid the term "clinic"	Rename the pathway to "Living Well"
Prevention or treatment	This pathway should deliver both	Identify those at risk
Multidisciplinary approach	Seeing the physician, dietitian and physiotherapist at the same appointment was highly valued. Patients felt they could action informed behaviour change immediately following medical assessment	This structure should continue
Holistic treatment	Fatigue and cognitive impairment assessment should be central to this pathway	Include in assessment
Support	Referral to psychology, hypnotherapy and peer mentors and buddies should be provided	Explore how to include
Group Sessions	Group support would aid motivation. Suggestions: gym programmes, peer-led walking groups, cooking classes.	Explore how to include
Logistics	Flexibility in appointment times requested to help those in work	Investigate late afternoon and early evening appointments / groups
Data collection	Completing questionnaires prior to attending was appreciated, although flexibility was requested	Email, post and text reminders, to complete at home, or on tablet on the day
Liaison with Primary Care	Patients reported primary care staff being reluctant to advise on lifestyle change given potential impact of HIV Patients want GPs to be trained and encouraged to lead on non-ARV prescribing	Redesign liaison with GPs and organise training and support

Conclusions: Patients value the current multidisciplinary care pathway, and suggest this is developed to enable prevention as well as treatment of metabolic comorbidities. Patients want a flexible, holistic approach to their care, and suggest peer-led interventions should be included. We will continue to develop the care pathway utilising co-design methodologies in partnership with our patients, and recommend this approach to others.

BHIVA Research Awards winner 2016, Alastair Duncan

P142

Tenofovir alafenamide (TAF) for treatment of HIV-1 in adults and adolescents: a provincial audit

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Background: The NHS England's Clinical Commissioning Policy clearly outlined the clinical criteria for commencing Tenofovir Alafenamide (TAF) in patients with absolute and relative contraindications to Tenofovir Disoproxil Fumarate (TDF). It further provided requirements for audit purposes, which include: (1.) Patients with contraindications to other backbone switched to F/TAF. (2.) Estimated eGFR changes in patients commencing TAF-based ART
The aim of this audit was to compare our standard of practice to those set out in this policy by NHS England.
Methods: Patients commencing TAF- based antiretroviral treatment (ART) between October 2017 to September 2018 were included. Data was obtained from pharmacy records, MDT Approval Forms and patients medical notes.
Results: Sixty-five (65) patients were commenced on a TAF-based ART in the period audited. 34 (52%) of these patients were commenced on TAF due to renal disease (according to the National Institute of Clinical Excellence definitions).
In patients with available eGFR results for six months or less (n=22), 15 (68%) showed eGFR improvement from baseline in the first six months. Nine patients *(60%)* had a net eGFR gain between 1 ml/min and 10 ml/min, while six patients (40%) had a net eGFR gain of more than 10 ml/min.
Furthermore, in patients with available eGFR results for more than six months after TAF commencement, (n=15), 13 (87%) showed improved eGFR from baseline - on TAF commencement. Of these, 7(*46%)* have eGFR of 60 ml/min or above, while 6(*40%*) had eGFR 70 ml/min or above.
Contra-indications to other Nucleoside Reverse Transcriptase Inhibitor (NRTI) backbones included: High cardiovascular disease risk (25), HBV co-infection (13), HLA positivity (6), others (9), undocumented (12)
Conclusions: Our audit has demonstrated that TAF treatment in this provincial centre compares favourably with the national policy on TAF for treatment of HIV-1 in adults and adolescents. It further highlights eGFR improvement in patients commenced on TAF due to renal disease.

P143

The East London Immediate ART (ELIA) survey: attitudes and barriers to immediate ART initiation

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Background: Initiation of same day ART (Immediate ART) has been introduced in resource limited settings & has been shown to increase retention in care and shorten time to viral suppression. The feasibility and safety of immediate ART has also been demonstrated in HIV clinics in San Francisco and London. Furthermore the option of immediate ART is included in international treatment guidelines. We conducted a survey of the attitudes of healthcare professions (HCPs) to the implementation of immediate ART in an East London HIV network to understand potential barriers to immediate ART, and to develop the East London Immediate ART pathway.
Methods: HCPs from across the Bart's Health NHS Trust who provide HIV care were surveyed. This included doctors, nurses, pharmacists and health advisors. HCPs were invited to participate by email invite. Multiple choice (pre-defined) and free text responses were collected and collated confidentially using Survey Monkey and analysed using Excel.

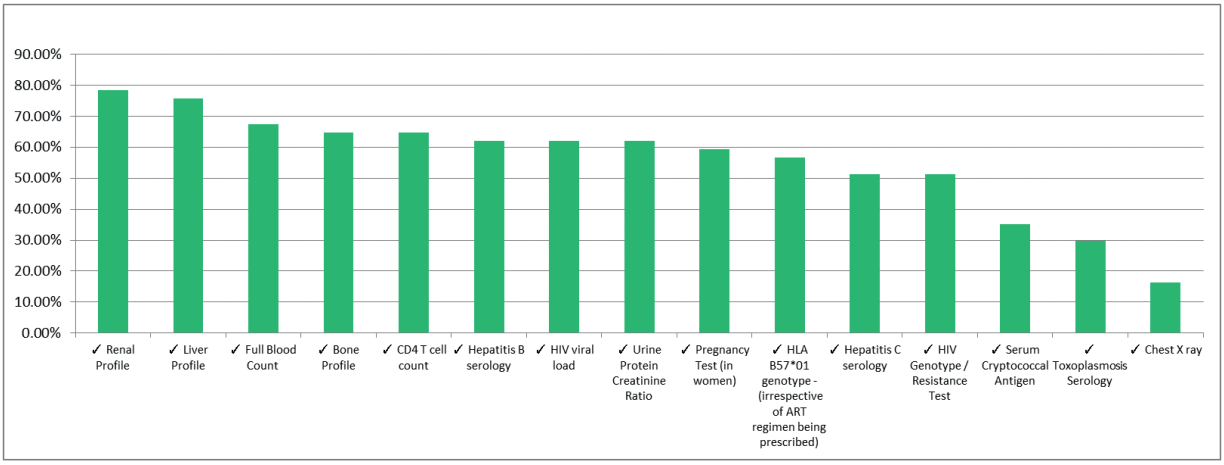

Figure P143.1. Baseline investigations required prior to ART start

Results: 44 HCPs completed the survey; 57% were doctors, 16% were nurses and 11% were pharmacists. 49% have been providing HIV care for more than 10 years. 86% of respondents were aware of evidence to support immediate ART initiation. 46% supported ART initiation on the same day as HIV diagnosis while 54% supported initiation within one week. The main perceived concerns and barriers of respondents regarding immediate ART initiation were; lack of time to adjust to HIV diagnosis (65%), undiagnosed opportunistic infections (35%) and drug resistance (27%). 30% had no concerns regarding immediate ART. From a pre-defined list of responses, the greatest perceived benefit of immediate ART was decreased risk of onward HIV transmission (78%), improved patient experience (32%) increased engagement in care (19%), decreased lost to follow up (19%) and improved ART adherence (14%). 51% of respondents reported unavailable baseline investigations as a barrier to immediate ART; baseline results that prescribers would require prior to ART initiation are shown in Figure P143.1. Respondents reported that immediate ART patients should be seen by the following HCPs on day of ART start: doctor (97%), pharmacist (95%), health advisor (76%) nurse (66%), adherence support (35%), peer support (16%) and psychologist (11%).**Figure P143.1.**
Conclusions: Implementation of immediate ART is supported by the majority of HCPs in East London. However, traditional concerns & barriers to ART initiation, including insufficient time to adjust to a HIV diagnosis and lack of baseline test results, may delay HCPs in offering immediate ART. This highlights the importance for HCP engagement, consultation and education prior to implementing immediate ART pathways.

P144

The family HIV testing pathway: ensuring prioritisation and follow up

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Background: Our trust serves an urban population (Total cohort size 5000). Following a serious incident (SI) investigation into the late diagnosis of an HIV positive child; the Family HIV testing pathway was redesigned and a look-back exercise of the patient cohort initiated.
Methods: A dedicated HIV health adviser post was created to lead this process. The HIV testing pathway for untested children was rewritten with involvement of the safeguarding team.
A new AIDs diagnostic code was implemented in pathology for post-mortem diagnoses with a monthly report sent to the HIV department.

Traffic light system for assessing urgency of HIV testing timeline (see Table P144.1): Time zero is from the time we knew about an untested child.

Table P144.1.

BLUE LIGHT - same day testing	● Partner in late stages of pregnancy (>24/40) ● Child currently an in-patient.
RED LIGHT - testing within 1 month	● Child at home but frequent ill health ● Partner in early stage of pregnancy ● Untested baby <1 years old
YELLOW LIGHT - testing within 4–6 months	● Child who is currently well (institute safeguarding protocol by month 4 aim to resolve by month 6)
GREEN LIGHT - test within 3–6 months	● Sexual contacts who are not known to be pregnant

A local community event was held in conjunction with a third sector organisation to raise awareness of the importance of partner and child testing. Patients are being identified in batches:

- Tier 1: Women living with HIV who may have untested children.
- Tier 2: Males living with HIV who may have untested partners and children.

Results: Results to date: 1601 patients have been identified in Tier 1 across three sites. Tier 2 – 474 men from site 1 identified so far.
Tier 1 cohort – single site data: 530 women (age 18–65) 18–25 (7), 26–35 (71), 36–45(187), 46–55 (215), 56–65 (50)
241 (45%) with children in UK who have been tested
151 (28%) documented no children
3 (0.5%) declined to give details of their children's testing status as now adults
12 (2%) with children who are abroad and are untested.
123 (23%) who have children considered not at risk of vertical transmission due to HIV acquisition timeline of mother.
1 child was referred to child safeguarding team and subsequently tested negative.
2 children referred to Paediatric teams – 1 tested negative, the other had tested HIV positive before joining parent in UK.
3 referrals to GP for child testing – 2 carried out and tested negative, 1 declined involvement as young person 18 yr old.
Conclusions: Vast majority of patients to date have cooperated with the process. A dedicated Health adviser leads this process. It is an on-going of piece of work and liaison with the children safeguarding team is required for advice and intervention.

P145

The impact of weather and college holidays on attendance at HIV youth services

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Background: Extremes of temperature and adverse weather conditions impact on ambulance call outs, attendance to emergency departments and to paediatric clinics yet there is no published data on the impact of utilisation of youth services. We investigated the impact of temperature, precipitation and college holidays on rates of youth HIV out patient attendance.
Methods: Retrospective analysis of attendance at a multidisciplinary youth friendly HIV service by electronic booking review between July 2016 and June 2018. The clinic runs once weekly from 2–6 pm combining booked appointments with a walk in service. Baseline demographics, daily midday London temperature (oC) and daytime precipitation (mm) from Met Office statistics (www.metoffice.gov.uk) were recorded with attendance rates in Excel. Holiday periods were defined as 10th December to 10th Jan, April, and from July through to September. Data was analysed using GraphPad Prism and unpaired t test used to compare medians and linear regression where appropriate.
Results: At study end 191 youth were registered, median age 22.9 years (IQR 20–25, range 16–33), 56% female, 81% Black African, 93% perinatal HIV acquisition and 37% were in full/part time education. 80% were on suppressive antiretroviral therapy (<200 c/ml). Median attendance per clinic of 11 young adults (IQR 9–13, range 5–21), male: female 5:6. There was a significant increase in attendance in college holidays compared to term time; 13 (5–21) vs. 10 (6–18), p<0.0001 (Figure P145.1). There was no significant difference in attendance rates by temperature (p=0.28) or precipitation (p=0.34).
Conclusions: This unique cohort of young adults living with HIV appear to value their education, preferring to attend outpatient services within holiday periods. Reassuringly they appear to be resilient against British weather conditions, suggesting youth service utilisation may be minimally affected by global warming.**Figure P145.1.** Attendance at HIV youth services by college holidays

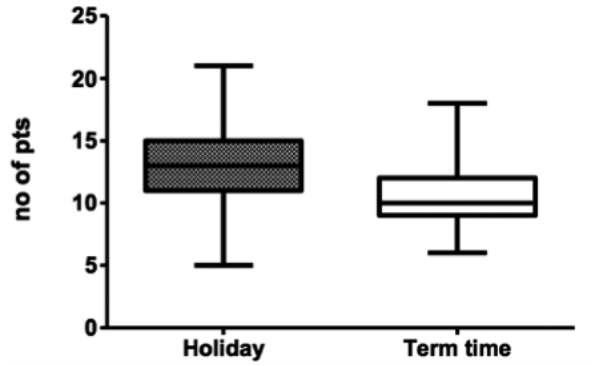

Figure P145.1. Attendance at HIV youth services by college holidays

P146

Vaccinations in newly diagnosed HIV patients: a quality improvement project

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Background: HIV positive individuals have an increased risk of infection and experience more severe morbidity following exposure to vaccine preventable diseases compared to HIV negative patients. Hence it is important that their vaccination schedule is up to date. Although Hepatitis A and B vaccines are predominantly administered in HIV clinics, vaccines for Measles, Varicella zoster virus, Pneumococcal and Influenza vaccines are primarily administration by GP. Robust communication to and from the GPs are very important to optimise the vaccination requirements for HIV patients.
Methods: Our primary objective was to review our current vaccination documentation and our communication with GP's regarding vaccine administration. Our second aim is to optimise our vaccine provision to all our newly diagnosed HIV positive patients and develop a robust mechanism for GP communication.
All newly diagnosed HIV patients in our centre in 2016 and 2017 were audited with particular reference to their infection susceptibility and vaccination requirements. Patients with CD4 count more than 200 cells/mm^3 were included. Patients transferred to and from other clinics were excluded. 58 patients met these criteria. Patients were tested for their susceptibility to Hepatitis A and B, measles and varicella[WU1] Zoster Virus (VZV). We also reviewed if they received pneumococcal vaccine. The data was analysed using an Excel spreadsheet. We accessed the patients' individual GP care records (Care Centric Portal) and checked if the specified vaccines had been administered based on the HIV physicians letters to the GP.
Results: We currently have approximately 1200 patients living with HIV in our care. A total of 146 patients were newly diagnosed in the specified time period. Of the 58 newly diagnosed HIV patients, 54(93%) were tested for measles, VZV and hepatitis A and B immunity at baseline. 24(41%) were non-immune to hepatitis B and the rest were either already immune against hepatitis B at diagnosis or naturally immune to the infection. Out of the 24 patients who were eligible for the vaccination only 8 (33.3%) were given the vaccine at the GUM/HIV clinic. 54 out of 58 patients (93%) were tested for VZV immunity. Of them 2 were non immune (3.44%) and the rest were immune (89.6%). Only 4 out of 58 individuals (7%) were not tested for VZV at baseline. No communication was sent to the GP in the non-immune cases regarding VZV vaccination. Only 4 patients (6.89%) who required pneumococcal vaccination had this documented in the hospital notes and in the letters sent to the GP.
Conclusions: Although we are faring well at baseline testing for vaccine preventable infections, collaboration with primary care physicians needs to improve. Results will be discussed with stakeholders and we aim to develop a 'new patient template letter' where all vaccine requirements are clearly communicated and reply requested from the GP to complete the documentation. We also aim to develop a 'vaccination passport' for patients for their own records. Education of healthcare providers and good communication are key requirements to ensure successful uptake of vaccines.

STIs, Reproductive Health, Contraception and Sexual Dysfunction

P147

A review of hypogonadism in an HIV cohort

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Background: The link between HIV infection and hypogonadism was well recognised in advanced disease before the introduction of combination antiretroviral therapy (cART). However, hypogonadism remains an issue in HIV positive patients despite effective treatment. The aetiology of hypogonadism within the context of HIV remains undetermined. Abnormal testosterone levels have been attributed to AIDS related cachexia, low CD4 cell count, chronic disease as well as natural age-related decline. This retrospective review aims to study an HIV positive population within a single-site HIV clinic, diagnosed with hypogonadism within the last 5 years to investigate factors that may be associated with its development. These include obesity, length of antiretroviral therapy and nadir CD4 count.
Methods: A data search within a HIV clinic was carried out to identify patients with an abnormal free testosterone (FT) levels (<160pmol/L) detected within the last 5 years. Data was collected on FSH/LH, sex hormone binding globulin (SHBG), BMI, type and duration of antiretroviral therapy and CD4 nadir.
Results: 69 patients were identified to have an abnormal total testosterone result. The age range was 31–88 years with an average of 58. The average duration of HIV diagnosis was 15 years (range 1–32). 8 patients had a diagnosis of type 2 diabetes and 1 patient had type 1 diabetes mellitus. At the time of hypogonadism diagnosis and 11 patients had a diagnosis of hypertension. The average nadir CD4 count was 375 (range 15–1037). All patients had an undetectable viral load of <40. Patients were generally

overweight with an average BMI of 26.5 (range 17.15–39). There was a large range in FT levels between 3 and 159 pmol/L (normal range 163–473 pmol/L). Total testosterone (TT) levels ranged between 0.2 and 27.3 nmol/L (normal range 6.68–25.7 nmol/L). SHBG levels ranged between 13 and 200 nmol/L (Normal range 10–57 nmol/L) with 49% being above normal. 81% of patients were symptomatic complaining of either fatigue, low libido and erectile dysfunction or a combination of symptoms. 32 of these patients have commenced testosterone therapy and a further 5 where still undergoing investigation and awaiting treatment. 37 of these patients had their prostate specific antigen (PSA)measured before starting treatment as well as regular follow up PSA monitoring.
Conclusions: This review identified a significant number of patients had developed hypogonadism despite well controlled HIV infection. SHBG levels varied with 49% being above normal which may lead to under diagnosis of hypogonadism if only total testosterone levels are measured. The Majority of patients were symptomatic and responded well to treatment. There were a significant number of patients with comorbidities which is a feature of an ageing cohort. This may indicate hypogonadism may become more prevalent.

P148

Evaluation of a dedicated postnatal contraception clinic for women living with HIV (WLWH): 5 years post-implementation

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Background: Prevention of unplanned pregnancies is one of the WHO's four elements for perinatal HIV prevention. Selected studies suggest that 51–91% of pregnancies in WLWH are unplanned. British HIV Association (BHIVA) guidelines recommend all contraceptive options be discussed with WLWH and the postnatal period is an opportune time for implementation of an effective contraceptive method. A doctor-led dedicated postnatal contraception clinic (DPCC) was set up in July 2013 at our service and an initial review at two years found an increase in all contraception uptake with nearly a 50% increase in long-acting reversible contraception (LARC). Following this demonstrable improvement midwives were encouraged to routinely book patients into the DPCC on the same day as booking other routine postpartum appointments. In addition the doctor who conducted the clinic would confirm attendance by phone-call.
Aim: To evaluate the DPCC five and a half years following implementation to assess if this increase in uptake of contraception has been maintained.
Methods: Retrospective case note review of women attending an HIV antenatal clinic (ANC) in south London between January 2016 to December 2018, five and a half years following the implementation of a DPCC. Data was obtained on planning of pregnancy, antenatal and postnatal advice on contraception and uptake of contraception methods, to be compared with a period prior to establishment of the clinic (September 2009–July 2012) and just after the establishment of the clinic (July 2013–June 2015).
Results: There were 94 pregnancies in 85 women. 77(91%) were of black ethnicity; median age 36 years; 69(81%) partner negative or of unknown HIV status; 29(34%) had a history of a TOP. Of the pregnancies 48(51%) of pregnancies were unplanned. 74 of the 94 pregnancies had a live birth outcome at the hospital of which 58 attended post-partum. 16(17%) pregnancy outcomes were miscarriages which reflects the general population. Table P148.1 demonstrates the comparison of contraception discussion and provision prior to setting up the clinic and two time periods following the establishment of the clinic. In a sub analysis of 58 patients that attended the DPCC 35(60%) took up a LARC method.**Conclusions:** Women who attended the DPCC left with a contraceptive method, the majority (45%) with an intrauterine technique. This evaluation has demonstrated a sustained and significant increase in uptake of contraception. Just over 50% of pregnancies were unplanned; a dedicated service led by appropriately trained staff with an understanding of cART presents an excellent cost effective intervention to address contraception access and provision for WLWH.

Table P148.1.

	Pre-intervention Sep 2009–July 2012 (35 months)	Post-intervention July 2013–June 2015 (24 months)	p-value	Jan 2016–Dec 2018 (24 months)	p-value
Contraception discussion	60/140 (41%)	58/77 (75%)	<0.0001	60/74 (81%)	<0.0001
Attended 6 weeks postpartum	123/140 (88%)	68/77 (88%)	0.554	58/74 (78%)	0.125
Uptake all contraception	44/123 (36%)	34/68 (50%)	0.055	45/58 (76%)	<0.0001
Uptake LARC	21/123 (17%)	22/68 (32%)	0.015	35/58 (60%)	<0.0001
Uptake IUD/IUS	11/123 (9%)	18/68 (26%)	0.001	27/58 (47%)	<0.0001
Uptake Implant	0/123 (0)	1/68 (1%)	0.356	4/58 (7%)	0.006

P149

Feasibility, acceptability and outcomes of fertility evaluation in adults with perinatally acquired HIV-1 infection: a cross-sectional observational study

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Background: Limited data exists on the reproductive health status of adults with perinatally acquired HIV (PaHIV). The current cohort of adults with PaHIV are the first generation to reach reproductive age and many have experienced poor health, immune dysfunction and exposure to antiretroviral therapy through puberty. We aimed to evaluate feasibility, acceptability and outcomes of fertility investigations in a cohort of PaHIV adults.
Methods: We conducted a single-centre cross-sectional observational study evaluating fertility in consenting PaHIV adults aged >18 years using sperm functional assessment (SFA) in males and transvaginal ultrasound scanning paired with anti-Mullerian hormone (AMH) testing in females from February 2018 to December 2018. Information regarding demographics, HIV viral load, CD4 cell count, ART regimen and risk factors for infertility was collected. Significant abnormal findings were referred to NHS services.
Results: Thirty-three PaHIV individuals were recruited. Cohort demographics are displayed in Table P149.1. 12/19 (63%) females and 6/14 (43%) males completed the study and underwent fertility investigations. For the 19 female participants, mean (SD) serum AMH level was 18.2 (12.0) pmol/L. For the 12 women who attended for transvaginal scans, mean (SD) antral follicle count (AFC) was 21.3 (9.6) follicles. Of 12 transvaginal scans, seven were normal, four were booked for re-assessment and one had a low AFC on a background of bilateral ovarian cystectomies. In all males attending for SFA, the period of abstinence was adequate and there were no delays in sample processing. 5/6 individuals had abnormal semen analysis results for at least one parameter (Table P149.1).

Table P149.1. Participant demographics and results of fertility investigations

	Females (n=19)	Males (n=14)
Median age (IQR) (years)	24 (20–27)	25 (24–28)
Ethnicity (black or mixed)	16 (84%)	12 (86%)
Overweight (BMI>25)	5 (26%)	6 (43%)
Known exposure to zidovudine, didanosine, stavudine or efavirenz (drugs that have been associated with mitochondrial toxicity or sperm abnormalities)	7 (37%)	11 (79%)
VL<50 c/ml	18 (95%)	10 (71%)
Median CD4 cell count (IQR) (cells/mm^3)	695 (513–1055)	610 (315–803)
Current smokers	4 (21%)	3 (21%)
Alcohol use	10 (53%)	7 (50%)
Recreational drug use	0 (0%)	3 (21%)
Males n=6/14		
Semen volume >1.5 ml		5 (83%)
Sperm concentration >15/ml		4 (67%)
Progressive motility >32%		3 (50%)
Total motility >40%		3 (50%)
Sperm morphology normal forms >3.9%		1 (17%)
Females n=12/18		
Mean (SD) AMH pmol/L	17.8 (10.2)	
Mean (SD) AFC	21.3 (9.6)	

Conclusions: This is the first study to report results of semen analysis in males with PaHIV. Recruitment was limited by the personal nature of the tests and practicality of attending a separate unit for semen production. We found no evidence of increased risk of infertility amongst women with PaHIV. Male sperm function may be impaired but our study numbers were too small to draw conclusions. It is important to note that results of SFA should interpreted together and a single aberrant result may not be of any significance. Additionally, fertility investigations are mainly used in the context of assisted conception and it is unclear whether they can predict reproductive potential.

P150

Is it time to review the recommended intervals of cervical cytology in women living with HIV (WLHIV)?

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Background: The NHS Cervical Screening Programme (NHSCSP) guidelines recommend yearly cervical cytology tests for all women living with HIV (WLHIV) between the ages of 25–65 years. The Centre for Disease Control and Prevention (CDC) recommends cervical screening from 1 year after sexual debut. The CDC also recommends that after 3 consecutive normal annual cytology results or where a cytology is normal and high-risk human papilloma virus (hrHPV) negative, the screening interval may be extended to three-yearly. Cervical intraepithelial neoplasia (CIN) and invasive cancer rates are higher in WLHIV compared to the non-HIV population and are associated with severity of immunosuppression. Effective antiretroviral therapy (ART) reduces the risk of abnormal cytology.
Methods: A retrospective review of all HIV-positive women attending the cervical cytology clinic in our HIV outpatient department between 01/01/14 and 31/12/17 was undertaken. Results of cervical cytology taken prior to 01/01/2017 was also collected. Demographics, laboratory values cervical cytology data were extracted from electronic databases and patient notes.
Results: 259 women attended the cervical cytology clinic during this period (mean age 43.6 years (SD 9.38); 89% were black African or Caribbean). The nearest median CD4 count to the time of cervical cytology was 637 (IQR 436–875) cells/μL and 93% had an undetectable HIVRNA. 66 (25%) had an abnormal cytology result of which 17 (6.5%) were high grade CIN. Of these, only 5 (2%) had a CD4 >500 cells/μL. 111 (43%) had three years of consecutively negative cytology and during follow up (between 1–15 years) went on to have consistently normal cytology results. The median CD4 count of these women was 680 (IQR 456–876) cells/μL. 28 women did not manage to attend every year for screening. However following three normal cytology (over an extended time period) they also went on to have consistently normal cytology results. 10 had previous treatment for CIN and went on to have consistently normal cytology results during follow up. 9 women had three consecutive normal cytology results and then developed an abnormal result after 1–7 years of follow up. These were low grade abnormalities which would have picked up at three yearly interval screening. 7 women went on to have a normal smear following this low grade abnormality The remaining 33 (13%) women had normal cytology but less than three smear results during follow up
Conclusions: Among our cohort, cervical cytological abnormalities were found at higher prevalence than in the general population but high grade abnormalities were low. Even though this is a small retrospective cohort it suggests that for those patients with three previous consecutive negative cytology results, on treatment with high CD4 counts, a longer interval between cervical cytology may be appropriate. This would be both cost saving for the department but also more convenient for patients.

P151

The menopause experience: a quality improvement project

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Background: In 2016, 10,350 women living with HIV aged 45–56 attended HIV clinics in the UK. The BHIVA/BASHH/FSRH Guidelines for sexual and reproductive health (2017) state that all women between the ages 45–56 should have an annual menopausal review and given information about the perimenopause/menopause along with information around the use of HRT.
Aims: Approximately 13% (153/1200) of our HIV cohort are women aged between 45–56. Our aim was to review these women attending our services and assess if they have ever discussed menopause, have menopausal symptoms and whether they might benefit from a discussion about or initiating HRT.
Methods: A comprehensive questionnaire looking at contraception, menopausal symptoms, comorbidities, medications and lifestyle risk factors was developed and information obtained. Case note review was undertaken following completion of the questionnaire and information gathered around clinical review, FRAX and cardiovascular scores were calculated and their antiretroviral (ARV) regime was reviewed.
Results: 20 women between age 45–56 completed the questionnaire. 80% were Black African/Black Caribbean, 15% White British and 5% Asian in Ethnicity. 90% were are on HIV treatment and all had an undetectable viral load.
Of these women, none of them had a menopause review in their visits with a HIV physician but 40% had menopausal symptoms which would have been identified if questioned. 20% had heard of HRT and only half of them had been given this information from a healthcare professional, otherwise had heard about it through word of mouth and no information had been given/sought about whether they would be eligible or would help with their menopausal symptoms.
The remaining 60% who had no symptoms, were still having regular periods but given their age, are likely to reach menopause in the near future so would be worth discussing symptoms/signs in advance and information around Hormone Replacement Therapy (HRT).
Only 1 of these symptomatic women had discussed the menopause with their GP and started HRT which they found beneficial.
Women with HIV are more likely to undergo pre-mature menopause and hence it is very important to enquire about menopause at least once a year in their annual review. A comprehensive review to include their FRAX, cardiovascular risk scores, their current anti-retroviral regimen, pharmacological review to identify any drug-drug interactions in women of this age group is crucial to minimise any drug related side effects. Information on HRT should be made readily available for these women. Every unit should have a specialist interested in menopausal issues to improve the quality of care provided, as HIV now is more about living long and living healthy.
Conclusions: This survey has highlighted that menopausal symptoms are extremely common in women of the specified age group. Based on our survey, we aim to improve 'menopausal awareness' by not only identifying the issues in our annual review but also providing information and guidance to deal with menopause.

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