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Abstracts of the 17th Annual Conference of the British HIV Association (BHIVA)
Bournemouth, UK
6–8 April 2011

EDITORS
Brian Gazzard
Jens Lundgren

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- The award is open to any BHIVA member working on HIV disease in any capacity that does, or may, improve HIV clinical care and management in the UK.
- Laboratory studies are included as well as clinical and other related projects that do, or may, lead to improved patient care in the UK.
- It is open to both medically and non-medically qualified BHIVA members.

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Please refer to the following websites for further information:

- NIHR CRN Portfolio www.crncc.nihr.ac.uk *information on study eligibility, funding and accrual data*
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- IRAS www.myresearchproject.org.uk *researchers use this site to begin the process of applying for NHS Permissions and for inclusion on the NIHR CRN Portfolio*

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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

Complications of HIV Disease or Treatment

01
A comparative analysis of risk factors associated with efavirenz, darunavir/ritonavir, lopinavir/ritonavir, atazanavir/ritonavir and renal impairment

N Rockwood, M Nelson, S Mandalia, J Sirokosta, R Jones, M Boffito and B Gazzard

Chelsea and Westminster Hospital, London, UK

Background: The long term effect of Protease Inhibitors (PIs) on renal function is unknown. We compared the effect of efavirenz (EFV) and the boosted PIs atazanavir (ATZ), lopinavir(LPV) and darunavir(DRV) on reaching first estimated glomerular filtration rate (eGFR)<60 in individuals commencing these therapies with an eGFR above this range.

Methods: 2115 patients were prescribed HAART containing 2NRTI+ EFV or PIs and had a baseline eGFR available from June 2006 and Feburary 2010. Univariate and adjusted Cox's proportional hazards regression model were used to show likelihood of renal impairment (eGFR < 60). The proportion of renal recovery after first eGFR< 60 was examined.

Results: 386(18%) reached eGFR<60. On univariate analysis, female gender (HR 1.51, p<0.002), baseline age (p<0.001), baseline eGFR (p<0.001),DRV (HR 1.53, p<0.001), ATZ (HR 1.27, p<0.036), LPV (HR 1.71, p<0.001), prior Tenofovir (TFV) exposure (HR 1.68, p<0.001),Hep B Sag +ve status (HR 1.21, p<0.001) and total duration TFV exposure (HR 1.09, p<0.001) were associated with significantly increased risk of eGFR<60 whereas ethnicity, baseline CD4 count, baseline viral load (VL), VL blips >500, prior EFV exposure and Hep C+ve status were not. EFV was linked with significantly decreased risk of eGFR<60 (HR 0.6, p<0.001).The risk of eGFR< 60 increased by 9% per year exposure to TFV. Multivariate analysis with comparison to EFV showed DRV (HR 1.3, p 0.014) and LPV (HR 1.8, p<0.001) but not ATZ to have significantly increased risk of eGFR<60. There were no significant differences between the EFV group (N=50) and PI group (N=160) in a subgroup analysis of traditional risk factors for renal impairment. Post first eGFR<60, at 12months, 50% of patients had renal recovery with eGFR>60. Between 0–30 months, there was a mean 31% increase in proportion of patients with renal recovery in those who stopped TFV compared to those who continued TFV (p<0.001).

Conclusion: There was significant risk of renal impairment with boosted LPV and DRV in the study. In contrast to previous studies, the effect of boosted ATZ on renal impairment was no longer significant after adjusting for TFV exposure. In individuals developing an eGFR<60, cessation of TFV was associated with a higher rate of renal recovery.

02
Change in vitamin D levels smaller, and risk of development of severe vitamin D deficiency lower, among HIV-1-infected, treatment-naïve adults receiving TMC278 compared with efavirenz: 48-week results from the Phase III ECHO trial

D Wohl[1], M Doroana[2], C Orkin[3], JH Pilotto[4], S Sungkanuparph[5], P Yeni[6], S Vanveggel[7], H Deckx[7] and K Boven[8]

[1]The Center for AIDS Research, The University of North Carolina at Chapel Hill, NC, USA, [2]Hospital de Santa Maria, Lisbon, Portugal, [3]Barts and The London NHS Trust, London, UK, [4]Hospital Geral de Nova Iguaçu, Nova Iguaçu, Brazil, [5]Ramathibodi Hospital, Bangkok, Thailand, [6]Hôpital Bichat, Paris, France, [7]Tibotec BVBA, Beerse, Belgium and [8]Tibotec Inc., Titusville, NJ, USA

Background: TMC278 is an investigational NNRTI with efficacy non-inferior to efavirenz (EFV) at Week 48 (W48) in two Phase III trials in treatment-naïve HIV-infected adults. EFV can induce CYP450 enzymes involved in vitamin D (VD) metabolism and has been associated with severe VD deficiency and osteomalacia. We compared changes in 25-hydroxyvitamin D (25(OH)D) serum levels and proportions of patients with 25(OH)D deficiency on TMC278 vs EFV over 48 weeks in ECHO (NCT00540449).

Methods: ECHO included 690 patients in North America (32%), Europe (24%), Latin America (19%), Asia (14%), Africa (9%) and Australia (2%) randomized (1:1) to TMC278 25mg qd or EFV 600mg qd, plus tenofovir/emtricitabine. 25(OH)D was measured in stored baseline (N=686) and W48 (N=586) serum samples. Proportions of patients with normal (>75nmol/L), insufficient (50–75nmol/L), deficient (25–50nmol/L) and severely deficient (<25nmol/L) 25(OH)D levels were calculated.

Results: Populations in both treatment groups were well balanced for age, gender, race (Black/African-American [AA], non-Black/AA), geographical region, BMI, HIV duration, baseline CD4 cell count, serum albumin, calcium, phosphate, 25(OH)D levels, and use of VD supplements during the study. 292 (TMC278) and 290 (EFV) patients had paired baseline/W48 samples. The mean (SD) change from baseline in 25(OH)D levels at W48 was 0.6 (17.9) nmol/L (p=0.6) for TMC278 and -6.2 (18.0) nmol/L (p<0.0001) for EFV. The proportion of patients with severe 25(OH)D deficiency at baseline was similar for TMC278 (4.8%) and EFV (5.2%) but smaller for TMC278 than EFV at W48 (4.5% vs 9.0%, respectively; p=0.03). Of the patients with baseline 25(OH)D insufficiency/deficiency, a smaller proportion developed severe 25(OH)D deficiency with TMC278 than EFV:

TMC278		EFV	
Patients with baseline 25(OH)D insufficiency or deficiency[a]			
Proportion	Patients who developed severe 25(OH)D deficiency	Proportion	Patients who developed severe 25(OH)D deficiency
204/292 (70%)	4/204 (2%)	186/290 (64%)	15/186 (8%) (p=0.0079)[b]
Patients with baseline 25(OH)D deficiency[a]			
73/292 (25%)	3/73 (4%)	71/290 (24%)	14/71 (20%) (p=0.0042)[b]

[a]With paired baseline/W48 samples; [b]Fisher's Exact test vs TMC278

Conclusion: Over 48 weeks, TMC278 did not result in a significant change in 25(OH)D levels but there was a significant decrease with EFV. Patients with 25(OH)D insufficiency/deficiency at baseline had a significantly lower risk of developing severe 25(OH)D deficiency with TMC278 than with EFV.

03
A decade of renal biopsies in an HIV-infected cohort: what have we learnt?

M Rayment[1], H Isenman[2], J Levy[2] and R Jones[1]

[1]Chelsea and Westminster Hospital NHS Foundation Trust, London, UK and [2]Imperial College Renal and Transplant Centre, Hammersmith Hospital, London, UK

Introduction: As the HIV-infected population ages, the prevalence of non-HIV co-morbidities is increasing. The spectrum of renal diseases within the population is likely to be changing. We evaluated the cross-

sectional case mix of renal disease in our cohort, as defined by renal biopsy findings.

Methods: We audited the HIV biopsy database. All those who had undergone renal biopsy in the last ten years were evaluated. Data were collected on referral diagnosis and clinical outcome.

Results: 39 patients underwent biopsy between 1999 and 2010 (10 female; 29 male; mean age 44 yrs). Most women were black (90%) and most men white (62%). The mean time from HIV diagnosis to biopsy was 8.6 years, but 9 patients presented with renal disease at the time of HIV diagnosis. The mean CD4 at biopsy was 367cells/μl. The most common diagnosis made across the cohort was acute tubulo-interstitial nephritis (ATIN)**:** this was the principal diagnosis in 8 patients (21%, including two granulomatous cases) and a major feature in a further 5 cases (13%). All non-granulomatous cases were on ART at biopsy, with a wide range of agents. The mean creatinine at presentation was 307μmol/L. 3/13 required dialysis but the remainder recovered renal function with steroids and a change of ART. Acute tubular damage was the second commonest finding, affecting six patients (15%), all of whom had undetectable viral loads on protease inhibitor-based ART. The mean creatinine at presentation was 560μmol/L and all recovered renal function fully. HIVAN was seen in five patients (13%): all black, and all with uncontrolled HIV, presenting 0–12 years post-diagnosis. The mean creatinine at presentation was 397μmol/L. None recovered renal function and 4/5 were on dialysis at six months. Outstanding diagnoses comprised IgA (4), mixed immune complex disease (4), FSGS (3), membranous glomerulopathy (2), advanced scarring (2), focal necrotising GN (2), and fibrillary, thin membrane and glomerulocystic dilatation (all 1 each).

Conclusion: In our cohort, ATIN and tubular damage were the commonest biopsy findings. Cases were mostly related to drug toxicity and all associated with a good outcome. We are unable to identify a link with particular ART classes due to a small number cases and the presence of many confounding variables. HIVAN is infrequently seen and is invariably associated with uncontrolled HIV infection, and carries a poor prognosis. Renal biopsy was useful in directing clinical management in all cases.

O4

Atazanavir exposure is associated with increased rate of renal stones compared with efavirenz, lopinavir and darunavir

N Rockwood, M Nelson, S Mandalia and B Gazzard
Chelsea and Westminster Hospital, London, UK

Background: Although there are reports of atazanavir (ATZ) associated renal stones (RS), there is paucity of data on their incidence. We retrospectively compared the rate of RS in a patient cohort exposed to antiretroviral (ARV) regimens containing ATZ, efavirenz (EFV), lopinavir(LPV) and darunavir (DRV).

Methods: Patients who had 1) abdominal x-ray 2) renal ultrasound scan 3) computer tomography scan of abdomen 4) intravenous urogram during May 2006 to Febuary 2010 and who were exposed to ATZ,EFV, LPV,DRV during this period were investigated. Diagnosis of RS was made on a radiological basis. Event rate (ER) per 1000 patient year(py) of ARV exposure was calculated and statistical significance evaluated comparing combined EFV/LPV/DRV with the ATZ group. Sub analysis was carried out excluding patients who developed RS who had previous Indinavir (IND) or ATZ exposure.

Results: Out of 1206 patients on ATZ, 24(2%) developed RS with an ER of 7.3 per 1000py (95% CI 4.7–10.8). Of 2803 patients on EFV,14(0.4%) developed stones with ER 1.5 per 1000py (95% CI 0.8–2.5). Of 828 patients on LPV, 5(0.6%) developed stones with ER 1.9 per 1000py (95% CI 0.6–4.5). Out of 818 patients on DRV, 5(0.6%) developed stones with ER 4.5per 1000py (95% CI 1.5–10.5). The ER in the EFV/LPV/DRV combined group was 1.9 per 1000py (1.2–2.8) and this was significantly different compared to ATZ group (rate ratio (RR) 0.26, p<0.001). When patients from the ATZ group with previous IND exposure were excluded, the ER was 4.6(95% CI 2.6–7.5). When patients from the combined EFV/DRV/LPV group with previous ATZ/IND exposure were excluded, ER per 1000py was 1.2 (95% CI 0.6–1.9) and this was significantly different to the ATZ group (RR 0.26, p=0.009).The median bilirubin (Bil) at RS diagnosis in the ATZ group was 50.5 and this was significantly different to the mean Bil of 23 in all other subjects who were on ATZ and did not develop RS at a similar time point (p<0.001). One patient who developed RS on DRV with a previous history of ATZ exposure, had evidence of ATZ on stone analysis 21 months after stopping ATZ.

Conclusion: ATZ exposure is associated with significantly increased rate of RS compared with the EFV/LPV/DRV combined group with and without adjusting for prior ATZ/IND exposure.

O5

Features of neurocognitive performance in over 100 neurologically-asymptomatic HIV-infected adults receiving combination antiretroviral therapy (cART)

L Garvey[1,2], V Surendrakumar[1,2] and A Winston[1,2]
[1]Imperial College London, London, UK and [2]St Mary's Hospital, Imperial College Healthcare NHS Trust, London, UK

Background: Factors associated with cerebral function impairment in HIV-infected subjects remain poorly described. The aim of this study was to investigate association between neurocognitive performance (NcP) scores and clinical parameters including antiretroviral drug class and CNS penetration effectiveness (CPE) score, within a cohort of neurologically-asymptomatic subjects.

Methods: Eligible subjects were HIV-1 infected, aged over 18 years, receiving stable cART with plasma HIV RNA<50 copies/mL for at least 3 months. Neurologically-symptomatic subjects were excluded. Current cART was evaluated for drug class (PI- or NNRTI-based), and CPE (2007) score. Subjects underwent detailed, computerised neurocognitive testing. These results were used to calculate composite speed, accuracy and executive functioning scores and determine if neurocognitive impairment (NCI) was present (a score>1SD below mean age-matched population data in at least 2 cognitive domains). Associations between NcP scores and clinical parameters were evaluated using linear regression.

Results: 101 (88% male) subjects participated. Mean (SD) age was 52 (12) years, current CD4+ 559 (268) and nadir CD4+ 183 (132) cells/uL. 25 subjects (25%) had chronic hepatitis C coinfection. Mean (SD) CPE score was 1.71 (0.59) and 53% were receiving NNRTI-based cART. Overall 19 (19%) subjects had NCI. No association between presence of NCI and clinical parameters were observed (p>0.14 all values). Poorer composite speed score was associated with older age (p<0.01), lower current CD4+ count (p=0.02) and nadir CD4+ count (p=0.03). Poorer composite accuracy score was associated with older age (p<0.01) and poorer composite executive function score with lower nadir CD4+ count (p=0.02). No relationship between poorer NcP performance and hepatitis C status, CPE score or drug class of cART was observed (p>0.15).

Conclusion: In asymptomatic HIV-infected adults on stable cART, HIV disease status (lower current and nadir CD4+ count) and older age, but not CPE score or cART drug class, are associated with worse NcP.

O6

Non-cirrhotic portal hypertension is the commonest cause of varices in HIV-infected individuals

A Scourfield, L Waters, S de Silva, A Jackson, P Holmes, G Panos, B Gazzard and M Nelson
Chelsea and Westminster Hospital, London, UK

Background: Oesophageal varices are a major complication of portal hypertension with high mortality rates. Common causes include viral hepatitis and alcohol abuse. Non-cirrhotic portal hypertension (NCPH) is increasingly described in the HIV literature and has been associated with didanosine (ddI) exposure. We determined the proportion of individuals with NCPH and endoscopic evidence of varices in our cohort and assessed their long term follow up.

Method: We identified all individuals with endoscopic evidence of oesophageal or gastric varices from our HIV cohort using electronic clinical codes from 2000–2010. A retrospective review of case notes, pathology, endoscopy and radiology reports was performed to identify the cause of portal hypertension. After excluding other causes subjects were labelled NCPH.

Results: 48 individuals with varices were identified. Alcohol related liver disease was identified in 4 subjects, hepatitis C in 12, hepatitis B in 7, delta hepatitis in 1, NASH in 2 and NCPH in 25. Data was compared for individuals with NCPH to those with an identifiable cause of portal hypertension (n=23). Groups had similar median ages (49 years), duration of HIV exposure (11 years) and proportion of females (20%). Individuals with NCPH were more likely to present with upper GI bleeding (60 vs 43%), undergo more endoscopies (3 vs 2), have higher grade of varices (2 vs 1), more portal hypertensive gastropathy (92 vs 74%) and higher rates of intervention (80 vs 48%). Both had rebleeding rates of 30%. All subjects with NCPH had been exposed to ddI, median duration 62 months (36–102). 17 individuals had a liver biopsy performed 12 showed mild fibrosis, 4 moderate fibrosis and 4 features of nodular regenerative hyperplasia. 12 subjects had undergone echocardiography and 4 (33%) showed raised pulmonary artery pressure, two of these confirmed by right heart catheterisation. 13 had fibroscan performed 8 showed >9.6 kPa (stage F2 fibrosis), 5 >14.6kPa a value indicative of cirrhosis and 4 >21kPa, strongly predictive of oesophageal varices. Five (25%) subjects with NCPH have since deceased, 4 from decompensated liver disease, one unrelated. Five others are being followed up in the liver transplant clinic.

Conclusion: Our data demonstrates NCPH is a common cause of varices in HIV infected individuals and shows a strong association with ddI exposure. Screening patients with long-term ddI exposure may prevent life-threatening complications such as variceal haemorrhage.

Diagnosis, Testing and Epidemiology

07
HIV testing in non-traditional settings – the HINTS study

M Rayment[1], A Thornton[2], T Welz[3], R Jones[1], P Roberts[1], A Nardone[2], J Anderson[4], M Tenant-Flowers[3] and A Sullivan[1] on behalf of the HINTS Study Group

[1]Chelsea and Westminster Hospital NHS Foundation Trust, London, UK, [2]Health Protection Agency, London, UK, [3]King's College Hospital NHS Foundation Trust, London, UK and [4]Homerton University Hospital NHS Foundation Trust, London, UK

Background: Guidelines recommend routine HIV testing in healthcare settings when the local diagnosed HIV prevalence >0.2%. This prospective study assessed the feasibility and acceptability, to patients and staff, of routinely offering HIV tests in four settings**:** Emergency Department (ED), Acute Care Unit (ACU), Dermatology Outpatients (OPD) and Primary Care (PC).

Methods: Patients aged 16–65 were offered an HIV test over a 3 month period, and demographic data, uptake, results, transfer to care and departmental activity were collected. Univariate analysis was conducted to identify factors associated with likelihood of test uptake. Subsets completed a questionnaire (behavioural and attitudinal data) or participated in focus groups and interviews (ongoing). Staff completed questionnaires and participated in focus group discussions.

Results: Of 6349 patients offered a test, 4111(65%) accepted (61–72% across sites). Eight individuals were newly diagnosed with HIV (0.0–1.0% across sites). All were transferred to care and two sexual partners tested positive. ED patients were more likely to test if they were younger, or if offered the test by clinical rather than non-clinical staff ($p<0.001$). An association was observed between test uptake and ethnicity in ACU patients ($p=0.04$). Of 991analysed patient questionnaires (528 ED, 107 ACU, 286 OPD, 70 PC) the offer of an HIV test in this setting was acceptable to 95%, with no difference by gender, ethnicity, age or HIV testing history. 50% of patients had never tested before for HIV. The most common reasons given for declining a test were 'tested recently' (44%) and 'low risk' of HIV infection (39%). Pre-study, staff had anxieties about the feasibility of delivering the service and its impact on the department. Post-study staff focus groups demonstrated a high level of satisfaction**:** delivery of testing was feasible with no negative impact on the department. 42% ED, 57% ACU and 73% OPD staff agreed they would feel comfortable offering HIV tests, but the majority felt they would require further training to do so (82% ED, 65% ACU and 63% OPD).

Conclusions: HIV testing in these settings is acceptable to the majority of patients and staff, and is operationally feasible. The strategy was successful in identifying and transferring to care previously undiagnosed HIV-infected individuals. However, if HIV testing is to be included as a routine part of patients' care, additional staff training will be required.

08
A study to assess the acceptability, feasibility and cost-effectiveness of universal HIV testing with newly registering patients (aged 16–59) in primary care

G Bryce[1], P Wilkinson[1], S Nicholson[1], A Jeffery[1], M Hankins[2] and D Jackson[3]

[1]NHS Brighton and Hove, Brighton and Hove, UK, [2]Brighton and Sussex Medical School, Brighton and Hove, UK and [3]University of Surrey, Surrey, UK

Background: New HIV testing guidance recommends introducing universal HIV testing in areas where diagnosed prevalence is 2 per 1000 or more. The acceptability, feasibility and cost-effectiveness of universal HIV testing with newly registering patients (aged 16–59) was assessed in the primary care setting in Brighton and Hove, where diagnosed prevalence is more than 7 per 1000. A total of 10 GP practices that hold locally enhanced service contracts to improve access to primary care for people living with HIV took part in the study. The results presented here were obtained during the first four months of the study.

Methods: Newly registering patients (aged 16–59), attending for a new patient health check appointment (NPHCA), were universally offered a point of care Biolytical INSTi® HIV test. Patient acceptability was assessed through a self-completed questionnaire using Likert scales. All patients were asked to complete the questionnaire following the offer of an HIV test, regardless of whether they opted to have an HIV test or not. Feasibility factors, such as time constraints, delivering reactive results, clinicians' attitudes and referral to care were assessed through the use of reflective diaries, regular working group meetings and focus groups. A cost-effectiveness analysis is being conducted to establish the incremental cost-effectiveness of testing in this setting.

Results: Across all 10 practices, 799 patients who were offered an HIV test completed a patient questionnaire. HIV testing was accepted by 596 (74.6%) patients of whom 369 (61.9%) were female. Accepting an offer of an HIV test was significantly associated with practice ($p<0.001$), age band ($p=0.003$), gender ($p<0.001$) and timing of last HIV test ($p<0.001$). No significant association was found with sexual identity. Of those tested 3 patients produced reactive results of which 2 were later confirmed HIV positive.

Overall, 96.7% of patients agreed that the offer of HIV testing was a good idea, with 81.7% reporting that they had had enough time to make the decision to test. Patients reported being happy to have an HIV test at their GP's surgery (92.4%), and only 9.0% stated that they would prefer to have a test at a specialist sexual health clinic. Patients rated the experience of being offered a test as helpful and useful (92.1%).

Clinicians' views of the feasibility of universal HIV testing were positive overall. In a small focus group (n=10) all agreed that the universal testing policy had been adopted well despite some early anxieties about offering an HIV test and managing reactive results.

In the 6 practices for which complete of the NPHCA was available, the average uptake by newly registered patients was 36% (range 3–81%).
Conclusion: Preliminary results suggest information about the uptake that universal HIV testing in primary care is both acceptable and feasible. The provision of genuinely universal coverage in the context of a NPHCA is dependent on several factors including the policies and practices of individual primary care facilities in offering NPHCAs, uptake rates by patients and follow-up mechanisms for patients who do not attend. A challenge remains in supporting clinicians to be confident in offering HIV testing to patients, particularly if this may potentially involve delivering "bad news".

O9
Community HIV testing: the feasibility and acceptability of assertive outreach and community testing to reduce the late diagnosis of HIV

M Brady[1], C Harrison[1], J Warriner[1], C Skinner[2], N Larbalestier[3] and P Ward[1]
[1]Terrence Higgins Trust, London, UK, [2]Barts and The London NHS Trust, London, UK and [3]Guy's and St Thomas' NHS Foundation Trust, London, UK

Background: Rates of undiagnosed HIV and late diagnoses remain unacceptably high, especially amongst black African heterosexuals. Community HIV testing is one strategy to address this. We piloted an assertive outreach model of health promotion and HIV testing in community settings to assess its feasibility and acceptability.
Methods: Trained outreach workers used a variety of venues to engage with black African communities. They undertook HIV health promotion interventions and offered HIV testing. 22 community partnerships were formed; primarily in areas of South and East London with high HIV prevalence. All tests were done using the Determine 4th generation HIV POCT. Referral pathways were agreed with local HIV centres for confirmatory HIV testing and on-going care. A standardised questionnaire was issued to staff at the venues and clients accepting testing. Data on demographic details, acceptability, HIV knowledge and testing history were collected. Clients who declined a test were asked to complete a similar questionnaire which also included their reasons for not testing. The pilot ran from January – November 2010.
Results: 3789 people were approached and 459 (12.1%) tested. 272 / 3028 who declined a test completed the questionnaire (9.0%). The mean age of those testing was 33. 57.3% were men and 89.4% were heterosexual. 77.0% were black African or Afro-Caribbean. 44.4% had never tested before. 96.3% thought the service was appropriate, 91.5% said they would use the service again and 97.9% would recommend it to a friend. 4 clients tested positive for HIV (0.87%). Of those declining an HIV test 50.4% said it was because they had recently tested and only 5.3% said it was because they didn't want testing in this setting. 83.6% had tested in the last year. 90.7% felt the setting was appropriate and 95.9% said they were likely to recommend the service to a friend. Similar opinions on acceptability were elicited from the staff survey.
Conclusions: We have demonstrated both the feasibility and acceptability of assertive community outreach to increase the uptake of HIV testing. We tested a high proportion who had either never tested or not tested recently and were able to deliver HIV health promotion to over 3,000 individuals. The challenges were around developing the partnerships with community organisations. These relationships are key to the sustainability of the model: as we normalise the concept of community testing we should see the uptake of testing increase.

O10
Evaluation of a dry plasma matrix transport device for genotyping of HIV-1, HBV and HCV, and quantification of HIV-1 VL to provide an economic approach for real-time clinical care in resource-limited settings

C Loveday[1], R Lloyd[2], R Diaz[3], E MaCrae[1], Z Grossman[4], R Mathis[2], D Burns[2] and M Holodney[5]
[1]ICVC Charitable Trust, Buckinghamshire, UK, [2]Technology Think Tank, Buford, USA, [3]Federal University, Sao Paulo, Brazil, [4]Sheba Medical Centre, Tel-Hashomer, Israel and [5]Veteran Affairs Medical Centre, Palo Alto, USA

Background: Worldwide, HIV-1 molecular testing for patient care and research requires transport of frozen plasma, which has become prohibitively expensive. Dried plasma (1 ml) on a cellulose acetate biomatrix (Vivebio Inc, V-ST) has provided an economic approach for collection, transport and storage of plasma from resource-limited settings for later molecular, serological and biochemical testing.
This study evaluated the clinical utility of V-ST versus paired frozen plasma for accurate genetic characterisation for HIV-1 resistance, HIV-1 VL, HBV resistance and HCV genotype.
Methods: Paired V-ST and patient samples (n=patient number) were allowed to sediment and 1ml of plasma was loaded onto the V-ST, air-dried overnight and stored in the low-technology laboratory, and 1ml of plasma was frozen at −70C.
Paired samples were analysed for HIV-1 resistance by TRUGENE HIV-1 Genotyping Kit (n=167), VL by HIV-1 bDNA VERSANT assay, version 3 (<50c/ml;n=99,<4 log:n=100, <6 log:n=100), HBV resistance by INNO-LiPA HBV DR kit (n=20) and HCV clinical genotype by TRUGENE HCV 5'NC kit (n=30).
Statistical analyses were performed using SPSS (version 17).
Results: 137/150 pairs gave HIV-1 resistance data (92.3%) with V-ST having mean similarity scores of >98% and >99%, respectively, at the nucleotide and amino acid level for resistance associated mutations (p: NS). There was no discordance at significant resistance sites. Seventeen sample pairs did not amplify due to low VL.
12/99 VL results at <50c/ml were detectable in V-ST only. In pairs for VL between 1.7log and 5.99log c/ml (n=200) there was strong correlation (r=0.97,p<0.001).
There was agreement in HBV resistance in 19/20 pairs (95%), and HCV typing in 29/30 pairs (97%).
Conclusions: There was a highly significant correlation between plasma and V-ST results for all these clinically important genotyping assays. V-ST provided a highly flexible means of storing and transporting plasma for HIV-1, HBV and HCV molecular assays, and makes it possible to post dry plasma, with no temperature or time constraints, at very low cost.
This transport matrix would provide an important key for a new strategy for the use of distant philanthropic high-technology laboratories, in combination with modern internet and text-based technologies, to provide measures to support and enhance the real-time clinical care of adults and children in resource-limited settings.

O11
Drug levels and drug resistance after interruption of NNRTI-based HAART in the SMART trial

P Vitiello[1], A Garcia[1], C Booth[1], Z Fox[2], A Owen[3], J Johnson[4], A Phillips[2] and AM Geretti[1]
[1]Royal Free Hampstead NHS Trust, London, UK, [2]University College London, London, UK, [3]University of Liverpool, Liverpool, UK and [4]Centers for Disease Control and Prevention, Atlanta, USA

Background: We analysed the virologic outcomes of patients who interrupted and restarted NNRTI-based cART in SMART in relation to the interruption strategy, NNRTI clearance rates, and high/low-frequency drug-resistance.

Methods: NNRTI plasma levels and *CYP2B6/CAR* genotypes were measured 4 weeks after interruption. Resistance testing was performed 4–10 weeks after interruption by population sequencing, AS-PCR (TAMs, K65R, Q151M, M184V, K103N, Y181C, Y188L, G190A; pre-defined cut-offs), and 454 UDS (RT aa 100–190; 1% cut-off).
Results: Among 132 NRTI/NNRTI-experienced patients with VL<400 cps/ml, 63 simultaneously interrupted the NRTIs and NNRTI, whereas 69 either continued the NRTIs alone or switched the NNRTI to a PI/r for two weeks (staggered/switched interruption). Median (IQR) plasma levels were 0.96 (0.5–3.2) ng/ml for nevirapine and 16 (9–55) ng/ml for efavirenz after median 32 and 30 days, respectively. The *CYP2B6/CAR* genotype was highly predictive of NNRTI concentrations, with higher levels seen in the TT/CC profile (p=0.02). Major NRTI and NNRTI resistance mutations were detected in 24/122 (20%) and 13/122 (11%) patients respectively by bulk sequencing, and 29/122 (24%) and 20/122 (16%) patients respectively by combined bulk/sensitive testing, with excellent concordance between AS-PCR and UDS. Detection of NRTI resistance was higher in patients with longer treatment duration (p=0.001). Detection of NNRTI resistance was higher in patients with NNRTI levels in the top 50th centile, with an odds ratio (OR) of detection of 7.62 (95% CI 1.52–38.30; p=0.01)), but no significant difference was seen according to interruption strategy (p=0.17). At 4–12 months after restarting cART, a VL<400 cps/ml was observed in 76.2%, 79.3%, and 94.7% patients with simultaneous, staggered and switched interruption respectively (p=0.22), and in 86.4% of those with no RT mutations, 63.6% of those with NRTI mutations only, and 61.5% of those with NNRTI mutations +/− NRTI mutations (p=0.02). After adjustment, the OR of VL<400 cps/ml was 0.17 (0.03–1.1.5) and 0.18 (0.03–0.89) for patients with NRTI mutations only and for those with NNRTI mutations +/− NRTI mutations relative to patients with no RT mutations (p=0.04).
Conclusions: Most patients restarting NNRTI-based cART after interruption regain virologic suppression. A subset with longer duration of ART exposure, slow NNRTI clearance rates and evidence of NRTI and NNRTI resistance are at risk of suboptimal virologic responses.
(BHIVA Research Award Winner 2008: Anna Garcia-Diaz.)

O12
Dying of AIDS in the era of ART: a national audit

R Smith, B Rice and V Delpech
Health Protection Agency, London, UK

Background: Effective antiretroviral therapy has improved the life expectancy of persons living with HIV, resulting in dramatic declines in mortality. Nevertheless over 500 HIV infected persons continue to die each year in the UK - and many have an underlying AIDS condition at the time of death. We present national trends in death rates and the proportion of deaths attributable to AIDS since ART availability and examine risk factors associated with an AIDS death.
Methods: Analyses of national HIV surveillance data. Crude mortality rates (15–59 years) were calculated for all deaths using SOPHID as the denominator. Cause of death among all adults diagnosed between 1997 and 2008 in England and Wales (E&W) reported to have died were reviewed and AIDS deaths identified. Risk factors associated with an AIDS-related mortality were investigated using a nested case-control study design. Cases were diagnosed between 1997–2008 and reported to have died of AIDS by 2008. Controls were matched on date and age at HIV diagnosis and alive in 2008 (ratio 1:4).
Results: The crude mortality rate among HIV diagnosed persons aged 15–59 years fell from 21.8 per 1000 population in 1999 to 8.2/ 1000 in 2008. Men had a higher crude mortality rate, compared with women, (in 2009 this was 9.1/1000 vs. 6.5/1000, p=0.002). In a multivariate analyses, late diagnosis (OR 6.09 95% CI: 4.95–7.50), heterosexually infected in Africa (OR: 1.24 95% CI: 1.06–1.44) and through injecting drug use (OR: 2.91 95% CI: 2.02–4.21 baseline MSM) were independent factors associated with dying of AIDS. Three quarters (73%) of AIDS-related deaths were attributable to late diagnosis; the corresponding figure for individuals infected in the UK was 66%.
Conclusion: Death rates among HIV infected persons continue to decline in the ART era but remain 5 times greater than the general population. AIDS account for about half of all deaths. Earlier diagnosis and treatment could eliminate three out of four AIDS death, and two-thirds of those among persons who probably acquired their infection in the UK.

O13
Use of laboratory tests to study non-disclosure of HIV status within the Unlinked Anonymous Survey in GUM clinics

EJ Savage[1], CM Lowndes[1], G Murphy[1], G Paul[2], DJ Back[3], ON Gill[1] and AK Sullivan[2]
[1]Health Protection Agency, London, UK, [2]Chelsea and Westminster Hospital, London, UK and [3]University of Liverpool, Liverpool, UK

Background: Unlinked Anonymous (UA) measurement of previously undiagnosed HIV infection in 13 UK Genitourinary Medicine clinics (GUM Anon) contributes to estimates of undiagnosed infections. In the GUM Anon survey previously undiagnosed HIV infection comprises new diagnoses made at that visit and those 'remaining undiagnosed'. In 2009, UA testing indicated previously undiagnosed HIV in 0.4% of subjects, a quarter (27%) of whom remained undiagnosed. A potential bias of the GUMAnon survey is the possibility of non-disclosure of 'known HIV-infected status', due to attending different clinics for STI and HIV care. In this pilot study the feasibility of using indicator tests to reveal the extent of non-disclosure was assessed.
Methods: During 2009 HIV positive samples obtained from one sentinel clinic were tested for presence of plasma HIV RNA. Samples were then classified as remaining undiagnosed after anonymised matching with clinic data on HIV status and HIV test uptake. Those with an undetectable or very low level viraemia (<1000 copies/ml) were subsequently tested for the presence of antiretroviral drugs (ARVD).
Results: 132 HIV positive samples were tested. Of these 18 were classified as remaining undiagnosed, 11 (61%) had a VLBLD and in 2 (11%) the VL was <1000c/mL. There was sufficient sample volume to screen 8 of these 13 samples (7 with an undetectable viral load and one with a viral load of <100c/mL) for the presence of ARVD. Antiretroviral drugs were detected in all 8 samples. All the samples tested were from male patients. Sexual orientation data was available for 5 patients, 4 of whom were MSM.
Conclusion: This preliminary study provides objective evidence that the phenomenon of non-disclosure occurs at this clinic, but its extent here, elsewhere in London or outside requires further study. The study demonstrates the feasibility of using viral load and ARVD assays on stored serum to assess non-disclosure of HIV status. Results of further ARVD testing of 300 archived samples from 'previously undiagnosed' HIV infected attendees at other sentinel GUMAnon clinics will help elucidate the extent of non-disclosure.

O14
An audit of HIV care provision for Immigration Removal Centre patients

K Sabapathy, D Reid and L Rubinstein
Hillingdon Hospital, London, UK

Background: Detainees held in Immigration Removal Centres (IRC) should receive the same range and quality of services as the general public does from the National Health Service, and adequate provision should be made for onward care, according to published guidance from the British HIV Association and National AIDS Trust.

Method: An audit was done of all IRC patients seen at our sexual health centre to describe patient characteristics, and compare practice against recommended standards. Routine clinical data of patients seen at the centre between 2008 and 2010 was analysed using Stata statitsical software (version 11).
Results: One hundred and sixteen new patients were seen for sexual health and HIV care in the study period. All patients were male (female IRC patients are referred elsewhere); median age 33y (IQR 28,41). Fifty-nine percent of patients were from Africa, 14% Asia, 12% West Indies, 9% Middle-East and 6% from another region. Most patients were referred for HIV care (N=61, 53%). 15% of those referred were removed from the detention centres before they could be seen (of whom half were HIV positive). There was 1 new HIV diagnosis (in a partner of an HIV-positive patient). Of those with identifiable country of HIV diagnosis 93% (N=56) were diagnosed in the UK. Prior HIV care was provided by 36 different centres around the country, and 3 from abroad. Most patients (85%) were already on ART at presentation to us. The median number of visits at our centre was 5 (IQR 2, 6). Twenty-four (39%) of HIV patients were deported, 20 (33%) were released into the community, 11(18%) were still detained and 6 (10%) had unknown outcomes. We were given prior notice of release/ deportation in 8 cases, with <1 weeks notice in 5 cases and 2 weeks in a further 2 cases. 1 patient died on release. For the 8 individuals where prior notice was given, none had the recommended 3 month contingency supply of medication provided, 5 received advice about care in the onward location, and 4 were provided with a medical summary letter to inform a subsequent care provider.
Conclusion: British HIV Association and National AIDS Trust standards of care for detainees are not being met. The majority of patients were removed from the IRCs without adequate notification. Greater commitment to meeting recommended standards is paramount to enable medical centres to uphold patient and public health interests.

O15
A retrospective analysis of HIV-positive patients diagnosed with sexually transmitted infection (STI) on asymptomatic screening: the risk to public health

M Toby, J White, A de Ruiter and D Chilton
St Thomas' Hospital, London, UK

Background: Concomitant sexually transmitted infections (STIs) increase the risk of HIV transmission. BHIVA guidelines state that all patients with HIV should be offered STI screening at least annually.
Aim: 1) To determine characteristics of an HIV infected cohort testing positive on asymptomatic screening for STI. 2) To assess the risk of HIV transmission based on antiretroviral therapy (ART) history and HIV viral load (VL).
Method: Retrospective analysis of HIV infected patients testing positive for STIs in 2010 during asymptomatic screening. Data collected included HIV surrogate markers, age, ethnicity and STIs diagnosed. Further analysis of those infected with more than one STI during the analysis period.
Results: 1566 STI screens were performed. 158 (10%) infections were found in 143 patients.
134 (94%) were MSM, 4 (3%) were women, 5 (3%) were heterosexual men, 69 (48%) had a rectal STI, median age was 38 years (range 20–74 yrs), 104 (73%) White ethnicity, 76 (53%) were on ART, median CD4 count 531 cells/mm^3 (range 141–1534), 90 (63%) had VL <1000, 7 (5%) had VL ≥1000 and ≤9,999, 31 (22%) had VL ≥ 10,000 and ≤99,999 and 15 (10%) had VL ≥100,000 copies/ml.
Of MSM, 61/134 (45%) had STIs diagnosed on separate occasions within the analysis period. Median CD4 was 670 cells/mm^3 (range 141–1200), 30 (49%) were on ART. 37/61 (61%) had VL <1000, 3 (5%) had VL ≥1000 and ≤9,999, 16 (26%) had VL ≥ 10,000 and ≤99,999 copies/ml and 5 (8%) had VL ≥100,000 copies/ml.

STI	Positivity (%)		
	Heterosexual men	Women	MSM
Rectal chlamydia	-	-	49(31)
Rectal gonorrhoea	-	-	20(13)
Pharyngeal gonorrhoea			14(9)
Pharyngeal chlamydia			4(3)
Urethral chlamydia (men)	1(0.6)		15(9)
Syphilis	2(1)	1(0.6)	39(25)
Hepatitis C	1(0.6)	2(1)	8(5)
Genital chlamydia (women)	-	2(1)	-

Conclusion: Most STIs were diagnosed in MSM, almost half of whom had at least 2 STIs in the study period. We propose that quarterly screening, targeted risk reduction in addition to partner notification would be appropriate for these high risk individuals. Many of the STIs found were rectal, suggesting high rates of unprotected anal sex, and many had detectable viraemia. Whilst some patients are 'serosorting', others pose a serious public health risk in terms of onward HIV transmission. We propose that early ART is considered as a public health intervention in those with recurrent STIs.

Coinfections and Malignancies

O16
Increased incidence of multicentric Castleman's disease in KSHV$^+$ HIV-1$^+$ individuals of Black African ethnicity may result from the higher frequency of the TLR4 single nucleotide polymorphism A299G

S Westrop[1], D Lagos[2], M Bower[3], F Gotch[1], B Gazzard[3], C Boshoff[2] and N Imami[1]
[1]Imperial College London, London, UK, [2]University College London, London, UK and [3]Chelsea and Westminster Hospital, London, UK

Background: Kaposi's sarcoma herpesvirus (KSHV) is the aetiological agent of Kaposi's sarcoma (KS) and multicentric Castleman's disease (MCD), a lymphoproliferative disorder associated with high KSHV viral load. A299G is a single nucleotide polymorphism (SNP) in the toll-like receptor (TLR)4 gene which we have reported to be associated with increased incidence of MCD in KSHV$^+$ patients.
Methods: One hundred and seven HIV-1$^+$ patients from the Chelsea and Westminster cohort presenting with KSHV related (n=41) and non-KSHV related (n=66) malignancies were analysed according to ethnicity, and genotyped for the presence of the A299G SNP. DNA extraction was performed on peripheral blood mononuclear cells from EDTA blood, and the presence of the A299G SNP in TLR4 determined by pyrosequencing.
Results: Of the 41 patients presenting with KSHV related malignancies, 12 were of black African ethnicity and 29 of white ethnicity. MCD was diagnosed in 18 of these patients, 50% of whom were black African. HIV-1$^+$ individuals with KSHV-related malignancies of black African ethnicity were therefore 2.4 times more likely to present with MCD than white patients (75% of black African patients compared to 31% of white patients). This observation concurs with previously published data from our entire HIV-1$^+$ cohort, indicating that black African ethnic origin is a significant independent predictor of MCD incidence in HIV-1$^+$ patients (p=0.001). In contrast, HIV-1$^+$ individuals with KSHV-related malignancies of white ethnicity were 1.5 times more likely to present with KS than black African patients, as of the 32 HIV-1$^+$ individuals with KS, 7 were black African and 25 white. Nine of these individuals had both MCD and KS. A299G was found to be present in 33% of black African and 10% of white patients with KSHV-related malignancies. In the cohort of patients diagnosed with MCD (n=18) the SNP was present at a frequency of 0.33, regardless of ethnicity. In patients presenting with KS alone (n=23) the SNP was present in only one individual (4%), who was of black African ethnicity.

Conclusion: The 2.4 fold increased incidence of MCD in black Africans with KSHV-related malignancies compared to white individuals may be due to the >3 times higher frequency of the TLR4 A299G SNP in the black African patients. Interestingly, this SNP has previously been associated with protection from malaria mortality in sub Saharan Africa, explaining the higher frequency in this population.

O17
Chemoradiotherapy of anal cancer in HIV patients causes prolonged CD4 cell count suppression

M Alfa-Wali[1], T Allen-Mersh[1], A Antoniou[1], D Tait[2], T Newsom-Davis[1], B Gazzard[1], M Nelson[1] and M Bower[1]

[1]Chelsea and Westminster Hospital, London, UK and [2]Royal Marsden Hospital, London, UK

Background: Despite the advent of HAART, anal cancer remains a significant health problem in people living with HIV. We present the clinical features and treatment outcomes of anal cancer in 60 HIV positive patients over a 20-year period.
Methods: A prospective database of all HIV positive individuals managed at our hospital since 1986 includes 11,112 patients with a total of 71,687 person-years of follow-up. From this database we identified 60 patients diagnosed with invasive anal cancer. Their clinico-pathological and treatment details were analysed.
Results: At anal cancer diagnosis, the mean age was 44 years (range: 28–75), the median CD4 cell count was 305/mm^3 (range: 16–1252) and 59 (98%) were male. Eight (13%) patients were diagnosed in the pre-HAART era (prior to 1996) and 52 (87%) since 1996, of whom 41 (79%) were on HAART at cancer diagnosis and 32 (78%) had undetectable plasma HIV viral loads. Fifty (83%) were treated with chemoradiotherapy (CRT). Their median CD4 count fell from 289/mm^3 before CRT to 132/mm^3 3 months after CRT and 189/mm^3 1 year after CRT ($p<0.05$). Fourteen (28%) patients relapsed following CRT. The median follow-up of the entire cohort is 6.5 years and 19 (34%) patients have died: 13 from anal cancer and 6 from HIV related illnesses whilst in remission. The overall 5-year survival is 65% (95% Confidence interval: 51–78%).
Conclusions: HIV associated anal cancer remains common even amongst patients on HAART with undetectable HIV viral loads and occurs at relatively high CD4 cell counts. The clinical management with CRT achieves similar outcomes as in the general population. CRT is associated with significant and prolonged suppression of CD4 cell counts that may contribute to late deaths of patients in remission.

O18
Clinical features and outcome in 61 patients with HIV-associated multicentric Castleman's disease

S Merchant[1], A-M Young[1], T Newsom-Davis[1], K Naresh[2], B Gazzard[1], M Nelson[1] and M Bower[1]

[1]Chelsea and Westminster Hospital, London, UK and [2]Hammersmith Hospital, London, UK

Background: To describe the clinical features, treatment outcomes and relapse rates in HIV-associated multicentric Castleman's disease (MCD) in a sizeable and mature cohort.
Methods: From a prospective database we identified 61 HIV seropositive patients with histologically confirmed MCD. The median follow-up is 4.2 years. Since 2003, 49 patients with newly diagnosed MCD have been treated with rituximab-based therapy with (14) or without (35) etoposide.
Results: At MCD diagnosis, 55/61 (90%) met the proposed clinical criteria defining an attack. Four (7%) patients had histological evidence of co-existing lymphoma and one patient developed lymphoma 2 years following treatment. The incidence of lymphoma in this MCD cohort is 28/1000 patient years.
With rituximab-based treatment, the overall survival is 94% (95%CI: 87–100%) at 2 years and 90% (95%CI: 81–100%) at 5 years. Four of these 49 patients have died; 3 of MCD within 10 days of diagnosis and one of lymphoma in remission of MCD. Eight of the 46 patients who achieved a clinical remission have suffered symptomatic disease relapse and this has been confirmed histologically. The median time to relapse is 2 years and all 8 have been successfully re-treated and are alive in remission. The 2 & 5 year progression-free survival for all 49 patients treated with rituximab based therapy is 85% (95%CI: 74–95%) and 61% (95%CI: 40–82%) respectively.
Conclusion: HIV-associated MCD is a remitting relapsing disease whose overall survival has improved dramatically in recent years with the introduction of rituximab based therapy yielding high overall survival rates.

O19
HIV-infected patients with hepatocellular carcinoma live longer if they have undetectable HIV RNA

E Page[1], M Bower[1], D Kaplan[2], J Daruich[3], L Kikuchi[4], M Marques Molero[5], D Rimland[6], M Goetz[7], J Pineda[8], K Marks[9], N Brau[10] and M Nelson[1]

[1]Chelsea and Westminster Hospital, London, UK, [2]University of Pennsylvania, Philadelphia, USA, [3]Universidad de Buenos Aires, Buenos Aires, Argentina, [4]Universidade de Sao Paulo, Sao Paulo, Brazil, [5]Hospital Virgen de la Victoria, Malaga, Spain, [6]Emory University, Atlanta, USA, [7]University of California Los Angeles, Los Angeles, USA, [8]Unidad Linica de Enfermedades Infecciosas, Sevilla, Spain, [9]Weill Cornell Medical College, New York, USA and [10]Bronx VA Medical Centre, New York, USA

Background: High HIV viral loads in HIV/HCV co-infected patients are associated with faster fibrosis progression. It is unknown if HIV viral loads also affect the outcome of HCC.
Methods: The Liver Cancer in HIV Study Group identified patients from 29 centres in 7 countries (Canada, USA, Argentina, Brazil, Germany, Spain, UK) and collected data retrospectively. To be included in the database subjects had to be HIV seropositive, have an available HCV serology result and have had a diagnosis of HCC, between 1995 and 2010, in accordance with AASLD 2005 criteria.
Results: 159 patients were identified and divided into those with HIV RNA < 400 copies/ml (n=98) and HIV RNA > 400 copies/ml (n=61). There was no difference between age, gender, ethnicity or CD4 count at the time of presentation with HCC. In keeping with data from HIV negative individuals HCV was the leading aetiological factor in both groups accounting for ¾ of HCC. Those with undetectable HIV RNA were diagnosed more recently with a median diagnosis date of April 2004 compared to January 2002 (p=0.001). Those with detectable viral loads had worse underlying liver disease with a higher CTP score (7.41 compared to 6.31: $p<0.001$), with 18% being classified as stage C compared to just 5% in the group with undetectable viral loads. Looking at tumour characteristics – there was no difference in the presence of single or multiple tumors but those with detectable viral loads had larger tumours at presentation with the median size of the largest tumour being 5.8 cm compared to 3.6cm (p=0.002). They also had higher AFP levels at 907 compared to 197 (p=0.016).
The distribution of HCC therapy differed between groups – those with undetectable viral loads were more likely to be offered potentially curative (38% vs 18%) or effective / non curative therapies (31% vs 21%), while those with detectable viral loads were most likely to have no therapy at all (61% vs32%) (p=0.001). Survival is poor with median survival of 12 months in those with undetectable viral loads and 5.2 months in those with detectable viral loads (p=0.005). Multivariable cox regression analysis of survival demonstrated four factors independently associated with improved survival: initial presentation through screening, effective HCC therapy, BCLC stages A&B and HIV RNA level.
Conclusion: HIV RNA levels of < 400 copies/ml are associated with: lower CTP scores, earlier tumour staging, more frequent, effective HCC therapy and better survival.

O20

Treatment of acute hepatitis C infection in HIV-positive men who have sex with men: a ten-year experience at a single UK treatment centre

D Webster, T Wojcikiewicz, M Keller, D Castelnovo, Y Gilleece, J Tibble and M Fisher

Brighton and Sussex University Hospitals NHS Trust, Brighton, UK

Background: In the era of Highly Active Antiretroviral Therapy (HAART), the natural history of HIV infection has changed and HCV-related liver disease has emerged as a major cause of morbidity and mortality among HIV patients. There is an ongoing epidemic of acute HCV infection in men who have sex with men (MSM) associated with sexual transmission. A majority of patients are identified through routine blood testing as follow up of HAART. Treatment in the acute phase demonstrates significantly better SVR rates as compared with deferred treatment although data are limited on treatment outcomes.

Methods: Retrospective study of new HCV diagnoses in MSM over a 10 year period (November 01 to October 2010) at a single UK centre. Acute infection was defined using European consensus guidelines. Case notes were reviewed and details of treatment and treatment outcomes were obtained. The standard treatment protocol was for 48 weeks of PEG interferon- 2α and ribavirin commenced within 24 weeks of detectable HCV RNA. Spontaneous clearance, end of treatment (ETR) and sustained virological (SVR) rates were assessed.

Results: There were 73 acute HCV infections in MSM (presumed sexually-acquired) in the study period with complete data. The spontaneous clearance rate was 15% (11/73). 47 patients were treated in the acute phase (76%). Genotype data were available on 66 subjects (all undergoing treatment) showing genotype 1 to be predominant - G1=52 (78.8%), G2/3=7 (10.6%), G4=7 (10.6%). The overall SVR was 74% with no significant difference between genotypes 1 and 4 vs genotypes 2 and 3 (21/29 vs 4/5). See table.

Discussion: This is the largest published case series of treatment of acute HCV with 48 weeks of interferon/ribavirin therapy. The majority of cases were the relatively treatment-resistant genotype 1 and yet a high sustained response rate of 74% was seen. This is higher (74% vs 62%) than in a large multi-centre European study with heterogeneous treatment regimes (including 29 people treated for 48 weeks) and higher than another UK study of 27 individuals treated for 24 weeks with the same drugs (74% vs 59%).

O21

Acquisition of acute HCV in HIV-infected subjects is associated with cerebral disturbances but not increased microglial cell activation: a PET study

L Garvey[1], N Pavese[1], A Ramlackhansingh[1], J Allsop[1], E Thomson[1], R Kulasegaram[2], J Main[1], D Brooks[1], S Taylor-Robinson[1] and A Winston[1]

[1]Imperial College London, London, UK and [2]Guy's and St Thomas' NHS Trust, London, UK

Background: Detrimental effects on cerebral function and increased cerebral microglial activation have been described in both chronic hepatitis C virus (HCV) and HIV-1 infections. It remains unknown whether acquisition of acute HCV is associated with microglial activation.

Aims: To investigate the effect of acute HCV infection upon cerebral function and cerebral microglial cell activation.

Methods: A case-control study was conducted to compare subjects with acute HCV and chronic HIV coinfection (*aHCV*) and subjects with chronic HIV monoinfection *(HIVmono). aHCV* was defined as a new positive plasma HCV RNA within 12 months of a negative RNA test. Control subjects were matched by age, elapsed-time since HIV diagnosis, current and nadir CD4+ count, current plasma HIV RNA and type of combination antiretroviral therapy (cART). Subjects underwent neuro-cognitive testing (NCT), cerebral proton magnetic resonance spectroscopy (^{1}H-MRS) and positron emission tomography (PET) using a ^{11}C-radiolabeled ligand (PK-11195), highly specific for translocator protein 18kDA receptors on activated microglial cells. Differences between cases and controls were assessed via linear regression modelling.

Results: Of 24 *aHCV* cases completing NCT and ^{1}H-MRS, 8 underwent PET. Of 57 *HIVmono* controls completing NCT, 12 underwent ^{1}H-MRS and 8 PET. Cases and control subjects were well-matched. Subjects with *aHCV* demonstrated significantly poorer executive function (EF) performance on NCT and increased myo-inositol/creatine (mI/Cr, a marker of cerebral inflammation) in the basal ganglia on ^{1}H-MRS (mean(SD) EF error rate 26.50(17.87) versus 19.09(8.12), p=0.02 [95%CI 1.4,13.4] and mI/Cr ratio of 0.71(0.22) versus 0.55(0.23), p=0.03 [95%CI 0.02, 0.35] for the *aHCV* versus *HIVmono* groups respectively). On PET, no difference in ^{11}C-PK-11195 binding (representing microglial cell activation) was observed between study groups (p>0.30 all cerebral locations).

Discussion: Acquisition of *aHCV* in HIV-infected subjects is associated with disturbance of cerebral metabolites and cognitive performance (executive function). Microglial cell activation does not appear to be the responsible mechanism. We postulate circulating cytokines may play an underlying causal role.

O22

Hepatitis B virus coinfection in HIV-infected patients in the UK Collaborative HIV Cohort (UK CHIC) study

H Price, L Bansi, C Sabin and R Gilson

University College London, London, UK

Background: The prevalence of co-infection with hepatitis B virus (HBV) among the HIV-positive population in the UK is unknown. We determined the HBV status of participants in the UK CHIC Study and calculated the incidence of HBV infection after cohort entry, in those with available data. Factors associated with HBV infection were identified.

Methods: Data from 10 UK CHIC centres that contributed HBV test data were included in analyses. The cumulative prevalence of HBV co-infection (ever HBsAg-positive) was calculated. For incidence calculations, baseline HBV status was determined using the earliest available HBV marker results (taking a window of 1 year). All HBV-negative patients were followed up until a positive HBsAg or anti-HBc test result (incident infection) or censored at the first positive anti-HBs (evidence of vaccination) or last negative HBsAg test result. Poisson regression was used to determine factors associated with HBV co-infection. Models were adjusted for demographics, current CD4 count, current viral load (VL), current age, calendar year and time since starting ART.

Results: Of the 35377 patients in the UK CHIC study, 33811 were from eligible centres; of these, 24777 patients had at least one HBV test (HBsAg, anti-HBs or anti-HBc) result post-1996 available. Patients with HBV data were typically male (77%), MSM (56%) and of white ethnicity (59%) in line with the overall cohort. The median age at first result was 36 (inter-quartile range [IQR]:31, 34) years, and median CD4 and VL were 361 (212, 543) cells/mm^3 and 5000 (50, 56710) copies/ml respectively. Among the 23023 patients with a HBsAg test result, the prevalence of detectable HBsAg was 7.4% (1707/23032); among the 1809 initially HBV-negative patients, the incidence of HBV infection was 0.5/100 person-years. Factors independently associated with incident HBV co-infection were older age (RR: 1.24 (95% CI: 1.02, 1.50) per 10 years higher), IDU risk group (2.47 (1.22, 5.00) compared to MSM), and time since starting ART (1.04 (1.01, 1.08) per 1 year higher).

Conclusion: The prevalence of HBV in UK CHIC is in line with estimates from other studies and low by international standards. In the group with complete data at baseline the incidence of HBV is low, however early vaccination remains important. Further analyses will examine HBV and HIV disease outcomes in co-infected individuals.

023

Invasive pneumococcal disease among HIV-infected individuals in the last decade: a population-based cohort study

Z Yin, B Rice, P Waight, E Miller, R George, A Brown, R Smith and V Delpech

Health Protection Agency, London, UK

Background: Individuals living with HIV are vulnerable to *S. pneumoniae.* We present national trends in the incidence of IPD (Invasive Pneumococcal Disease), describe the distribution of *Streptococcus pnuemonia* serotypes, and examine risk factors for IPD among HIV-infected individuals.

Methods: Data linkage between HIV and IPD surveillance databases for England and Wales. HIV-infected adults (≥15 years) diagnosed with IPD were identified between 2000–2009. The IPD incidence was calculated among HIV diagnosed adults seen in a given year. Risk factors for IPD were assessed using a case-control study**:** cases were co-infected adults; controls were randomly selected and matched on date of HIV diagnosis (case:controls 1:4).

Results: The overall incidence of IPD over the 10 year period was 247 episodes per 100,000 HIV-infected adults and 246/100,000 among those aged 15–44 years. IPD incidence was higher among patients not on treatment (281/100,000) and among those with CD4<200 per mm^3 at IPD diagnosis on ART (359/100,000) and those without (1685/100,000). Episodes of IPD among HIV patients accounted for 8% of all IPD episodes reported among 15–44 yrs olds in 2009. Of co-infected adults 14% were unaware of their HIV infection at IPD diagnosis. Factors associated with an increased risk for IPD included older age (aOR 1.4 for 45–64 yrs, 95%CI 1.1–1.8 and aOR 3.1 for ≥65 yrs, CI 1.5–6.3; ref 15–44 yrs), black Caribbean ethnicity (aOR 1.6, CI 1.1–2.5; ref white), history of injecting drug use (aOR 1.6, CI 1.0–2.8; ref heterosexuals), HIV diagnosis with CD4<200 (aOR 1.6, CI 1.3–1.9; ref CD4≥200) and no previous ART (aOR 4.0, CI 3.3–4.8; ref ART use). The proportion of IPD episodes among HIV-infected adults caused by PCV7 serotypes decreased from 49% in 2006 to 23% in 2009 ($p<0.05$) and remained stable for PCV13 serotypes (67% 2006 and 60% 2009).

Conclusions: The incidence of IPD among HIV-infected adults is 20 times higher than that of the general population and 50 times higher in those aged 15–44 years. Severe immunosuppression results in a greater risk of IPD regardless of ART status. The routine offer and recommendation of a HIV test among adults diagnosed with IPD should be implemented, especially among those aged 15 – 44 years without other obvious risk factors. A large proportion of IPD episodes were potentially preventable by 13-valent pneumococcal conjugate vaccine. Further study on the implementation of IPD vaccination among this population is warranted.

024

Whole-blood interferon-gamma release assay in the diagnosis of active tuberculosis infection in HIV-infected and HIV-non-infected individuals: a five-year review of data

T Lavender[1], A Barrett[2], J Magee[2] and E Ong[1]

[1]Newcastle upon Tyne Hospitals NHS Foundation Trust, Newcastle upon Tyne, UK and [2]North East Regional Health Protection Agency Laboratory, Newcastle upon Tyne, UK

Background: The role of interferon-gamma release assays (IGRAs) in the diagnosis of latent tuberculosis (TB) is well defined. Their role in the diagnosis of active TB infection is less clear, and currently unpublished BHIVA guidelines on the treatment of TB/HIV co-infection do not recommend their use. Previous studies of IGRAs in HIV/TB co-infection report sensitivities both similar and inferior to those seen in HIV uninfected individuals.

Methods: Clinical records of 415 patients with QuantiFERON-TB Gold In-Tube (QFG) assay requested through our unit from 29/06/05–28/10/10 were reviewed. Cases were assigned into 5 categories**:** 1. culture confirmed TB with supporting clinical and radiological findings; 2. culture negative cases with clinical and radiological features highly suggestive of TB, an appropriate response to therapy, and supportive histology if available; 3. clinically indeterminate cases, with TB neither highly probable or excluded; 4. active TB infection excluded and an alternative diagnosis identified; and 5. latent TB infection or QFG requested for screening purposes.

Data collected included QFG result, indication for QFG, final diagnosis, mycobacterial species, site of TB infection, sex, age, nationality, HIV or other immunosuppression status, and CD4 count if HIV positive. Duplicate tests, patients on whom insufficient clinical data was available, atypical mycobacterial infections, and category 3 and 5 patients were excluded from further analysis.

Results: Active TB infection was diagnosed in 66 patients, of whom 42 were culture positive. 7 had isolated pulmonary TB (PTB), 51 extrapulmonary TB (EPTB), 7 PTB and EPTB, and 1 miliary tuberculosis. Active TB infection was excluded in 260 cases, of whom 49 were asymptomatic. 14 of 66 with active TB infection were HIV positive (CD4 count 93–891 cells/μl).

Overall sensitivity of QFG for active TB infection was 76% (95% CI 64–85%), specificity 88% (95% CI 83–91%), negative predictive value (NPV) 92% (95% CI 87–95%). Similar results were seen in HIV infected patients and were not significantly affected by CD4 count.

Conclusions: These data confirm the low reported sensitivity of QFG in diagnosing active TB infection, although the high NPV suggests a role in excluding active disease. HIV infection did not have a significant effect on these results, irrespective of CD4 cell count.

Pregnancy and HIV

025

Atazanavir in pregnancy: a report of 155 cases

M Samuel[1], D Bradshaw[2], M Perry[1], R Dhairyawan[3], SY Chan[4], L Byrne[5], K Smith[6], J Zhou[7], C Naftalin[8], N Offodile[9], C-E Short[10], G Ratnayake[1], S Mandalia[2], R Shah[11], G Brook[9], S Roedling[12], J Anderson[3], P Hay[4], H Noble[5], D Hawkins[2], L Sarner[6], M Rodgers[7], M Poulton[8], R Cross[1], M Natha[2], G Taylor[10] and A de Ruiter[1]

[1]Guy's and St Thomas' NHS Trust, London, UK, [2]Chelsea and Westminster NHS Trust, London, UK, [3]Homerton University Hospital NHS Trust, London, UK, [4]St George's Hospital NHS Trust, London, UK, [5]Newham University Hospital NHS Trust, London, UK, [6]Barts and The London NHS Trust, London, UK, [7]Croydon University Hospital NHS Trust, London, UK, [8]King's College Hospital NHS Trust, London, UK, [9]North West London Hospitals NHS Trust, London, UK, [10]Imperial College Healthcare NHS Trust, London, UK, [11]Barnet and Chase Farm Hospitals NHS Trust London, London, UK and [12]Mortimer Market Centre, Camden PCT, London, UK

Background: Atazanavir (ATZ) is increasingly used in pregnant HIV +ve women.

Aim: To review the tolerability, safety and efficacy of ATZ in pregnancy.

Method: A retrospective case note review of ATZ exposed pregnancies was performed at 12 sites.

Results: 155 pregnancies were identified in 145 women, 3 miscarried and 134 had delivered at time of data collection. 112 were Black African, median age 32 years(15–47), 6 were Hepatitis B and 2 Hepatitis C co-infected, median CD4 was 401 cells/mm^3(15–1161). 37 had resistance mutations (18 single,17 dual,2 triple class), none had the I50L mutation. In 149/155 pregnancies ATZ was boosted with ritonavir. 93 conceived on ATZ; 28 started ATZ first line. 34 switched to ATZ, 24/34 from another PI for toxicity/tolerability issues (18 LPV; 6 SQV), 21/24 due to GI side effects (resolved in 18/21) and 3/24 for deranged LFTs (resolved in 2/3). ATZ side effects**:** nausea/vomiting 51(33%)(3 discontinued);scleral icterus 11(7%);rash 5(4%); abdominal pain 3(2%);diarrhoea 2(1%);acid reflux 2(1%);dizziness 2(1%).134(86%) had hyperbilirubinaemia(Bili >17umol/L), median 31umol/L(3–183). 9(6%) had ACTG grade 1–4

hepatotoxicity(4 G1;3 G2;1 G3;1 G4), median ALT 123 IU/L(58–1289). Of these 1 had Hepatitis C and 3 Hepatitis B. LFTs improved spontaneously in 8/9. ATZ was stopped in 1 case (ALT peak 356) who had switched to ATZ from LPV with deranged LFTs, and her ALT normalised on raltegravir. 10(6%) discontinued ATZ in pregnancy: vomiting 3;hepatotoxicity 1;cholelithiasis 1;ranitidine interaction 1;hyperbilirubinaemia 1;poor adherence 1;virological failure 1;teratogenicity concerns 1.3rd trimester TDM: 17 routine, median 811ng/ml(304–2210); 11 for raised viral load, median 247ng/ml(0–1393) of which 4 were subtherapeutic (<150ng/ml). Data were available for 127 deliveries: 28(22%) vaginal; 62(49%) elective CS; 37(29%) emergency CS. 101(80%) had a viral load <50 c/ml, median detectable viral load 409 c/ml(76–28189). Median gestational age was 38 weeks(30–42);17(13%) <37 weeks. Median birth weight 3120g(1081–6600). 83 neonates had bilirubin levels measured, median 71 umol/L(3–258). 3 neonates had phototherapy:1 polycythaemic, Bili 258 umol/L;1 haemolytic anaemia, Bili 109 umol/L;1 no other cause, Bili 194 umol/L. 1 vertical transmission is reported to date in a woman with adherence issues.

Conclusion: This is the largest case series on ATZ in pregnancy to date, suggesting it is safe, effective and well tolerated. Neonatal data are reassuring.

026
HIV-positive pregnant women with detectable HIV viral load at 36 weeks' gestation – what is the outcome?

H Watson, M Pammi and E Carlin

Nottingham University Hospitals NHS Trust, City Hospital Campus, Nottingham, UK

Background: With highly active antiretroviral therapy (HAART) the rate of mother-to-child transmission (MTCT) of human immunodeficiency virus (HIV) in the UK is <2% and even lower if the HIV viral load is undetectable at delivery. Hence, optimum virological control is crucial during pregnancy.

Aims: To review all pregnancies seen in our unit with a detectable HIV viral load at 36 weeks gestation, or at premature delivery, to identify management changes used to reduce the risk of MTCT.

Methods: A retrospective review was conducted on the records of all HIV positive pregnant women attending our unit for antenatal HIV care from January 2006 to December 2010. Women with a detectable viral load >40 copies/ml at 36 weeks gestation, or at premature delivery, were identified for further analysis.

Results: In total, 96 pregnancies were identified with 16 pregnancies where the HIV viral load was detectable at 36 weeks (range 59–23,463 copies/ml). Two other women had a detectable HIV viral load when they delivered prematurely at 32 and 34 weeks. In women with a detectable HIV viral load, 50% were newly diagnosed with HIV in the current pregnancy, several presenting late in the pregnancy, and 44% of those diagnosed pre-pregnancy were on HAART. Therapeutic drug monitoring and/or antiretroviral (ARV) therapy intensification was instituted in 5 pregnancies.

All women had a delivery plan at 36 weeks; 8 were for vaginal delivery and 3 did so, 10 were for a caesarean section and 9 did so. Thus 14 (78%) had a caesarean section, 11 elective and 3 emergency (2 for obstetric reasons, 1 to reduce MTCT due to prolonged rupture of membranes).Triple ARV therapy was started on all neonates where the maternal HIV viral load was detectable.

The overall MTCT rate was 1 out of 96 pregnancies (1%). This occurred in where the viral load was detectable at 36 weeks in a late presenter with treatment intensification. Thus the MTCT rate was 0% in those with an undetectable HIV viral load at 36 weeks and 5.5% in those with a detectable viral load.

Conclusion: Our overall HIV MTCT rates are low and are comparable to national UK rates. In women with a detectable HIV viral load at 36 weeks medical intervention, caesarean section and neonatal triple ARV were used to reduce the MTCT risk. Despite this, one neonatal HIV infection occurred highlighting the importance of early detection of HIV in pregnancy to optimise the opportunities for good virological control.

027
Pre-exposure prophylaxis exposure for conception as a risk-reduction strategy in HIV-positive men and HIV-negative women in the UK

Y Gilleece[1], J Whetham[1], L Charlwood[1], C McInnes[2], E Payne[2] and S Taylor[2]

[1]Brighton and Sussex University Hospitals NHS Trust, Brighton, UK and [2]Birmingham Heartlands Hospital, Birmingham, UK

Background: HIV positive men with HIV negative female partners have many options, the current gold standard being sperm washing. This is expensive and often involves significant inconvenience for patients living outside London. For several years two non-London teaching hospitals have run dedicated HIV preconception services. In this abstract we present the data for couples opting to use pre exposure prophylaxis for conception (PrEP-C). Our protocols are based on a detailed knowledge of the biology and virology of the sexual transmission of HIV and analysis of prior and emerging data on sexual transmission of HIV in both human and animal models.

Methods: Data was collected prospectively on demographics, CD4, HIV VL and ARVs. Males underwent baseline semen analysis and seminal HIV VL testing. Females had full fertility screens including tubal patency assessments. All couples utilised timed ovulatory intercourse (TOI) to reduce potential exposure to HIV. Cycle length and ovulation (natural or stimulated) was determined. Both partners had STI screens prior to UPSI. All women had regular HIV tests (1–3 monthly).

Results: To date 5 couples have chosen to use PrEP-C. Median male age was 42 years (30–56) and in females 34 years (28–43). The median CD4 was 720 cells/mm3 and HIV VL <40 copies/ml with all men on HAART at baseline. Couples were discussed with a multidisciplinary team, underwent counselling together and individually prior to commencing PrEP-C and completed detailed written informed consent outlining the risk benefits of PrEP-C. A specified number of doses of tenofovir or tenofovir/emtricitabine were taken by the female partner at protocol designated times both before +/– after TOI. Thus far there have been 4 pregnancies in 5 couples resulting in 2 live births (no congenital defects, normal development), 1 ongoing pregnancy and 1 miscarriage (6/40) after a median of 3 attempts (1–5). There have been no HIV transmissions. One couple had 4 unsuccessful attempts before PrEP-C was stopped due to low level VL blipping in the male (max 126 c/ml) and have been referred for sperm washing; one couple have only just started using PrEP-C. PrEP-C was well tolerated by the women with no discontinuations due to intolerance.

Conclusions: This is the first UK data on successful PrEP-C, undertaken in 2 dedicated HIV preconception clinics using standardised protocols and demonstrates PrEP-C to be a safe and effective method of reducing risk in HIV discordant couples.

Early to Late: Young to Old

028
Frequency and characteristics of long-term non-progressors and HIV controllers in the Chelsea and Westminster HIV cohort

S Mandalia[1], S Westrop[2], E Beck[1], M Nelson[1], B Gazzard[1] and N Imami[2]

[1]Chelsea and Westminster Hospital, London, UK and [2]Imperial College London, London, UK

Background: Long-term nonprogressors (LTNP) and HIV controllers (HIC) have durable suppression of HIV-1 replication without ART and have a low rate of progression. The prevalence is low and estimated at 5/1000.

There are no internationally agreed and standardised definitions of LTNP and HIC. This analysis from our HIV Cohort is founded on definitions relating to the patients CD4 T-cell count profiles.

Methods: Data from 1988 to 2008 (time 1) were screened to identify LTNP and HIC and compared to data extended to 2010 (time 2). Non-progression to AIDS for >=7 years then those who never received ART were selected. A stable CD4 T-cell count indicated by change in CD4 count since entry to cohort being >=0 cells/ul blood per 3 months was then selected. After excluding patients who had died, those who had a CD4 count below the normal range (450–1650 cells/ul) defined as discordant LTNP were compared to those who never had measurements below the normal range. A subset of patients classified as LTNP and who controlled HIV-1 replication to below the limit of detection were classified as HIC. A random intercept model was fitted using CD4 counts from all clinic visits as a dependent variable using MIXED procedure in SAS to derive subjects with stable CD4 T-cell counts.

Results: 52 from time 1 were alive and with stable CD4 count compared to 50 from time 2. In time 1 numbers identified as LTNP and discordant LTNP were 16 and 36 and 13 and 37 respectively from time 2. Of these 8/13(62%) and 22/37(59%) remained in both times 1 and 2. One of the 16 LTNP (6%) identified in time 1 as HIC remained and was also identified with all VL<50 copies/ml plasma in time 2 (1/13 (8%)).

Conclusion: Many international single and multi centre HIV cohorts have identified LTNP and HIC but have differing definitions resulting in problems in terms with comparability. This study confirms the numbers of LTNP and HIC are low and with further follow up almost half LTNP identified in 2008 progressed by 2010. This suggests that with follow up most LTNP will eventually progress. The unique immunological and virological responses demonstrated may provide further clues towards the changing status and responses demonstrated by these individuals may provide clues towards development of HIV vaccine. These should be further studied through international collaborative work, as the importance of such studies with global unified definitions and classifications of LTNP and HIC is acknowledged.

029

Prolonged antiretroviral therapy initiated at seroconversion is associated with a polyfunctional HIV-1-specific T-cell profile comparable to that of long-term non-progressors (LTNPs)

C Cellerai[1], A Harari[1,2], H Stauss[3], S Yerly[4], AM Geretti[3], A Carroll[5], T Yee[5], J Ainsworth[6], I Williams[3], J Sweeney[7], A Freedman[8], M Johnson[5], G Pantaleo[1,2] and S Kinloch-de Loes[3,5]

[1]Service of Immunology and Allergy, Centre Hospitalier Universitaire Vaudois, University of Lausanne, Switzerland, [2]Swiss Vaccine Research Institute, Centre Hospitalier Universitaire Vaudois, University of Lausanne, Switzerland, [3]University College London, London, UK, [4]University Hospital Geneva and University of Geneva Medical School, Geneva, Switzerland, [5]Royal Free Hospital, London, UK, [6]North Middlesex University Hospital, London, UK, [7]Victoria Hospital, Blackpool, UK and [8]Cardiff University School of Medicine, Cardiff, UK

Background: Early initiation of antiretroviral therapy (ART) may dramatically curtail cumulative immunological damage allowing maximal levels of immune preservation/reconstitution and induce an immuno-virological status similar to that of HIV-1 LTNPs with low viral reservoirs and polyfunctional HIV-1 specific T cell responses.

Methods: We performed a cross-sectional study of an HIV-1 seroconverter cohort on long-term ART (LTTS) and compared it to one of LTNPs. Inclusion criteria for 20 LTTS were: (a) ≥4 years ART; (b) long-term aviremia and (c) absence of treatment failure and for 15 LTNPs: (a) ≥7 years of documented HIV-1 infection; (b) <1000 HIV-1 RNA copies/mL and ≥500 $CD4^+$ T-cells/mm^3 in >90% of measurements; (d) absence of AIDS-defining conditions; (e) ART-naïve except for temporary ART for prevention of MTCT. In both cohorts, we analysed residual viral replication and reservoirs in peripheral blood, as measured by cell-associated HIV-1 RNA and DNA in PBMCs, respectively and used polychromatic flow cytometry to analyse HIV-1-specific $CD4^+$ and $CD8^+$ T-cell functional profile in terms of cytokine production using IFN-γ, IL-2, TNF-α production.

Results: Cell-associated DNA [47.7 (4.8–583.2) in LTTS and 19.7 (0.5–295.5) in LTNPS, p=0.10], and RNA [3.9 (0–36) and 5.8 (0–10.3), respectively] were shown to be similarly low in both cohorts. We identified 103 CD8 T cell epitope-specific responses, all subjects responding to ≥1 epitope. Mean responding number of responding epitopes per patient was 2 and 4 in LTTS and LTNPS, respectively. Mean % of cytokine-secreting CD8 T cells was 0.37% and 0.50% (p=0.06), of these 43% and 39% (p=0.12) were secreting simultaneously IFN-γ, IL-2 and TNF-α. Respective values for CD4 T cells were 0.28% and 0.33% (p=0.28) of which 33% and 30% (0.32) were secreting these 3 cytokines simultaneously.

Conclusions: Long-term aviremia after very early ART initiation is associated with low levels of reservoirs saturation ad residual replication. Although less broad CD8 T cell responses were found in LTTS, HIV-1 specific CD4 and CD8 T cell responses showed similar magnitude and functional profile in the 2 cohorts. Our results indicate that prolonged ART initiated at the time of HIV-1 seroconversion is associated with immuno-virological features which resemble those of LTNPs.

(BHIVA Research Award Winner 2008: Anna Garcia-Diaz.)

030

Cerebral function in perinatally HIV-infected young adults and their HIV-uninfected sibling controls

J Ashby[1], C Foster[1], L Garvey[1], T Wan[2], J Allsop[2], Y Paramesparan[2], A Kocsis[1], E Hodgson[1], C Sanger[1], S Taylor-Robinson[2], S Fidler[2] and A Winston[2]

[1]St Mary's Hospital, London, UK and [2]Imperial College London, London, UK

Background: Life time exposure to HIV infection and antiretroviral therapy (ART) in perinatally HIV infected (PaHIV) young adults may lead to neurocognitive (NC) impairment. However data are sparse and appropriate control data lacking. This study compared cerebral function in young adults with PaHIV infection to aged matched HIV negative sibling controls.

Methods: 16–25 year old PaHIV young adults (Group 1) were recruited with HIV-uninfected sibling controls (Group 2). Baseline epidemiological and clinical data were gathered. Cerebral function was evaluated by: computerised NC testing (CogState™), International HIV Dementia Scale (IHDS) and the prospective and retrospective memory questionnaire (PRMQ). 8 cases and 4 controls also underwent ^{1}H cerebral magnetic resonance spectroscopy (MRS) to assess basal ganglia (BG) metabolites. Cases and controls were compared using linear regression modelling.

Results: 33 and 14 subjects were recruited in groups 1 and 2, respectively. In group 1 mean CD4 count was 444 cells/uL, plasma HIV viral load<50 in 55% and 79% were on ART. There were no statistically significant differences between study groups in IHDS or NC testing. PRMQ results were significantly poorer and MRS basal ganglia inflammatory-metabolites (choline- and myo-inositol- to creatine ratios) were significantly elevated in group 1 vs. group 2. No significant association between PRMQ score and MRS metabolites was observed (*p=0.89*).

Table 1		Total	Group 1	Group 2	*p* value*
Number		47	33	14	
Baseline characteristics	Age,years (mean,range)		20,17–23	20,16–24	*ns*
	Black ethnicity %		85	86	*ns*
	Male gender, n (%)		11 (33)	4 (29)	*ns*
	Years education		14	15	*ns*
IHDS, mean score			11.3	11.3	0.86
PRQM (IQR)			42 (36–49)	35 (28–43)	0.02
Neurocognitive domain	Overall Speed	10.6	10.7	10.6	0.27
	Overall Accuracy	3.0	3.0	3.0	0.78
	Executive Function	17.8	18.2	17.0	0.68
Number			8	4	
MRS measurable metabolites	BG – NAA/Cr	2.0	2.1	1.8	*0.17*
	BG – Cho/Cr	0.8	0.8	0.6	*0.02*
	BG – mI/Cr	3.3	3.4	3.0	*0.09*

IHDS=International HIV Dementia Scale; PRMQ=prospective and retrospective memory questionnaire; MRS=magnetic resonance spectroscopy; BG=basal ganglia; Cr=creatine; Cho=choline; mI=myo-inositol; NAA=N-acetyl aspartate. *p-value for difference between groups.

Conclusion: Statistically significant differences in cerebral function testing were seen in PaHIV young adults compared to a well matched control population. The deficit observed, in memory, rather than fine motor function, differs from the cerebral impairment described in HIV-infected adults.
(BHIVA Research Award Winner 2009: Jane Ashby.)

O31
Health outcomes for young adults with perinatally acquired HIV-1 infection following transfer to adult services

T Wan[1], S Fidler[2], S McDonald[2] and C Foster[2]
[1]Imperial College London, London, UK and [2]Imperial College Healthcare NHS Trust, London, UK

Background: An increasing proportion of children living with perinatally acquired HIV-1(PaHIV) infection in the UK have transferred to adult care. Since reporting to the paediatric CHIPS database ceases following transfer to adult services, minimal data is available describing the health outcomes for this cohort. We describe a single centre experience of mortality and morbidity in this cohort.
Methods: Case note review of all patients following transfer from paediatric services by January 2006- 2011; recording antiretroviral therapy (ART), CD4 count, viral load (pVL), lipodystrophy, mental health disorders, inpatient admissions, loss to follow up and deaths.
Results: 58 young people transferred from paediatric services at a median age of 17.2 yrs, 36 (62%) female, 44 (76%) black African, 8 Caucasian, 5 mixed race and 1 Asian. 5 (9%) subsequently transferred care to local adult HIV services and 2 (4%) died aged 20 and 21 yrs; with multi-drug resistant end-stage HIV disease (1), HIV nephropathy and sepsis, declining ART (1). 50/51 patients attended in the last 6 months, median age 20.6 yrs (IQR 19.0- 20.8 yrs), median CD4 count 425 cells/ul, (IQR 325–625 cells/ul) with 11 (22%) having CD4 counts <200 cells/ul. 5/51 (10%) are ART naïve, median CD4 640 cells/ul. 12/51 (24%) patients elected to stop ART having previously received it, 5 with CD4 counts <200 cells/ul.
At last follow up 34/51 (67%) were on ART: 14 NNRTI based, 18 boosted protease inhibitors and 2 on triple nucleoside regimens. 6 (18%) patients had ever received two or more of darunavir, raltegravir, etravirine and T20. 29/34 (85%) patients have pVL<50 c/ml, median CD4 count 480 cells/ul (IQR 360–650). 6/34 have CD4 counts <200 cells/ul, 3 with pVL<50 c/ml. 2 patients have gastrostomies for adherence. 6/51(12%) have ART associated lipodystrophy; 5 requiring surgery, 1 injectable fillers. 13/51 (25%) had hospital admissions in adult services; median bed days 9, (IQR 5–20, range 3–133 days); 2 proven opportunistic infections (PCP, MAI). 4/5 with intentional overdoses requiring admission and 7/51(14%) patients were ever prescribed antidepressants.
Conclusion: The complexities of lifelong HIV infection are increasingly apparent with one fifth of this cohort having severe immunosuppression, a quarter requiring admission in adult care and high rates of lipodystrophy and depression. Response to ART was good in those who continued treatment.

O32
Comorbidity and late presentation: findings from an over-fifties cohort

H Williams[1], F Makia[1], M Bennett[2], D Eldred-Evans[2], N Lobo[2], C Godavitarne[2], S Castelino[1], N Larbalestier[1] and R Kulasegaram[1]
[1]Guy's and St Thomas' NHS Foundation Trust, London, UK and [2]King's College London School of Medicine, London, UK

Background: HIV has become a chronic illness in the era of HAART. Clinicians therefore need to prepare for the challenges of caring for an aging cohort with co morbidities.
Methods: Patients aged 50 years or over were identified from a cohort of 2700. Medical history data was collected by review of patient notes, electronic patient records and existing in-house databases.
Results: 505 patients were identified, aged 50 to 83 years, with 49.7% aged between 50 and 54. The group were 76.4% male, 36.6% of patients were born outside the UK and 54.9% were of white ethnicity. 47.3% of the group were MSM, 46.7% heterosexual, 3% bisexual and 3% were of unknown sexuality. Rates of previous other sexually transmitted infections were 20.6% syphilis, 12.7% genital herpes, 5.7% gonorrhoea and 2.2% chlamydia. Median age and CD4 at diagnosis were 46 (range 22–82) and 212.5 cells/uL (range 3–1100) respectively. 154 patients needed to start HAART within 1 year of HIV diagnosis but 54.9% were still on their initial combination. Documented HIV status disclosure rates were 67.1% to GP, 34.8% to partners and 15% to family. 15.2% were current smokers, 10.9% had used recreational drugs and 11.3% had a history of alcohol excess. Rates of co morbidities were 42.4% hyperlipidaemia, 29% mental health disease, 10.9% diabetes, 7.9% cardiovascular disease (median Framingham score 12.4%), 8.1% renal disease, 7.9% memory disorder in some form, 7.1% Hep C IgG positive and 4.8% Hep Bs Ag positive. 26.7% underwent bone density scanning and of these, 57% had evidence of osteoporosis/osteopenia (median Vitamin D levels 35 nmol/L).
Conclusion: The majority of this group of patients were on the same combination of HAART as at treatment initiation but had also had to start HIV medication within one year of diagnosis. This reflected a low median baseline CD4 count therefore demonstrating high rates of HIV diagnosis at a late stage. Our HIV positive patients over 50 had high rates of significant co morbidities, particularly concerning bone, cardiovascular and mental health, highlighting the ongoing need for holistic approach in this group.

O33
The use of calcaneal stiffness index to screen for osteoporosis in HIV-infected individuals

A Scourfield, L Waters, R Jones, A Jackson, A Hughes, B Gazzard and M Nelson
Chelsea and Westminster Hospital, London, UK

Background: Osteoporosis is more common in HIV infected individuals and osteoporotic fractures are a significant cause of mortality and morbidity. Dual energy X-ray absorptiometry (DEXA) is the gold standard screening test for osteoporosis and is proven to correlate with fracture risk. Disadvantages include expense, extra patient attendance and radiation safety approval. The GE-Achilles Insight uses calcaneal ultrasound to calculate calcaneal stiffness index (CSI) to give an estimated t-score. CSI is proven to predict hip fracture risk and vertebral fracture in post-menopausal women, however there is no data of its use

in HIV infected individuals. We performed a service evaluation to assess the clinical utility of CSI to screen for osteoporosis.

Method: We performed CSI measurements on 100 subjects at random who had undergone a DEXA scan for any indication using the GE-Achilles Insight®. We then performed a cost effectiveness analysis.

Results: In these 100 subjects the prevalence of osteoporosis by DEXA was 15% and 55% osteopaenia. The overall positive predictive value of CSI for the diagnosis of osteoporosis was 30%. The table below shows the number of subjects with CSI t-score of <1.0 and the correlation with osteoporosis.

In our unit a DEXA scan costs £65 so assuming those with a t-score ≤1.0 would proceed on to DEXA a population of 324 subjects would need to be screened in order to be cost effective.

CSI ≤ −1.0	Osteoporosis (DEXA t-score ≤ −2.5)	No Osteoporosis	
Positive	**15**	**42** (36 osteopaenic DEXA t-score ≤ 1.0)	
Negative	**0**	**43** (19 osteopaenic DEXA t-score ≤ 1.0)	NPV = 100%
	Sensitivity = 100%	Specificity = 51%	

Conclusion: Calcaneal stiffness index is a reliable and cost effective method to screen HIV infected subjects for osteoporosis. In our 100 subjects this would have resulted in 43 less DEXA scans, 19 missed cases of osteopaenia and importantly no missed cases of osteoporosis. In order to be cost effective requires a population of 324 subjects but this may be significantly less if repeat screening 3–5 yearly is performed as recommended in EACS guidelines.

Poster Abstracts

Access and Service Delivery

P1

A method to estimate the proportion of HIV patients disclosing their infection to primary care

N Field[1], M Desai[2], J Crompton[2] and M Ruf[2]
[1]NHS Southwark, London, UK and [2]NHS Lambeth, London, UK

Background: The British HIV Association recommends that HIV patients register with a GP, and disclose their infection. This is not always the case, with important implications for shared care models and patient safety. Using the example of an inner city borough, which has among the highest prevalence of patients accessing HIV care in England, this study estimated the proportion of HIV positive residents who had disclosed their status to primary care.
Methods: An ecological comparison was made between two datasets to obtain a disclosure proportion: (i) anonymous data for individuals with clinical READ codes indicating HIV infection were remotely extracted from 51 of 52 borough GP practices in March 2010 (data not available for one practice), as a proxy for HIV disclosure, and (ii) the number of residents accessing HIV care in this borough was obtained from the national surveillance database, Survey of Prevalent HIV Diagnoses (SOPHID 2009). Analyses were presented by age group and gender.
Results: 2,098 GP registered patients were coded as HIV positive and SOPHID 2009 reported 2,844 HIV positive residents in the borough. The disclosure proportion was estimated to be 73.4%. Nearly all (97%) registered HIV patients were aged 15–59, 79% were male. Disclosure was more likely by women than men (83% versus 73%, $p<0.01$). Large variation was noted in the size of individual practice HIV populations (range: 3–173 patients) and in HIV prevalence per practice (0.0%-3.5%).
Conclusion: These data suggest high levels of disclosure by HIV patients to GPs in this borough, with some practices having HIV populations to rival smaller HIV centres. Comparisons are now being made with other areas. Although this method has known limitations, which include assumptions about the extent to which the datasets overlap, it is novel, practicable and reproducible. It will support shared care service planning, may improve HIV awareness and has important applications for public health and GP led commissioning in high prevalence areas.

P2

Quality not quantity? Publication success following BHIVA presentation

L Waters, S Soni and M Fisher
Brighton and Sussex University Hospitals NHS Trust, Brighton, UK

Background: Medical advance requires high quality, peer-reviewed research, disseminated to the relevant audience in order to inform evidence-based guidelines and treatment decisions. The BHIVA conference is the foremost opportunity for British HIV researchers to share provisional research findings. We aimed to determine the fate of BHIVA oral abstracts.
Methods: We identified all oral abstracts presented at BHIVA between 2002 and 2007. A PubMed search was performed using first author, senior author and at least 3 key words from the abstract title. In cases of uncertainty abstracts were reviewed by an independent third party. The proportion of abstracts published was determined overall and by calendar year. In addition, all centres who had presented at least 5 oral abstracts during the study period were anonymised and compared; remaining centres were combined in a single category.
Results: 201 oral abstracts were presented over the 6 year study period; 10 centres presented 5 or more abstracts (groups 1–10), 16 presented 4 or fewer (group 11). Overall 53% of abstracts were subsequently published in peer-reviewed journals; this was identical in groups 1–10 combined compared with group 11. Publication rate by site varied from 25% to 83% (chi squared test for trend $p=0.173$). Publication by calendar year varied from 47% to 67% with no temporal pattern.
Conclusion: More than 50% of BHIVA oral abstracts were subsequently published in peer-reviewed journals; this is greater than the 45% publication rate in a 2007 Cochrane review (all specialities) [1] and 34% of UK-based abstracts presented at the 13th International AIDS Conference [2]. Our figure may be a conservative estimate due to the search criteria used. A significant proportion of work deemed eligible for oral presentation at BHIVA has yet to reach a wider audience; qualitative research into reasons why abstracts are not published will be presented. Abstract findings may be widely discussed and even guide changes to clinical practice. Research suggests abstract data may be incomplete, and/or inconsistent with final published data [3,4], so caution should be exercised when interpreting abstract results and publication of presented date encouraged.

P3

Does the right hand know what the left hand is doing? An evaluation of the concordance between prescribing data in primary and secondary care among HIV-positive individuals

G Whitlock, A Patel, R Miller, P Benn and S Edwards
Mortimer Market Centre, London, UK

Background: Lack of awareness between primary and secondary care prescribing practice has the potential to cause fatal drug-drug (d-d) interactions. We aimed to determine the i) response rate of primary care (PC) to requests for prescribing data, ii) concordance of PC and secondary care (SC) prescribing data and iii) to describe the frequency and severity of potential d-d interactions.
Methods: Between 03/09/10 and 15/11/10, letters requesting prescribing information to be faxed back to SC were sent to PC following 100 consecutive HIV+ patient attendances at a large HIV-outpatient service. We evaluated the response rate and compared the information provided with current medication recorded within the SC medical records. The University of Liverpool HIV drug interaction website (DIW) system was used to classify any potential d-d interactions.
Results: By 24/11/10, PC had provided information regarding current medication in 57% patients after a median interval of 9 days (range 3–29). Of these, 56/57 (98%) were prescribed antiretroviral therapy (ART): 26 including boosted protease inhibitors (rPI), 29 non-nucleoside reverse transcriptase inhibitors (NNRTI) and one both rPI and NNRTI. Three (5%) of the PC and SC medication lists were concordant. A least one medication prescribed by PC was not recorded within SC records in 65%. One in three PC (19/56, 34%) had ART details recorded, however of these, 8/19 (42%) were non-concordant with current SC records. Of those on ART, 31/56 (59%) had the potential for significant d-d interactions with medication prescribed in PC according to DIW, of which SC clinicians were unaware in 19/31 (61%). This included four patients on rPI prescribed steroid inhalers by PC. Cushing's syndrome was excluded and treatment altered accordingly in all. Potential d-d interactions could be managed by monitoring response/side effects/drug levels and adjusting doses accordingly in 12 cases. No patients were prescribed medication classified as contraindicated from PC and SC.

Conclusion: We demonstrate that a small majority of PCs were willing to provide prescribing data following requests from SC. We highlight high rates of potential d-d interactions in this group. Despite a policy of regular communication from SC to PC we show poor concordance of prescribing data between PC and SC. All correspondence now requests prescribing data to be faxed to SC. Effective two-way communication is essential to minimise the risk of fatal d-d interactions.

P4
Enhancing services for HIV-positive patients: the role of point-of-care CD4 testing

S Herbert[1], G Carrick[1], S Edwards[1], A Copas[2], B George[1], L Long[1], C Sandford[1], M Amphlett[3] and P Benn[1]
[1]Mortimer Market Centre, London, UK, [2]University College London, London, UK and [3]Alere Ltd, Stockport, UK

Background: The Alere™ PIMA™ point of care (POC) CD4 test has been validated in resource limited settings but its use in the UK has yet to be defined. Turn-around of laboratory (LAB) CD4 testing varies due to numerous logistical issues. POC testing provides a result in 20 minutes using 25μl of finger-stick capillary blood and may facilitate expanded opening hours +/− outreach services. We evaluated the performance and patient acceptability of the POC in a London HIV outpatient service.
Methods: Parallel POC and LAB CD4 testing were performed in newly diagnosed HIV patients (NHIV) or those with chronic HIV infection (CHIV). Information regarding demographics, clinical status and time taken for CD4 results to be available was recorded. Patient acceptability was assessed using a five-point likert scale. Comparison between POC and LAB CD4 results was undertaken using linear regression.
Results: Of the planned 200 patients, 97 underwent POC (NHIV n=9, CHIV n= 88) between 20/12/10 – 13/1/11. All patients approached agreed to have the POC. The POC result was available in 30 minutes (85.2%). Beyond a two week training period, 78 patients had valid results for both POC and LAB CD4 counts, with median (range) count 381(19–1316) and 425(10–1290) respectively. Counts from both tests were very strongly correlated, r=0.95, but were lower by POC for 61/78 (78%) of patients, p<0.001. As a percentage of the LAB count the median (95% range) POC count was 87% (68–118). All 29 patients with LAB counts ≤350 were also ≤350 by POC. However of 49 patients with a LAB count >350, 7 (14%) had POC count <350. For these seven the median (range) lab CD4 count was 410 (370–490). 4/9 NHIV had POC CD4<350 and were offered an urgent appointment, started on PCP prophylaxis or HAART within 1 month, 1 started HAART within 1 week. 94/97 (97%) patients completed the questionnaire; 78/94 (82.9%) found waiting 20 minutes acceptable, 57/94 (60.6%) found the POC preferable to the LAB test and only 18/94 (19.1%) thought it was more uncomfortable than the LAB test. 45/94 (47.8%) would have the test at their GP if available.
Discussion: The CD4 POC provides an immediate result and is highly correlated with the LAB test. POC correctly identifies all patients requiring HAART. POC was highly acceptable among those tested, may facilitate service delivery in a variety of patient-centred settings/times and offers rapid assessment of the NHIV patient. Further evaluation in other settings is warranted.

P5
Treatment outcomes in Black and Minority Ethnic (BME) and White men who have sex with men (MSM)

G Sethi[1], S Edwards[2], R Gilson[3] and C Sabin[3]
[1]Guy's and St Thomas' NHS Foundation Trust, London, UK, [2]Mortimer Market Centre, London, UK and [3]Royal Free and UCL School of Medicine, London, UK

Background: It has been reported that BME communities access HIV care at a later disease stage than whites. We have reported that BME MSM were 18% less likely to initiate combination antiretroviral therapy (cART) than white MSM with similar CD4 counts. We investigated whether these differences impacted on treatment outcomes.
Methods: Eligible patients were BME and white MSM from the UK CHIC Study who started first-line cART from 1/1/2000–31/12/2007. The following outcomes were analysed**:** (i) HIV viral load (VL) and CD4 count changes at 6 and 12 months after cART; (ii) time to VL suppression (VL <50 copies/ml); (iii) discontinuation/switch of a drug in the initial cART regimen in the first year for reasons other than virological failure (iv); and development of a new AIDS event/death. Multivariable analyses were performed using logistic and Cox regression, with adjustment for age, pre-cART CD4, VL and AIDS status, type of cART regimen, year and hepatitis C (HCV) and B (HBV) co-infection.
Results: Of 4589 eligible MSM, 4091 (89.2%) were white and 498 (10.9%) BME. Compared to white MSM, BME MSM were younger (white**:** 37 vs. BME: 35 yrs), less likely to have HCV co-infection (11.5% vs. 7.6%), more likely to have HBV co-infection (4.5% vs. 7.0%) and had lower CD4 counts (210 vs. 193 cells/mm3) and VL (5.1 vs. 5.0 log cp/ml). By 6 and 12 months after cART, 69.2% and 85.6% of white MSM, respectively, and 72.5% and 84.7% of BME MSM, respectively, had achieved VL suppression; median times to VL suppression were 4.2 and 3.9 months in white and BME MSM, respectively (p=0.67, log-rank test). There was evidence of a lower CD4 count increase at 6 months in BME MSM (adjusted difference -14.6 cells/mm3 [95% CI −29.0, -0.1], p=0.05). This was not maintained at 12 months. There were no significant differences in the time to discontinuing/switching either in unadjusted or adjusted models; 89.8% of white MSM and 88.9% of BME MSM spent 100% of the first year after starting cART on treatment, with no significant difference between ethnic groups (p=0.52, Chi-squared test). In total, 274 MSM (6.0%) experienced a new AIDS event (n=243) or death (n=49) in the first year, with rates being similar in white (236 events, 5.8%) and BME (38 events, 7.6%) MSM (p=0.38, Chi-squared test).
Conclusions: Our study demonstrates that despite reported disparities in healthcare delivery BME MSM who initiate cART have similar virological, immunological and clinical outcomes to their white counterparts.

P6
Does better tolerated antiretroviral therapy (ART) allow us to modernize post-exposure prophylaxis (PEP) services?

A Hartley, N Garrett, C Orkin, L Sarner and N Ault
Barts and The London NHS Trust, London, UK

Background: Since 2009, tenofovir/emtricitabine (TDF/FTC) and lopinavir/ ritonavir (LPV/r) have been firstline ART used as PEP in our service. Patients have weekly contact either in person or by telephone with follow-up HIV testing at 4 months post treatment, as per BASHH guidelines (2006).
Aim: To review side effects, blood abnormalities and completion rates for patients on PEP in order to devise strategies to optimise our service.
Methods: All patients commencing PEP 01/2010–06/2010 were included. Number of attendances, side effects, blood abnormalities, completion rates and follow-up HIV test results were documented and analysed. Side effects and blood abnormalities were graded according to the Division of AIDS Table for Grading the Severity of Adult Adverse Events.
Results: 52 patients commenced PEP during the study period. 43 (82%) were male with a median age of 30 years (range 18–53). 86% were sexual exposures, 14% occupational exposures. Median time to presentation was 24 hours (1–72). All patients commenced TDF/FTC/LPV/r. After baseline consultation, 96% attended appointments at day 3–5 and 93% at day 14. 56% were reviewed at day 28. 4 patients (8%) required an additional appointment while on PEP. 90% had sexual health screens at day 14. Only one patient had a sexually transmitted infection diagnosed (pharyngeal gonorrhoea).
Two patients had their PEP regime modified: one switched LPV/r to darunavir/ritonavir due to dizziness; the other switched TDF/FTC to

zidovudine/lamivudine due to a suspected FTC-related rash. 66% completed 28 days of PEP, with 32% lost to follow up. 2% stopped PEP prematurely. 65% of patients received their 4 month HIV test within the service, all of which were negative.

	Grade 1 (%)	Grade 2 (%)	Grade 3 (%)
Diarrhoea	45	0	0
Fatigue	37	2	2
Nausea	30	6	0
Dizziness	4	2	0
Rash	4	2	0
High bilirubin	2	4	0
High creatinine	7	0	0

Conclusion: This study shows that current PEP has few high grade adverse effects, with good completion rates. This suggests virtual follow-up via telephone or email may be more appropriate, patient friendly and cost-effective at day 28, and at day 14 for those where sexual health screening is not indicated. No patients switched or stopped PEP due to abnormal blood results.

P7
Complicated contexts: providing HIV care in London (UK) to children and families with multiple stressors

T Campbell, J Griffiths, H Beer, P Legemah and M Saine

Newham Psychological Services, East London Foundation Trust, London, UK

Background: Research has indicated that family coping in the context of HIV reduces when the number of stressors increases. A case note review of families attending an HIV family clinic explored psychological status, social factors and medical concerns faced by families in order to identify factors likely to negatively affect coping.

Methods: A proforma was developed covering demographics, family composition, socio-economic context, disclosure, and parental and child physical and mental health. Medical/psychological files were reviewed. Missing data was identified and information obtained by asking relevant clinicians.

Results: 40/48 paediatric records were reviewed (21 female, 19 male). Age range was 2–18 years, with 72% aged 12+ years. 94% of families were of Black African ethnicity. 72.5% of children had no immigration issues. 67.5% lived with a lone parent (usually mother). Data regarding fathers was unavailable for 50%. Disclosure of HIV status occurred from ages 7–14 years, with the most common ages being 11 and 12 years. 50% of children on ARVs have had adherence difficulties (pill swallowing problems and treatment refusal). 80% of siblings resident in Africa were untested. 40% of parents had had mental health concerns, predominantly depression. 25% of children have had child protection concerns, usually relating to non-adherence and neglect. Over 50% of children had experienced an HIV-related death in their family.

Conclusions: The study highlighted the number and complexity of stressors including factors such as high levels of poor maternal mental health, absence of fathers and HIV related deaths within the family. Other factors such as child adherence difficulties, and family issues such as separation from siblings and children whose HIV status is unknown may also be stressors. Implications for clinical practice are that a more holistic approach to child and family functioning may be required to fully understand the capacity of families to respond effectively to the challenges of HIV management. Further research is indicated to investigate how such stressors interact and impact on young peoples' capacity to cope with their HIV status, adhere to medication and transition through adolescence into adulthood.

P8
Concept to clinic: enabling medical students to become the HIV researchers of the future

M Toby[1], D Kinchington[2], F Kinchington[3], L Hughes[1], M Tenant-Flowers[2], J Cason[2] and B Peters[1]

[1]St Thomas' Hospital, London, UK, [2]King's College Hospital, London, UK and [3]Greenwich University, London, UK

Background: CONCEPT TO CLINIC or C^2 is a new integrated approach to teaching undergraduate medical students whereby equal weight is given to each of three strands**:** concept, clinical trials and clinical impact. It is proposed that this novel delivery gives students a real understanding of how scientific ideas can be best conceived and translated into good clinical practice.

This teaching method employs a three stage delivery: 1) CONCEPT: The initial idea for a therapy is explained by the scientist 2) CLINICAL TRIAL: The studies that investigated the concept and proved the efficacy are described. 3) CLINICAL IMPACT: The value to health and quality of life is described by a patient who derived benefit.

Method: C^2 was used for HIV teaching utilising how HAART was conceived, tested and the consequent patient benefits in the following courses**:** MBBS, (September 2010 and January 2011). Each component was 20 minutes, forming a 1 hour session. An anonymised questionnaire using a 5 point Likert scale was completed by students immediately before and after the C^2 presentation. This questionnaire measured attitudes concerning the relevance of basic HIV science to clinical practice and the willingness of participants to engage in such research, to read scientific literature and to engage with basic scientists.

Results: 182 MBBS students completed the 9 part questionnaire. One key question dealt with student's self-assessment of their likelihood of doing scientific research in the future. Prior to the C^2 lecture only 100 students (55%) thought of themselves doing research, after the lecture this number had increased significantly to 117 (65%). 168 (84%) students thought that the C-squared lecture format was a good example of clinical teaching and 150 (82%) felt that the lecture had been beneficial to their learning. By the end of the lecture 181 (99%) of students agreed that they had developed a good understanding of how scientific research had a direct impact on therapy.

Conclusion: The C^2 pilot with the MBBS students appears to offer significant value in HIV education, with more than 75% of students deriving benefit and understanding how scientific research impacts on therapy. This has prompted us to evaluate C^2 during the period 2010–2012 in a range of medical courses. If it appears that C^2 is superior to existing methods of teaching delivery for HIV medicine, then such an approach can be explored in future across the breath of the medical spectrum.

P9
My body, my choice: an evaluation of performance arts-based HIV-prevention events for young people in London (UK)

T Campbell[1], J Griffiths[1], H Beer[1], R Bradbear[2], M Bath[3], J Cottle[4] and V Onobrara[1]

[1]Newham Psychological Services, London, UK, [2]Live Ed Company & Creative Arts, London, UK, [3]Newham Education, London, UK and [4]SHiNE Team, London, UK

Background: London has higher than national rates of unplanned pregnancies, sexually transmitted infections and HIV in teenagers. Local World AIDS Day community education and prevention activities in Newham (London) specifically target young people, using a performance arts based approach underpinned by the Information-Motivation-Behavioural skills model of HIV prevention.

Methods: Young people participated in a school-based six week STI/HIV intervention culminating in a theatre production. Participants completed a pre- and post-intervention questionnaire covering HIV-related

knowledge, and self-ratings of behavioural skills and motivation around condom use.

Results: Baseline data were collected for 101 participants: 48.5% male, 51.5% female; age range 15–20 years (mean = 17). The largest ethnic group was Black (55.4%), followed by White (19.8%) and Asian (8.9%); 41.6% of participants were sexually active. Post-intervention data has been collected for 44 participants to date: Gender, age and Black ethnic group figures are comparable with pre-intervention group, with smaller White (13.6%) and higher Asian (20.5%) ethnic groups and lower sexually active figure (36.4%). Initial between-group analyses indicate statistically significant higher levels of knowledge and self-rating of behaviour skills and motivation levels following intervention. Knowledge levels statistically significantly correlate with self-ratings of motivation and skill, and sexually active participants had statistically significantly higher scores on self-ratings of motivation and skill. Further analyses will be conducted when additional post-intervention data is collected, including a paired sample analysis.

Conclusions: Initial results suggest that participating in performance-based HIV-prevention activities has a positive impact on levels of HIV-related knowledge, behavioural skills and motivation to use condoms. On collection of final data, implications will be discussed in the light of relevant literature and implications for public health promotion approaches discussed.

P10
Postexposure prophylaxis after sexual exposure to HIV in four accident and emergency departments in one region

P Arkell[1], M Abouyannis[2] and K Manavi[3]
[1]West Midlands Deanery, Birmingham, UK, [2]Mersey Deanery, Liverpool, UK and [3]Whittall Street Clinic, Birmingham, UK

Background: The British Association of Sexual Health and HIV (BASHH) guidelines suggest that A&E departments should assume responsibility for provision of post-exposure prophylaxis for HIV following sexual exposure (PEPSE) in the UK. This study aimed to describe presentations for PEPSE and their management at four A&E departments in one region of the UK.

Methods: PEPSE presentations were identified by searching all A&E presentations during 2009 for key words or diagnosis categories. Demographic, exposure-related and management-related data were collected by retrospective review of clinical notes (casualty cards). Analysis was descriptive, concentrating on patient assessment and initial management.

Results: Out of a total 391,978 A&E presentations, 18 individuals seeking PEPSE were identified. Median age was 33 (IQR 23,42) years and 67% were male. High risk exposures included unprotected sexual intercourse with a) known HIV-positive partner (nine individuals), b) partner from a high-risk country (two individuals, and c) man who has sex with men (three individuals). Forty four percent (95%CI 19–70%) of individuals were fully assessed for PEPSE, and management was appropriate in 61% (95%CI 36–86%) of cases. PEPSE was overlooked in seven individuals. Overall, eight individuals were offered PEPSE, six of whom accepted treatment.

	All included	PEPSE offered	PEPSE not offered
Guideline: PEPSE recommended	5	4	1
Guideline: PEPSE not recommended	3	0	3
Insufficient history to assess eligibility for PEPSE	10	4	6
Total	18	8	10

Conclusion: Findings suggest low attendance at A&E for PEPSE and that some individuals are not managed appropriately in this setting. Suggestions for improving this service include training to improve staff awareness, development of local protocol, use of a pro forma and better promotion of PEPSE availability in A&E departments. Good communication between A&E departments and GUM services will be integral to guiding and implementing such changes.

P11
Three years' experience of delivering sexual health service in gay saunas in a high HIV prevalence area: what did we achieve?

M Malook, S Toomer, J Sweeney and W Wasef
Sexual Health Department, Blackpool, UK

Background: Our previous pilot study highlighted the demand for sexual health service delivery in our community especially in gay venues such as saunas. Feedback from patients showed popularity and acceptance of this type of service delivery which is much needed in a high HIV prevalence population.

Aims: Evaluation of service delivery over the period of 3 years from 2008 to 2010.

Method: An outreach sexual health service was delivered in gay saunas by a team of a nurse and a health assistant. We offered screening for chlamydia, gonorrhoea, syphilis and HIV. Herpes simplex virus (HSV) testing was performed if clinically indicated; Ora-Quick test was used for detection of HIV while serology was used for syphilis testing. Chlamydia was tested by PCR and gonorrhoea by culture. 104 urine and 29 rectal samples were taken for Chlamydia detection. From those who tested for gonorrhoea, 35 swabs were taken from rectum, 13 from throat, 7 from urethra and 47 had urine sample. They were also offered Hepatitis B (Hep B) vaccination and sex education. Data was collected by retrospective case notes review and were analysed.

Results: A total of 213 clients used the service of which 132 accepted screening. All of these were tested for HIV and syphilis. Of these, 74 had additional tests for both chlamydia and gonorrhoea whilst 19 were tested for chlamydia only. Four HIV positive results were identified of which 2 were newly diagnosed and 2 were known positives. Nine patients had positive syphilis serology, 5 of these were newly diagnosed whilst 4 were known treated cases. Two urethral and 3 rectal chlamydia positive results were found; however, no positive gonorrhoea tests were reported. All rectal chlamydia positive results were LGV negative. Six patients were tested for HSV with one positive result. Patients were treated accordingly and reviewed in the sexual health clinic. From the total number seen 97 clients had Hep.B vaccination while 71 had their Hep.B antibodies level checked. Those who declined screening were counselled regarding safe sex and given information on how to access local sexual health services.

Conclusion: Our experience reflects the benefits of delivering sexual health service in gay saunas providing the hard to reach, high risk groups with easy accessibility. This service not only increases awareness and treats the undiagnosed but also improves both patients' and public health.

P12
Did cutting Combivir cut costs?

A Darley, E Carlin, I Ahmed and C Bignell
Nottingham University Hospitals, Nottingham, UK

Background: Antiretroviral drugs account for a significant proportion of HIV care costs and the need to use resources wisely is particularly important in the current financial climate. Generic Zidovudine (AZT) became available in 2009 and is cheaper than Retrovir. Using generic AZT and Lamivudine (3TC) instead of Combivir (CBV) reduces the drug costs by 25%. This was identified as a cost-saving initiative for our region in May 2010. Switching all CBV to separate components was predicted to save the Trust £44K per year. This study evaluates the outcomes of this change.

Methods: Patients prescribed CBV in the 6 months prior to May 2010 were identified from the home delivery database and hospital pharmacy records. The medical records were reviewed after each patient switched

treatment and data about the new regime was collected. The costs of the new regime and the change in drug costs were calculated using prices from May 2010.

Results: Two patients were unable to tolerate AZT & 3TC, one due to headaches/ dizziness, one developed a rash. Switching to an alternative nucleoside backbone was not appropriate in either case. A third patient remains on CBV whilst pregnant and will switch after delivery. All 9 patients who stopped treatment were on CBV as START to reduce vertical transmission. The change in medication was difficult for some patients resulting in queries to pharmacy and extra clinic attendances. Virological control has been maintained in all patients who remain on therapy.

Outcome	Number of patients	Annual cost difference (£)
Switched to AZT & 3TC	34	-31685
Switched to Truvada	10	+20537
Switched to Kivexa	3	-320
Remained on CBV	3	0
Stopped treatment	9	0
No longer under our care	6	0
Total	65	-11468

Discussion: Stopping CBV use would have resulted in a decrease in the annual Trust bill by about £11K if drug prices at the start of the switch were maintained. However, the price of 3TC increased so that CBV is now cheaper than separate agents until generic 3TC is available. Changes in treatment are associated with risks including new side effects and potential errors as well as increased consultations. These need to be balanced against the potential financial saving on drug costs.

Conclusion: The actual savings generated by switching from a combination product to separate agents were small and significantly less than predicted. The effectiveness of this strategy as a cost-saving measure is compromised when one of the agents remains patented and may be associated with clinical risks.

P13
Communication with primary care in a genitourinary medicine clinic HIV cohort

J Gibbs
Addenbrooke's Hospital, Cambridge, UK

Background: HIV is unusual in being primarily managed in secondary care. This, along with concerns regarding confidentiality, means traditional communication links between General Practitioners (GPs) and Genitourinary (GU) clinics have not always been formed. Our aim was to assess communication with GPs in a GU clinic against the parameters outlined in the 2007 Standards for HIV Clinical Care.

Methods: A case record review of all HIV-infected patients seen in clinic in the previous 6 months was carried out during June-July 2010. Data was collected on year of diagnosis, HAART treatment status, known AIDS diagnosis, GP registration status, consent to communicate with GP, and communication with GP after last clinical episode. Data was analysed using SPSS v.18 and the Chi-squared test of association.

Results: 295 patients were eligible for inclusion. 63.6% were male, the median age was 43 years (IQR 37–50), and 54.5% of patients were of white ethnicity. 93.5% had a CD4 count of >200 cells/mm^3, 88.1% were on HAART and 31% had a diagnosis of AIDS. 47.6% had been diagnosed for less than 5 years.95.3% were registered with a GP and 82.9% of these had consented to their GP being informed of their diagnosis. Of these, the GP had been sent information on the latest clinical episode in 73.3% of cases. A diagnosis of AIDS and being on HAART were significantly associated with the GP having been informed of an HIV diagnosis (p=0.02, p=0.026 respectively) and having received correspondence on the most recent clinical episode (p=0.026,p=0.033 respectively). Females were significantly more likely to be registered with a GP (p=0.054). Older patients, those diagnosed for longer, and those with a CD4 count <200 cells/mm^3 were more likely to have agreed to their GP being informed and to have had communication sent to their GP on the latest clinical episode. These were not significant. There were no differences in outcomes with ethnicity.

Conclusion: A high proportion of HIV-infected patients were registered with a GP but nearly 1 in 5 of these had not informed their GP of their diagnosis. Improvement can be made in terms of information being sent about latest clinical episode. An older population with a high proportion on HAART may account for good results. Further multi-regressional analysis is required as the factors above may be interlinked. A standard letter template has been proposed along with qualitative studies focussing on patients who refuse consent to inform their GP.

P14
Let's talk about sex: PEPSE and contraception methods – how well informed are our patients?

S Wielding, D Wilks, K Bethell, J Andrews, H Rae, S Morris, C Leen and J Turner
Regional Infectious Diseases Unit, NHS Lothian, UK

Background: According to the 2008 BHIVA, BASHH and FSRH guidelines all HIV positive individuals should be made aware of, and of how to access, post-exposure prophylaxis following sexual exposure (PEPSE). Additionally, there are recommendations regarding discussion and provision of contraceptive methods in addition to condom use for all HIV positive women. Our survey aimed to investigate how well informed patients are of these issues, and how effective we are as clinicians at providing appropriate information and services.

Methods: A survey was carried out of HIV positive individuals attending routine HIV clinic appointments in an Infectious Diseases unit. Between 12/10/10 to 31/12/10 a total of 306 people (105 women) were recruited, representing a capture rate of 70%. A questionnaire was completed in clinic by the care provider on direct consultation with the patient.

Results: Of all individuals surveyed, 52.9% were aware of PEPSE, of whom 62% had previously discussed it in the clinic, the others gaining their knowledge from other sources. Of those aware of PEPSE 76.5% knew how to access it. We had referred 12.3% partners for PEPSE elsewhere, and dispensed to only 6.8%. 157/306 (51.3%) of all had no current sexual partner, and 65/149 (43.6%) of the sexually active were in concordant relationships. Proportionally more of the discordant couples included in the survey were aware of PEPSE (84.5%), 73.2% of those having discussed in clinic, and 91.5% knowing how to access it. Of the sexually active women surveyed, 27.6% use no contraception other than condoms. Little over 20% had previously discussed contraception of any kind in clinic with only 12% having discussed emergency contraception (EC).

Conclusion: This survey has highlighted that there is very little discussion regarding contraception and EC with women, who are not using the best contraceptive options available, in terms of efficacy and undesirable drug interactions for those on HAART. Only half of the HIV individuals attending clinic in this period were aware of PEPSE, however level of knowledge was good in discordant couples. We have produced a PEPSE patient leaflet to increase awareness and aid discussion between patients and their partners. A dedicated PEPSE clinic may also improve access. It may be beneficial to provide written contraceptive guidance for HIV positive women, to inform them of safe and effective contraceptive choices.

P15
Testing for sexually transmissible infections in patients with HIV infection: what are we missing?

E McCarty, K Quinn, C Donnelly, S Quah and C Emerson
Royal Victoria Hospital, Belfast, UK

Background: Sexually transmissible infections (STIs) are known to increase the transmission of HIV infection. Recent outbreaks of STIs among HIV infected groups led to the development of UK sexual health

testing guidelines. These recommend 3-monthly syphilis and annual STI screening.

Methods: A retrospective chart review of two consultant cohorts was carried out to ascertain compliance with these guidelines. Data collected included: number of years diagnosed, probable mode of acquisition, current viral load, current use of antiretroviral medication, and frequency of testing for syphilis, hepatitis, chlamydia and gonorrhoea in the past 5 years or since diagnosis.

Results: 205 patients were included in the analysis: 165 (80%) male (of these 76% MSM). Median age was 41yrs (range 17–71yrs). 71% were diagnosed with HIV or transferred to our unit in the past 3 years. 65% are currently taking antiretroviral therapy. Rate of 3-monthly syphilis testing increased from 1.5% in 2006 to 14.5% in 2010.

All infections diagnosed were in MSM. 12 had several episodes of infection.

	% of eligible patients tested at least annually					
STI	2010	2009	2008	2007	2006	Incidence of infection
Syphilis	75	63	53	37	18	5.5%
HBV	71	61	49	41	15	1.5%
HCV	72	61	50	42	13	1.3%
Chlamydia urethra/cervix	47	45	34	30	18	6.3%
Gonorrhoea urethra/cervix	36	35	30	23	19	3.2%
Chlamydia rectal	47	37	36	31	21	17.9%
Gonorrhoea rectal	43	33	32	24	21	3%

Discussion: Testing for STI has significantly increased in the past 5 years, but 3-monthly testing remains at a low level. Is this target relevant to all our patients? The incidence of STI in MSM with HIV infection is high in those who have been tested. We aim to set up a nurse-led clinic to improve routine screening in our cohort.

P16
Cervical cytology for HIV-positive women attending genitourinary medicine (GUM) departments: are GUM clinics becoming deskilled?

S Sundaram, R Patel, D Vijeratnam and S Samraj
Royal South Hants Hospital, Southampton, UK

Background: Cervical cytology screening (CCS) in HIV-positive women shows significantly higher rates of abnormality but also higher rates of inflammatory and inadequate smears. Many HIV-positive women choose to have their CCS performed by their HIV care provider, many of whom perform few other CCSs. Rates of smear inadequacy outside of GUM are closely correlated to the number of CCS taken by individuals with the highest failure rates seen in those that take <50 per year. CCS services have introduced minimum targets for numbers of CCS/yr to remain considered competent (e.g. 50/year per practitioner). Few GUM units take enough CCSs to allow each practitioner to maintain this level of experience.

Aim: To compare the inadequacy rates of cervical smears from HIV-positive women in our cohort taken in 3 settings: GUM clinic, General Practice and Colposcopy clinic.

Methods: HIV-infected women who had smears between January 2005 and April 2010 were identified from the departmental database. Cytology results analysed at our local laboratory were obtained using patients' confidential GUM number and their names/demographic details. Data collected included smear results and the source of the cytology sample.

Results: 221 samples were performed on 274 HIV-positive women within the study period: 98 (44.3%) in GUM, 66 (29.9%) at GP practices and 57 (25.8%) in the Colposcopy department. None of the samples taken in the GUM department were reported inadequate in comparison to 2/66 (3.0%) taken at a GP practice and 1/57 (1.8%) at Colposcopy department. The overall inadequacy rate at our local laboratory for all cervical smears taken from both HIV-positive and negative women is 2.3%. Overall 143/221 (64.7%) smears in HIV-positive women were normal and 75/221 (33.9%) were abnormal.

Conclusion: This study confirms that the majority of CCS for our HIV-positive women continues to be performed in the GUM department. Contrary to other evidence, our study shows that GUM staff take adequate smears despite their declining experience of CCS. Our findings suggest that the process of taking an adequate smear may be more dependent on familiarity with speculum examination than upon the number of smears taken per year. The target of '50/year per practitioner' to qualify to remain on the CCS register for practitioners (an initiative in response to local and national audits) may be inappropriate for GUM.

P17
Evaluating HIV services: using focus groups to find out what matters to patients

L Land[1] and J Ross[2]
[1]Birmingham City University, Birmingham, UK and [2]Whittall Street Clinic, Birmingham, UK

Background: The latest White Paper identifies the need for a transparent framework of outcomes in which care providers are required to produce measurable indicators of their activity. Two indicators are concerned with enhancing the quality of life for people with long term conditions and ensuring that patients have a positive experience of care. Within HIV services the latter has also been linked to higher levels of treatment adherence. A previous systematic review assessing patient satisfaction in HIV patients failed to locate a gold standard method of measuring satisfaction in this setting. Patient input and guidance is needed to develop appropriate and reliable measurements.

Methods: Using the themes derived from a previous systematic review as a guide, a qualitative research approach was taken. Patients were invited to take part in one of four focus groups. Face to face recruitment in the HIV clinic produced 32 volunteers, 25 of whom participated. The conversations were digitally recorded transcribed verbatim and analysed for content.

Findings: The rating of physician knowledge and expertise was high and the majority of the patients preferred to see the same consultant at each visit. In contrast the patients did not expect the clinic nurses to have specialist knowledge of HIV but did see them as kind and helpful in the clinic. The patients felt that it was important that they were treated with respect and that they were able to maintain their dignity. The level of perceived autonomy differed - MSM with professional backgrounds appeared to have more autonomy and were more likely to question treatment, whilst some of the Black African participants were more worried that they might be given inappropriate treatment. Communication between professionals and patients was highlighted as an important issue and generally satisfactory, but communication between professionals was seen as variable and sometimes led to inconvenience for patients. The organisation and operation of the clinic prompted mixed reactions.

Conclusions: The findings from the systematic review and focus groups provide common patient derived themes which can be used in the development of questionnaires which will reflect the areas of greatest concern to patients attending HIV services.

P18
Evaluation of a new clinic model: increasing enrolment into clinical trials without increasing staffing or costs

E Draeger, K Smith, S Hogan and C Orkin
Barts and The London NHS Trust, London, UK

Background: Our service is in a busy inner-city area with a cohort of 2357 active HIV positive patients. Over the last few years we have been innovating and improving the service and one of the new clinics set up

(in 2008) was a treatment advice clinic (TAC). This was established with two main Aims:
to optimise the way naïve patients are started on antiretroviral therapy and to improve recruitment into clinical trials. All clinicians considering starting outpatients on antiretroviral therapy are advised to refer them in the first instance through the TAC, unless they need to start urgently on clinical grounds. The TAC operates as part of the research clinic, with 2 slots a week reserved for naïve patients.
Methods: All patients starting on therapy for the first time between 1st November 2009 and 30th April 2010 were identified and a retrospective case notes review was undertaken, cross-referenced with our HIV treatment database, clinic admin system and hospital EPR system.
Results: In the 6-month period we identified 60 patients who were started on antiretroviral therapy for the first time. There were 43 men (12% black African) and 17 women (59% black African), reflecting the characteristics of our general clinic cohort. 11 were started on ARV as inpatients and so excluded from data analysis. Of those started as outpatients, 22 (45%) attended the TAC. Overall 76% of patients without significant resistance mutations were started on an NNRTI, which just falls short of the criteria for the CQUIN. There was no significant difference between those who attended the TAC and those who did not in terms of average nadir CD4 count, achieving adequate viral load suppression at 6 months or starting on BHIVA recommended therapy. However, our recruitment into naïve clinical trials increased with 4 patients entering into trials during the period, in line with recommendations from BHIVA standards of care 2007.
Conclusion: Less than 50% of new starters went through the treatment advice clinic. Due to the success in recruiting to trials we plan to continue improving the TAC service, and have increased the number of slots available for patients to be seen. We will further evaluate the service later this year, with a financial calculation.

P19
Social care coordinator within an HIV clinic: an innovative and popular service

M Wills, S Mguni, D Awosika, I Reeves and J Anderson
Homerton University Hospital, London, UK

Background: People living with HIV have complex medical, social, psychological and financial needs which are tightly interlinked and have both direct and indirect health consequences. Unresolved non-medical problems are frequently brought into the clinical environment by patients, many of whom may not have access to, or the wish to use other external sources of help. Since February 2010, a dedicated HIV Social Care Coordinator has been employed to provide integrated HIV social care provision from within an inner London HIV clinic, situated in an area of severe social deprivation.
Aims: 1. To evaluate the first 12 months of the Social Support Service from both service user and provider perspectives. 2. To evaluate service users perceived ability to cope with their social care issues before and after interventions from the service.
Methods: Two anonymous questionnaires were developed, one for health/social care providers (1) and the other for users of the service (2). Questionnaire 1 investigated the effect of the Social Care Support Coordinator on key aspects of their work. It was completed by email and fax. All patients using the service were invited to complete questionnaire 2 by post, telephone or in clinic over a four week period. Respondents were asked to rate the overall value of the social support service.
Results: Questionnaire 1 had an overall response rate of 85% (36/42). 97% (32/33) of respondents stated they were very satisfied with the service. Medical staff identified a reduction in their time now spent on social care needs. 4/4 (100%) Third sector providers reported an increase in uptake of services and in appropriateness of referrals.
Initial results from the patient satisfaction questionnaire are positive. Patients report improved health management after accessing the Support Service. Interventions have had a positive impact on their overall needs, with faster, more effective resolution; ease of access and greater coordination of their overall care.
Conclusions: The introduction of the Social Care Coordinator post has had a positive impact for patients and professionals alike. The medical team now report less time being spent on social care, with consultations having a greater focus on the medical management of HIV. Third sector have reported more effective referrals and an increase in access to their services as a result of the new role.
Patients report high levels of satisfaction with the service, with an improvement in their social needs as a result.

P20
Audit of adherence to BHIVA immunization guidelines

C Papoutsos, D Cousins, A Vas, C Whitfield and V Lee
Manchester Royal Infirmary, Manchester, UK

Background: The British HIV Association published guidelines for immunisation of HIV patients. This study is to audit the uptake of immunisations for hepatitis A, B, pneumococcus and influenza vaccinations in our HIV cohort.
Methods: Retrospective case note review of 200 patient attendances in 2009. Information including demographics, CD4 count, and vaccination status were included.
Results: 127 patients were male (64%). The median age was 37 years (range 18–60) with median CD4 432 (range 1 to 1160). 151 (76%) were on antiretroviral therapy.
Most patients not immune at baseline for hepatitis A (47/196) were vaccinated (87%). 151/200 (75%) had been vaccinated for pneumococcus with 5 declining and no documentation in 36 cases (18%). 144/200 (72%) had been vaccinated for influenza or advised to attend their GP, with 9 declining and no documentation in 47 (24%) cases.
114 (62%) patients were non immune to hepatitis B at HIV diagnosis and 93 (82%) had completed immunisation of which 65 (70%) were non responders. In the previous year 73/93 (80%) of those vaccinated had a surface antibody test but none had PCR measured. 23/86 (27%) of patients not immune to hepatitis B had yearly core and surface antibody checks with only 3 having PCR measured in the preceding year.
Discussion: Vaccination of hepatitis A, pneumococcus and influenza was nearly universal where it was clinically indicated. Although vaccination rates were high against hepatitis B, surveillance of hepatitis B status, in particular regular surface antibody and PCR testing were not universal. Departmental protocols should be changed to facilitate this.

P21
Integral involvement of people with HIV throughout service design improves usefulness and acceptability

L Power[1], B Evans[2], G Brough[1] and D Edwardes[1]
[1]Terrence Higgins Trust, London, UK and [2]Elton John AIDS Foundation, London, UK

Background: As part of a new programme of services, people with HIV (PWHIV) wanted comprehensive and interactive online information and services to manage HIV as a long term condition. Involvement of PWHIV and acceptability to them was agreed as a key feature for success.
Methods: PWHIV were integrally involved in all stages and aspects of designing the website, including:
* The original concept was led by PWHIV in both funding source and service provider
* Consultation was undertaken with external groups of PWHIV on the concept
* A national Expert Advisory Group was held including PWHIV to determine key content
* Web design was managed by PWHIV, informed by focus groups in sites across the UK and reviewed by PWHIV in key user groups
* Website content was user-edited, reviewed and piloted with key user groups

* Video/other content was provided by a range of independent PWHIV
* Of the 50 models used to illustrate issues, at least half were PWHIV and all were people affected by HIV
* Discussion forums and message boards will be exclusively run and moderated by PWHIV for PWHIV

Result: Many features of the website were developed or changed in response to PWHIV input. These included**:**

* Tools for self-management (CD4 tracker, journal for consultation notes)
* Rigorous use of plain English instead of jargon
* User-generated star system to evaluate services
* Clearer explanation of confidentiality and data requirements for registration
* Pages are tailored to ''personas'' for key user groups, without exclusion of other PWHIV
* Evidence for all statements is cited on the page itself

Pre-launch evaluation by further PWHIV shows site contents and style to be highly acceptable. Comments from pilot users included ''this is a whole new level of self-management'' (white gay man) and ''I feel like I've been to an African support group'' (African heterosexual man). All information on the site is accredited under the Information Standard.

Conclusion: Comprehensive user and target group involvement from concept to conclusion can substantially change a service to improve both quality and acceptability.

P22
The success of antiretroviral therapy in a non-urban HIV cohort

M-Y Tung, A Vidhyadharan and E Fox
Eastern and Coastal Kent Community Health NHS Trust, East Kent, UK

Background: The British HIV Association (BHIVA) national HIV treatment guidelines 2008 recommend to limit the risk of virological treatment failure an objective of initial therapy (and subsequent treatment regimens if achievable) is to suppress the viral load to less than 50 copies/ml (undetectable).

The local Key Performance Indicator (KPI) target for individuals receiving antiretroviral therapy set by the Sexual Health Commissioner is for 70% of individuals to have an undetectable viral load on treatment.

Method: To be eligible for inclusion into this study an individual had to be under active follow-up and receiving combination antiretroviral therapy for at least 6 months by 31st December 2008 and have CD4 count and HIV viral load data collected during 2008. This was a retrospective study and data was retrieved from clinical case notes and laboratory reports and included data on demographics, current antiretroviral combination, whether the current antiretroviral combination was an individual's first combination or subsequent combination, CD4 cell count and viral load results during the study period.

Results: 141 individuals were eligible. 78 (55%) individuals were male and 63 (45%) were female. The median age of the cohort at last review was 42 years (range 25 – 72 years). 96 (68%) individuals in the cohort acquired their HIV infection via heterosexual contact. 115 (82%) individuals receiving combination antiretroviral therapy for more than 6 months had an undetectable HIV viral load. 86 (61%) were receiving an Efavirenz based regimen. Separating the cohort into individuals on first line therapy and non-first line therapy (second line therapy and above) the results are equally favourable with 84% on first line therapy and 81% on non-first line therapy achieving an undetectable viral load.

Conclusion: Our analysis reveals that, the majority of individuals (82%) receiving antiretroviral therapy in our cohort had an undetectable HIV viral load. This review helps to demonstrate that individuals managed in a smaller non-urban HIV cohort can achieve successful treatment outcomes comparable to larger treatment centres.

P23
Revealing the secret: the dilemma of people disclosing their HIV status – a support workers' perspective

P Bravo, S Rollnick, A Edwards and G Elwyn
Cardiff University, Cardiff, UK

Background: Living with HIV constitutes an important threat to the psychosocial wellbeing of those who have the disease. The condition of being HIV-positive not only affects physical health, but also it involves a distressing lifestyle including issues with interpersonal relationships, sexual life, treatment and difficult decisions surrounded by stigma and discrimination. The aim was to assess the decision needs of people living with HIV (PLHIV) and to describe these needs in order to consider to what extent they could be met by the development of new services or interventions.

Methods: A qualitative research study, using phenomenological approach, was conducted. A web-based search strategy was conducted to identify HIV charities/organisations in the UK; inclusion criteria were organisations, which provide direct services to PLHIV. The organisations were approached and support workers were invited to take part in the research. Semi-structured interviews were conducted from September to December in 2009. The interviews were audio taped and transcribed verbatim. Thematic analysis was performed. ATLAS.ti version 6 package was used. Ethical approval was granted.

Results: Access to organisations was very difficult. 13 interviews (7 men, 6 women average age 36 years) were conducted in 5 charities/organisations in London covering PLHIV from different ages, gender, country of origin and sexual orientation. One of the principal emergent themes was revealing the secret; whether or not to disclose is an ongoing conflict for PLHIV; sharing the information can bring social, emotional and medical support, but the negative consequence of being discriminated against makes the dilemma harder. Disclosure constitutes an endless process, which involves personal experiences and realities, however little has been done to support PLHIV when facing it.

Conclusion: Support workers in the HIV field identified particular decision needs of PLHIV. Revealing their status is a distressing process surrounded by fears of rejection and discrimination; however, it is an essential step to reach social and healthcare support. This process and its potential negative outcomes exemplify the need for social and psychological support for PLHIV. This need has a large influence on the way care is provided and should be considered in the design of supporting interventions.

P24
Rigorous outcomes evaluation can show impact of health trainers and usefulness of service to clinicians

L Power[1], B Evans[2], V Glasgow[1] and D Branch[1]
[1]Terrence Higgins Trust, London, UK and [2]Elton John AIDS Foundation, London, UK

Background: Health trainers are non-clinical support staff, working in an increasing number of HIV clinics to support consultants and nurses in helping people self-manage their condition. However, very little solid outcome-focussed data exists to illustrate their usefulness. Working together, a provider NGO and a major HIV funder set out to provide outcomes evaluation to show their impact.

Methods: Health trainers were recruited to work in five regions across the UK with people with HIV (PWHIV) in collaboration with local clinics and using both clinic and self-referral of PWHIV who were newly diagnosed or having difficulties in self-management. A rigorous programme of evaluation was devised with the support of professional management consultants and academic researchers including collection of quantitative outcome data from service users and qualitative views of clinicians. PWHIV outcomes are assessed via a ''Lifecheck'', which measures progress in pre-defined areas and provides a score showing improvements in knowledge and self-management ability. Regular

reports are shared with funders and an Advisory Group of researchers, clinicians and PWHIV. The Lifecheck is completed by the service user with the health trainer and acts initially as a learning tool as well as an evaluation mechanism. Demographic and other data is also collected to enable learning about specific target groups. The programme will be evaluated across three years in order to provide solid evidence of results.
Results: Initial analysis over the first year shows that service users broadly match HPA-provided demographics of the UK HIV population. The Lifecheck questionnaire has evolved to increase sensitivity and robustness. Early outcomes are that, of those showing an improved score, 86% demonstrate increased knowledge of HIV; 59% adopt healthier living practices (more exercise, healthier food, less smoking, alcohol and illegal drug use); 28% increase levels of disclosure to family, friends or professionals and 88% begin to share their experience of living with HIV with other PWHIV. Early indications suggest that baseline knowledge levels and behaviours may vary across the UK. An unplanned outcome of the programme has been a strong cultural shift within the provider organisation towards outcomes evaluation in other areas of work.
Conclusion: With appropriate support and collaboration between funders and providers, outcomes evaluation can be done and can show concrete improvements. However, it is neither short term nor simple and requires funding and commitment from all sides.

P25
Hopes, dreams and ambitions: a qualitative investigation into the views and concerns of older HIV-positive adolescents about their future challenges and support needs

T Campbell[1], J Griffiths[1], R Wilkins[2] and G Marhino[1]
[1]Newham Psychological Services, East London Foundation Trust, London, UK and [2]Redbridge PCT, London, UK

Background: HIV + young people are living longer and healthier lives. Previous research indicates that living with HIV presents many challenges about self-management at a time of rapid emotional and psychological change and in the context of rapidly changing educational and vocational experiences, the challenges of high adherence and the development of long-term emotional and sexual relationships. This small-scale qualitative study aimed to explore hopes and ambitions, anticipated challenges and support needs with regard to their transition to adulthood with a group of HIV+ young people in London. All participants were of Black African origin and had acquired HIV vertically
Method: 5 adolescents (4 female, 1 male; age range 17–19 years) attended a focus group. Questions focused on the impact of HIV status on; school and educational issues, romantic relationships/disclosure of HIV status, work and training. The focus group was facilitated by 2 clinical psychologists. The session was transcribed verbatim and data were compared and analysed for inter-rater reliability, commonly recurring themes and subjected to a thematic analysis. These themes were then collaboratively reviewed and refined in line with existing guidelines.
Results: The over-arching theme was an increasing awareness and sometimes uncomfortable understanding by participants that HIV suffuses all areas of their lives in complex and unexpected ways. Key subthemes included; ambition for the future (e.g. wish to attend university and/or have a career but anticipating the burdensome aspect of keeping their HIV status secret), building life-skills (e.g. living alone but feeling ill-prepared to manage finances, bills etc), disclosure of status as a lifelong dilemma (e.g. delaying romantic/sexual relationships as a strategy for non-disclosure, anticipating discrimination in the workplace). Themes about support needs were; acknowledging need for on-going support (e.g. from peers, positive adults and professionals) and request for services to adapt to their changing needs (e.g. age-specific group support).
Conclusion: This focus group had a small number of participants and representativeness of the population of HIV+ young people is not claimed. However, the data suggest that young HIV+ people slowly become aware of the complex implications of living with HIV infection as they grow older. Many of these implications are unwelcome and emphasize the need for them to be as equipped as possible with the skills and tools to self-manage effectively. Clinically, health professionals need to be aware that the personal meanings of HIV infection for this group may be changing very rapidly as they grow older. Professionals can help by being actively curious by enquiring about these changes in order to help their young patients make sense of their feelings and behaviours.

P25A
Feast to Famine? HIV social care and the AIDS Support Grant

A Pearmain
Essex Adult Social Services, Essex County Council

This presentation is of a published report, which was based on a 6-month research project into HIV social care in 16 representative local authority areas. It was funded by the Department of Health and conducted between March and October 2010, with support from the National AIDS Trust and the Terrence Higgins Trust.

This is a definitive study, the first for nearly twenty years, of how English local authorities have used the AIDS Support Grant to provide social care, statutory and voluntary, to people living with HIV/AIDS. It includes a historical survey of the ASG, an account of how it was recently 'de-ring-fenced', a picture of current provision, and a set of recommendations of how the best of HIV social care might be maintained.

Other specific issues covered include: how people are referred, assessed and case-reviewed for HIV social work; how HIV social work is managed; how HIV social work relates to generic social services, and where it is located; confidentiality and recording of HIV status; how recent social care reforms affect HIV social care; the situation and prospects of the HIV voluntary sector; and the continuing dominance of the 'medical model' over HIV social care.

The report also includes eight anonymised case-studies, based on visits and interviews with HIV-positive service users.

Basic Science, Immunology and Virology

P26
Low-level viraemia below 50 copies/ml in treated HIV-infected patients predicts viral load rebound above 400 copies/ml independently of adherence levels

T Doyle[1], P Vitiello[1], C Smith[1], V Cambiano[1], A Owen[2], A Phillips[1] and AM Geretti[1]
[1]University College London, London, UK and [2]University of Liverpool, Liverpool, UK

Background: Previously, we investigated whether in patients monitored with the Abbott RealTime viral load (VL) assay, a VL of 40–49 cps/ml and RNA detection <40 cps/ml at a single arbitrary time point during HAART (referred to as T0) predicted VL rebound during follow-up. Here, we extended the analysis to include the next available VL assessment after T0 (referred to as T1) and adherence levels.
Methods: The study investigated 1,247 treated patients undergoing VL monitoring by RealTime and showing a T0 VL of 40–49 cps/ml (40–49; n=240), RNA detected <40 cps/ml (RNA+; n=507), or RNA not detected (RNA-; n=500). These VL levels were reported to the treating clinician as <50 cps/ml. The T1 VL was measured after median (IQR) 15.4 (11.7–18.6) weeks. At T0, a 95% adherence measure was calculated as the proportion of days in the previous 6-month period covered by a valid prescription for ≥3 drugs; in addition, among 187 patients receiving EFV, plasma drug concentrations were measured at T0.
Results: In the multivariate analysis, the T0 VL independently predicted the risk of VL rebound >400 cps/ml over 12 months, with an adjusted HR

of 6.91 (95% CI 2.9–16.47; p<0.0001) and 2.88 (1.24–6.69; p<0.0001) for the 40–49 and RNA+ groups respectively relative to the RNA- group. The HR was 10.42 (3.36–32.33; p<0.0001) for patients with T0 40–49 or RNA+ and any detectable T1 VL (n=315) relative to those with T0 RNA-. At T0, levels of adherence >95% were measured in 13.1%, 38.2% and 58.3% of patients in the 40–49, RNA+, and RNA- groups respectively (p<0.001), while median EFV plasma concentrations were 1666 (1278–2449), 1339 (984–2041) and 1593 (1047–2333) ng/ml respectively among the EFV-treated patients (p=0.11). In the univariate analysis, >95% adherence was associated with VL rebound >400 cps/ml over 12 months (HR 0.43; 0.22–0.82; p=0.0008) but the effect was not seen after adjustment for the T0 VL (HR 0.96; 0.45–2.07).

Conclusion: RealTime VL levels below the 50 cps/ml threshold during HAART vary with the level of adherence, but there appears to be no relation with EFV plasma levels among EFV-treated patients. Importantly, VL levels of 40–49 cps/ml and to a lesser extent RNA detection <40 cps/ml strongly and independently predict VL rebound >400 cps/ml over 12 months of follow-up. The effect is strengthened by confirmation of detectable VL in the subsequent sample. The adherence levels did not retain independent predictive value for VL rebound after adjustment for the T0 VL.

P27
Comparison of the rate of viral load blips with Roche COBAS TaqMan HIV-1 versions 1 and 2 and possible implications for patient management

N Garrett, V Apea, I Ushiro-Lumb, G Baily and D Clark
Barts and The London NHS Trust, London, UK

Background: HIV-1 RNA quantification underpins the monitoring of virological response to antiviral therapy, successful viral suppression and early identification of viral escape. The Roche COBAS TaqMan HIV-1 v1.0 test was introduced into our service in 2005 and we and others have shown that this real time PCR test detects more low level viral loads (VLs) compared to the previous Roche Amplicor v1.5 assay. Owing to under-quantification issues, the Roche TaqMan HIV-1 v2.0 was introduced in 2009. Reports show that VLs with v2.0 may overall be slightly higher (~0.2log) to v1.0, but less is known about differences at the low VLs, where clinical decisions are often based.

Aim: To compare the rate and magnitude of VL blips with the Taqman v1.0 and v2.0 tests in suppressed HIV-1 patients and describe the impact of v2.0 with regards to patient management.

Methods: Patients HIV-1 VLs were obtained for 9 months before and after introduction of v2.0. Inclusion criteria were a VL <50 cp/ml at the beginning and end of the study period. A blip was defined as at least one sample >50 cp/ml and <2000 cp/ml which subsequently returned to <50 cp/ml. The rate of and median log VLs of blips were compared. Patients with blips on v2.0 were described with respect to genotypic resistance testing and treatment switches.

Results: 1037 of 1951 patients were included. During the 18 month study, 2465 VL samples were measured on v1.0 and 2206 on v2.0. 123 (11.9%) patients had blips on v1.0 compared to 114 (11.0%) on v2.0. Median log VLs was 1.90 (79 cp/ml) for v1.0 and 2.08 (120 cp/ml) for v2.0 (p<0.001). The distribution of blips by VL range is shown in the table. In the Taqman v2.0 period, genotypic resistance testing on 7 samples did not identify any new mutations. 9 patients had treatment modifications, including 3 switches from NNRTI to PI-based ART, and 3 intensifications from other PIs to darunavir.

	TaqMan v1.0	TaqMan v2.0
Detectable VL >50 cp/ml	N (%)	N (%)
Total	123/ 1037 (11.9)	114/1037 (11.0)
50 – 200	108 (87.8)	71 (62.3)
200 – 500	9 (7.3)	25 (21.9)
>500	6 (4.9)	18 (15.8)

Discussion: This study shows that in suppressed patients, the blip rates were similar between Taqman v1.0 and v2.0 tests, while the VLs detected were higher with v2.0. With the introduction of realtime PCR tests such as Roche Taqman v2.0 further studies are needed to help to interpret the clinical significance of low level viraemia including blips for patients and whether there may be a need to review management guidelines.

P28
Ex-vivo recognition of late-lytic CD8 epitopes specific for Kaposi's sarcoma-associated herpesvirus (KSHV) by HIV/KSHV-coinfected individuals

R Robey[1,3], S Mletzko[1,3], M Bower[2], R Meys[2], M Boffito[2], M Nelson[2], S Merchant[2], B Gazzard[2], C Boshoff[3] and F Gotch[1,3]
[1]Imperial College London, London, UK, [2]Chelsea and Westminster Hospital, London, UK and [3]University College London, London, UK

Background: Kaposi's sarcoma-associated herpesvirus (KSHV) is the aetiological agent of Kaposi's sarcoma (KS), the most common cancer in individuals with untreated HIV/AIDS and consequently one of the most common cancers in Sub-Saharan Africa. There are several lines of evidence to indicate that KS oncogenesis is associated with the loss of CD8 T-cell mediated control of KSHV-infected cells. In immunocompetent individuals, KSHV can establish life-long asymptomatic infection. However, upon immunosuppression (acquired or iatrogenic) both KSHV seroprevalence and the incidence of KS in KSHV carriers dramatically increase. However, host control of KSHV infection and KS oncogenesis by CD8 T cells still remains underexplored. Although KSHV CD8 epitopes have been identified, the responses they elicit are weak and little is known about their relative importance.

Methods: We sought to make a direct comparison of the recognition of a selection of the best-described known epitopes by a cohort of KSHV-seropositive, HIV-co-infected individuals, in order to assess the relative dominance of these epitopes. We further sought to identify novel epitopes from within a candidate immunogenic protein encoded by KSHV ORF28. MHC binding and denaturation assays identified putative novel A*0201-restricted epitopes from within the late-lytic glycoprotein ORF28. Recognition of these candidate epitopes was tested in a cohort of KSHV-seropositive, HIV-1-seropositive, A*0201-positive individuals by *ex vivo* ELISpot and compared with recognition of nine previously described epitopes.

Results: One novel late-lytic epitope from ORF28 was recognised by 7.1% of individuals, and was used for further investigation of KSHV-specific T cells using multimer technology. One known late-lytic epitope from the glycoprotein-encoding K8.1 was recognised by 71.4% of individuals and represented an immunodominant KSHV epitope but was too hydrophobic for multimer synthesis.

Conclusion: This study identifies two KSHV CD8 epitopes derived from late-lytic antigens that are recognised by KSHV-seropositive, HIV co-infected individuals and will be useful in future immunological studies into the CD8 response against KSHV in similar patient cohorts.

P29
Phenotypic and genotypic tropism testing: a clinical cohort

M Desai, J Zhou, S Tilbury, L Waters and M Fisher
Brighton and Sussex University Hospitals NHS Trust, Brighton, UK

Background: BHIVA guidelines recommend tropism testing in patients with drug toxicity and/or virological failure, for whom a CCR5 antagonist is being considered. In addition, there is increasing evidence that adding a CCR5 antagonist to intensify therapy may be beneficial in specific situations. We explored the pattern of tropism testing and the epidemiological and immunological factors associated with tropism in our cohort of over 1700 patients.

Methods: We identified all patients who had undergone tropism testing from our prospectively collected clinic database. For each sample tested,

patient demographics, date of HIV diagnosis, baseline and nadir HIV surrogate markers, tropism test parameters, ARV history and previous HIV treatment were collected. Tropism was assessed using the enhanced Trofile® (ESTA) or genotypic tropism (V3) assay and geno2pheno algorithm (G2P). Nadir CD4+ T-cell counts were only available for the 135 samples from patients who did not receive care elsewhere. Statistical significance was analysed using Mann-Whitney, Pearson's χ^2 or Fisher's exact tests.
Results: 209 samples were analysed for co-receptor tropism of which 136/145 (93.8%) with ESTA and 73/74 (98.6%) with G2P were successful (p=0.03). The table below illustrates tropism results for each assay and a breakdown of results by nadir CD4 and history of prior virological failure.

	CXCR4	R5	
CCR tropism assay			
G2P (n=73)	14	59	
ESTA (n=136)	32	104	
Nadir CD4+ T-cells count for non-transfers (cells/microlitre)			
n	30	105	
Median CD4	190.5	245.4	p=0.05
CD4 ≤200	18	43	p=0.06
CD4>200	12	62	
CD4≥350	27	82	p=0.14
History of virological failure			
No	13	137	p=0.06
Yes	11	21	

Conclusions: In our cohort G2P yielded significantly fewer non-reportable results than ESTA. Median nadir CD4 was lower in CXCR4 tropic samples and patients with CCR5 utilising virus were less likely to have failed ART. Most patients with low CD4 nadir or previous virological failure still harboured CCR5 tropic virus emphasising the importance considering CCR5 antagonists in all patients.

P30
Effect of CCR5 inhibitors on immune activation in subjects with suppressed HIV-1 RNA levels

A Scourfield[1], L Waters[1], B Gazzard[1], P Kelleher[2], M Nelson[1] and A Steel[1]
[1]Chelsea and Westminster Hospital, London, UK and [2]Imperial College London, London, UK

Background: Persistent aberrant CD8 T-cell activation is linked to lower CD4 counts and a worse prognosis in HIV infected individuals and has been suggested as a surrogate marker of disease progression. In the MERIT study naive subjects commencing maraviroc had lower markers of immune activation than subjects receiving efavirenz, and greater CD4 rises. This pattern was observed at 24 weeks however the difference had disappeared by 48 weeks. We investigated the effect of CCR5 inhibitor therapy on reduction of CD8 T-cell activation in those with prolonged suppression of HIV viral replication.
Methods: Ten subjects on maraviroc containing regimens with an undetectable viral load (5 naive to therapy, 5 for salvage therapy) underwent blood sampling for analysis. Percentage of CD38 expressing CD8 T-cells were calculated using flow cytometry. This data was compared to several control populations from a cross sectional study in our HIV cohort including subjects on ART with VL<50, n=208, on ART with detectable viraemia, n=121 and ART naïve subjects, n=67. Data from 24 non-HIV infected controls was also included. A further sub-analysis of subjects on ART with an undetectable viral load was performed to case match individuals on CCR5 inhibitors for factors known to reflect immune activation such as age, duration of undetectable HIV viral load, nadir and current CD4. Ninety six suitable controls were identified and a Mann-Whitney U statistical analysis was performed to determine significance.
Results: The results are summarised in the table below.

There was no significant difference in CD38 expressing CD8 T-cells between subjects on CCR5 inhibitors with a viral load <50 copies/ml and those on non-CCR5 ART with undetectable viral load (p=0.88).

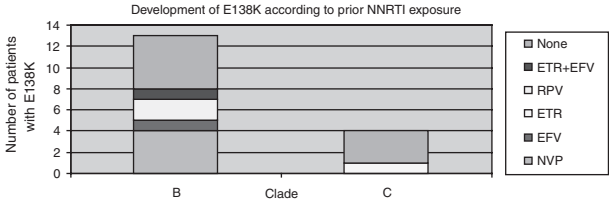
Group	Number	Mean % CD8+CD38++ T-cells	Standard deviation	Mean CD4 cells/mm^3
ART VL<50	96	8.2	4.64	420
ART viraemia	121	23.9	15.95	322
ART naïve	67	23.2	15.38	337
CCR5 inh VL <50	10	7.3	2.63	469
Healthy controls	24	4.4	3.1	624

Conclusion: CD8 T cell activation measured by monocyte gating for CD8+CD38++ and corrected for known confounders is not improved with prolonged CCR5 inhibitor therapy. The greatest levels of CD8 activation were seen in ART-naïve individuals and those on ART with detectable viraemia. HIV viral suppression significantly reduced CD8 activation but there was no difference with subjects on a CCR5 inhibitor containing regimen. Even with a suppressed viral load HIV infected individuals had greater levels of immune activation than HIV-negative controls.

P31
E138K – how common in current clinical practice?

D Bradshaw, S Mandalia and M Nelson
Chelsea and Westminster Hospital, London, UK

Background: The new HIV-1 non-nucleoside reverse transcriptase inhibitor (NNRTI) rilpivirine (TMC278) is the focus of much current interest following the results of the ECHO and THRIVE trials. However, individuals failing therapy with rilpivirine commonly develop a novel NNRTI mutation in the reverse transcriptase (RT), E138K. This reduces susceptibility *in vitro* to etravirine by 3- to 5-fold, and to the other NNRTIs by 2- to 5-fold. It may also modestly reduce replication capacity.
Methods: We searched our cohort for patients harbouring the E138K mutant HIV-1 between January 2001 and February 2010. This was achieved through interrogation of electronically held resistance tests. HIV-1 clade and prior exposure to NNRTIs were recorded.
Results: Of the 9650 patients, 17 harboured the E138K mutant virus. This compared to 257 patients with Y181C and 550 patients with K103N mutant virus during the study period. Thirteen of 17 patients (76%) had Clade B virus and 4/17 (24%) Clade C. Five of 13 patients (38%) infected with Clade B virus with the E138K mutation had not previously been exposed to NNRTIs. Similarly, 3/4 patients (75%) with Clade C virus with E138K had no previous NNRTI exposure. The remaining patients had all been exposed to NNRTIs. In 14/17 patients (82%) with E138K, there was at least one other major NNRTI mutation, most commonly 101E (5/17, 29%).



Conclusion: E138K occurs rarely as a baseline resistance mutation in 8/9650 patients (0.08%) in our cohort. E138K rarely develops through selective pressure of nevirapine, efavirenz, etravirine and rilpivirine use.

P32
Genotypic testing for HIV-1 tropism determination: results from a proficiency panel

A Buckton[1], L Ashton[2], D Bibby[3], B Ferns[4], A Garcia[5], S Kaye[6], A Maclean[7], J Shepherd[8], E Smit[9], P Tilston[10] and P Cane[1]
[1]Health Protection Agency, London, UK, [2]Royal Liverpool University Hospital, Liverpool, UK, [3]Barts and The London NHS Trust, London, UK, [4]University College London, London, UK, [5]Royal Free Hospital, London, UK, [6]Imperial College London, London, UK, [7]West of Scotland Specialist Virology Centre, Glasgow, UK, [8]Royal Infirmary, Edinburgh, UK, [9]Heartlands Hospital, Birmingham, UK and [10]Royal Infirmary, Manchester, UK

Background: Use of CCR5 coreceptor antagonists in the treatment of HIV-1 is dependent on assays which predict the tropism of the infecting virus. To date, mainly phenotypic assays have been used but recently there has been a move to replace these with in-house genotypic assays based on sequencing of the V3 loop of the envelope protein gene. We report here the outcome of an External Quality Assessment (EQA) panel distribution for genotypic tropism assays in the United Kingdom.
Methods: a panel of 4 samples with varying viral load and subtype, and treatment status of patients, was distributed to 10 laboratories in the UK undertaking genotypic tropism testing. The laboratories used their usual methods for amplification of the genome region encoding the V3 loop and provided their interpretation of these sequences. The analysing laboratory compared the data with respect to reproducibility of sequences and concordance in interpretations.
Results: Only 4/10 of the laboratories returned co-receptor predictions on all four samples. 2/10 laboratories failed to amplify 2 samples, 4/10 laboratories were unable to sequence one sample although amplification was successful. Where results were supplied, the laboratories gave the same tropism predictions for 3/4 of the samples. For 1 sample, 6/8 laboratories predicted an R5 tropism while 2/8 predicted X4 tropism. The variable results for this sample were due in part to minor variations in the sequence but also due to application of different false positive rate limits. Clonal analysis of another sample showed that it was a complex mix of R5 and X4 viruses with insertions and deletions in the sequence, so making the sequence uninterpretable in some laboratories.
Conclusions: Variation in genotypic tropism assay outcomes can be caused both by the high levels of variability in this region of the HIV-1 genome and also by the use of different interpretation algorithms.

P33
Alteration of natural killer cell maturation during HIV-1 infection

L McLaughlin[1], A Coleman[1], B Gazzard[2], M Nelson[2] and M Goodier[1]
[1]Imperial College London, London, UK and [2]Chelsea and Westminster Hospital, London, UK

Background: Chronic immune activation is associated with ongoing stimulation of natural killer cells during HIV-1 infection. Functional maturation of human natural killer cells is also promoted by inflammatory signals. Immature NK cells in the blood express c-kit, the receptor for stem cell factor, which is lost as they mature. Functional maturation of NK cells can also be monitored by the loss of CD94 and CD56. We therefore investigated how chronic HIV-1 infection influenced the maturation of NK cells and the impact of antiretroviral therapy.
Methods: maturation markers c-kit and CD94/CD56 were measured by flow cytometry in NK cells from treatment naïve (n=7) or HAART experienced (n=9, plasma viral load < 50 copies/ ml blood) HIV-1 infected individuals and expression compared to HIV-1 seronegative control individuals (n=9).
Results: A significantly lower proportion of immature c-kit^{+} NK cells were observed in HIV-1 infected individuals receiving HAART compared to HIV-1 seronegative control individuals (p=0.012). In addition, the proportion of cells expressing c-kit was lower after in-vitro culture in both treatment naïve and HAART treated individuals compared to HIV-1 seronegative controls (p=0.042 and 0.031, respectively). Spontaneous maturation of NK cells from HIV-1 infected individuals *in-vitro*, in the absence of additional stimuli was confirmed by a loss of immature CD94^{hi}CD16^{hi} NK cells (treatment naïve vs seronegative control p=0.021, HAART vs seronegative control p=0.027) and an increase in the proportion of cells of mature CD94 negative CD56^{lo} phenotype (HAART vs seronegative control p=0.015).
Conclusions: Chronic HIV-1 infection may drive ongoing maturation of human NK cells, which proceeds further in *in-vitro* cultures. These data have implications for immune reconstitution of the NK cell compartment during anti-retroviral therapy.

P34
Elevated PD-1 expression on NK cells during HIV-1 infection

S Norris[1], A Coleman[1], B Gazzard[2], M Nelson[2] and M Goodier[1]
[1]Imperial College London, London, UK and [2]Chelsea and Westminster Hospital, London, UK

Background: Programmed death receptor 1 (PD-1) is elevated on T-cells in HIV-1 infected individuals with inhibitory consequences for antigen-specific CD8+ T-cell proliferation and function. More recently, PD-1 was shown to be elevated on natural killer cells during chronic Hepatitis C virus infection.
Hypothesis: PD-1 is elevated on NK cells during chronic HIV-1 infection and may contribute to NK cell dysfunction.
Methods: The expression of PD-1 and its ligand PDL-1 were compared on gated CD3-CD56+NK cells and CD3+CD8+ T cells from HIV-1 infected aviraemic individuals (n=19, HIV-1 RNA <50 copies/ml blood), viraemic individuals (n=14, median HIV-1 RNA =17, 641 copies/ml blood) and HIV-1 seronegative contols (n=22) using flow cytometry. Dead cells were excluded using a FITC conjugated amide reactive dye and the percentages of PD-1^{+} and PDL-1^{+} NK cells were estimated after subtracting values obtained using an isotype matched control monoclonal antibody. The role of chronic activation in the induction of PD-1 expression on NK cells was investigated by in-vitro stimulation with recombinant IL-15. The proliferative capacity of PD-1+ NK cells was investigated by staining with cells with CFSE prior to stimulation with IL-15.
Results: A low frequency of CD3-CD56+ NK cells from HIV-1 infected individuals expressed PD-1 and this was elevated in both HIV-1+ viraemic (mean$\pm$sd 0.364$\pm$0.496%, p=0.043) and aviraemic (mean$\pm$sd 0.358$\pm$0.391%, p=0.013) individuals compared to HIV-1 seronegative controls (mean$\pm$sd 0.14$\pm$0.24%). The proportion of NK cells expressing PD-1 was, however, lower than that detected on gated CD8+ T-cells (aviraemic 3.2$\pm$3.7%, viraemic 2.4$\pm$1.9%, HIV-1 seronegative 0.5$\pm$1%). No significant differences were observed in PDL-1 expression on NK cells form HIV-1+ and HIV-1 seronegative control individuals. Stimulation of PBMC from HIV-1 seronegative control individuals resulted in significant increases in the proportions of NK cells and CD8+ T-cells expressing PD-1 by 7 days of stimulation with IL-15 which persisted until 14 days after stimulation (n=7, day 0, 0.14$\pm$0.141%, day 7, 1.7$\pm$0.6%, p=0.041, day 14, 6.075$\pm$ 5.19%, p=0.0178). Furthermore, PD-1+ NK cells and CD8+ T-cells demonstrated reduced proliferative capacity on stimulation with IL-15 *in-vitro*.
Conclusion: Elevated PD-1 expression on NK cells may result from chronic immune activation during HIV-1 infection and result in reduced proliferative capacity of these cells.

P35
Enhancement of HIV-1 gag-specific T cell responses by type A CpG DNA

A Coleman[1], N Imami[1], B Gazzard[2], M Nelson[2] and M Goodier[1]
[1]Imperial College London, London, UK and [2]Chelsea and Westminster Hospital, London, UK

Background: TLR agonists mediate partial activation of NK and CD8^{+} T cells by stimulating antigen-presenting cells, including peripheral blood

DC. However, responses induced via some TLR pathways, such as TLR4 and 8, are refractory in HIV-1$^+$ individuals, indicating these pathways become exhausted during chronic infection. We therefore tested the ability of TLR agonists to enhance antigen-specific immune responses in HIV-1 infected individuals.

Methods: PBMC from HIV-1 seronegative individuals (n=4) were stimulated with TLR agonists alone or with a Flu/EBV/CMV (FEC) peptide pool (NIBSC) and IFN-γ secretion was measured by ELISpot. Additional co-stimulation experiments were performed with PBMC from both treatment experienced (n=13) and naïve (n=13) HIV-1 seropositive individuals in combination with HIV-1 peptide pools (Gag MHC class I restricted 9mers or 20mers). Activation, degranulation and IFN-gamma production of antigen specific T-cells was confirmed in co-stimulated cultures by flow cytometry.

Results: Enhancement of FEC specific IFN-gamma production was observed in HIV-1 seronegative individuals who made relatively weak responses to peptide alone. Conversely, a reduced frequency of IFN-gamma producing T cells was observed where individuals made stronger responses to antigen. CpG DNA (TLR9 agonist) (1nM), combined with HIV-1 peptides (Gag 9mer pool – 5ug/ml), increased the frequency of IFN-gamma producing cells in 6/9 treatment naïve individuals (responding to 9mer alone at frequencies above 50 spot forming cells (sfc)/10^6 cells) whereas LPS (10ng/ml) reduced the frequency of IFN-gamma producing cells in 7/10 individuals (mean sfc/10^6 PBMC +/− standard deviation) responding to Gag 9mer alone**:** 419.6+/−555.6); co-stimulated with CpG DNA: 478.9+/−636.7; or co-stimulated with LPS: 359.1+/−485.4.

Conclusion: These results demonstrate the potential of CpG DNA to boost antigen-specific immunity in a therapeutic setting for HIV-1 infection. Conversely, the reduction of antigen specific responses observed in the presence of LPS suggests a potential role for endotoxin in the downregulation of HIV-1 specific CD8$^+$ T-cell responses during chronic infection.

P36
Gamma-delta T cell responsiveness to zoledronic acid and adjuvant potential in HIV-1 infection

S Begom[1], A Coleman[1], B Gazzard[2], M Nelson[2], N Imami[1] and M Goodier[1]
[1]Imperial College London, London, UK and [2]Chelsea and Westminster Hospital, London, UK

Background: Human gamma-delta T cells can be indirectly activated by aminobisphosphonates such as zoledronic acid (ZA). Gamma-delta T cell based adjuvanting systems have shown promise in tumour immunotherapy by boosting tumour-specific CD8$^+$ T cell responses. Gamma-delta T cells are not normally infected by HIV-1 hence such adjuvanting systems could potentially avoid generalised activation that would otherwise promote HIV-1 infection and dissemination. ZA is particularly suited to this strategy since it is specific for gamma-delta T cells, and is a potent and efficacious agent already in clinical use. Here we develop an *in vitro* system to test the potential for activation of gamma-delta T cells by ZA and to further investigate its effect on Influenza, EBV and CMV (FEC) specific responses of CD8$^+$ T cells.

Methods: Peripheral blood mononuclear cells (PBMC) from HIV-1-control (n=8) or HIV-1+ individuals receiving HAART with plasma viral loads <50 copies/ ml blood (n=8) were stimulated with zoledronic acid and induction of activation markers were assessed using flow cytometry. ELISpot assays were used to quantify FEC-specific T cell responses by peptide stimulation in the presence or absence or ZA.

Results: ZA preferentially stimulates the activation of gamma-delta T cells in both HIV-1 infected and HIV-1 seronegative control individuals compared to CD4$^+$ and CD8$^+$ T cells. Significant gamma-delta T cell activation above basal levels is observed in response to both low (100pg/ml) and high (5ug/ml) concentrations of ZA in HIV-1 infected individuals. ZA-mediated gamma-delta T cell activation is, however, reduced in HIV-1 infected individuals compared to HIV-1 seronegative controls (p=0.01). Responses to low concentrations of zoledronic acid correlates directly with CD4$^+$ T-cell counts in HIV-1 infected individuals (r=0.724, p=0.04). No enhancement of IFN-gamma production by CD8$^+$ T-cells in response to FEC peptide pools was observed in the presence of ZA in HIV-1 infected individuals whereas some enhancement was observed in HIV-1 seronegative controls.

Conclusion: Zoledronic acid specifically stimulates gamma-delta T cells in HIV-1 infected individuals receiving HAART. Further experiments will determine the potential of gamma-delta T cell activation in adjuvanting HIV-1 specific T cell responses in HAART treated or treatment naïve individuals.

P37
Intravenous methamphetamine use is associated with lower sustained virological response rates in HIV-positive men who have sex with men infected with acute hepatitis C

E Thomson[1], J Main[1], P Karayiannis[1] and P Klenerman[2]
[1]Imperial College London, London, UK and [2]Oxford University, Oxford, UK

Background: The ongoing epidemic of acute hepatitis C (HCV) infection in HIV-positive men who have sex with men in urban centres in Europe, the USA and Australia is likely to herald an increase in deaths from cirrhosis and hepatocellular carcinoma in this population within the near future. At present, early treatment with pegylated interferon alpha (IFNα) and ribavirin is the best treatment choice with reported sustained virological response rates (SVR) of 59–80%. The main transmission route in such patients is likely to be sexual although a significant minority also use intravenous methamphetamine (IVMA). We observed a decreased SVR rate in IVMA users within an established prospective cohort of HIV positive patients with acute HCV. We aimed to investigate the reasons behind this difference.

Methods: 95 patients were recruited and followed at 1–3 monthly intervals for a median of 3 years. The primary endpoint was sustained virological response (SVR) after anti-viral treatment. At the time of analysis, 40 patients had completed treatment with 48 weeks of IFNα and ribavirin, 30 patients had started but not yet completed treatment, 14 spontaneously cleared infection and 11 patients were not treated (depression n=5, co-existing malignancy n=4, active pulmonary TB n=1, epilepsy n=1). We compared clinical, immunological and virological variables including clonal sequence evolution within the HCV E2 envelope gene and flow cytometry to measure the production of IFNγ, IL2, TNFα and IL17 by CD4+ and CD8+ cells.

Results: The overall SVR rate was 70% (28/40); 82% in nonIVMA users (23/28) and 42% (5/12) in IVMA users (p=0.02). The CD4 count (552 versus 598x10^6/l; p=0.39) and HIV viral load were similar in each group (1.71 versus 1.70 $\log_{10}$ copies/ml; p=0.87). 21/30 IVMA patients were on highly active antiretroviral therapy versus 33/65 nonIVMA patients. Baseline HCV VL was higher in IVMA patients (6.2 versus 5.3$\log_{10}$ IU/ml) and the baseline Hamming distance was also higher (5.2 versus 1.6; p=0.0007) although the number of quasispecies was not different (4 versus 5, p=0.58). The dN/dS ratio was higher in IVMA patients but did not reach statistical significance (2.4 versus 1.7; p=0.33). IVMA use was also associated with reduced IL2 expression by CD4+ cells (0.1% versus 0%; p=0.0004).

Conclusion: Use of IVMA is associated with a poor response to treatment, high viral diversity and impaired cellular immune responses. Patients should be discouraged from methamphetamine use.

P38
Impact of IL-2/GM-CSF, rhGH and therapeutic immunization in treated HIV-1 infection: a randomized, open-label, Phase I immunotherapeutic study

A Herasimtschuk[1], J Downey[1], M Nelson[2], C Higgs[2], R Sikut[3], I Stanescu[3], B Gazzard[2], F Gotch[1] and N Imami[1]
[1]Imperial College London, London, UK, [2]Chelsea and Westminster Hospital, London, UK and [3]FIT Biotech Oy, Tampere, Finland

Background: Immune-based therapeutic interventions in the context of antiretroviral therapy (ART) may serve to reverse T-cell anergy and boost the HIV-1-specific responses that are not restored with ART alone. This study investigates the effects of IL-2 (Aldesleukin)/GM-CSF (Leukine), recombinant human growth hormone (rhGH) and therapeutic immunisation in ART-treated individuals and aims to reverse T-cell dysfunction in chronic HIV-1 infection.
Methods: Twelve patients on ART with nadir CD4 T-cell counts >200 and baseline counts of >400 cells/μl blood were randomised into one of three groups: 1) vaccine + IL-2/GM-CSF and rhGH (n = 3); 2) vaccine alone (n = 4); or 3) IL-2/GM-CSF and rhGH alone (n = 5), with the treatment schedule and sample time points illustrated in Table 1.
IFN-γ, IL-2, IL-4 and perforin ELISpots were carried out at each time point to assess functional responses to peptide pools of Gag p17, Gag p24, Nef, Rev, and Tat. Phenotypic analysis of the CD4 and CD8 T cells was also carried out and the panel included markers for activation (CD38, HLA-DR), exhaustion (CTLA-4, TIM-3, PD-1, PD-L1), senescence (CD57), and differentiation (CCR7, CD45RA, CD27, CD28), as well as markers associated with the regulatory T cells ($CD3^+CD4^+CD45RO^+CD25^{high}$).
Table 1. Treatment schedule

Week	−4	−2	0	1	2	4	6	8	12	16	24	48
Arm 1			Vaccine	IL-2/GM-CSF	rhGH		Vaccine		Vaccine			
Arm 2			Vaccine				Vaccine		Vaccine			
Arm 3				IL-2/GM-CSF	rhGH							

Results: Plasma HIV-1-RNA was <50 copies/ml for all subjects at baseline and CD4 T-cell counts were >400 cells/ul blood (median 757; interquartile range 567–886 cells/ul blood). Cytokine and hormone treatment in patients resulted in marked increases in CD4 T-cell counts, detectable plasma HIV-1 RNA in some subjects, and increased expression of markers associated with chronic activation and regulatory T cells. However, CD4 T-cell counts normalised, HIV RNA returned to an undetectable level and levels of activation fell to below baseline levels for these individuals. Fluctuations in CD4 T-cell counts were less dramatic in subjects receiving vaccine alone. Increased functional (IFN-γ) responses were detected against Gag p24 in cytokine-treated patients but these were transient.
Conclusions: These preliminary findings indicate that immune-based therapy in the context of ART may serve to boost HIV-1-specific responses, although transiently. To address whether viral reservoirs are being purged, assessment of levels of proviral DNA is needed.

P39
When is detectable undetectable? An audit of HIV viral loads following the introduction of a new assay

C Knapper, F Clark, S Corden, B Healy, A Freedman, N Price and N Lomax
University Hospital of Wales, Cardiff, UK

Background: In March 2010 the NASBA HIV viral load (VL) assay version 1.2 used by our service was replaced by version 2. We aimed to audit the performance of the new assay and compare it to the previous version in line with BHIVA guidelines for the treatment of HIV-1-infected adults with antiretroviral therapy (2008), with reference to the outcome "the goal of treatment must always be to achieve a viral load of <50 copies/mL and to achieve this within 4–6 months of starting treatment".
Methods: We compared the 2 assays by collating data from patient notes from clinics based in 2 centres in our service from the 3 months (December 2009-February 2010 inclusive) preceding the introduction of the new assay with data from the 3 months after (March-May 2010 inclusive). Data included patient demographics, sequential viral loads, HAART start dates and drugs, adherence, clinic visits and contacts.
Results: Overall the total number of viral loads analysed had risen from 482 (version 1.2) to 538 (version 2) and the percentage of viral loads reported as undetectable at <50 copies/ml had dropped from 69% (version 1.2) to 59% (version 2). The greatest proportion of viral loads using version 2, other than undetectable, occurred at levels of 10^2 copies/ml (14%). In a sub-group analysis, patients with reasons for on-going viraemia were removed from the data. In those patients with good compliance (therapeutic drug monitoring and resistance profile checked where possible) there was an increase in chronic viraemia and viral load blips from 4.7% at one site and 0% at the second site using version 1.2 to 10.1% and 10.9% respectively using version 2. This increase was associated with an increase in clinic work load, with the number of clinic contacts (visits, letters, phone calls or texts) relating to viral loads in this sub group rising from 35 (version 1.2) to 107 (version 2) over the 3 month period in 1 centre. Subsequent to this audit an extraction platform was replaced. By November 2010 almost all patients with persistent viraemia after starting HAART have become undetectable, although this may take up to 1 year to achieve.
Conclusion: The new VL assay is more sensitive and has resulted in an increased number of patients with detectable virus as well as increasing clinic workload Guidance is needed to deal with the clinical application of ultra-sensitive assays. A prospective audit of the new assay is now being devised.

P40
Is emtricitabine associated with reduced levels of the M184V mutation when compared with lamivudine?

N Bulteel, M Bower, B Gazzard, S Mandalia and M Nelson
Chelsea and Westminster Hospital, London, UK

Background: Lamivudine (3TC) and emtricitabine (FTC) are guideline choices for HAART. 3TC has a shorter half life than FTC and may be more likely to lead to the M184V mutation with non-adherence. This may be confounded by better adherence to the lower pill burden of FTC regimens compared with those containing 3TC.
Methods: All individuals receiving tenofovir (TFV) with 3TC or FTC and efavirenz (EFZ) were analysed. Individuals on FTC were subdivided into those receiving TFV, FTC and EFZ or Truvada and EFZ or Atripla. Rates of development of M184V and K65R mutations were analysed by time on individual regimens. All FTC containing regimens were compared to the 3TC regimen.

		TFV/3TC/EFZ	TFV/FTC/EFZ	TRUVADA/EFZ	ATRIPLA
Number		399	119	515	1711
Mean age (SD)		40.6 (9.2)	39.5(8.6)	40.6(9.6)	41.0(9.6)
Sex (n(%))	Male	358(89.7)	103(86.6)	455(88.4)	1542(90.1)
	Female	41(10.3)	16(13.5)	60(11.7)	169(9.9)
Race (n(%))	Caucasian	288(72.2)	90(75.6)	380(73.8)	1235(72.2)
	Black African	64(16.0)	15(12.6)	69(13.4)	181(0.6)
	Other	47(11.8)	14(11.8)	66(12.8)	295(17.2)
Sexual orientation	MSM	320(80.2)	103(86.6)	433(84.1)	1517(88.7)
	MSW	64(16.0)	12(10.1)	68(13.2)	160(9.4)
	Bisexual	15(3.8)	4(3.4)	14(2.7)	34(2.0)
IVDU		3(0.8)	0(0.0)	3(0.6)	14(0.8)
Median (IQR) CD4 count at initiation		265 (159 to 480)	209 (162 to 325)	245 (162 to 437)	345 (233 to 521)
Median (IQR) VL at initiation		623 (<50 to 111368)	40686 (<50 to 161707)	3627 (<50 to 123664)	<50 (<50 to 21125)
% VL < 50 at initiation		130	30	202	848

Results: M184V and K65R resistance mutations developed in 18 of the 2744 patients analysed. There was a strong trend to a significant increase in the rate of development of resistance mutations for regimens containing 3TC compared with those containing FTC (p=0.051). There were no significant differences between rates of development of resistance between the FTC containing regimens.

Conclusions:

1. In all groups the rate of virological failure associated with the development of resistance were small.
2. There was no difference in rates of development of resistance between different FTC containing regimens suggesting that although patients may prefer simpler regimens this does not translate into a preferential resistance profile.
3. There was a strong trend for 3TC containing regimens to develop resistance mutations than those on FTC.

P41
Novel technology for HLA-B*3501 epitope prediction and kinetics within the HIV-1 capsid Gag

N Grageda[1], S Westrop[1], B Gazzard[2], M Nelson[2] and N Imami[1]
[1]Imperial College London, London, UK and [2]Chelsea and Westminster Hospital, London, UK

Background: Exploring the intricacies of CD8 T-cell epitope recognition using emerging technologies to combine assessment of affinity, phenotype and resulting polyfunctional efficacy advances our understanding of HIV-1 immunopathogenesis and disease progression. Major histocompatibility complex (MHC) class I molecules, encoded by highly polymorphic HLA genes, display a large repertoire of peptides to CD8 T cells generating a highly specific, broad immune response. Complexities within T-cell antigen recognition such as epitope**:**MHC binding, stability and affinity, appear to influence the distinction between protective and ineffective anti-HIV-1 immune responses, that are thought to govern disease progression rate. Rapid disease progression has been linked to HLA-B35, with reports of dysfunctional CD8 T-cell responses in $B35^+$ individuals. Few studies have addressed rapid disease progression and consequently the mechanisms behind it are unclear. Greater understanding of HIV-1-specific immunity remains fundamental to current and future HIV-1 treatment and prevention.

Methods: This study utilises ProImmune REVEAL and ProVE® technology of rapid peptide synthesis, binding and affinity assays, and pentamer synthesis in conjunction with flow cytometry and simultaneous assessment of multiple CD8 T-cell effector functions in response to HLA-B*3501-restricted HIV-1 Gag peptides, to discover new T-cell epitopes within the HIV-1 capsid protein Gag, and attempt to identify the underlying mechanism behind this dysfunctional response.

Results: The peptide binding assay identified 12 peptides out of 44 as potential CD8 T-cell epitope targets. Furthermore, *ex vivo* ELISpot analysis revealed a dysfunctional CD8 T-cell response, supported by the observed skewed differentiation of epitope-specific CD8 T cells. The predicted HLA-B*3501-restricted peptides, HPVHAGPIA and YPLTSLRSL, and relevant pentamers were used in parallel to validate T-cell epitopes on clinical $HIV\text{-}1^+$ samples, confirming correlation between the expected superior immunogenicity of newly discovered epitopes and the *ex vivo* T-cell response.

Conclusion: Together these data give an indication that HIV-1 epitopes in the context of B*3501 MHC class I molecules *in vivo* may fail to induce the appropriate and effective polyfunctional responses thought to be integral to HIV-1 control. Such a platform for prediction and validation of epitopes should be employed in prophylactic and therapeutic vaccine settings.

P42
Responses of CD56+CD16- 'helper' NK cells to toll-like receptor ligands are preserved in HIV-1-infected individuals

A Coleman[1], B Gazzard[2], M Nelson[2] and M Goodier[1]
[1]Imperial College London, London, UK and [2]Chelsea and Westminster Hospital, London, UK

Background: Chronic stimulation of Toll-like receptors (TLR) occurs during HIV-1 infection, due to the presence of viral ssRNA or LPS derived from bacterial translocation. Both ssRNA and LPS are pathogen associated molecular patterns recognised by TLR. Chronic stimulation not only impacts on the myeloid cell population, but also on NK cells, which display a chronically activated phenotype.

Objective: To establish whether responsiveness of NK cells to TLR agonists, *in vitro,* is compromised in HAART experienced (plasma viral load < 50 copies/ml) or treatment naïve HIV-1 infected individuals.

Methods: PBMC from HIV-1 seropositive or seronegative individuals were cultured in the presence of single TLR agonists and the changes in activation and functional markers were determined by flow cytometric analysis.

Results: Early activation (CD69 expression) of NK cells was observed in response to all TLR agonists tested, but only LPS and ssRNA were able induce the expression of IL-2Rα in HIV-1 seronegative individuals (median, 12.9%, range 5–73.6%; and median, 57.0%, range 16.5–88.4% respectively) suggesting further progression and maturation of NK cells. Stimulation of NK cells with TLR agonists was accessory cell dependant. Refractory NK cell responsiveness in response to TLR agonists was observed in HIV-1 infected individuals receiving HAART. Such refractory responses were restricted to the $CD56^+CD16^+$ NK cell subset and responses of $CD56^+CD16^-$ NK cells were preserved. ssRNA induced a significantly lower frequency of CD25 and CD69 in the $CD56^+CD16^+$ subset in individuals who were HIV-1 seropositive and receiving treatment compared to seronegative individuals (p=0.008 & p=0.008, respectively). ssRNA was the only agonist capable of inducing IFN-gamma on NK cells (median, 12.1%, range, 3.0 -51.8%), a high frequency of which was produced within the $CD56^+CD16^-$ subset. Significantly reduced IFN-gamma responses were observed in HIV-1 seropositive, treatment naïve individuals, again exclusively in $CD56^+CD16^+$ subset (p=0.021) with only partial recovery during HAART (p=0.047).

Conclusion: NK cell responsiveness to TLR ligands is refractory during chronic HIV-1 infection and is confined to the $CD56^+CD16^+$ subset; responsiveness is maintained in the $CD56^+CD16^-$ subset. These data indicate that the $CD56^+CD16^-$ NK subset might be a useful target for immunotherapeutic strategies during HIV-1 infection.

P43
Impaired dendritic cell (DC) function in Kaposi's sarcoma-associated herpesvirus (KSHV) infections

S Mletzko[1], A Kyriakou[1], R Robey[1], M Bower[1], M Nelson[1], S Merchant[1], B Gazzard[1], C Boshoff[2] and F Gotch[1]
[1]Imperial College, Chelsea and Westminster Hospital, London, UK and [2]University College London, London, UK

Background: KSHV is the aetiological agent of Kaposi's sarcoma (KS), the most frequently arising malignancy in individuals with untreated HIV/AIDS. KSHV can establish life-long asymptomatic infection in immune-competent individuals. Whilst several lines of evidence indicate that KSHV-specific immune responses are important in controlling KS oncogenesis, KSHV has also evolved numerous strategies to evade the host immune system, thereby avoiding complete elimination and enabling persistent infection. There is accumulating evidence that KSHV subverts immune-surveillance by infecting DCs and impairing their function. The role of specific KSHV proteins in this scenario has yet to be established.

Methods: This study investigated whether latently expressed viral proteins have the ability to modulate DC functions. Monocyte-derived DCs (moDCs) were generated *in vitro* and transduced with lentiviral

vectors encoding for one of the three KSHV-latent genes (ORF71, ORF72, ORF73) or a cluster of KSHV microRNAs. Following maturation, moDCs were screened for changes in a panel of cell-surface markers (DC-SIGN, CD11c, HLA-DR, HLA-ABC, CD80, CD86 CD83, CD62L, CCR7) by flow cytometry and quantitative PCR. The functional response to allogenic T cells was tested in mixed lymphocyte reaction (MLR) assays.
Results: The results revealed that expression of ORF73 (which encodes the latency-associated nuclear antigen-1, LANA-1) in moDCs inhibits moDC maturation and reduces antigen presentation. We observed reduced cell-surface expression (as measured by both % of highly +ve cells and mean fluorescence intensity) of MHC class I molecules (% +ve cells**:** 75.25±1.944, p<0.001), accompanied by a reduction of the co-stimulatory molecule CD80 (76.61±2.812, p=0.0018) compared to the empty vector control cells (88.36±1.015 and 87.97±1.322 respectively). However, expression of ORF71, ORF72 or the KSHV microRNA cluster had no detectable impact on moDC maturation and function. Taken together, ORF73 but not ORF71 or ORF72 may contribute to impaired DC-mediated initiation of adaptive immunity against KSHV.
Conclusion: These findings contribute to our understanding of the mechanisms triggering DC modulation and immune evasion by KSHV. Further investigations may assist the design of targeted therapeutic strategies to restore DC function, thus controlling KSHV infection in both AIDS and transplant recipients.

P44
Algorithmic prediction for the identification of novel HLA-B*2705-restricted HIV-1 CD8 T-cell epitopes: assessment of epitope stability, affinity and specific T-cell profile

S Westrop[1], G D'Souza[1], M Bower[2], B Gazzard[2], M Nelson[2] and N Imami[1]
[1]Imperial College London, London, UK and [2]Chelsea and Westminster Hospital, London, UK

Background: The relationship between predicted MHC/peptide binding affinity and CD8 T-cell response to novel and described HIV-1 Gag and Nef epitopes was investigated by algorithmic screening, cytokine production, TCR specificity, and cell-free assays of binding affinity and stability. Epitope prediction algorithms were compared to immune function and phenotype in HIV-1^+ patients, contrasting responses to HIV-1 and CMV to indicate whether algorithmic screening prior to functional analysis sufficiently projects epitope quality, enabling reduction of the number of peptides tested.
Methods: Three algorithms were used to scan HIV-1 Gag and Nef for potential epitopes restricted to B*2705, an MHC class I allele associated with delayed HIV-1 disease progression. IFN-γ response to these peptides was assessed in 112 HIV-1^+ patients, compared to predicted epitope quality, and contrasted with data from CMV peptides. CCR7 and CD45RA were used to compare differentiation of Gag and CMV pentamer-specific T cells in HLA-defined HIV-1^+ patients and healthy controls. Nonparametric statistical analyses were applied.
Results: The superior immunogenicity of B*2705-restricted Gag epitope RI9 over DI9 (p=0.0365) was supported by algorithmic prediction. However the difference in IFN-γ production between B*2705- and B*3501-restricted epitopes was not statistically significant (p=0.2406), despite the relative instability of the HLA-B*3501-restricted epitopes and the association of HLA-B*3501 with rapid HIV-1 disease progression. Predicted affinity and IFN-γ release did not correlate for HIV-1 epitopes but did for CMV (r^2=0.5523, p=0.0255). The majority of HLA-B*3501 HA9 pentamer-specific CD8 T cells were effector memory, in contrast to the mainly TEMRA phenotype of TM10 CMV pentamer-specific CD8 T cells.
Conclusions: Algorithmic methods correlated with immune function for CMV, but not HIV-1 epitopes. However, algorithmic screening of HIV-1 epitopes exhibited some value in the context of HLA-B*2705. Thus our data substantiate merging algorithmic prediction with cell-free affinity and stability assays and functional assessment, to identify novel therapeutic and prophylactic epitope targets.

P45
Is Atripla a feasible switch option in patients with an existing M184V mutation?

N Rockwood, G Jagjit Singh and M Nelson
Chelsea and Westminster Hospital, London, UK

Background: In the COOL study, 82% of patients switching to Tenofovir (TFV) and Efavirenz (EFV) with an undetectable viral load (VL), maintained virological suppression. We present a retrospective case review of treatment experienced patients who wished for a one pill once a day regimen despite the presence of the M184V mutation.
Methods: The resistance database was searched to identify patients who switched to Atripla with a previous documented M184V mutation. All patients were counselled prior to switching, of the possibility of virological failure, had the results of the COOL study explained to them and the possibility of enhancement of TFV activity by the M184V mutation.
Results: 6 patients (P) were identified. None had resistance mutations against TFV or EFV.
The median follow up time undetectable on Atripla was 23.5 months (IQR 12–24months). Throughout follow up, 1 virological blip (VL > 50 copies) was noted in 1 patient. However, subsequent measured VL were undetectable. The median change in CD4 count at 6 months was +76cells/mm^3 (IQR 68–178) and at 1yr was +121cells/mm^3 (IQR 48–318). Virological suppression was achieved in 2 individuals with detectable virus prior to Atripla.

	P1	P2	P3	P4	P5	P6
No. of previous regimens	6	11	1	5	2	1
Regimen pre switch	TFV	D4T	AZT	TFV	AZT	AZT
	FTC	3TC	3TC	DDI	3TC	3TC
	DRV/r	SQV/r	EFV	EFV	ABC	LPV/r
VL pre switch	<40	<40	<40	<40	152	289
Resistance mutations	184V	184V	184V	184V 62V 90M 73S	184V	184V 89M
VL<50 on Atripla (months)	6	32	24	23	12	24

Stavudine D4T Lamivudine 3TC Abacavir ABC Didanosine DDI Zidovudine AZT Darunavir DRV Saquinavir SQV LPV Lopinavir r Ritonavir

Conclusion: The data suggests Atripla as a possible switch option for individuals with M184V who wish to receive a single tablet regimen.

Children and Pregnancy

P46
Assessing the risk of birth defects associated with atazanavir exposure in pregnancy

M-J Jimenez-Exposito[1], S Esker[2], J Albano[3], H Tilson[4], J Uy[2], D Arikan[5], K Krantz[5] and D Seekins[2]
[1]Bristol-Myers Squibb, Europe, France, [2]Bristol-Myers Squibb, Plainsboro, NJ, USA, [3]Kendle International Inc, Durham, NC, USA, [4]UNC Gillings School of Global Public Health, Chapel Hill, NC, USA and [5]Bristol-Myers Squibb, Hopewell, NJ, USA

Background: The Antiretroviral Pregnancy Registry (APR) is an international collaborative operation which utilizes a prospective exposure-registration design to study antiretroviral (ARV) drug exposures during pregnancy. This study assessed the potential for human teratogenic risk of atazanavir (ATV),a protease inhibitor used to treat HIV infection in combination with other ARV agents. ATV exposures are increasingly reported to the APR in this population, reinforcing the need to better understand the risk of birth defects.
Methods: The analysis population includes all prospectively reported pregnancy exposures with complete exposure and birth outcome data for HIV-infected women enrolled in the APR from Jan 1, 1989 through Jan 31,

2010;the ATV subset includes those enrolled since June 2003, when ATV received FDA approval. The prevalence of birth defects after pregnancy ARV exposure is compared both externally, with rates from a population-based surveillance system, and internally between first-trimester and combined second/third-trimester exposures. Summary of Results**:**
Through January 2010, 698 women with ATV-exposed pregnancies were enrolled. The mean age of these women was 29 yrs;12.9% were White, 63.9% Black and 16.7% Hispanic;87.9% were from the US. 82.5% had a baseline CD4>200 cells/mm3. Of the ATV-exposed pregnancies, 588 were eligible for analysis including 567 live births. Among 368 first trimester exposures (167 since 2008), 8 had birth defects (2.2%).The birth defect rate in infants with 2nd/3rd trimester exposures was 2.5%, and the rate in a non-HIV-infected population (CDC) was 2.72%(95% CI=2.68–2.76).The risk of defects of first trimester exposures relative to second/third trimester exposures was 0.87 (95% CI=0.29–2.61).No pattern of birth defects suggestive of a common aetiology was observed.

	Exposure to any ARV (Jan 1989-Jan 2010)	Exposure to ATV (Jun 2003–Jan 2010)
Earliest exposure to ARVs		
First Trimester		
#of defects/live births	127/4563	8/368
Prevalence(95% CI)	2.8%(2.3%–3.3%)	2.2%(0.9%–4.2%)
Second/Third Trimester		
#of defects/live births	158/6184	5/199
Prevalence(95% CI)	2.6%(2.2%–3.0%)	2.5%(0.8%–5.8%)
Any Trimester		
#of defects/live births	285/10747	13/567
Prevalence(95% CI)	2.7%(2.3%–3.0%)	2.3%(1.2%–3.9%)

Conclusions: Prevalence of birth defects among infants prenatally exposed to ATV is not significantly different from internal and external comparison groups. These findings may be useful in counselling patients who are exposed to ATV during pregnancy.

P47
Management of repeat pregnancies among HIV-infected women in the United Kingdom and Ireland

C French, C Thorne, M Cortina-Borja and P Tookey
UCL Institute of Child Health, London, UK

Background: Current UK guidelines do not offer specific recommendations for the management of diagnosed HIV-infected women experiencing more than one pregnancy. Such women may have complex obstetric and therapeutic histories. It is unclear how this group of women are being managed, or what the most appropriate obstetric and therapeutic strategies are. Here we describe the management of repeat pregnancies among HIV-infected women in the UK and Ireland.
Methods: We used data from the National Study of HIV in Pregnancy and Childhood (NSHPC) for 1990–2009 on live births to diagnosed HIV-infected women. Those with at least two singleton live births reported, whose second infant was delivered during 2005–2009, were included (irrespective of when their first delivery occurred) to explore patterns in mode of delivery and antiretroviral therapy.
Results: There were 1329 live births during 2005–2009 to women who had already had one live birth reported to the NSHPC. Of those with known mode of delivery, 47.2% (621/1315) had an elective caesarean section (EL-CS), 22.1% (n=290) an emergency caesarean (EM-CS), and 30.7% (n=404) a vaginal delivery. Of those with EL-CS, 95.3% (592/621) had a CS (EL or EM) for their first delivery. Among women delivering their second infant vaginally, 36.7% (147/401) had a previous CS, this proportion remained stable between 2005 and 2009 (χ^2 test for trend**:** p=0.95).
Most women (98.9% (1296/1311)) received treatment during their second pregnancy, with 93.7% on highly active antiretroviral therapy (HAART), 0.5% on dual and 4.7% on monotherapy; 45.0% (539/1199) were known to have conceived their second pregnancy whilst on treatment. Of the remaining treated women with known treatment start date, 75.4% (470/623) started before their third trimester. An undetectable viral load (<50 copies/ml) close to delivery was achieved in 75.7% (526/695) of second pregnancies, although information was missing for almost half of women.
Conclusion: Over a third of women delivering vaginally had a previous CS. The risks and benefits of vaginal delivery following CS for HIV-infected women require exploration. Most women received adequate treatment during their second pregnancy but reasons for the later (third trimester) initiation of treatment in around one quarter of second pregnancies may require further investigation.

P48
HIV-2 infection in pregnant women living in the UK/Ireland: data from national surveillance 1997–2010

H Haile-Selassie, J Masters and P Tookey
UCL Institute of Child Health, London, UK

Background: HIV type 2 infection (HIV-2) is most prevalent in West Africa and countries with substantial migration from this region such as France and Portugal. In the UK, HIV-2 infections represent ~0.1% of all new diagnoses. To date little has been reported on the characteristics of HIV-2 positive pregnant women in the UK/Ireland or the management and outcomes of their pregnancies.
Methods: Surveillance of obstetric and paediatric HIV in the UK and Ireland is conducted through the National Study of HIV in Pregnancy and Childhood. Pregnancies in women with HIV-2 mono infection reported between 1997 and 2010 were included in this analysis.
Results: 39 pregnancies in 28 women with HIV-2 mono infection were reported (first report in 1997) representing 0.3% (28/9857) of all reported HIV positive pregnant women. 71% (20/28) of the women were reported since 2003, similar to the proportion of women with HIV-1 reported during this period (78%, 7682/9829, p=0.37). Most women (20/28) were born in West Africa, the majority from Ghana (7/20), Ivory Coast (5/20) and Guinea Bissau (5/20). Over half of the women (17/28) were diagnosed antenatally. None had clinical symptoms reported in pregnancy and only 2 women had detectable viral load (≥50 viral copies/mL) reported close to delivery (data available for 29/39 pregnancies). CD4 count near delivery was available for 90% (35/39) of pregnancies**:** only 14% (5/35) were <350 cells/mm^3 including 1 <200 cells/mm^3. One miscarriage and 38 live births were reported. Twelve infants (32%) were delivered by elective caesarean section (CS) (antenatal treatment: 7 HAART, 3 zidovudine (ZDV) only, 2 untreated), 11 (29%) by emergency CS (antenatal treatment: 3 HAART, 2 ZDV only, 6 untreated), and 15 (39%) vaginally (antenatal treatment: 5 HAART, 2 ZDV only, 8 untreated). In 39% (15/38) of pregnancies the women received intrapartum treatment (IV ZDV) and 66% (25/38) of infants received ART post-exposure prophylaxis (ZDV monotherapy). Five infants were born at <37 weeks gestation (4 at 35–36 weeks, 1 at 32 weeks). No infected infants have been reported in this group (infection status reported for 32/38 infants).
Conclusion: The number of pregnant women with HIV-2 mono infection living in the UK/Ireland is relatively small, and there is no evidence that the proportion is increasing. To date there have been no reports of mother-to-child transmission of HIV-2 infection.

P49
First trimester markers of aneuploidy in women positive for human immunodeficiency virus

I Samuel[1], M Savvidou[2], M Poulton[1], A Syngelaki[2] and K Nicolaides[1]
[1]King's College Hospital NHS Foundation Trust, London, UK and [2]Chelsea and Westminster Hospital, London, UK

Background: Effective screening for chromosomal abnormalities in the first trimester of pregnancy is provided by assessment of a

combination of maternal age, measurement of fetal nuchal translucency (NT) and maternal serum free beta-human chorionic gonadotropin (free β-hCG) and pregnancy-associated plasma protein-A (PAPP-A). This method of screening is associated with 90% detection rate of trisomy 21.Free β-hCG and PAPP-A are known to be affected by maternal race, weight, smoking status, gestational age, parity and method of conception. Little is known about the effect of maternal HIV status, on their levels.

The objective was to investigate whether the sonographic and maternal serum biochemical markers used in first-trimester screening for chromosomal abnormalities are altered in pregnancies affected by maternal HIV infection.

Method: In the setting of routine antenatal visit from 95 HIV positive and 450 HIV negative pregnant women, the design was a nested case-control study.

The markers were compared between HIV positive (treated and untreated) and HIV negative women.

In the cases and controls the measured serum free β-hCG and PAPP-A were corrected for fetal CRL, maternal weight, smoking, parity, racial origin and method of conception. Comparisons between groups were performed using t-test, Mann-Whitney or chi-square (χ^2) test accordingly.

Results: There were no statistically significant differences between the HIV+ and HIV- women in the median maternal levels of free β-hCG, PAPP-A and fetal NT. However, within the HIV+ group those receiving antiretroviral treatment (n=41) had a significantly lower median multiple of the median (MoM) free β-hCG (0.74, IQR 0.45–1.32 MoM) than HIV+ women on no treatment (1.03, IQR 0.76–1.85 MoM; p=0.007) and HIV- women (1.0, IQR 0.68–1.47 MoM; p=0.01). There was no correlation between the level of free β-hCG or PAPP-A and maternal viral load or CD4+ count.

Conclusions: Maternal levels of free β-hCG in treated-HIV pregnant women are lower compared to non-treated HIV and HIV negative women, whereas the levels of PAPP-A and fetal NT remain unaltered. From a clinical perspective, the differences in free β-hCG levels are unlikely to be of any clinical significance but may have implications in the estimation of individual risks of chromosomal abnormalities. This is particularly important in view of the theoretical increased risk of HIV vertical transmission that is associated with early invasive diagnostic techniques.

P50
Don't forget the children – audit and service innovation

A Baugh, I Ahmed and M Pammi
Nottingham University Hospital, Nottingham, UK

Background: The consensus document "Don't forget the children" published in 2009 highlighted the issue of untested children at risk of HIV. In our hospital we had been referring children for testing on an individual basis but no formal referral pathways or policy existed. To streamline and improve the testing rates, a multidisciplinary steering group consisting of HIV physicians, paediatricians, health advisors and a HIV specialist nurse was formed. A "look back" exercise was performed to audit the existing testing rates in children and to determine the number of vulnerable untested children living in the UK. We report preliminary results from this project and our referral pathway.

Methods: Clinicians collected information prospectively during routine consultation on all children of HIV positive parents using a standardised proforma. The Children and Young Person's HIV Testing Pathway group devised the referral pathway. Parents who refused to test their children were referred to the health advisor and HIV specialist nurse for additional support and information. These parents were then followed up until the child was tested for HIV.

Results: From a cohort of 600 patients, data from 95 patients is available. 61 (64.2%) were black African, 27 (28.4%) were white, 4 (4.2%) were other and 3 (3.1%) unknown. 52 (54.7%) were women. Of the 43 (45.3%) male patients, 19 (20%) were men who have sex with men (MSM). 69 patients (72.6%) report having 149 children. We have data on 128 children. Overall 61 children (47.6%) are reported as being tested for HIV. 79 children (61.7%) are currently resident in the UK, 43 (33.6%) are abroad and there is no data on 6 children. Among the 79 children resident in the UK, 64 (81%) are less than 18years old and among them 51 (64.6%) were tested. In this group there are 3 HIV positive children. 13 (16.5%) children in the UK <18yrs old have not been tested for HIV.

Conclusion: So far we have identified 13 untested children living in this country who need HIV testing and have tested 51 children. We have set up the Children and Young person's HIV Testing pathway Group and developed robust referral pathways to ensure these children get tested and their families are supported through this difficult process.

P51
Research shows a majority of HIV-affected children in the UK live in poverty

B James[1], C Velasquez[1] and P Bravo[2]
[1]Children with AIDS Charity, London, UK and [2]Cardiff University, Cardiff, UK

Background: Children With AIDS Charity (CWAC) gives small grants to HIV affected families living under a certain financial threshold. The charity conducted a research study in order to obtain a profile of the situation of HIV affected children living today in the UK, with a specific focus on their economic circumstances. No comprehensive study has been done for 15 years and no reliable figures on HIV affected children were available.

Methods: CWAC collected data nationally from 75 of their referring agencies representing 3,200 HIV affected households and approximately 4,000 HIV affected children. A questionnaire survey mapped all aspects of the circumstances of families and children focusing on their material situations, such as income, accommodation, or the children's unfulfilled needs. CWAC was also able to draw from its annual client survey which informs on the purpose of the grants delivered.

Results: The research shows 92% of heads of households are unemployed, 70% of households live on benefits, 20% of these families have no income. This is due to more than 50% have insecure immigration status. Immigration status is the first reason these families encounter in accessing basic services,14% of them have no access to healthcare and 44% have no access to childcare services. As a result, HIV affected families predominantly face difficult living conditions, with 9% of them being homeless and 22% living in an accommodation presenting hygiene issues.

Conclusion: Poverty has many trickledown effects on children. It affects in the short and long terms their physical and mental health conditions as well as their educational achievements. This research shows that funding available for families should be scaled up, as services on offer. Data on these children should be systematically collected to improve service delivery as well as public awareness and advocacy.

P52
Trends in mode of delivery in HIV-infected women and rate of transmission

J Russell, K Perez and J Burch
Queen Elizabeth Hospital, Woolwich, London, UK

Background: We reviewed obstetric outcome including mode of delivery for over 200 consecutive births to HIV positive mothers at our unit between 2003 and 2009.

Method: HIV and obstetric databases at our hospital were reviewed to compare mode of delivery in each year 2003- 2009 (2009 data incomplete but will be presented in full)

Results: 4 babies have since tested HIV positive; 1 each from 2004 and 2006 and 2 in 2005, 2 were delivered by elective LSCS, 1 because of

previous LSCS the other due to Hepatitis C co-infection. 1 was delivered by emergency LSCS after pre-labour ROM. 1 delivered vaginally having declined LSCS.

Year	Total	Elective LSCS	Vaginal	Emergency LSCS	SB*
2003	23	12 (52%)	3 (13%)	7 (31%)	1
2004	20	6 (30%)	13 (65%)	1 (5%)	
2005	32	8 (25%)	16 (50%)	7 (22%)	1
2006	45	6 (13%)	30 (67%)	9 (20%)	
2007	38	3 (8%)	25 (66%)	10 (26%)	
2008	21	2 (9%)	12 (58%)	7 (33%)	
2009	28	6 (21%)	15 (54%)	7 (25%)	
	207	43	113	49	2

*Both stillbirths were intrauterine deaths pre-delivery.

Discussion: The rate of mother to child transmission in this cohort is 1.9%. We do not believe that the chosen mode of delivery altered the risk of transmission in 3 cases, in the fourth LSCS may have reduced this risk she actively declined this. We actively encourage normal delivery in women with virological suppression by the 3rd trimester. Emergency (usually in labour) LSCS remains high but the excess is largely accounted for by earlier threshold for intervention. We find the prospect of "normal birth" is viewed as a big incentive to good anti-viral adherence.

P53
A decade of prenatal care for HIV-positive women attending an integrated sexual health clinic

S Duncan, F Hawkins and N Desmond
Garden Clinic, Slough, Berkshire, UK

Background: In the post-HAART era there are growing numbers of HIV positive women whose general health allows them to consider motherhood, which has increased awareness of the benefits of a holistic approach to HIV care in pregnancy. Preconception counselling provides a crucial opportunity to discuss disclosure and minimise the infection of HIV negative partners, This study aims to describe our experience of providing preconception and antenatal care for HIV positive women in a community based integrated sexual health clinic.
Methods: We performed a retrospective case note review of all women who received HIV care during pregnancy to term at our clinic from October 2000 to September 2010.
Results: 113 pregnancies amongst 90 women were eligible for inclusion. The mean age at the time of pregnancy was 30 years (95% CI 29 – 31) and 90% of women originated from sub-Saharan Africa. In 46% of cases women were aware of their HIV status prior to their pregnancy, and of them 34% attended for specialist advice on safe conception. Antenatal sexual health screen occurred in 91% of pregnancies. Nineteen percent of women conceived on antiretroviral therapy, and treatment was started for the benefit of the mother as well as for the prevention of mother to child transmission in 28% of cases, at a mean of 21.6 weeks (95% CI 18 – 24). In 71% of pregnancies the woman had a regular male partner, of whom 39% were HIV negative, 44% were HIV positive and 17% were of unknown HIV status. Non-disclosure of the mother's status to her regular male partner during the pregnancy occurred in 10% of cases. Vertical transmission occurred in less than 1% of cases.
Conclusions: In this study only 34% of women who were aware of their HIV status prior to their pregnancy attended for preconception advice, despite the majority having a planned pregnancy. This highlights the need to increase awareness of the issues associated with pregnancy amongst all women living with HIV, and the responsibility of their HIV care providers to reinforce the importance of prenatal care in optimising the health of HIV positive women and their partners.

P54
A decade of postnatal care for HIV-positive women attending a community-based integrated sexual health clinic

S Duncan, F Hawkins and N Desmond
Garden Clinic, Slough, Berkshire, UK

Background: Little is known about key issues facing HIV positive women in the immediate postnatal period, which include access to appropriate contraception, antiretroviral review and infant feeding. This study aims to describe our experience of providing postnatal care to HIV positive women in a community based integrated sexual health clinic.
Methods: We performed a retrospective case note review of all women who received HIV care during pregnancy to term at our clinic from October 2000 to September 2010.
Results: 113 pregnancies amongst 90 women were eligible for inclusion; The mean age at the time of pregnancy was 30 years (95% CI 29 – 31); 90% of women originated from sub-Saharan Africa, HIV was diagnosed at antenatal screening in 53% of pregnancies; and conception occurred after initiation of antiretroviral therapy in 18% of pregnancies. Attendance for clinical assessment within 1 month of delivery occurred in 78% of pregnancies. Short term antiretroviral therapy was not discontinued in 14% of pregnancies. In those who stopped treatment, evidence of antiretroviral resistance at 2–3 weeks post delivery was found in 0% of cases. The self-reported avoidance of breastfeeding was documented in all pregnancies. Postnatal contraceptive advice was documented after 77% of pregnancies; and of these women, the IUS/IUD, Depo Provera, condoms, and other appropriate methods were used by 23%, 23% 14% and 13% respectively. Vertical transmission occurred in less than 1% of cases and 20% of women went on to have a second pregnancy under our care.
Conclusions: The postnatal period is an important time for women living with HIV. Our study highlights the vulnerability of the 22% of pregnant women who did not attend for a postnatal clinical review, or to discuss postnatal contraception. The uptake of appropriate contraception was high, emphasising the need to broaden the focus of care for HIV positive women in the post-HAART era, and the benefits of providing HIV care in an integrated sexual health care clinic.

P55
Impaired glucose metabolism in HIV-1-seropositive pregnant women: a prospective analysis

C Rock[1], P Kyithar[1], V Jackson[2], E de Barra[1], M Brennan[2], M Eogan[2], J Edwards[2], A Fleming[2], M Byrne[1] and J Lambert[1]
[1]Mater Misericordiae University Hospital, Dublin, Ireland and [2]The Rotunda Hospital, Dublin, Ireland

Background: Highly active antiretroviral therapies (HAART), particularly protease inhibitors (PI), may be associated with D.M. and insulin resistance. There is little data regarding incidence of GDM in HIV seropositive women. This study aimed to determine the incidence and factors associated with GDM/GIGT in HIV-1 seropositive women.
Methods: From 01/2009 to 01/2011 all HIV-1 seropositive women underwent 100g OGTT at 24–28 weeks gestation with blood glucose at 0, 1, 2 and 3 hr. Carpenter/Coustan thresholds were used for diagnosis of GDM. Baseline demographics, use of HAART and obstetric outcomes were noted.
Results: 3/63 (4.8%) gestational diabetes mellitus (GDM) and 5/63 (7.9%) gestational impaired glucose tolerance (GIGT). There was no difference in age (29.9 vs 29.4 p=0.810), BMI (30.11 vs 29.49 p=0.837), HAART pre pregnancy (4/8 vs 26/52 p=0.999) between GDM/GIGT and normal glucose tolerance. 2/3 of those with GDM had other risk factors that would have precipitated an OGTT. However 1/3 and 5/5 of GIGT had no other identifiable risk factor. 2 patients with GDM were treated with insulin from 28 week gestation and required emergency caesarian section. Both had normal OGTT 6 weeks post partum. Average baby weight for GDM/GIGT 3.5kg vs normal OGTT 3.3kg (P=0.352).

Conclusion: This study does not demonstrate a higher incidence of GDM in the HIV-1 seropositive pregnant women. However, none of the HIV-1 seropositive women with GIGT had another identifiable risk factor for GDM/GIGT. For this cohort HIV/HAART may be a potential risk factor for GIGT. Further studies assessing the association between HIV/HAART and GDM/GIGT are needed.

P56
Newborn outcomes in a cohort of premature babies born to HIV-infected mothers: a single-centre experience

MI Sarwar[1], N Edi-Osagie[1] and M Kingston[2]
[1]St Mary's Hospital, Manchester, UK and [2]Manchester Centre for Sexual Health, The Hathersage Centre, Manchester, UK

Background: The immediate management of premature babies born to HIV positive mothers is still uncertain. While these babies are at an increased risk of vertical transmission compared to term infants, the choice of antiretroviral prophylaxis is limited. This is further complicated by the absence of adequate antiretroviral dosing and safety data. Oral antiretrovirals themselves have been associated with an increased risk of developing necrotising enterocolitis (NEC). In this respect, Zidovudine remains one of the very few antiretroviral that is available intravenously and with dosing and safety data in the preterm infants.
The aim of this study is to review the experience of a major tertiary neonatal unit in the management of babies born prematurely to mothers who are HIV positive.
Methods: Retrospective single centre study looking at all babies born before 37 completed weeks to HIV positive mothers from 2008 to 2010. Infant management, patient characteristics, maternal antenatal therapy and babies' subsequent progress were analysed and reviewed.
Results: A total of 10 premature babies were born to HIV positive mothers from 2008 to 2010. Gestation ranged from 26 to 36 weeks gestation. In particular, 5 babies were <34 weeks gestation with birth weights ranging from 880g to 1880g (mean 1340g). Maternal viral load prior to delivery was low and these babies were managed with a combination of intravenous Zidovudine and oral Nevirapine and Lamivudine. In our cohort, one baby treated with this antiretroviral combination developed fulminant NEC and subsequently died.
Conclusions: Although the causal effect of oral antiretrovirals in the development of NEC is still not clear, our experience highlight the possible problem of using oral antiretrovirals in preterm babies. We suggest withholding the use of oral antiretrovirals in preterm babies most at risk of NEC. To further minimise the risk we suggest using donor milk when establishing feeds in this cohort. Efforts at infant prophylaxis should also be concentrated on loading the infant via the mother before delivery. In this example, antiretrovirals that easily crosses the placenta e.g. Nevarapine given to HIV positive mothers at least 2 hours prior to delivery can be helpful.

P57
Safe conception: an audit of advice and methods used by HIV-positive women

J Fowler, M Douglas, GP Taylor and NE Mackie
Imperial College Healthcare NHS Trust, London, UK

Introduction: HAART has greatly improved morbidity, mortality and quality of life for patients infected with HIV. Parenting has therefore become a realistic option for such individuals. BHIVA guidelines 2008 recommend that HIV services should provide clear pathways for advice and support around conception, pregnancy and fertility issues. Our centre offers a dedicated women's health clinic to provide pre-conception advice and contraception. An audit was performed to see whether HIV positive women were receiving pre-conception advice particularly in regard to safe conception.
Methods: Retrospective case note review of all new pregnancies referred to antenatal clinic (ANC) during 2009 and 2010.
Results: A total of 67 pregnancies in 64 women were identified. 56/64 women were known to be HIV-infected prior to conception, with 8 women diagnosed during antenatal screening. Of 59 pregnancies in 56 known positive women, 51 case notes were obtained. 77% of women were Black African, median age was 38. Partner status was documented in 47/51 cases.18/51 (35%) had a positive partner. 17/51(33%) had a negative partner and 12/51 (24%) had a partner of unknown HIV status. 25/51 (49%) pregnancies were planned**:** 14/51 (27%) were unplanned: in 12 cases this was unclear. In those with planned pregnancies, the majority (19/25, 76%) had received pre-conception advice. Of those women whose pregnancies were unplanned only 1/14 (7%) had received such advice. In concordant relationships, 11/18 (61%) conceived by regular unprotected intercourse (UPI). In discordant couples most (59%) conceive by self insemination. Where partner status is unknown, condom failure is the most common reported conception method (42%). In 16/51 (31%) case notes, method of conception was not documented.
Conclusion: The majority of women attending ANC are known to be HIV positive prior to conception which is a continued shift seen in the UK since 2005. The majority of women with HIV negative partners received advice and used self insemination to conceive. Those who do not know their partner's status are most likely to report condom failure. A significant proportion of pregnancies were unplanned suggesting we are not meeting these women's' contraceptive needs. In many cases partner status and method of conception is not discussed and this represents a missed opportunity to identify at-risk partners.

P58
Testing children of newly diagnosed HIV-positive parents

E Stergiopolou[1], L Owen[2], R Turner[2], R Fish[1] and E Jungmann[1]
[1]Mortimer Market Centre, Camden Provider Services, London, UK and [2]University College London, London, UK

Background: A consensus statement jointly produced by BHIVA, CHIVA and BASHH in December 2008 states that 'The HIV status of all the children of HIV-positive adults in the UK should be known as a matter of clinic urgency'. We have previously presented data from our centre from a retrospective audit of patients already within our service. We now present data relating to the identification, and testing where indicated, of children of parents with newly diagnosed HIV-1 infection.
Methods: Case notes of all patients newly diagnosed with HIV at our centre from 03/2009 to 10/2010 were retrospectively reviewed using a structured proforma. Data was collected on likely time and mode of HIV acquisition as well as documentation of whether the patient had any children. Where the latter or the HIV status of the children was not documented in the notes, the responsible clinician was contacted prompting a discussion with the patient at their next clinic appointment. Where children were identified as being at risk of HIV infection a referral pathway and policy exists within the clinic to facilitate testing.
Results: Notes of 200 patients (151 male, 75%) newly diagnosed with HIV during the audit period have so far been reviewed. There was no documentation whether patients had children in 111 (56%) notes**:** 1(0.9%) woman, 2 (1.9%) bisexual men, 9 (8.3%) heterosexual men, 96 (89%) men who have sex with men (MSM) and 3 (2 female, 1 male) patients who no longer attend our service. Of the remaining 89 patients with documentation 50 (25%) had no children and 4 women were pregnant at the time of the audit (1 of whom already has a child). 36 (18%) patients had a total of 66 children: 24 (67%) women, 10 (15%) heterosexual men and 2 (3%) MSM. Of the 66 children 20 (30%) were felt not to be at risk of HIV infection, 15 (23%) had tested HIV antibody negative, 5 (8%) were currently undergoing post-natal testing and 5 (8%) were planning to test. 4 of the children for whom testing is planned currently reside in Africa, the 5th is a 4 year old child. The HIV status of 21 children (32%) is still unknown. Further data including ages of the children and place of testing will be presented at the conference.

Conclusions: Identifying and testing children of patients newly diagnosed with HIV remains an important and challenging issue. While most parents were women and heterosexual men, 2 MSM in this group had children highlighting the need to discuss testing of children with all patients.

P59
How do patterns of antiretroviral adherence in childhood impact on adherence in adult life?

A Kent[1], C Foster[2] and S Fidler[2]
[1]The Ipswich Hospital NHS Trust, Ipswich, UK and [2]Imperial College Healthcare NHS Trust, London, UK

Background: Optimal treatment of HIV requires >90% adherence to antiretroviral medication (ART). Poorer adherence to medication in adolescence is well documented for many chronic diseases, with early data emerging for HIV. We investigated the relationship between ART adherence in childhood and subsequent adherence in early adult life.
Method: Case note review of perinatally HIV-infected young people (PaHIV-YP) aged 18- 25 years attending an adult clinic before July 2010 who received ART in paediatric and adult care. Comparison was made between HIV plasma viral load (pVL), CD4 count, duration on ART and reported adherence between paediatric (ages 0–18) and adult services (ages 18–25). Optimal ART response was defined as time spent on ART with CD4 > 200 cells/cc^3 and pVL < 50 c/ml. Self/carer reported missed doses of >10% was defined as poor adherence, with good adherence defined as >90% ART doses taken.
Results: 34 PaHIV-YP,19(56%) female, 25(74%) black African, median age at last follow up 19.8 yrs (IQR 18.3–20.8). In paediatrics median age of starting ART was 9.2 yrs (IQR 7.0–11.5) with a median duration on ART of 8 yrs (IQR 2.9–8.6) prior to entering adult services. Median age at transition was 17.2 yrs. Post transition; the median time on ART was 2 yrs (IQR 0.5–3.5).
In paediatric care 15/34 (45%) were defined as good adherers, all maintained CD4 counts >200 cells/cc^3 following transition and only 1/15 (6%) had virological rebound, with no deaths or new AIDS defining diagnoses in this group.
Of the poor adherers in paediatrics (19/34; 55%), only 17% of time on ART was spent with 'optimal ART response', compared to 71% in good adherers. Following transition, in poor adherers, the proportion of time on ART with 'optimal ART response' was 27%. Of this group 2/19 improved adherence in adult care achieving a CD4 > 200 cells/cc^3 and pVL < 50 for more than 50% of time spent on ART. Clinical outcomes for poor paediatric adherers in adult care; 4 patients developed new AIDS defining illnesses, 2 of whom died and 9/17 (53%) survivors had a CD4 count <200 cells/cc^3 at last follow up.
Conclusions: In this initial cohort of young adults with PaHIV patterns of adherence set in childhood, both good and bad, were difficult to change in early adult life, and influenced clinical outcomes. Supporting adherence within families at ART initiation in childhood is essential to promote long term adherence and survival in adult life.

P60
Achieving a high rate of HIV testing and use of effective antiretroviral therapy (ART) in pregnant women in rural Tanzania

S Edmonds[1], R Hill[2], H Kayuzi[1] and J Meadway[3]
[1]Teule Hospital, Muheza, Tanga Region, Tanzania, [2]Brighton and Sussex Medical School, Brighton, UK and [3]MforM Africa, London, UK

Background: A District Designated Hospital (DDH) in north-eastern Tanzania serving a rural population of approximately 277,000 observed an HIV prevalence in pregnant women of around 8% between 2002 and 2008. The DDH trained staff in rural health centres and provided mobile outreach clinics to increase the availability of HIV testing for pregnant women throughout the district. From 2007 Tanzanian national guidelines recommended triple ART for pregnant women only if they had a CD4 count below 200 or stage 3 HIV; for others prevention of mother to child transmission (PMTCT) with zidovudine in pregnancy and single dose nevirapine with a zidovudine/lamivudine tail. The DDH HIV clinic for pregnant women followed guidelines for developing countries issued by the World Health Organisation to give triple ART to HIV positive pregnant women. We reviewed uptake of HIV testing and ART in pregnant women admitted for delivery.
Methods: Records were reviewed for 211 pregnant women admitted to the District Designated Hospital for obstetric care in the third trimester of pregnancy between 7th September and 4th October 2009. Data collected included whether HIV status was known prior to admission, and if so whether positive or negative; if positive, whether on ART; and if status not known on admission, whether the woman had then been offered an HIV test, and if offered, whether a test had been carried out. Note was also made of the hospital or clinic at which the woman had her early pregnancy care.
Results: 192 women (91%) were aware of their HIV status, 16 (8%) were HIV positive, 8 of whom were on ART. The commonest ART regime was zidovudine, lamivudine and nevirapine; other women were on other triple ART regimes and none on zidovudine alone. Of the 19 (9%) of women who were not aware of their status, 8 were offered a test on admission, all of whom were tested and were HIV negative. In women unaware of their status, 7 lacked an antenatal record card and/or a record of their previous clinic; it is likely that they had no antenatal care of any kind.
Conclusion: A high rate of HIV testing is achievable in a rural area in Africa, and could be further increased by improving access to antenatal care for women in very remote communities. Improved access to triple ART by pregnant women may be achieved through HIV clinics specifically for pregnant women.

P61
Successful establishment of an HIV clinic for adolescents within existing resources in a community-based organization in eastern Uganda

E Fomum[1] and J Meadway[2]
[1]The AIDS Support Organisation, Mbale, Uganda and [2]MforM Africa, London, UK

Background: A community-based Non-Governmental Organisation (NGO) in Uganda provides HIV treatment and care to over 200,000 people in 11 regional centres. Provision for children and adolescents lagged behind that for adults, but in eastern Uganda an area for a children's clinic was developed in a refurbished building adjacent to the main NGO building. The NGO provides counsellors, community projects for HIV treatment and prevention including music, dance, drama, AIDS Challenge Youth Clubs, and supports HIV-positive students in primary and secondary education. By contrast the government Regional Referral Hospital (RRH) which is the other major HIV treatment provider in the area has no budget for counsellors, social support or any community services. The eastern regional NGO centre enrolled 1187 adolescents (aged 11 to 18 years) between 1993 and 2010, and the possibility was assessed for having a separate adolescent treatment clinic within existing resources.
Method: Children and adolescents had been attending sessions in the children's clinic area with their parents. Two sessions each week were reserved for adolescents, and the transition was made by booking patients' next appointment on the day appropriate for their age group. Adolescents saw the clinical staff who had cared for them in their previous clinics, and continued to have access to all services provided to NGO patients including counselling, health education, social support and access to television or use of a computer. Clinic attendance was assessed.
Results: The number of adolescents who attended at least once in six months was 551, 354 females and 197 males. Of these, 210 were on antiretroviral therapy (ART). After the clinic was established, adolescents preferred the new system and attended more regularly in order to be with their peers. They communicated more freely with their peers and with

service providers. An early impression is that adherence to ART is also improving. Staff found the new organisation improved their ability to provide a good service.

Conclusion: An HIV clinic for adolescents was established within resources of a community-based NGO using existing counselling and support services. Staff and patients approved of the separate clinic, and attendance improved. Despite a resource-poor setting an NGO's provision of psychosocial care facilitates development of an adolescent clinic appropriate for its service users.

P62
PI monotherapy: helpful in paediatric HIV management?

G Barrow, A Tan and E Wilkins
North Manchester General Hospital, Manchester, UK

Background: Current PENTA guidelines recommend lifelong cART for children. Switching to boosted PI monotherapy in adults with suppressed VL has been shown in randomised open trials to be a viable strategic option with switch/intensification in the occurrence of viral rebound. Outside of studies, boosted PI monotherapy is usually reserved for particular circumstances such as renal dysfunction, simplification, toxicity, or where adherence and drug-selected resistance is a concern. This report describes our experience with children where additional disruptive factors in family, school and home as well as peer pressure and pubertal development are evident.

Methods: Patient, pharmacy and laboratory results were reviewed and a database constructed for analysis. Adherence was measured in consultations with patients and their families.

Results: Four patients were identified, three patients on PI monotherapy, one on patient on PI double therapy. All patients were male, median age: 14 years (range 11–16 years). Average age at diagnosis of HIV was 6 years (range 2–10 years). All were commenced on combination ARV therapy at diagnosis and had been treated for over 6 years (range 6–10 years). At PI initiation: average CD4 count 677 (range 503–753), 3 patients had undetectable viral loads, one patient whose compliance was poor due to family circumstance had a viral load was 9, 217.

Reasons for changing to PI monotherapy included reducing the number of medications (100%), lipodystrophy(50%),increased protein: creatinine ratio(25%)and drug resistance. The patient prescribed double PI therapy had genotypic resistance to all NRTIs including intermediate resistance to Tenofovir and all NNRTIs.

PI prescribed: Loponavir and ritonavir (25%) darunavir with ritonovir (50%) Loponavir, ritonavir and atazanavir (25%)

The average CD4 count increase on PI monotherapy was 82 (range 21–150). All patients had undetectable viral loads after PI monotherapy including the patient with an initial viral load of 9, 217.

Conclusion: Paediatric HIV treatment is a challenge in which boosted PI monotherapy may play a helpful role. Patients showed increased CD4 counts and decreased viral load.

PI monotherapy allows adherence issues to be worked through without further resistance, simplifies therapy where there is NNRTI/NRTI resistance. All medication changes have to be made with the child and parents on board until they are able to take control of their own health and medications.

P63
Virtual support for paediatric treatment decision-making

A Bamford[1], C Foster[2], S Kaye[1], S Walters[2] and NE Mackie[2]
[1]Imperial College London, London, UK and [2]Imperial College Healthcare NHS Trust, London, UK

Background: The use of virtual clinics facilitating multidisciplinary input to support complex treatment decision making is well established in adult practice. Childhood prescribing is further complicated by limited liquid/paediatric tablet formulations, reduced pharmacokinetic data and delayed access to newer drug classes. The small population of children living with HIV limits treatment experience of individual clinicians and whilst existing paediatric networks encourage shared decision making we piloted the establishment of a paediatric virtual clinic (PVC) within our network. The PVC meets monthly and comprises 4 infectious disease paediatricians, 2 adult physicians with expertise in resistance/family care, a virologist, a paediatric HIV pharmacist and a clinical nurse specialist.

Methods: Database audit of PVC referrals from October 2009 to January 2011.

Results: 56 children were discussed in 14 PVC meetings, median age 12 years (IQR 10–15). 5 were discussed twice. Referral source: 34 our centre, 22 other UK centre, 1 Poland. Referral reason for 61 cases: virological failure (20), treatment simplification (13), dyslipidemia/lipodystrophy (11), CD4 driven restart after treatment interruption (6), viral blipping (2), HIV encephalopathy (2), thrombocytopenia (2), tenofovir nephrotoxicity (1), failed immune reconstitution (1), symptomatic (delayed puberty) with good CD4 count off HAART (1), parotitis (1), treatment naïve with adherence concerns (1). 41/53 (77%) patients who had ever received antiretroviral therapy (ART) had HIV-1 associated resistance: single class (10), dual class (27), triple class (3), four class (1). Of 35 children with NNRTI resistance, 19 (54%) had mutations impacting on the use of etravirine. Of 31 children with NRTI resistance 21 (68%) had an M184V, 9 (29%) had a K65R and 6 (19%) had major PI mutations. Following adherence interventions, including 3 gastrostomies, ART changes were recommended in 49/53 (92%) treatment experienced children, 12 (24%) regimens including either Raltegravir or Maraviroc. 2 children with lipoatrophy commenced nucleoside sparing regimens.

Conclusion: Referrals to PVC were precipitated equally by viral resistance and toxicity/simplification issues. Multidisciplinary input combining adult expertise in resistance and newer agents, with paediatric knowledge of pill swallowing, childhood formulations/weight banding and parental support, assists complex treatment decision making for this population.

P64
Non-means-tested provision of formula feed to help prevent HIV transmission

M Dawson[1], H Green[1], C Gatford[1], J Moore[2] and A Apoola[1]
[1]Derby Hospitals NHS Foundation trust, Derby, UK and [2]Derby Positive Support Group, Derby, UK

Introduction: Breast feeding is currently not recommended by the guidelines for HIV positive mothers delivering in the UK where formula feeds are easily available. No provision is made however for the financial capabilities of the families who are HIV infected to help with buying formula milk. HIV positive women delivering babies in the 2 general hospitals in the county providing care were offered free formula milk funded by the local community support group for a period of 1 year. The milk provision was not means tested.

Methods: The uptake of free milk and the associated costs of this were assessed between October 2008 and January 2011. We also analysed whether free provision of milk from the local support group would be taken up by all mothers delivering within this time period.

Results: There were 23 deliveries in the time period analysed with 21 women taking up the provision of formula feed. The average uptake of feed was 28 tins of milk (range 3–56). The mean cost per patient was £220 (range £43-£403). The 2 women refusing the free milk provision did this because of distance from the support group and stigma. There was no case of HIV transmission.

Conclusion: BHIVA/CHIVA continue to recommend that, in the UK, mothers known to be HIV infected, regardless of maternal viral load and antiretroviral therapy, refrain from breastfeeding from birth. Most of the mothers were on a low income and would have had some difficulty funding formula feed. Provision of formula feed in a non-means tested way may help to avoid partial breast feeding and the risk of HIV transmission.

Coinfections and Malignancies

P65
Hepatocellular carcinoma (HCC) in HIV-positive patients: a more aggressive disease course?

D Joshi, C Taylor, J Maggs, M Heneghan, K Childs, I Carey, N Heaton, J O'Grady, K Agarwal and A Suddle
King's College Hospital, London, UK

Background: Liver disease is the leading non-AIDS related cause of death amongst HIV(+) patients. More are presenting with the long-term sequelae of liver disease including HCC.
Methods: The prospective HCC database (2003–2010) was interrogated. Data parameters collected included aetiology of liver disease, age at diagnosis, CD4 count, exposure to cART, MELD, UKELD, Child Pugh Score (CPS) and survival. HIV(+) patients with HCC were matched according to sex, aetiology and year of diagnosis with HIV negative(-) controls (3:1 ratio).
Results: 20 HIV(+) were diagnosed with HCC using contrast CT/MRI in conjunction with clinical parameters. Aetiologies included HBV (n=13) and HCV (n=7). Median age at time of diagnosis 46 years (range 28–54). 8 (40%) were diagnosed incidentally and 12 through surveillance. 90% of patients had undetectable HIV viral load and were on cART (median CD4 266, 107–650 cells/μL). MELD, UKELD and CPS were comparable between HIV/HBV and HIV/HCV patients. HIV/HCV patients had lower CD4 counts (180 vs 430, p= 0.06) and had more advanced portal hypertension (spleen 15 vs 11cm, p=0.02) compared to HIV/HBV patients. HIV/HCV patients were less likely to have been exposed to anti-HCV Rx compared to HCV mono-infected patients (14% vs 73%, p= 0.006). At presentation of HCC there was no difference between HIV(-) and HIV(+) patients with regards to evidence of portal vein thrombosis (23% vs 33%, p=0.85), metastatic disease (4% vs 10%, p=0.5) and BCLC stage C or D (21% vs 33%, p=0.7). 6 patients were listed but only 3 underwent liver transplantation (LT). HIV/HCV patients (48 vs 58 years, p=0.002) and HIV/HBV (44 vs 56 years, p=0.001) were younger compared to their matched controls. Irrespective of HIV positivity, survival rates in the HCV groups appeared poor at 12 months, 50% HIV(+) vs 65% HIV(-). Survival at 6 months appeared comparable between HIV/HBV (69%) and HBV (75%) groups but with a trend towards poorer survival at 12 months and beyond in the HIV/HBV group (60% vs 71%). On univariate analysis predictors of survival included CPS, jaundice, AFP and no treatment (p <0.006).
Conclusion: Our data suggests HIV(+) patients with HCC present at a younger age and have a high drop-out rate for LT. This suggests a more aggressive disease course in HIV(+) patients with HCC. Close monitoring and early diagnosis is required to improve outcomes.

P66
Effect of raltegravir on rates of chemotherapy-induced neutropenia in HIV lymphomas

S Merchant, A Marouf, V Bradley, J Myers, T Newsom-Davis, M Nelson, B Gazzard and M Bower
Chelsea and Westminster Hospital, London, UK

Background: The treatment of high grade non-Hodgkin's lymphoma in people living with HIV has evolved so that standard chemotherapy regimens are now recommended without dose modifications. The major toxicity of the CHOP (cyclophosphamide, doxorubicin, vincristine, prednisolone) regimen is neutropenia and previous studies have demonstrated that potential drug interaction between the cytotoxic agents and boosted PI (Protease inhibitor) antiretroviral regimens potentiate this.
Methods: We investigated the effects of concomitant NNRTI-based HAART (highly active antiretroviral therapy) and integrase inhibitor based HAART on neutropenia in a consecutive series of 31 HIV positive patients treated with CHOP chemotherapy.
Results: 31 patients received 144 cycles of CHOP chemotherapy with (114) or without (30) rituximab. 21 completed 6 cycles, 4 are on-going and 5 died. All received concomitant opportunist infection prophylaxis and HAART. The HAART regimens were NNRTI & NRTIs (15 patients, 68 cycles), raltegravir & NRTIs (11 patients, 52 cycles), boosted PI & NRTIs (4 patients, 23 cycles) and boosted PI, raltegravir & NRTIs (1 patient, 1 cycle). There were no differences in CD4 cell count and plasma HIV viral load at lymphoma diagnosis, prior AIDS defining illness, lymphoma stage or IPI (international prognostic index) or bone marrow involvement by lymphoma between patients on NNRTI and those on raltegravir. However, more patients receiving raltegravir had Hickman lines in situ (p=0.0042). Compared to patients treated with NNRTIs, raltegravir was associated with significantly lower nadir total white cell count and neutrophil counts (p=0.0066 and p=0.0008 respectively) and significantly lower day 10 total white cell count and neutrophil count (p=0.014 and p=0.0027 respectively). Moreover, the rate of febrile neutropenia was significantly higher (35% vs 12% p=0.0026) in patients receiving raltegravir. However, there were no significant differences in number of G-CSF doses administered or delays following a cycle of chemotherapy.
Conclusion: Neutropenia and febrile neutropenia occurred more frequently in patients receiving raltegravir based HAART than those receiving NNRTI-based HAART. This difference may relate to differences in demographic of the populations such as placement of Hickman lines. A randomised study is required to confirm these findings.

P67
The safety of rituximab in patients with low CD4 cell counts

J Roe, K Wheatley, T Kordbacheh, T Newsom-Davis, B Gazzard, M Nelson and M Bower
Chelsea and Westminster Hospital, London, UK

Background: A randomised study on 150 patients with HIV-associated non-Hodgkin's lymphoma published n 2005 suggested that the addition of rituximab to CHOP chemotherapy was associated with an increased risk of infectious deaths that outweigh the benefit of a higher complete response rate. These infectious deaths occurred in patients with CD4 cell counts below 50/mm^3 and led some guideline authors to caution against the use of rituximab in patients with low CD4 counts.
Methods: We investigated the effects of a CD4 cell count below 50/mm^3 at the start of chemotherapy on febrile neutropenia and opportunistic infections in a consecutive series of 23 HIV positive patients treated with R-CHOP chemotherapy and concomitant HAART.
Results: The 23 patients completed 114 cycles of R-CHOP chemotherapy; 7 patients (31 cycles) had CD4 count <50/mm^3 at start of the first cycle of R-CHOP, whilst 16 patients (83 cycles) started with CD4 count >50/mm^3. The patients with the lower initial CD4 cell counts had higher HIV viral loads (p=0.023), but there were no differences in prior AIDS diagnoses (p=0.55), non-Hodgkin's lymphoma staging (p=0.55) or prognostic index scores (p=0.92). Both the day 1 (p=0.039) and nadir (p=0.011) white cell counts were lower in patients with low CD4 counts. However, there were no differences in day 1 or nadir neutrophil counts (p=0.15), number of days of G-CSF use (p=0.63), chemotherapy delays (p=0.12) or rates of febrile neutropenia (p=0.07). The median follow-up for the cohort is 1.9 years (range:0.2–3.7) and 2 patients have developed AIDS defining illnesses diagnosed following completion of chemotherapy (1 oesophageal candida & 1 Kaposi's sarcoma) both patients had initial CD4 cell counts above 50/mm^3. No patients have developed PML.
Conclusions: In this small consecutive cohort of HIV patients treated with R-CHOP chemotherapy, there is no excess early or delayed infection in patients whose CD4 cell count was below 50/mm^3 at start of chemotherapy. This will reassure clinicians concerned about the use of rituximab in patients with low CD4 cell counts following the findings of AMC010 trial.

P68
Demographics, histology and survival in HIV-associated lung cancer

S Merchant, V Bradley, M Mak, B Gazzard, M Nelson, M Bower and T Newsom-Davis
Chelsea and Westminster Hospital NHS Trust, London, UK

Background: There is a significant increase in the incidence of lung cancer in the HIV-positive population (1). We compared clinicalopathological features and survival in HIV-associated lung cancer with those in the general population.
Methods: We analysed data from 36 HIV seropositive patients and 668 individuals from the general population, diagnosed with lung cancer, treated between 1986 and 2010 at Chelsea and Westminster Hospital. Lung cancer incidence and survival data for the London general population were obtained from the NHS Clinical and Health Outcome Development and Office for National Statistics respectively.
Results: There was no difference in the incidence of lung cancer between the HIV seropositive ($50.53/10^5$ patient years [PY]) and general population ($50.93/10^5$ PY). Patients with HIV associated lung cancer were younger than those in the general population (median age 50.53 years, compared to 69.30 years, $p<0.001$). As expected, nearly all (89.2%) HIV-positive patients were male whereas in the general population, 57.1% were male.
There was no significant difference in the distribution of histological subtypes between the two patient groups ($\chi^2 = 0.26$). The one year survival rate for male HIV-positive patients was 13.8% compared to 27.7% in the HIV-indeterminate group. The number of female HIV-positive patients ($n=4$) was too small to allow meaningful comparison of survival.
Conclusions: Reports of increased incidence and differences in histological subtype in HIV-associated lung cancer are not supported by this data. HIV-serpositive patients with lung cancer tend to be younger. In contrast to other reports (2), the prognosis in HIV-associated lung cancer is worse than that in the general population.
References:
1. J Clin Onc (2009); 27(6): 884–890
2. Clin Lung Cancer (2010); 11(6): 396–404

P69
The incidence and correlates of paraneoplastic syndromes in 62 HIV-positive patients with Hodgkin's lymphoma

B Lee, S Merchant, A Sita-Lumsden, B Gazzard, M Nelson and M Bower
Chelsea and Westminster Hospital, London, UK

Background: Paraneoplastic syndromes (PNS) are non-metastatic systemic manifestations of malignancy that mostly arise due to secretion by tumours of hormones, cytokines and growth factors. The incidence in solid tumours is 2–20% and in Hodgkin's lymphoma (HL) is estimated to be around 1%. Paraneoplastic neurological complications are often caused by auto-reactive antibodies. In HIV, neurological phenomena resembling PNS are common and so are excluded from this analysis. There is no published data on PNS in HIV-associated HL.
Method: Clinical data has been prospectively collected on 62 HIV patients with HL. Clinicopathological features and outcomes were compared between patients presenting with and without non-neurological PNS.
Results: Seven (11%) presented with PNS (3 dermatological**:** bullous pemphigoid, lupus, Grover's disease, 2 haematological: thrombocythemia with eosinophilia, 1 metabolic: SIADH, 1 hepatic: vanishing bile duct syndrome). There were no significant differences in gender (p=0.45) or race (p=0.26) between HIV HL patients with and without PNS. Similarly there were no differences in HL related factors including: stage (p=0.77), bone marrow involvement (p=0.22), ECOG performance status (p=0.25) or Hassenclever prognostic score (p=0.28).There were no differences in HIV related variables such as: prior AIDS diagnosis (p=0.79), on HAART (p=0.75), CD4 cell count (p=0.17) or undetectable HIV viral load (p=0.48). Survival analysis confirms no difference between patients with and without PNS (overall at 5 years: 86% & 70% respectively, log rank p=0.87).
Conclusion: Non-neurological PNS appear to be relatively common in HIV associated HL. This resembles the high frequency of B symptoms in HIV (84% in this series compared to around 1/3 in most HIV negative HL series). Nevertheless, the presence of PNS was not associated with immunological, virological or oncological variables and did not influence prognosis.

P70
Achieving hepatitis B immunity in HIV-infected patients: a retrospective cohort study of 200 patients

K Quinn, S Quah, E McCarty, C Donnelly and C Emerson
Royal Victoria Hospital, Belfast, UK

Background: HIV/hepatitis B (HBV) co-infection rates are estimated to be between 6–10% in the UK; mortality rates are around 10 times higher than seen in either infection alone. Implementing universal vaccination against HBV in HIV infected individuals can be difficult to achieve. Moreover, it is recognised that vaccine response rates are commonly suboptimal and confusion arises when patients are HBsAg negative/anti-HBc IgG positive as to whether this represents immunity due to past infection or represents a false positive result. The study aims are to review vaccination practice in relation to targeting specific risk groups, to establish response rates to vaccines following HIV infection and determine what factors are likely to confer adequate immunity against HBV.
Methods: A chart review of 200 patients diagnosed with HIV between 1984–2009 was conducted to determine delivery of HBV vaccinations, schedule used and response to vaccines. Factors associated with adequate anti-HBs titres were also studied.
Results: 3% of the cohort were HBsAg positive whilst 20.5% were anti-HBc IgG positive/HBsAg negative. No patients contracted HBV subsequent to diagnosis of HIV. 59% of men who have sex with men (MSM) and 37% of HIV endemic contacts were anti-HBc IgG positive/HBsAg negative. 75% MSM who were non-HBV immune at HIV diagnosis completed a vaccine course against HBV subsequent to HIV diagnosis compared with 44% white heterosexuals and 37% endemic contacts. In patients vaccinated after HIV infection, 42% showed either partial or adequate response to a primary full vaccine course; 32% showed no response after primary vaccine course and 26% did not have anti-HBs titres checked. Adequate anti-HBs titre levels of >100 were associated with past exposure to HBV, having a CD4 >200 at time of vaccination and being vaccinated prior to HIV infection. There was universal non-response to vaccines when CD4 was <200.
Conclusions: Evidence of high rates of past HBV exposure in MSM and those from HIV endemic areas emphasise that non-immune individuals from these groups are at high risk of contracting HBV sexually. It is imperative that these patients are offered vaccinations. The benefit in vaccinating patients when the CD4 count us <200 is unclear. Alternative approaches may be providing double dosing vaccine schedules and more intensive vaccine schedules in those who fail to mount an antibody response or those with low CD4 counts <200 but more evidence is required for this.

P71
Coinfection with hepatitis B virus does not increase the risk of HIV-associated non-Hodgkin lymphoma

J Krell, T Newsom-Davis, M Bower, J Stebbing and M Nelson
Chelsea and Westminster Hospital, London, UK

Background: A large Korean cohort study of over 600,000 individuals found that people with hepatitis B virus (HBV) are at increased risk of developing non-Hodgkin's lymphoma (NHL) especially high grade B-cell NHL (adjusted hazards ratio 1.7), although no correction for HIV status was performed.

Methods: We analysed data from 464 HIV seropositive individuals diagnosed with NHL, and 555 individuals co-infected with HIV and HBV. Twelve HIV patients diagnosed with both NHL and HBV simultaneously were excluded from incidence analysis.
Results: Fifty eight of 464 HIV patients with NHL (25 Burkitt lymphoma, 33 diffuse large B-cell lymphoma) were HBV surface antigen positive on at least one test prior to NHL diagnosis. Hence the prevalence of HBV in HIV associated NHL is 12.4%. The total follow-up for 543 HIV/HBV co-infected patients without lymphoma at enrolment is 3,098 patient years, during which time 8 have developed NHL. The prevalence of NHL in HIV/HBV co-infected is 1.4%, and the incidence is $26/10^5$ patient years (PY). This compares to previously published results from our cohort including 34,133 PY follow-up demonstrating that the incidence of NHL is $30/10^5$ PY (ref 1). Combined, these data strongly suggest that HBV positivity does not put patients with HIV at a greater risk for NHL (unadjusted rate ratio: 0.86, 95% CI: 0.64–1.09).
Conclusions: These data suggest that HBV and HIV co-infection do not increase a patient's risk of NHL compared to HIV infection alone and concur with published findings from the Swiss cohort (ref 2).
References:
1. J Clin Oncol 2004, 22:2177–2183.
2. Br J Cancer. 2006; 95: 1598–602.

P72
Imaging of anorectal pathology by MR in people with HIV infection

K Shahabuddin, R Mehta, S Graeme-Baker, H Gay, C Davies, N Khan, F Kazmi, B Gazzard, M Bower and M Nelson
Chelsea and Westminster Hospital, London, UK

Background: Radiological imaging of the anorectum posses considerable challenges and in recent years magnetic resonance (MR) imaging has emerged as the standard modality for providing pre-operative diagnoses and surgical road-mapping and staging in the treatment of benign and malignant diseases of the anorectum. People living with HIV are prone both to tumours in this region including squamous cell cancers of the anus, anorectal Kaposi's sarcoma and anal lymphomas, as well as opportunistic infections including syphilis, CMV and condylomata accuminata.
Methods: Standard sagittal T2, axial T2 and fat saturation T2 sequences were obtained through the pelvis using a Siemens 1.5 Tesla MR scanner.
Results: Nine patients have presented with ano-rectal Kaposi's sarcoma (median CD4 280/mm^3 range: 1–616) and 2 underwent MR imaging. This demonstrated the classic radiological features of bowel wall thickening, submucosal nodules with or without ulceration and enlarged, enhancing regional lymph nodes.
Forty eight patients with HIV associated invasive anal cancer (median CD4 376/mm^3 range: 46–1252) have had pelvic MR scans at diagnosis for tumour staging to measure the size of the primary tumour (T stage) and evaluated lymph node involvement (N stage). Fifteen (31%) were AJCC (American Joint Committee on Cancer) stage 1, 14 (29%) stage 2, 6 (12%) stage 3A, 12 (25%) stage 3B and 1 (2%) was stage 4.
Two patients with Buschke-Lowenstein tumours (giant condylomata accuminata) have been imaged and demonstrated the characteristic appearances of a cauliflower-like mass with high signal on T2 weighting but no peri-lesional oedema or nodal involvement.
The most frequent infections causing proctitis in patients living with HIV include syphilis and Chlamydia. The MR appearances of syphilitic proctitis mimic inflammatory bowel disease and show rectal wall thickening whilst Chlamydial proctitis causes diffuse mucosal oedema of the rectum and anus that is readily demonstrated on MR.
Conclusions: The appearances of tumour and infections of the ano-rectum produce characteristic appearances on MR imaging that in combination with a knowledge of the patient's immune status aids diagnosis.

P73
An innovative joint approach to HIV and lymphoma care

R Dhairyawan, S Longwill, C Orkin and S Montoto
Barts and The London NHS Trust, London, UK

Background: The prognosis of patients with HIV and lymphoma has greatly improved in the era of HAART (highly active antiretroviral therapy). The BHIVA Clinical Standards (2007) state that the care of patients with diagnosed or suspected lymphoma of any type should be transferred to an HIV centre provider of specialised HIV oncology services. A novel clinic was set up at a tertiary HIV centre in December 2007 with the aim of improving patient outcomes by facilitating communication between the specialities. Patients were seen jointly by an HIV and a Haemato-oncology consultant in a clinic held fortnightly in the HIV department.
Methods: A service evaluation was undertaken of this clinic. Data was taken from the clinical database to look at clinic activity from December 2007 to June 2010. A patient satisfaction survey was undertaken over a six month period from November 2009 to April 2010.
Results: 73 patients were seen between December 2007 and June 2010 in 50 clinics. A median of 8 patients were seen per clinic (range of 2 to 11) and the median rate of non-attendances was 1 patient per clinic. 25/38 patients completed questionnaires (response rate: 66%). 54% were first seen in the clinic after chemotherapy, but 100% of patients preferred to be seen in the joint clinic during and after chemotherapy. 100% of patients agreed that being seen in a joint clinic improved their care. 92% of patients agreed that a joint clinic was more convenient than two separate clinics. 100% understood that the information discussed was confidential, clear and appropriate to one appointment. 96% agreed that there was ample time for discussion. 64% would wish to join a peer support group if available. Overall 86% found their experience to be "very good" and none found it unsatisfactory. Answers written in free text defined a need for written information specific to patients with HIV and lymphoproliferative diseases.
Conclusions: The joint HIV/Haemato-oncology clinic is well received by patients with a high activity rate and a low number of non-attendances. Most patients prefer to be seen in one clinic and there is high level of trust and satisfaction with the clinic. Since this service evaluation, a joint pre-chemotherapy clinic has been set up in Oncology Day Unit and a patient support group is being set up. Patient information leaflets are also being written specifically for those with HIV and lymphoma. A study comparing clinical outcomes with an HIV-uninfected cohort is planned.

P74
HIV-related characteristics at time of diagnosis of non-Hodgkin's lymphoma (NHL) in a London hospital cohort 2001–2010: can we predict who is at risk?

M Tenant-Flowers, S Gandhi and R Marcus
King's College Hospital, London, UK

Background: The incidence of HIV-related NHL has increased as a percentage of first AIDS defining illnesses. The diagnosis is more likely in older patients with low CD4 counts and no prior treatment with HAART. This study aimed to examine the relevance of these criteria to our local cohort.
Methods: NHL cases diagnosed from 1994–2010 were identified retrospectively from the hospital cancer registry and ward discharge summaries. Lymphoma diagnoses from January 2001 to December 2010 were selected for detailed analysis as accurate data for this period was accessible.
Results: From 1994 to December 2010, 37 cases of NHL were diagnosed, 33 (including 6 Burkitt's lymphomas) after January 2001.
Of the 33 cases 25 (76%) were male, 17 (52%) Caucasian and 16 (48%) Black African/Afro-Caribbean and HIV infection was acquired heterosexually in 20 (61%) cases. Age at NHL diagnosis ranged from 25–69 years with 31/33 (94%) of NHL cases being under 60 years old.

At diagnosis, 21 (64%) of cases were known to be HIV+ and an additional 9 (27%) were diagnosed HIV+ within 1 month of the lymphoma. HIV viral load at diagnosis ranged from <50–3,761,189 copies/ml, 7 (21%) were <50 copies/ml at diagnosis. CD4 counts at diagnosis ranged from 4–1437 (1%-37%) cells/μl, 13/33 (39%) were >200 cells/μl and of these 7/33 (21%) were >350 cells/μl with CD4% of <20% in 4/13 CD4 >200 and 2/7 CD4>350 cells/μl.

Antiretroviral therapy (ART) was being taken by 13 (39%) at diagnosis however, of these, 6/13 had a detectable viral load (>50 copies/ml) and, in 2/6 cases over 1,000 copies/ml.

Conclusion: This survey demonstrated that 94% of our NHL cases were diagnosed under age 65. Of all NHL cases 39% had CD4 counts of >200 cells/μl, with a fifth >350 cells/μl although, in some cases CD4 percentages were still low. Low viral loads were seen in 21% at diagnosis and, a history of being on ART was not protective, probably due to suboptimal adherence. NHL should perhaps therefore not be excluded too early as a diagnostic possibility in younger patients with a CD4 count of >200 cells/μl or more, with a low viral load on ART. Our study was limited by small numbers and retrospective survey methodology. Prospective, larger cohort studies are required to define accurately who is currently at risk of different types of HIV-related lymphoma.

P75
Epstein–Barr virus-associated smooth muscle tumours of the spine: two cases and a review of the literature

S Bradley, J Ainsworth and C Wood

North Middlesex University Hospital NHS Trust, London, UK

Introduction: In recent years there has been an increased incidence of non-AIDS-defining cancers, including smooth muscle tumours (SMTs) which are well described in paediatric HIV infection but are rare and less well characterised in HIV positive adults. In contrast to the immunocompetent population, SMTs in HIV positive patients are almost always associated with Epstein Barr Virus (EBV). We report two cases of spinal EBV-SMTs occurring in patients with AIDS and provide a brief review of the literature.

Methods: Two patients with EBV-SMTs were identified at the North Middlesex University Hospital during 2009–2010. Data was collected from patient case notes.

Results: Patient 1 (46 year old male) and Patient 2 (36 year old female), presented with signs of spinal cord compression including: severe leg weakness, a sensory level at the mid- thoracic region, and atypical back pain. Both patients were poorly adherent to highly active antiretroviral therapy (HAART). At the time of diagnosis of the SMTs the CD4 counts were 2 and 10 cells/mm^3 and viral load 19,379 and 57,834 copies/ml respectively. Magnetic Resonance Imaging showed a mass in the thoracic spinal cord in both cases. Patient 1 also had lesions in the adrenal gland and lungs. Both patients received surgical resection and patient 1 had adjuvant radiotherapy. Histology from both specimens showed spindle cell tumours expressing smooth muscle actin (SMA) and desmin. In situ hybridisation of both specimens showed expression of EBV encoded RNA (EBER). Mitotic rates were high at 8 per 10 high power fields (HFP) and 13 per 10 HFP respectively. These histological findings are consistent with EBV-SMTs. Both patients commenced HAART and had good recovery of neurological function. Patient 1 has stable disease 16 months from diagnosis and is adherent to HAART. Patient 2 has recovered well post-operatively but is poorly adherent to HAART.

Conclusions: Although rare, SMTs should be included in the differential diagnosis of intracranial and spinal masses in the immunosuppressed patient. SMTs in patients with AIDS are associated with EBV. They may be multifocal and occur in unusual sites. Treatment is based on resection of primary lesions +/− radiotherapy or chemotherapy. Prompt and accurate diagnosis may have significant implications for prognosis and management of these cases. Immune restoration in EBV-SMT cases appears to be associated with a better prognosis than non-EBV-SMTs in immunocompetent patients.

P76
Prophylaxis of infections in HIV patients receiving chemotherapy for malignancy

C Caldwell, E Simpkin, S Brown, C Richardson, H Leake Date, M Fisher and D Churchill

Brighton and Sussex University Hospitals NHS Trust, Brighton, UK

Background: In 2008 BHIVA published guidelines for HIV-associated malignancies. Local guidelines were adapted regarding antiretroviral (ART) initiation and infection prophylaxis for patients receiving chemotherapy (CT).

Method: All HIV patients diagnosed with malignancy who started and completed CT from Jan 09-Jan 11 were identified and data gathered from pharmacy, clinic and pathology databases to describe: malignancy, CT, ART, prophylaxis, CD4/neutrophil counts and clinical outcomes.

Results: 18 patients identified. ART: 16 prior to CT, 2 delayed (CT prioritised). ART adapted to avoid interactions in all except 2 patients with resistance. Infection prophylaxis: Lymphoma: 10 patients received CT for lymphoma & all received *Pneumocystis jirovecii* pneumonia (PCP), *mycobacterium avium* (MAI) and granuloctyte colony stimulating factor (GCSF) prophylaxis. 9 received antifungal prophylaxis; 1 did not (liver disease). 3 patients having CT for Burkitt's received bacterial prophylaxis. 9 patients developed sepsis associated with neutrophil counts ≤1.0. 1 patient developed aspergillosis despite prophylaxis. Other Malignancies: 2 Kaposi's sarcoma (KS), 4 squamous cell carcinoma (SCC), 2 adenocarcinoma (AC). For these 8 patients, infection prophylaxis prescribed as follows: PCP prophylaxis: Prescribed for 2 with baseline (BL) CD4 <200 (1 KS, 1 SCC), 3 at risk of CD4 <200 during CT (2 SCC, 1 AC; median BL CD4 459; median CT nadir CD4 251). Not prescribed for 3 remaining patients (all CD4 >300 throughout). MAI prophylaxis: Prescribed for 2 patients (1 SCC, CD4 BL 56 & CT nadir 22; 1 AC, CD4 BL 308 & CT nadir 251). 1 KS patient didn't receive despite BL CD4 121, CT nadir 43. Not prescribed for remaining 5 patients (all CD4≥200 throughout). No new PCP or MAI infections.

						Prophylaxis		
Pt	Malig	BL CD4	Nadir CD4	Neut<1	N'penic sepsis	Bacterial	Fungal	GCSF
1	KS	121	43	N	N	N	N	N
2		853	497	N	N	N	N	N
3	SCC	56	22	N	N	N	Y	Y
4		459	200	Y	Y	N	N	N
5		963	963	N	N	N	N	Y
6		1147	371	N	N	N	N	N
7	AC	308	251	Y	N	N	Y	N
8		439	312	Y	N	N	N	Y

Conclusion: Lymphoma patients received comprehensive prophylaxis but still developed complications. There was inconsistent practice in other malignancies.

P77
An atypical presentation of Kaposi's sarcoma

A Scourfield[1], A Jackson[1], L Waters[1], J Dunning[1], S de Silva[1], N Francis[2], P Holmes[1], M Nelson[1] and M Bower[1]

[1]Chelsea and Westminster Hospital, London, UK and [2]Imperial College London, London, UK

Background: A 30 year old Brazilian homosexual man had been diagnosed with HIV in 2005 with a nadir CD4 count of 230 cells/mm3. Shortly after he was commenced on antiretroviral therapy (ART) with combivir and efavirenz. He remained virologically suppressed for four years. Three months prior to admission he stopped his ART regimen and visited India to seek alternative therapies. On return he described an erythematous papule on the right nostril that had enlarged rapidly over 2 weeks to form a 5x5cm pedunculated lesion (see poster). Examination

revealed mild anterior cervical lymphadenopathy and he was otherwise well with no reported fevers; there was no history of insect bites, animal contact or local trauma. His only other travel history was a visit to Brazil earlier in the year. At admission his CD4 count was 508 cells/mm3 (28%) and HIV-1 viral load was 36,000 copies/ml. Differential diagnosis at the time included leishmaniasis, mycetoma, mycobacterial disease, atypical bacillary angiomatosis and malignancy. He underwent a shave excision in theatre under the plastic surgeons; the base of the lesion was cauterised and left open.

Results: Histology showed an ulcerated nodular Kaposi's sarcoma with typical elongated and plump spindled cells lining slit-like vascular spaces. There was no additional pathology or infective pathogens seen. Serum HHV-8 PCR was undetectable. The patient declined chemo and radiotherapy but agreed to restart ART. A resistance test was requested and he was commenced on combivir/kaletra. Upper GI endoscopy, colonoscopy and bronchoscopy were all normal. Two months after recommencing ART he developed further KS lesions on his left upper and lower limb; these have since resolved. Due to GI side effects he was switched to truvada/etravirine. His current CD4 count is 504 cells/mm3 (28%), undetectable HIV-1 RNA and he remains well with no further lesions.

Discussion: This case is very unusual due to the rapidity of growth, atypical physical appearance and high CD4 count of the individual. In the era of successful antiretroviral therapy physicians should still maintain a high index of suspicion for atypical presentations of common problems. AIDS related KS is still the commonest malignancy in HIV infected individuals. KS is a vascular tumour caused by an excessive proliferation of spindle cells thought to have an endothelial cell origin, predominantly composed of human herpes virus 8 (HHV8) genomic material.

P78
Case report: Incidental diagnosis of HIV-1 in an 82-year-old woman with acute kidney injury and multiple myeloma

K Conway, T Shalaby, E Naylor, R Weinkove and R Kulasegaram
Guy's and St Thomas' Hospital, London, UK

Background: An 82 year old Ghanain lady with a background of hypertension and mild osteoarthritis, presented to the Emergency Department with a progressive history of general functional deterioration, shortness of breath, chest tightness, fever and night sweats.

Clinically she had marked oedema and blood tests revealed acute renal impairment with a urea 18.0 umol/L and creatinine 457 mmol/L. Urine protein creatinine ratio was raised at 328 mg/mmol (0–15).

Case report: Ultrasound showed un-obstructed, normal size echogenic kidneys and on serum electrophoresis, a mid gamma band was immunofixed as free Lambda light chain, and the level of serum free Lambda light chains was raised at 2990 mg/L (5.7–26.3).

Histology from a renal biopsy reported myeloma cast nephropathy, hypertensive change and tubulo-interstital nephritis. Skeletal survey showed osteopaenia and one possible lucent area in the skull and bone marrow trephine appearances were that of plasma cell myeloma with extensive disease bulk (85%), but no amyloid seen.

She required haemo-dialyisis and received chemotherapy with bortezomib, cyclophosphamide and dexamethasone.

As part of a routine blood-borne virus screen pre-dialysis, an HIV antibody test was performed, and was positive for HIV-1. CD4 count was 292 /uL (28%) and HIV-1 viral load 5484 copies/ml. She is heterosexual, and last sexual contact was over twenty years previously, with her Ghanian husband, and she had had a hysterectomy in the 1970's in the UK, during which she required a blood transfusion.

She was started on HAART with raltegravir / lamivudine / darunavir and ritonavir, and had a good virological and immunological response.

She responded well to her first cycle of chemotherapy and after five weeks no longer required dialysis with improving renal function.

Discussion: This case highlights a number of interesting points. Firstly, increased awareness of HIV testing in the older population, whom clinicians often view as 'low risk'. Secondly the incidental nature of this HIV diagnosis, due to routine screening for blood-borne viruses in haemodialysis patients, and finally the link between HIV and multiple myeloma.

There is limited literature on HIV and myeloma, but there seems to be an increased frequency in the HIV positive population, and the clinical course may be more aggressive.

P79
Cutaneous Kaposi's sarcoma: a case of mistaken identity

J Dua, A Nori, C Cottrill and C Orkin
Barts and The London NHS Trust, London, UK

Background: Kaposi's sarcoma (KS), a multifocal angioproliferative endothelial disease, is the commonest neoplasm associated with HIV. We report a case of cutaneous KS that was initially misdiagnosed as a soft tissue sarcoma.

Case report: A 41 year old mixed white/Afro-Caribbean homosexual man was referred from primary care to orthopaedics with three months of difficulty in mobilising due to a growth on his left foot that was progressively worsening over the preceding eight months, swollen legs and a generalised rash for 4 months. There was a 4cm x 6cm necrotic ulceroproliferative lesion encasing the left 3rd and 4th toes with a malodorous seropurulent discharge. A violaceous, infiltrated papulosquamous plaque on his right leg was noted with lymphoedema bilaterally and a generalised pleomorphic pigmented rash with papules, nodules and keloid-like lesions.

Magnetic resonance imaging of the foot showed no bone involvement. Wound culture grew *Staphylococcus aureus* that was treated. Syphilis serology was positive with a Rapid Plasma Reagin titre of 1:256.

Biopsies were taken from the mass and the plaque, and with a provisional diagnosis of a soft tissue sarcoma, he was referred to the sarcoma unit for a forefoot amputation.

Histological examination confirmed both lesions to be KS. He was then tested for HIV; HIV-1 serology was positive with a CD4 count of 354 x 10^6 cells/mm^3 and a viral load of 122576 copies/ml. HHV-8 was detected in the serum at 160 copies/ml. There was no clinical or radiological evidence of visceral KS.

He was commenced on antiretroviral medication and had six cycles of liposomal doxorubicin. On clinical review after completion of chemotherapy, the plantar lesion had markedly shrunken and his other skin lesions were in various stages of resolution with some improvement in the lymphoedema.

Discussion: HIV and syphilis should always be considered when patients present with skin lesions of unclear aetiology. While this patient did not have clinical disease related to syphilis, it represents an 8 months' missed opportunity in preventing onward transmission of both HIV and syphilis. Earlier diagnosis may have prevented the need for chemotherapy and limited the degree of disability. KS continues to affect untreated HIV-infected individuals, potentially with devastating consequences, even in those whose CD4 counts are above the national threshold for treatment. This case highlights the need to recognize KS and diagnose HIV infection in primary care.

P80
Treatment outcome of acute and chronic hepatitis C in HIV-coinfected patients in an urban UK hospital

A Tsiakalos, S Johansen, A Mukela, T Wong, W Tong and R Kulasegaram
Guy's and St Thomas' NHS, London, UK

Background: Coinfection of HIV patients with hepatitis C virus (HCV) is an emerging phenomenon and combined treatment with pegylated interferon (PegIFN) and ribavirin (RBV) is established as standard of care. Furthermore, hepatic elastography (FibroScan) is a widely used, noninvasive method to assess liver fibrosis. We report the results from the coinfected population.

Methods: We retrospectively reviewed the total population of coinfected patients since 2007. Liver stiffness was evaluated with FibroScan (FS) and fibrosis score correlation was done according to the 2010 BHIVA guidelines.
Results: The study population consisted of 172 patients (153 male) with a median age 44 (27–66) years. Routes of HCV transmission were, men who have sex with men (68.5%), intravenous drug use (26%), heterosexuals (3.5%) and haemophiliacs (2%). Among the studied population 63% tested positive for HCV antibody at the time of HIV diagnosis and 37% were diagnosed with HCV during their follow-up period. HCV genotype 1 and 4 represented 86.5% of the cases and genotypes 2 and 3, 14.5%. Median Liver Stiffness (MLS) ranged from 2.7 to 61.5 (median**:** 6.3 kPa). 93 patients (69%) were classified as ≤ F1, 30 (22%) as F2-F3 and 11 (9%) as F4 (cirrhosis). 40 patients (38 male) with a median age 41.5 (29–60) years received treatment with PegIFN alpha-2a/2b with weight based RBV and 90% were on HAART. Acute HCV infection accounted for 47.5% of the treated patients; 3 were treated for re-infection. From the treated population 83% had genotypes 1/4 and 17%, genotypes 2/3. Overall sustained virological response (SVR) was 54%. Patients with genotypes 1/4, 48.5% achieved SVR, completing 48 - 72 weeks of treatment, and genotypes 2/3, 83% completing 24 - 48 weeks. Baseline HCV viral load (VL) in the non responders group was higher (5.2 ± 0.89 $\log_{10}$ vs 6.1 ± 0.99 $\log_{10}$, p<0.01). 57% of the patients with acute HCV RNA genotype 1/4 achieved SVR compared to 42% of genotype 1/4 with chronic HCV infection.
Conclusion: In this cohort of HIV/HCV co infected patients, SVR rates are in consistency with the reported large clinical trials. The baseline HCV VL is a determinant of SVR. The percentage of SVR was higher in patients with acute HCV genotype 1/4 when compared to chronic HCV genotype 1/4.

P81
Factors associated with a failure to suppress HBV at 48 weeks of tenofovir (TDF) plus lamivudine (3TC)/emtricitabine (FTC)-based cART in patients with undetectable HIV viraemia

K Childs, C Naftalin, D Joshi, M Bruce, I Carey, A Suddle, K Agarwal and C Taylor
King's College Hospital, London, UK

Background: TDF in combination with 3TC/ FTC cART is effective in suppressing HIV and HBV replication. We identified 15 patients with HIV VL <40 c/ml but detectable HBV DNA at 48 weeks of TDF based cART.
Method: Case-control study. 88 HIV/HBV coinfected patients were prescribed TDF; Cases were defined as HBV DNA >20 IU/ml and HIV RNA <40c/ml and controls defined as HIV <40 cps/ml and HBV<20 IU/ml after 48 weeks of TDF+3TC/FTC cART. All patients who had sufficient samples and met either definition were included. Direct sequencing of HBV polymerase was performed at baseline in cases and controls and at 48 weeks in cases. HBV DNA [log10 IU/ml] testing with Roche Cobas Ampliprep/Taqman v2 (LL<20 IU/ml) was perfomed at baseline and appropriate time-points.
Results: 15/88 (17%) were cases and were matched to 16 controls. 12/15 cases and 9/16 controls were eAg positive (p=ns). 9/15 cases and 6/16 controls had 3TC monotherapy prior to starting TDF.
Cases and controls did not differ in terms of race, age, weight, HBV genotype, duration of HIV, use of PI or NNRTI or duration of prior 3TC monotherapy. Similar proportions had 3TC resistance prior to starting TDF (5/15 vs 4/16).
The cases had significantly higher baseline HBV DNA prior to 3TC (median $1.2x10^8$ IU/ml vs $3.13x10^6$ IU/ml p=0.009) with a trend towards higher pre-TDF HBV DNA (median $1.05x10^8$ IU/ml vs $8.8x10^3$ IU/ml p=0.06). Nadir CD4 differed between the 2 groups: median 247 cells/ml in controls, 100 cells/ml in cases (p=0.09). 13/15 cases had a nadir CD4 <200 cells/ml compared to 7/16 controls (p=0.02).
Of the 15 cases, 11 eventually achieved HBV<20 IU/ml after a median of 42 (22,56) months. At resistance testing on the last detectable sample after 48 weeks treatment: 7/14 cases had HBV DNA<20 IU/ml, 2 showed persistent 3TC mutations, 1 wildtype despite previous 3TC resistance and 4 showed no mutations. No patient developed the A194T mutation conferring TDF resistance.
Conclusions: Failure to suppress HBV despite optimal adherence as shown by undetectable HIV was not uncommon in our patient population. Factors predicting this outcome were lower nadir CD4 and higher HBV DNA at baseline. The clinical significance of persistently detectable HBV is not known, although our data suggest that clinicians should not be unduly concerned by low level HBV viraemia as the majority of patients go on to suppress HBV. No patient developed further 3TC resistance or mutations associated with tenofovir resistance.

P82
Cerebral toxoplasmosis, management and outcome in the era of potent combination antiretroviral therapy

S Andrews[1], A Assadi Haghi[1], F Saltissi[1], K Russell-Hobbs[1], M Pakianathan[1] and D Macallan[2]
[1]St George's Hospital, London, UK and [2]St George's University of London, London, UK

Background: The prognosis for patients diagnosed with cerebral toxoplasmosis (CT) has improved dramatically since the advent of combination antiretroviral therapy (cART). However, such patients remain a challenge to treat because of advanced disease, multiple co-morbidities and significant drug toxicity. We describe the clinical presentation, management and outcome of patients with CT at a UK HIV tertiary referral centre over a six year period.
Method: Retrospective case note and blinded radiological review of HIV+ patients treated for CT, May 2004 to Nov 2009.
Results: 24 patients were identified. Most were of African origin (16 black African, 2 black Caribbean, 2 Asian and 4 other ethnicity) and had acquired HIV heterosexually (22 vs. 1 MSM, 1 IVDU). In almost all patients (22, 88%) this was the first presentation of HIV. Most frequent symptoms included focal weakness (12, 50%), confusion (10, 40%), seizure (6, 25%) and headache (6, 25%); interestingly neck stiffness and fever were not documented in any patients. As expected CT occurred predominantly in subjects with low CD4 counts (<50 in 18, 75%), but two (8%) patients had CD4 >200. Cases occurred equally by gender (11**:**13 F:M) and across a wide age-range (26–74 yr, median 41). Toxoplasma IgG was positive in all patients. Radiological imaging revealed multiple lesions in 19(79%), oedema in 24(100%), haemorrhage in 2(8%) and ring enhancement in 17(71%). With treatment, improvement was seen clinically in all and radiologically in 23/24. Of the 22 commencing Sulphadiazine(S) and Pyrimethamine(P), 12 (55%) required a change in treatment due to toxicity. No CT-related deaths were documented; one patient died from unrelated causes. Of 15 currently under follow-up (8 transferred care), 14 have CD4 >200 and 11 have minimal/no residual neurology; however, 2 have cognitive impairment and 2 significant functional impairment. Subsequent MRIs were done at >10 months in 11/24. It showed persistent enhancing lesions in 9/11(82%), persistent white matter changes in one and new onset diffuse white matter changes in 3(27%).
Conclusions: Survival of patients with HIV-related CT is excellent but 17% had long-term sequelae. S/P toxicity mandated treatment change in over half. A quarter of patients had white matter changes on follow up MRI; further work is needed to ascertain the clinical implications of these radiological findings.

P83
HIV testing in patients with hepatitis B and/or C

S Perera, C Lallemant, Y Gilleece and S Verma
Brighton and Sussex University Hospital NHS Trust, Brighton, UK

Background: HIV, Hepatitis B (HBV) and Hepatitis C (HCV) share similar routes of transmission and the immune systems ability to clear these infections varies markedly. This contributes to a high worldwide prevalence

of co-infection, with serious consequences including altered disease progression, drug-drug interactions and drug side effects. Current BHIVA/BASHH/BIS guidelines recommend universal HIV testing in healthcare services for patients diagnosed with HBV and/or HCV. The aim of this audit was to identify rates of HIV testing in patients with HBV and/or HCV and to assess HIV testing practice in a large UK teaching hospital.

Methods: A retrospective case note review of 185 patients using a sixteen item pro-forma. Data on hepatitis diagnosis, risk behaviours/groups, HIV testing practice and hepatitis active medication was collected. Hospital medical notes and sexual health records were reviewed. Further evidence of HIV testing was sought in computerised laboratory information management systems (Labcare pre-2005; Winpath post-2005) and the sexual health management system (Telecare).

Results: 185 patients were audited (5 HBV/HCV, 92 HCV, 88 HBV including 2 HBV/HDV). 45% were diagnosed with hepatitis in or after 2007. Risk behaviours/groups**:** high/intermediate prevalence country - 47.7% HBV, 63.0% HCV; Men who have sex with men - 11.4% HBV, 2.2% HCV; sexual contact with hepatitis – 10.2% HBV, 19.6% HCV; IVDU – HBV 4.5%, HCV 63.0%, HBV/HCV 60%; no risk identified - 22.7% HBV, 6.5%.

	HBV	HCV	HBV/HCV	Overall
HIV test offered/requested:	65.9%	40.0%	80.0%	51.9%
HIV test performed:	60.2%	43.5%	80.0%	52.4%
Tested at RSCH/CNC:	78%	80%	75%	77.7%
HIV co-infection:	5.7%	7.5%	-	6.6%
Test documented on WinPath/in letter:	65%	63%	100%	76%
Reason for not testing not documented:	74.3%	73.1%	100%	82.5%
Ever received treatment:	37.5%	54.8%	40.0%	44.1%
Physician aware of HIV status pre-treatment:	42.4%	41.2%	50.0%	44.5%
Contact tracing:	85%	37%	40.0%	65.6%
Follow-up:	100%	100%	100%	100%
Continued risk of acquiring HIV/risk not documented:	94.3%	97.8%	80.0%	90.7%
Regular testing of high risk:	12%	1%	2%	6.8%

Conclusion: A large proportion of patients with hepatitis have not received a HIV test. Of those patients that did, a significant proportion were HIV positive. Some patients were commenced on treatment for hepatitis with hepatitis and HIV active medications despite, in the majority of cases, physicians being unaware of patient HIV status. Improved documentation of HIV testing, risk behaviours/groups, reason for not testing, and contact tracing is needed. With 100% patient follow-up, an opportunity for universal HIV testing exists, with the potential benefit of improving medical care. Screening for HIV in patients with HBV/HCV is key to an effective strategy against HIV and HBV/HCV. HIV testing needs to be routinely offered and recommended to all HBV and HCV infected individuals.

P84
Screening for latent tuberculosis infection in HIV: should we do more?

K Pollock[1], H Tam[1], D Montamat-Sicotte[1], L Grass[1], G Cooke[1], M Kapembwa[2], G Taylor[1] and A Lalvani[1]

[1]Imperial College London, London, UK and [2]North West London Hospitals NHS Trust, London, UK

Background: The diagnosis of latent tuberculosis infection (LTBI) in the setting of HIV infection remains challenging despite the introduction of the recently developed interferon-gamma release assays (IGRA). The aim of this work was to compare current best practice for LTBI screening in the HIV clinic with screening criteria used in an on-going HIV and tuberculosis (TB) co-infection study.

Methods: Subjects with HIV infection recruited from two clinical cohorts were defined as at risk of LTBI if they were TB contacts, originated from a TB endemic country or had one or more additional risk factors e.g. travel to an endemic area. Evidence of an immunological response to *Mycobacterium Tuberculosis* (MTB) antigens ESAT-6 and CFP-10 was obtained using a next generation IFN-gamma ELISpot. Chest X-ray, tuberculin skin test (TST), TB contact history and demographic data were collected. Clinical guidelines recommended asymptomatic recent TB contacts and recent migrants for LTBI screening.

Results[TABLE 1]:116 HIV positive subjects with risk factors for LTBI and no previous history of TB (median (IQR) CD4 count 408 (285,605)) were recruited during Jan 08-Dec 10. Thirty were referred for clinical LTBI screening within one year, of whom 9(30%) had a positive TST and/or IGRA test (T-Spot®.*Tb* or QuantiFERON®-TB Gold). Three of these did not respond to ESAT-6 or CFP-10 in the study assay. Six (7%) of the additional 86 donors identified as at risk of LTBI had a positive ESAT-6 and/or CFP-10 response in the study assay. All were born in a TB endemic area and had an additional risk factor including 3(50%) with a history of travel to a TB endemic area.

Table 1: Comparison of those screened using the clinical or study protocols

	Clinic n=30		Study n=86	
Patients identified for screening	Pos	Neg	Pos	Neg
TST only	2	10	NA	NA
TST and IGRA	4	4	NA	NA
Clinical IGRA (QFN or TSpot.*TB*)	3	7	NA	NA
Research MTB ELISpot	NA	NA	6	80
Total identified as LTBI	9 (30%)		6 (7%)	

Conclusion: We were able to identify 6 donors with immunological evidence of LTBI in addition to the 9 identified though clinical screening. Whilst the current clinical protocols are efficient at identifying many of those with evidence of LTBI, extending the screening criteria to include all those born in a TB endemic country and those with an additional risk factor, especially a history of travel to a high-risk country, may be an effective way to increase the detection rate.

P85
Why aren't we treating the treatable? An audit of all HIV/HCV-coinfected individuals attending an HIV clinic

D Whiteley, S Lamond, F Rose, L Hildreth, J Turner and C Leen

Regional Infectious Diseases Unit, Western General Hospital, Edinburgh, UK

Background: Liver disease progression remains a significant problem in HIV/HCV co-infected individuals. We are concerned about the low uptake of HCV treatment within our HIV/HCV cohort.

Methods: A retrospective audit of case notes of all living HIV/HCV co-infected individuals on our database was conducted. Due to time constraints, only written entries made in the last three years were reviewed, however all serology was checked back to 1999.

Results: Of the 219 individuals identified, 46 were excluded from the study primarily as they had not been seen in clinic for >1 year. The remaining 173 individuals' notes were audited and the audit focused on the 113 patients who were HCV RNA viraemic. 52 individuals (46%) had discussion related to alcohol avoidance recorded within the last three years, and 30 (27%) had documentation about reducing the risks of transmission. HCV genotypes in the cohort were; G1, 66%; G2, 3%; G3, 21%; G4, 3%; no genotype available, 7%.

For assessment of fibrosis, hepatic elastography has only been available locally since June 2010, therefore liver biopsy has been the standard assessment tool used during the audit period. Overall, 39% (45% for G1&G4; 33% for G2&G3) had written evidence of being offered a biopsy in the last three years, or a biopsy result documented since 1999. Of those offered a biopsy, 63% of those with G1&4 accepted. 29% (n=33) of the total cohort were clinically identified as being possibly cirrhotic, of which only 21% (n=7) had been confirmed by biopsy.

Of the 113 RNA-positive individuals, 21 had been treated unsuccessfully in the past, 12 were currently being considered for treatment, and 8 were on HCV treatment. Of the remaining 72, a number of reasons were cited as to why treatment had not yet been attempted; concern regarding side effects (n=23), wishing to postpone (n=12), ambivalence (n=10) poor success rate (n=9), reluctance to switch HAART (n=1). Multiple reasons were cited in some sets of notes. 4 individuals had no discussion regarding HCV treatment documented in the last three years and no relative contraindications noted.

Conclusion: The side-effects of current HCV treatment was the main reason cited for declining therapy. Discussion of HCV treatment should be revisited and documented annually in all HIV/HCV co-infected individuals, and care plans formulated to address the obstacles to treatment identified. Staging liver disease should be a priority to prevent end stage liver disease.

P86
Undetectable HCV RNA in peripheral blood mononuclear cells (PBMC) may allow shorter treatment duration in HIV/HCV coinfection

E Page[1], A Cox[2], M Anderson[1], B Gazzard[1], M Atkins[2] and M Nelson[1]
[1]Chelsea and Westminster Hospital, London, UK and [2]Imperial NHS Trust, London, UK

Background: Duration of HCV treatment in HIV/HCV co-infected individuals remains intolerable to many individuals. Evidence of clearance from sanctuary sites (eg PBMC) may allow shorter duration of treatment.

Methods: 5 individuals who were felt would benefit from shortened treatment durations had PBMC HCV RNA measured at the end of treatment. PBMCs were isolated and reconstituted in PBS to $1X10^7$ cells/vial. Intracellular HCV RNA was extracted using QIAamp RNA Blood MiniKit (Qiagen). Reverse transcriptase PCR was performed using a modification of the COBAS TaqMan HCV Test for use with the high pure system (Roche Diagnostics). HCV RNA could be detected to at least 600 IU/$1X10^7$ cells.

Results: See table below.

Conclusion: Demonstration of an undetectable HCV RNA in PBMC at the end of treatment may allow shorter durations of therapy in certain HIV/HCV co-infected individuals. A controlled trial is required to confirm these findings.

P87
Successful treatment of acute hepatitis C virus in a cohort of HIV-positive patients

J Dorward, N Garrett, D Scott, M Buckland, C Orkin and G Baily
Barts and The London NHS Trust, London, UK

Background: There is a high incidence of hepatitis C virus (HCV) in HIV positive patients in London. Studies show that treatment of acute HCV infection with pegylated interferon alpha and ribavirin can lead to a sustained virological response (SVR) in approximately 60% of patients. However, cohorts are small and more data is needed to improve treatment strategies in this population.

Methods: This is a cohort study of HIV positive patients receiving treatment for acute HCV infection, defined as transmission within six months, and diagnosed between the years 2004 and 2010. Transmission dates were estimated as the midpoint between the last negative HCV antibody result and first positive HCV antibody and/or hepatitis C RNA, by retrospectively testing for hepatitis C RNA and/or by considering clinical information such as unexplained liver function test rises. Variables recorded included patient demographics, HIV serological markers, antiretroviral therapy and hepatitis C genotype. HCV RNA levels at diagnosis and during treatment at baseline, at 4 weeks (rapid virological response [RVR]) and at 12 weeks (early virological response [EVR]) were analyzed and treatment lengths and outcomes were evaluated (SVR versus treatment failure).

Results: 23 HIV-positive men who received pegylated interferon alpha and ribavirin for acute hepatitis C infection were identified. Median age was 41 years (range 28–54). Mean time from estimated transmission to treatment start was 22 weeks, and mean time from diagnosis to treatment start was 16 weeks. Median CD4 count at treatment start was 474 cells/μL (range 172–1222) and 17 patients (59%) were on antiretroviral therapy, all with suppressed HIV viral loads. HCV genotypes were predominantly 1 (78%), with 13% type 4 and 9% type 3. Two patients did not complete treatment due to side effects, and one patient had no virological response by 12 weeks and treatment was stopped. Of the 20 patients who completed treatment, 9 (45%) had RVR and were given 24 weeks of treatment, the remainder had no demonstrable RVR and received 48 weeks of treatment. All 20 patients who completed treatment achieved SVR at 24 weeks post treatment.

Conclusion: A treatment strategy of 24 weeks with RVR and 48 weeks without RVR can be highly successful irrespective of genotype, if patients can tolerate a full course of treatment. These results support clinicians who encourage HIV positive patients to start and persist with treatment for acute HCV infection.

P88
Improving tuberculosis treatment outcome in HIV-positive patients: effect of incorporation of community-support models for HIV in high-burden tuberculosis settings in Nigeria

E Nwene[1], D Olutola[1] and J Onyekwelu[2]
[1]Institute of Human Virology of University of Maryland School of Medicine, Baltimore, Maryland, USA and [2]Nnamdi Azikiwe University, Awka, Nigeria

Background: The advent of Human Immunodeficiency Virus (HIV) has increased the burden of Tuberculosis (TB) globally. Mortality is worsened by late diagnosis and atypical presentation of TB in HIV infected patients. Community treatment support including home tracking and treatment

Table for P86

		1	2	3	4	5
HCV		Chronic G1a	Chronic G1a	Chronic G3	Borderline acute G1a	Borderline acute G1
Reason for short treatment		Low baseline HCV RNA	Low baseline HCV RNA	Severe toxicity	HCV contracted >1yr and <2yrs pre treatment	HCV contracted >1yr and <2yrs pre treatment
Baseline value at start of treatment	CD4 (cells/μl)	404 (28.2%)	552 (52.2%)	677 (37.3%)	735 (28.7%)	344 (24%)
	HIV VL (cp/ml)	<50	<50	<50	<50	<50
	Serum HCV RNA (IU/ml)	628	5176	2,233,132	16,898	687,811
Week of treatment undetectable	Serum HCV RNA	1	1	8	2	3
	PBMC HCV RNA	12	12	4wk post treatment	20	20
Week treatment discontinued		12	12	24	24	24
ETR (IU/ml)		<15	<15	<15	<15	<15
SVR (IU/ml)		<15	Jan 2011	May 2011	April 2011	June 2011

support has improved outcomes of Anti Retroviral Therapy (ART) in HIV infected patients. In an effort to reduce the burden of TB disease on HIV positive patients in Nigeria, this process was adopted in treating TB in TB HIV co-infected patients. This study evaluates the effects of these strategies.

Methods: A cross-sectional retrospective analysis of TB treatment outcome in TB (including TBHIV co infected) patients in 6 local government areas (LGA's) in Anambra state was done between 2004 and 2008. All had functional TB and HIV delivery services. Patient profiles and treatment outcome were extracted from TB registers and treatment cards, abstracted and analyzed.

Results: 481 TB patients were screened for HIV, 280 (58.2%) were males while 201 (41.8%) were females. Of these numbers, 133 (27.7%) were HIV positive putting the HIV prevalence rate at 27.7%. Of the 133 HIV infected clients, 67 were males while 70 were female (male /female ratio is 47.4% vs. 52.6%, p = 0.0029). Smear positive diagnosis was made in 63 (47.4%) and 215 (61.8%) among HIV positive and HIV negative patients respectively. TB treatment outcomes in HIV positive compared to HIV negative patients were; Cured (19.5% vs. 37.4%, p= 0.0059), treatment completed (67.7% vs. 45.5%, p = 0.0182), deaths (3.8% vs. 4.9%, p = 0.6128), defaulter (6.0% vs. 7.8%, p = 0.5389), failure (0% vs. 1.6%, p =0.1309). The treatment success rate for HIV positive compared to HIV negative were 87.2% and 82.9% respectively.

	HIV positive	HIV negative	Total	P value
Sex				
Female	70 (52.6%)	131 (37.6%)	201	0.0029
Male	63 (47.4%)	217 (62.4%)	280	
TB Sputum smear				
Smear positive	63 (47.4%)	215 (61.8%)		
Smear negative	70 (52.6%)	133 (38.2%)		0.0740
TB Treatment Outcome				
Cured	26 (19.5%)	130 (37.4%)		0.0059
Treatment completed	90 (67.7%)	159 (45.5%)		0.0182
Died	5 (3.8%)	17 (4.9%)		0.6128
Defaulter	8 (6.0%)	27 (7.8%)		0.5389
Failure	0 (0%)	6 (1.6%)		0.1309

Conclusion: TB cure rate and survival rates were significantly better in TB/HIV co infected patients than HIV negative patients. This is due to the emphasis placed on treatment education and community support which are core components of HIV treatment programs in Nigeria. Efforts should be made to expand and strengthen this TB/HIV collaborative activity to all TB clients irrespective of HIV infection status all over the country. In addition, female sex was associated with higher cases of HIV positivity showing the effect of sexual route in HIV transmission in Africa.

P89
Chronic hepatitis E in HIV as a cause for cryptogenic cirrhosis

G Jagjit Singh[1], N Rockwood[1], M Atkins[1], B Gazzard[1], S Ijaz[2], R Tedder[2] and M Nelson[1]

[1]Chelsea and Westminster Hospital, London, UK and [2]Health Protection Agency, London, UK

Background: Chronic hepatitis E infection is increasingly being reported in immunocompromised patients. We describe a case of chronic hepatitis E cirrhosis in an HIV positive Caucasian man who demonstrated persistently elevated Alanine Transferase (ALT) levels predating commencement of Highly Active Anti-Retroviral Therapy (HAART).

Case report: A 45 year old HIV positive captain of a ship was found to have a persistently elevated ALT at 335 IU per liter at the time of HIV diagnosis in January 2000 at our centre (CD4 2 cells/cm, HIV 36,000 viral load copies/ml).He was hepatitis A immune and had natural immunity to Hepatitis B. Polymerase chain reaction (PCR) tests were repeatedly negative for hepatitis C, syphilis, cytomegalovirus and Epstein-Barr virus. Serological tests were negative for autoantibody screens, α1-antitrypsin, iron and copper studies. His HIV viral load was fully suppressed since June 2000 on HAART and CD4 count rose to greater than 200 copies/ml. He was asymptomatic with no relevant history to suggest a cause for chronic liver disease, including minimal alcohol use. His examination was normal with absence of neurological signs. A liver biopsy in 2006 revealed stage 4 fibrosis with moderate, spotty necrosis. In 2007 an ultrasound elastography assessment revealed progression to cirrhosis with a reading of 69.1kPa.In March 2010, hepatitis E (HEV) IgM and IgG were detected and HEV (genotype 3) infection was confirmed by the detection of HEV RNA in his serum.Testing of stored plasma samples for HEV RNA revealed the patient had been persistently viraemic since March 2000 with relatively unchanged HEV RNA levels at an average of log5.6 copies/ml over time. He was serologically silent from March 2000 until May 2001 but plasma samples were positive for both HEV IgM and IgG from October 2001 to date. A trial of pegylated interferon alpha-2a (Pegasys) was commenced to treat his HEV infection. After 3 weeks of Pegasys, his plasma HEV RNA levels were undetectable and his ALT improved significantly.

Conclusion: Unexplained liver dysfunction in HIV positive patients may be attributable to chronic HEV infection. Discrepancies between serological and PCR results shown in results shown in this patient demonstrate the importance of considering molecular techniques to exclude HEV infection. It is planned for him to undergo therapy for at least 24 weeks and a progress report will be provided.

P90
Cryptococcal meningitis in the era of effective antiretroviral therapy

A Scourfield, L Waters, J Dunning, B Gazzard and M Nelson

Chelsea and Westminster Hospital, London, UK

Background: It is estimated 10–30% of individuals with cryptococcal meningitis (CM) initiating ART develop immune reconstitution and inflammatory syndrome (IRIS). We performed a review of individuals with CM to determine frequency and clinical course of IRIS.

Method: We identified individuals with a positive CSF culture for *Cryptococcus* from 2005–2010 and performed a case notes review of these subjects. IRIS was defined as presentation with signs or symptoms consistent with CM after the introduction of ART with negative CSF culture.

Results: 9 cases of CM occurred during this time period all were identified as *Cryptococcus neoformans* with a median age of 39 years (range 26–54), 8 were male. 4 were white Caucasian, 1 black African, 2 SE Asian and 2 of Middle Eastern origin. At time of diagnosis 2 had concurrent PCP, 3 KS and 1 case TB meningitis. Pathology, CSF and imaging results are shown in table below. All were treated with ambisome for a mean 19 days. One subject received flucytosine for 2 weeks and the two subjects with cryptococcomas were treated with steroids. The mean time to CSF sterilisation was 9.6 days (SD 5.27). One individual with a CSF opening pressure of 89cm H20 died 7 days after CM diagnosis. The remaining patients were placed on fluconazole prophylaxis and commenced on ART at mean 39 days after CM (One subject started 9 days prior to CM). All surviving subjects re-presented with symptoms consistent with IRIS giving a 100% incidence in this cohort. Four had paired CSF cryptococcal antigen titres 3 showed marked improvement one remained the same. The mean time on ART prior to second presentation was 161 days (SD 101).

4/8 received steroids and the mean duration of time from onset of CM to full symptom resolution was 432 days (SD 208). Of the 8 subjects who survived 2 went on to have a CSF shunt inserted and 1 developed bilateral subdural haematomas.

(mean values)	Diagnosis of CM	Diagnosis of IRIS
Number	9	8
CD4 cell mm3	29	101
HIV RNA copies/ml	93,000	2,122
CSF opening pressure cm H20	34	21
CSF protein g/l	1.04	1.0
CSF glucose mmol/l	2.16	3.0
WCC (MNC=mononuclear cell, LYM=lymphocytes)	19 (MNC)	28 (LYM)
Imaging (NAD= normal)	9 CT NAD	4 CT NAD
CC = cryptococcomas	2 MRI CC	2 CT CC
FHS = focal high signal		2 MRI FHS

Discussion: This data shows that in the era of successful ART CM IRIS is a major problem with significant mortality and morbidity in those who present late or defer therapy. Timing of ART can be difficult due to the presence of concurrent OIs.

P91
Significant decreases in CD4 cell counts in human immunodeficiency (HIV-1)- and hepatitis C (HCV)-infected patients treated with pegylated interferon alpha (PEG IFNα) and ribavirin

R Gellissen, E Thomson and J Main
Imperial College London, London, UK

Background: Dual therapy with PEG IFNα and ribavirin remains the gold standard treatment for HIV-positive patients infected with HCV. However, this treatment is more hazardous in HIV-infected individuals due to an increased risk of immunosupression, bone marrow toxicity and potential interactions with highly active anti-retroviral therapy (HAART), potentially resulting in hepatotoxicity and decreased efficacy. In the APRICOT study, patients treated with PEG IFNα and ribavirin had a mean CD4 count decrease of 140 cells/mm^3. We aimed to review the effect of treatment on a prospectively-followed unselected cohort of HIV-positive individuals.
Methods: 56 HIV-positive patients with HCV infection presenting to a single centre between January 2008 and December 2010 were treated with 24–48 weeks of pegylated IFNα and ribavirin and followed for up to 72 weeks. We analysed CD4 count, haemoglobin, neutrophil count and platelets at 1, 3, 6, 9 and 12 months of therapy.
Results: All patients were treated with PEG IFNα and ribavirin; 46% with IFNα_{2a} and 54% IFNα_{2b} and the overall SVR rate was 69%. All patients were male and mean age of 40 years (95% CI: 38–42). 70% were treated within 1 year of HCV infection and 79% received HAART prior to HCV treatment. The mean CD4 count decreased from 632mm^3 to 411mm^3 at 3 months and 365/mm^3 by 9 months of treatment ($p<0.0001$); a mean drop of 267mm^3. High baseline CD4 counts positively correlated with larger drops in CD4 count. Four patients (7%) developed CD4 counts of <200 mm^3; the mean baseline CD4 count in this group was 456 mm^3 (range 343–670). While absolute CD4 counts declined, CD4:CD3 count percentages increased significantly over time (29% at baseline versus 37% at 9 months; $p<0.00001$). Neutrophil, Hb and platelet drops were most prominent in the first month of treatment and continued to decrease only slowly after this time. No significant differences were observed in patients on HAART, during acute versus chronic infection, or with IFN products.
Discussion/Conclusions: In a cohort of HIV-infected patients with predominantly early HCV infection, CD4 counts descend significantly in patients treated with IFNα and ribavirin for the first 9 months of treatment. The mean drop in CD4 count over 9 months was 267/mm^3, a figure significantly higher than that found in previous studies. HIV-positive patients require vigilant monitoring of CD4 count during treatment for HCV infection.

P92
Azathioprine use as a novel treatment for cryptococcal immune reconstitution and inflammatory syndrome in HIV

A Scourfield, L Waters, V Tittle, T Martin, N Rockwood, B Gazzard, M Bower and M Nelson
Chelsea and Westminster Hospital, London, UK

Background: We present the case of an individual who developed IRIS following cryptococcal meningitis who we were unable to wean off steroids despite ventriculoperitoneal shunting but responded to azathioprine.
Presentation: A 24 year old HIV positive man presented with worsening headaches. His CD4 count was 54 cells/mm^3 and HIV-1 RNA was 93,000 copies/ml. Initial CT imaging of the brain was unremarkable and lumbar puncture revealed encapsulated yeast on microscopy so he was commenced on treatment with liposomal amphotericin and flucytosine. Cultures grew *Cryptococcus neoformans* and after 10 days of treatment his CSF was sterile but he still required daily lumbar punctures for persistently raised intracranial pressure (maximum 60cm H_20). MRI showed development of cryptococcomas and in line with IDSA guidelines he was commenced on prednisolone 40mg once daily. Daily lumbar punctures were continued for four weeks. The steroids were continued and he was switched to fluconazole prophylaxis. Two months after admission he was commenced on antiretroviral therapy with atripla.
Follow-up: Over the next 10 months he presented on five occasions with headaches and vomiting, each time as the steroid dose was being reduced. Lumbar puncture revealed sterile CSF with persistenly raised opening pressures and a ventriculoperitoneal shunt was inserted. At this time his CD4 count had risen to 373 cells/mm^3 but due to repeated courses of steroids the patient had developed florid signs of Cushing's syndrome and steroid induced diabetes; a DEXA scan revealed osteopenia. A trial of montelukast was administered for one month during steroid dose reduction but he relapsed; investigation revealed a patent shunt. Steroids were restarted, this time with azathioprine 50mg once daily. One week later the steroids were discontinued and the azathioprine increased to 100mg once daily. The clinical picture improved gradually over a month. Follow up CT scan demonstrated significant radiological improvement at 4 weeks with further improvement at 7 weeks. Fourteen weeks after the initiation of azathioprine the patient remained off steroids, headache free and had not required further lumbar punctures.
Discussion: There is increasing interest in the use of steroid sparing regimes to treat IRIS in HIV. Azathioprine is a purine analogue that inhibits DNA synthesis and cell proliferation especially in lymphocytes and may be a useful alternative to steroids.

Complications of HIV Disease or Treatment

P93
A review of causes of death in HIV-positive patients in a London cohort over a 6-year period

K Atkinson, S Yacoub, M Nelson and N Nwokolo
Chelsea and Westminster Hospital, London, UK

Background: Prior to the advent of Highly Active Antiretroviral Therapy (HAART), deaths in HIV positive individuals were predominantly due to opportunistic infections and their complications. However, with the increased life expectancy offered by HAART, and with earlier diagnosis, studies have shown that cardiovascular disease, co-infection with viral hepatitides and cancer are increasingly recognized as major causes of mortality in this group of patients.
We reviewed our cohort to ascertain whether causes of death were similar to those described in the published literature.
Methods: We interrogated our clinic database to find all patients who had died between January 2004 and December 2009. Data collected included demographics as well as data on direct cause of death, other

medical conditions, CD4 count and viral load at time of death, time on HAART, presence of hepatitis B/C co-infection, and use of recreational drugs.

Statistical analysis was done using univariate and multivariable logistic regression to identify factors associated with cause of death.

Results: 318 individuals were identified as having died during the time period in question. The leading causes of death were non Hodgkin's lymphoma (10%), *Pneumocystis jirovecii* pneumonia (7.5%) and Burkitt's lymphoma (5%). Cancer related deaths contributed to 37.5% of all deaths.

Median duration of HIV infection was 9.5 years (range 0.1–23 years) and 54% of individuals were on HAART at time of death for a median of 5 years (range 0–22 years).

Median CD4 count at death was 169 cells/ml (range 2–1454 cells/ml). 42.5% had an undetectable viral load (<50 copies/ml) at time of death.

Conclusion: Causes of death in our cohort reflect those from other recently described groups.

As individuals live longer on HAART and as efforts towards earlier identification of HIV infected individuals become more successful, it is likely that numbers of deaths from opportunistic infections will continue to fall and those from cancers and cardiovascular disease will rise.

It is important to identify where possible, measures that can be utilized in the early diagnosis of cancers earlier and to screen for and treat risk factors for cardiovascular disease in an effort to reduce the contribution of these conditions to cause of death in HIV positive individuals.

P94
Chronic kidney disease in an inner London HIV cohort

N Jones[1], A Hegazi[2], M Pakianathan[2] and P Hay[1]

[1]St. George's University London, London, UK and [2]St. George's Hospital, Courtyard Clinic, London, UK

Background: Creatinine based methods for estimating glomerular filtration rate (eGFR) are widely used but have not been validated in HIV-infected populations. eGFR and proteinuria have been associated with progression of chronic kidney disease (CKD) and subsequent mortality.

Methods: Patients attending the HIV clinic between 1/1/9 and 1/1/11 were identified and data extracted from the HIV clinical database. eGFR was calculated for 1121 patients using Cockroft-Gault (CG) and modification of diet in renal disease (MDRD) equations and was stratified by CKD stage. Medical records of patients with CKD stage 3 or above were reviewed and aetiological factors identified.

Results: Patients were 57% male and median age was 44 yrs. 60% were of black ethnicity and 34% white. 61% (592/976) had a BMI ≥25. 73% of patients (818/1121) were prescribed tenofovir, 21% atazanavir and 15% both drugs. Urine Protein/Creatinine ratio (UPCR) was available for 871/1121 patients. Of these 69% had a normal UPCR (<15mg/mmol), 25% had a 'trace of protein' (UPCR 15–44mg/mmol) and 6% had a UPCR ≥ 45mg/mmol 'macroalbuminurea'. The prevalence of CKD stage 3 or above was 9% using CG to estimate eGFR but only 1.1% using MDRD. This difference was greater in non-black patients (0.7% vs. 10.8%) than in black patients (1.3% vs. 7.7%), and less marked in those with a BMI ≥25 (1% vs. 4.7%). 31 patients had an eGFR<50 measured using CG but not when using MDRD. Most cases of CKD stage 3 or above were multifactorial in aetiology and further data will be included in the final presentation.

eGFR mL/min/1.73m^2	Renal Impairment	MDRD n (%)	CG n (%)
Stage 1 GFR > 90	Normal	870 (77.6)	586(57.7)
Stage 2 GFR 60–89	Mild	213 (19)	338(33.3)
Stage 3 GFR 30–59	Moderate	28(0.2)	79(7.8)
Stage 4 GFR 15–29	Severe	2(0.2)	7(0.)
Stage 5 GFR <15	Established	8(0.7)	5(0.7)

Conclusion: More patients were identified as having CKD using CG than MDRD. This did not seem to due to underestimation of CG eGFR in black patients and may have been attenuated by the high prevalence of obesity. Dose modification of some antiretrovirals was indicated in patients with eGFR<50 by CG despite MDRD eGFR above this threshold. The high prevalence of proteinuria observed warrants further evaluation and intervention if appropriate to slow CKD progression.

P95
Efavirenz discontinuation in a UK HIV clinic cohort: later rather than sooner?

J Zhou, L Waters, M Desai, C Iwuji, S Tilbury and M Fisher

Brighton and Sussex University Hospitals NHS Trust, Brighton, UK

Background: Current BHIVA guidelines recommend efavirenz (EFV) based regimens as first line therapy for HIV infected adults. Central nervous system (CNS) side effects on EFV are common and tend to resolve in 4–6 weeks of starting EFV; a minority of patients may have persistent symptoms resulting in switching off the drug. Patients also switch off EFV for other reasons including virological failure and non-CNS toxicity. This study aims to describe the timing and reasons for discontinuation of EFV in a clinical cohort.

Methods: Retrospective database analysis of all patients starting EFV as part of their first regimen from 1 Jan 1999 to 21 Dec 2010 was performed. Demographic details, HIV surrogate markers and information on EFV discontinuation were extracted from our prospectively collected database.

Results: 475 patients (425 male) started EFV as part of their first regimen; median CD4 count and viral load at starting ART were 265 cells/mm3 (IQR 243–278) and 16466 copies/ml, respectively. 186 (39%) discontinued EFV. The reasons were: CNS disturbances 74(40%) virological failure 27(15%) rash 5(3%), non-CNS toxicity 30(16%), clinical trial 14(7.5%), planned pregnancy 3(2%) and other reasons 33(17%).. Median time to EFV discontinuation for all reasons was 365 days (IQR 134–729) and the discontinuation rate was highest between 0–12 weeks ((41(22%) of all discontinuations) and between 1–2 years (62(33%) of all discontinuations). Most patients who experienced virological failure had been on EFV for at least 1 year. Five patients developed a rash and discontinued EFV within 14 days. The table below illustrates the rate of EFV switch due to CNS toxicity; 3% of these were after more than 4 years on EFV.

There was no difference in discontinuations rates (overall or for CNS toxicity) across ethnic groups.

Time to switch	0–2 wks	>2–6 wks	>6–12 wks	>12wks – 1yr	>1–2 yrs	2–4 yrs	>4 yrs
Number (%)	4 (5%)	5 (7%)	8 (11%)	27 (36%)	15 (20%)	17 (18%)	2 (3%)

Conclusions: EFV discontinuation shows a bimodal distribution with the highest discontinuation rate in between 0–12 weeks and 1–2 years. Patients discontinue EFV for CNS toxicity up to 4 years after starting the drug. This highlights the importance of discussing CNS toxicity, even in patients established on EFV-based therapy.

P96
Kidney transplantation in HIV-infected patients: the preliminary United Kingdom experience

E Gathogo[1], L Hamzah[2], B Nathan[3], J Levy[4], R Jones[5], R Hilton[6], M Harber[1], N Marshall[1], C Ashley[1], F Post[2] and S Bhagani[1] on behalf of the HIV/Renal Transplant Study Group

[1]Royal Free Hampstead NHS Trust, London, UK, [2]King's College London, London, UK, [3]King's College Hospital, London, UK, [4]Imperial NHS Trust, London, UK, [5]Chelsea and Westminster Hospital, London, UK and [6]Guy's and St Thomas' Hospital, London, UK

Background: End-stage kidney disease (ESKD) affects approximately 1% of black HIV infected patients in the UK. Kidney transplantation (KT) is

considered an attractive strategy in these relatively young patients, although paucity of donor organs and clinical outcome data limits widespread implementation.

Methods: Retrospective national cohort study of HIV/KT recipients. Data were extracted from case notes and electronic resources, and included follow up until November 2010. Kaplan-Meier analysis was used to estimate patient and graft survival.

Results: Since 2005, 33 HIV-infected patients have undergone KT, 28 of whom are included in the study. Median age at transplantation was 38.5 years, 71% were male, 75% of black ethnicity, 4% HBV and 7% HCV co-infected. ESKD in 68% was due to HIV-associated nephropathy. All patients were stable on antiretroviral (ARV) therapy and had HIV RNA <50 c/mL at KT. Allografts were obtained from 16 deceased and 12 live donors. One patient died during KT; data on immunosuppressants (IS) and antiretroviral therapy (ART) was available for 26 patients. Basiliximab (n=20) or daclizumab (n=6) was used as induction and followed by mycophenolate mofetil, glucocorticosteroids and ciclosporin A (CsA) or tacrolimus (FK). Median trough levels (ng/mL) at one-month post-KT were 256 (IQR 196, 331) for CsA (Target**:** 200 – 350) and 8.4 (5.3, 9.9) for FK (Target: 10–15). The median follow up post KT was 18 (8, 32) months, during which 4 patients died. At the most recent visit, 85.7% had functioning allografts, with a median eGFR of 54 (43, 64) mL/min. One year patient survival was 87% (compared with 96–99% nationally) and graft survival 87% (compared with 93–96% nationally). Delayed graft function was encountered in 21% (compared to 5–28% nationally), and biopsy proven acute rejection in 39% patients (compared to 17% nationally). All patients maintained undetectable HIV RNA post-KT, and 4 (14%) patients developed opportunistic (CMV viraemia, BK virus nephropathy) or neoplastic (cutaneous Kaposi sarcoma) complications.

Conclusion: Preliminary results with KT in HIV infected patients suggest an increase in early mortality and of renal complications in this carefully selected population. Although the incidence of HIV-related complications is low, the results of HIV/KT should be carefully monitored to improve short-term outcomes and confirm acceptable medium to long-term outcomes.

P97
Diagnosis of osteoporosis: comparison of the effect of using T-scores derived from Caucasian male populations with those derived from HIV-infected males

A Samarawickrama[1], C Iwuji[1], M Fisher[1], Y Gilleece[1] and K Walker-Bone[2]
[1]Brighton and Sussex University Hospitals, Brighton, UK and [2]Brighton and Sussex Medical School, Brighton, UK

Background: To date, many studies have suggested that HIV-infected men are at increased risk of low bone mineral density (BMD). However, osteoporosis is conventionally diagnosed using World Heath Organization case definitions which were validated in Caucasian women with a defined risk of fracture. To date, it is unclear whether the same case definitions are applicable in HIV-infected male populations.

Methods: As part of a longitudinal study of bone disease in HIV-infected patients, mean and standard deviation (SD) of absolute femoral neck BMD (g/cm^2) were measured for each subject. As is 'usual' practice, data from the US National Health and Nutrition Examination Survey III were used to calculate T-scores. As a comparison, age-stratified standardised mean BMD and SD were calculated for this population using standard case definitions**:** normal >-1.0 SD, osteopenia <-1.0 - >-2.5 SD and osteoporosis <-2.5 SD. Agreement between T-score diagnoses from the two ranges was compared by Cohen's kappa (κ) coefficient.

Results: Femoral neck BMD performed in 280 Caucasian HIV-infected men aged 23–68 years was normally distributed. Mean BMI was 25 kg/m^2, 91% were on antiretroviral therapy and current median CD4 count was 547 cells/μL. HIV-infected men had significantly lower absolute BMD at the femoral neck at all ages except those aged 60–69 years. Agreement between the two reference ranges was variable (κ=0.28–0.85) (see table).

		T-score from HIV population			T-score from general population			
Age (yrs)	n	normal	osteo penia	osteo porosis	normal	osteo penia	osteo porosis	κ
20–29	14	9	5	0	8	6	0	0.85
30–39	41	34	6	1	23	17	1	0.43
40–49	118	88	30	0	58	55	5	0.42
50–59	81	58	21	2	42	37	2	0.61
60–69	26	19	6	1	7	18	1	0.28

Conclusion: Comparison of referent BMD from an HIV-infected population with those derived from a 'standard' reference range shows that the apparent prevalence of osteopenia and osteoporosis is altered. The importance of bone densitometry lies in its prediction of fracture. It has yet to be seen whether using an HIV-infected or general population reference range is more relevant in predicting future fracture risk in HIV-infected patients.

P98
Avascular necrosis in 22 patients with HIV

P Mehta, M Nelson and F Boag
Chelsea and Westminster Hospital, London, UK

Background: Avascular necrosis (AVN) is an emerging complication of HIV infection. The incidence of AVN in HIV patients surpasses the general population. Although the incidence has increased in the HAART era, the aetiology remains unclear. We report our experience of AVN from our tertiary referral HIV centre and evaluate risk factors for its development.

Methods: Review of MRI reports of HIV positive patients between 2007 and 2010 identified 22 patients with AVN (19 males, 3 females). Case notes and electronic records were reviewed.

Results: 22 patients developed AVN, among 6487 HIV patients attending our centre (0.34% incidence, 95% CI 0.2–0.48%), with a mean age of 44 years (range 28–58 years). 68% patients had multi-joint involvement. The hip was the most common joint involved (70%), followed by the knee (19%), talus (8%) and shoulder (3%). The median nadir CD4 count was 52 cells/μL. 73% patients had more than two risk factors including HAART (91%), protease inhibitors (68%), hypercholesterolaemia (59%), corticosteroids (55%), hypertriglyceridaemia (45%), smoking (45%), alcohol (27%) and CD4 <200 cells/μL (23%). 9% were idiopathic. Bisphosphonates were used in four patients (18%); two of these patients had proven osteoporosis on bone mineral density (DEXA) scanning. 95% were referred for orthopaedic consultation and 55% required surgical intervention.

Conclusions: AVN is an important musculoskeletal manifestation of HIV and may be multi-focal with multi-factorial aetiology. Preventative strategies should focus on risk factor modification. When investigating joint pain in HIV-infected patients, clinicians should maintain a high index of suspicion for AVN. Unexplained AVN, particularly if multi-focal, should prompt consideration of HIV testing.

P99
Focusing cardiovascular risk prevention where it counts

C McCormick[1], H Webb[1], D Macallan[2] and M Pakianathan[1]
[1]St George's Healthcare NHS Trust, London, UK and [2]St George's University of London, London, UK

Background: Cardiovascular disease, and its prevention, is becoming increasingly important for people living with HIV. New BHIVA monitoring guidelines recommend annual cardiovascular risk assessments as part of routine HIV care. We assessed cardiovascular risk in an ethnically diverse inner city HIV cohort.

Methods: We undertook a systematic cardiovascular risk assessment for Coronary Heart Disease (CHD) of an inner-city HIV patient cohort. All

registered patients attending the service aged over 18 years and not pregnant were eligible. The HIV Nursing Team used a Framingham risk assessment tool to screen all eligible patients attending between April and December 2010. Patients had height, weight, blood pressure, lipids and relevant cardiac history recorded on a standard proforma. Data was analysed using MS Excel©.

Results: Out of a cohort of 1342, 1200 patients were eligible for assessment. The recorded ethnicity breakdown of eligible patients was 406 (34%) white British, 594 (50%) black African, 89 (7%) black Caribbean, 111 (9%) other. 696/1200 (58%) were male, of these 385 (55%) identified themselves as men who have sex with men.

1112/1200 (93%) had full biometric data sets for a Framingham cardiovascular risk assessment recorded. 190/1112 (17%) 177/696 (25%) men and 13/416 (3%) women [p<0.0001] had a 10 year CHD risk ≥10%. Of these, 41% were smokers, 42% had an elevated systolic blood pressure (≥ 150mmHg) and 46% had a total cholesterol ≥5.2 mmol/L.

657/1112 (59%) had a 10-year CHD risk of ≤5%;264/657(40%) men and 393/657 (60%) women [p<0.0001]. Of these 348/657 (53%) had 10-year CHD risk of ≤2%.

Discussion: Patients with CHD risk ≥10% (17% of our cohort) were significantly more likely to be male and often had modifiable risk factors. This offers an opportunity for appropriate and targeted interventions. A sizeable proportion of the cohort (59%) had a 10-year CHD risk of ≤5%. Annual cardiovascular risk assessment may not be necessary for these patients with resources diverted to other aspects of health screening in this population. The completion of this assessment required considerable nursing resources.

P100
Multicentre prospective cohort study on long-term safety and efficacy of Truvada Or Kivexa in combination with Efavirenz in treatment-Naïve HIV patients – TOKEN study

S Das[1], J Arumainayagam[2], B Kumari[1], M Pammi[3], S Taylor[4], N Dufty[4], I Ahmed-Jushuf[3], E Carlin[3], L Riddle[5], S Chandramani[2] and M Ghanem[5]

[1]University Hospital Coventry & Warwickshire, Coventry, UK, [2]Walsall Manor Hospital, Walsall, UK, [3]Nottingham University Hospital, Nottingham, UK, [4]Birmingham Heartlands Hospital, Birmingham, UK and [5]Northamptonshire Healthcare NHS Trust, Northampton, UK

Background: There is conflicting evidence regarding risk of cardiovascular disease (CVD) and virological efficacy of abacavir use in HIV patients. We compared the long-term safety and efficacy between Truvada and Kivexa when used in combination with Efavirenz in treatment naïve predominantly black African HIV patients.

Methods: We collected information about HIV patients who are HLA-B 5701 negative starting treatment with Truvada or Kivexa in combination with Efavirenz from Jan 2006 to Dec 2006 with follow up through 144 weeks. Viral load (VL), CD-4 count, fasting lipid profile, estimated GFR (Cockroft-Gault) were measured at baseline and every 12 weeks. Risk of CVD was calculated using Framingham equation at baseline and every 24 weeks. Statistics were by student's t-test, one- way ANNOVA or Dunn's multiple comparison test.

Results: Of 178 patients, 95 were on Truvada and 83 on Kivexa. Most were black African (73%), mean age 39.0 (+/−8.9) years and 41.0% were female. Mean Baseline VL was 5.4 (+/−5.6) $\log_{10}$ copies/ml and CD-4 count 172 (+/−84) cells/mm^3 of blood.

At 144 weeks, on intention to treat analysis, VL suppression below 200 copies/ml in Truvada and Kivexa arm were 89.5% and 88.4.2% (p=0.1) and below 40 copies in 79.2% and 78.4% (p=0.8) respectively. Mean rise in CD-4 count was similar in both groups. Results were not predicted by baseline VL. Increase in serum total cholesterol (TC) was higher in Kivexa (p= 0.05), but triglycerides (TG), HDL-cholesterol (HDL), TC/HDL and e-GFR was not different.

There was no incidence of myocardial infarction in any groups. Risk of CVD remained similar in both groups (table 1).

Table 1: Mean (+/−SD) serum lipids, e-GFR and CVD risk (%)

	TC mmol/l	TG mmol/l	HDL mmol/l	TC/HDL	e-GFR ml/min	Mean CVD risk (%)
Truvada						
Baseline	4.2(0.9)	1.3(0.8)	1.2(0.4)	3.6 (1.9)	104.7 (24.0)	3.6 (4.9)
144 weeks	5.1(1.1)	1.6(1.1)	1.5(0.6)	3.5(1.5)	107.7 (23.7)	5.8 (10.0)
Kivexa						
Baseline	4.0(0.8)	1.5(1.0)	1.1(0.3)	3.8 (1.1)	104.8 (30.0)	3.9 (5.1)
144 weeks	5.2(1.0)	1.2(1.0)	1.6(0.5)	3.6(1.3)	122.0 (38.2)	5.0 (6.8)
p-value (between groups)	0.05	0.7	0.7	0.3	0.1	0.8

Conclusion: In this study, after 3 years of follow Truvada and Kivexa used in combination with Efavirenz in treatment naïve HLA-B 5701 negative predominantly black African patients were safe and effective.

P101
Clinical characteristics of HIV-positive patients with white matter lesions on magnetic resonance imaging of the brain

D Phillips[1], L Haddow[1], R Fish[2], H Hyare[3], R Jaeger[1], R Miller[1] and J Cartledge[2]

[1]University College London, London, UK, [2]Camden Primary Care Trust, London, UK and [3]University College London Hospitals NHS Trust, London, UK

Background: White matter (WM) lesions are often seen in patients with HIV (PWHIV) undergoing magnetic resonance imaging (MRI) of the brain for neurological complaints, the significance of which is often unknown. We aimed to estimate the proportion of PWHIV having brain MRI who had WM lesions and describe their clinical and laboratory characteristics.

Methods: All PWHIV undergoing brain MRI from 08/04 to 11/09 at a London teaching hospital were included. Patients were classified as cases if their first scan during the study period was reported by a radiologist as showing WM lesions, either as a sole finding or in combination with cerebral atrophy (CA) or space occupying lesions (SOL). Data collection included age, sex, CD4 count, plasma viral load (VL), antiretroviral therapy (ART), cerebrospinal fluid investigations, and (in cases only) full clinical history.

Results: Of 261 patients undergoing brain MRI, 99 (38%) had WM lesions (62 with WM lesions only, 28 with WM + CA and 9 with WM + SOL). Of these 99 cases, mean age was 44.3 years (SD 10.8), 64 were male, median CD4 count was 240 cells/μL (interquartile range 100–430 cells/μL), 41 had an undetectable VL (<50 copies/mL), and 66 were currently taking ART. Cases were similar to other patients in age, sex, CD4 count, VL and treatment status. Indications for brain MRI in cases included focal neurology (n=20), acute cognitive or behavioural change (n=15), headache (n=14), both focal neurology and headache (n=13), systemic illness (n=12), chronic cognitive impairment (n=11) and seizures/collapse (n=9). Final diagnoses in patients with WM lesions included HIV encephalopathy (n=16), progressive multifocal leucoencephalopathy (PML) (n=13), tuberculosis (TB) (n=9), small vessel cerebrovascular disease (CVD) (n=7), herpesvirus encephalitis (n=6), suspected viral encephalitis (n=4), toxoplasmosis (n=4), large vessel disease (n=3), and cryptococcosis (n=2). In 28 cases, there was no identifiable diagnosis underlying the WM lesions.

Conclusion: More than one third of PWHIV undergoing brain MRI at our centre were noted to have WM lesions, in whom the commonest diagnosis was HIV encephalopathy, and more than a quarter had no obvious aetiology (other than HIV). This common finding requires further exploration. In those with a causative explanation, PML, TB, CVD and viral encephalitis were frequent diagnoses.

P102
Absence of skin hypersensitivity in subjects switching to etravirine with undetectable plasma HIV RNA: a randomized prospective study

A Scourfield[1], L Waters[1], A Jackson[1], A Winston[2], L Garvey[2], W Hadley[3], N Perry[3], M Fisher[3] and M Nelson[1]

[1]Chelsea and Westminster Hospital, London, UK, [2]St Mary's Hospital, London, UK and [3]Royal Sussex County Hospital, London, UK

Background: In treatment naïve HIV-1 infected subjects the incidence of rash with NNRTI is approximately 5–20%. Etravirine has been reported to be associated with rash, ranging from mild self-limiting skin rash to severe hypersensitivity. In the SENSE study, designed to assess neuropsychiatric symptoms in naïve subjects commencing ART with etravirine or efavirenz, 79 subjects received etravirine of whom 29.1% developed skin adverse events of any grade (91% Grade 1–2) leading to discontinuation in 5%. The EuroSIDA and ATHENA cohorts have recently reported the risk of hypersensitivity and/or hepatotoxicity to nevirapine not to be increased in those with a high CD4 count if they have undetectable plasma HIV-1 RNA. We recently conducted and reported virological and neuropsychiatric findings from a multicentre placebo controlled trial designed to evaluate the effects of switching with an undetectable viral load from efavirenz to etravirine once daily in subjects with CNS toxicity. We performed a review to assess the development of rash within this study.
Method: All enrolled subjects were reviewed at 4 and 12 weeks post-switch to assess for adverse events including rash. Individuals with a documented cutaneous adverse event or rash were graded from 1–4. Where present, the study investigator recorded likelihood of relationship of this rash to etravirine, any prior history of dermatological complaints and any treatment administered.
Results: Thirty eight subjects with plasma HIV RNA <50 copies/ml were enrolled and completed study procedures. All were male with a median age of 43 years (range 26–64). During the 12 weeks after commencing etravirine only one individual (3%) reported rash, at both week 4 and 12. This subject had a history of skin complaints and was already under the care of the dermatologists. The rash was deemed grade 2, not related to etravirine and the subject was treated with antihistamines, topical antimicrobials and steroids.
Conclusion: Etravirine has been shown to be a safe, effective switch option in those with persistent CNS side effects to efavirenz. There were no identifiable cases of etravirine related rash in this group of patients with suppressed viral loads. Ongoing post-licensing follow up of etravirine is required to confirm these findings.

P103
Prevalence of, and factors associated with, significant liver disease in HIV-infected patients exposed to didanosine (DDI) and development of a screening strategy used to identify subclinical disease

S Logan, T Fernandez, F Ferro, L Maynard-Smith, C Smith, J O'Beirne, A Rodger and S Bhagani

Royal Free Hospital, London, UK

Background: Following the report of a number of cases of cirrhosis and non-cirrhotic portal hypertension (NCPH) associated with didanosine (DDI) the FDA issued a safety advisory in early 2010. Hepatic transient elastography(TE) is a validated tool for identifying hepatic fibrosis and high liver stiffness readings have also been reported in HIV patients with NCPH. We aimed to identify the prevalence and pathology of significant liver disease and portal hypertension in HIV+ patients currently on or previously exposed to DDI and to describe co-factors associated with liver disease. We also aimed to develop a screening strategy for liver disease in patients exposed to DDI using a combination of blood tests, ultrasonography (U/S) and TE.
Methods: Patients (excluding HBV, HCV co-infections) who had >6 months of DDI use were included in the study. A questionnaire assessing alcohol use and drug use, was administered. All patients had serum aminotranserases (ALT, AST) and liver stiffness assessed by TE using standard criteria. Patients with elevation of ALT and/or TE >7.65kPa underwent U/S scan. Patients with U/S abnormality or TE>9.4kPa were offered trans-jugular HVPG assessment and a liver biopsy.
Results: We identified 373 suitable patients at our centre. We report data from the first 60 patients screened. The majority were men (75%) of whom 66% (n=40) were men who have sex with men. The age range 30–68 years. Twenty percent drank more than 20 units of alcohol per week and 43% had used recreational drugs. Mean ALT in men was 38 IU/l (range 14–129) and in women 19 IU/l (range13–32). The median TE score was 4.7KPA (IQR 0.2KPa to 3.8KPa). Eleven percent (7/60) of TE readings were unsuccessful – IQR/Score > 0.3 mainly due to body habitus, Twenty eight patients underwent liver ultrasound of which 4 scans were abnormal; coarse echotexture (n=2), splenomegaly(n=1), dampened doppler flow (n=1). 6 patients were offered a transjugular liver biopsy. One patient refused, of the remaining 5, 3 biopsies found significant liver pathology; nodular regenerative hyperplasia (n=2), moderate fibrosis (n=1).
Conclusions: Based on blood tests, TE and U/S, 6 of the first 60 patients (10%) had abnormality warranting further assessment by TJ liver biopsy. We have found significant liver disease in 3 (4%). There is no significant relationship between ALT and elastography score. We have not seen an association between length of exposure to DDI and significant liver disease but numbers to date are small. Other factors such as alcohol may also contribute.

P104
HIV inpatient care in a district general hospital in the UK where prevalence exceeds 2/1000: a 5-year experience

I Cormack and J Watson

Croydon University Hospital, Croydon, Surrey, UK

Methods: All known HIV+ve patient admissions to our hospital were recorded prospectively on a database from January 2005 onwards. Inpatient and outpatient notes were reviewed for data collection, clinical details and outcome.
Results: There was a total of 348 hospital admissions involving 250 HIV+ve patients over a period of 5 years. 88 patients were undiagnosed prior to hospital admission. 93% of these patients had a baseline CD4<350 at diagnosis, 53% CD4<50 and 78% had an AIDS illness. The average hospital stay for an undiagnosed HIV patient on their first admission was 27 days. These 88(35%) patients accounted for 138(40%) admissions and 3036/5737 (53%)days in hospital. 90% of patients were tested for HIV within a week of admission but in 9 cases the test was delayed by more than 1 week. 4/9 (44%)of these patients died all from complications of PCP. In total 7/88 (8%) died during the course of their admission, all had a CD4<50 at baseline. 61/88 (69%) undiagnosed patients had had a blood test at our hospital in the previous 5 years. 36/61(59%) had previous lymphopenia, 32/61(52%) had a raised ESR. Lymphopenia correlated to CD4<350 in 69/82 cases (84%).
87 patients under regular HIV care were admitted during this time period resulting in 113(32%) admissions and 1619(28%) days in hospital. Average 18.6 days/patient, 14.3 days/admission. 56/87(64%) had a baseline CD4<350. In 78/113 (69%) admissions the CD4was still<350, 75/113 (66%) were on HAART. 25/87(28%) patients had an AIDS defining diagnosis. 52% presented within one month of diagnosis, 68% within 3 months and 80% within 6 months. There were 8/87 (8%) deaths(3 AIDS). 44 patients who had defaulted HIV care >1 year were admitted to our hospital, resulting in 55(16%)admissions and 771(13%) days in hospital (average stay 17.5days/patient, 14 days/admission). CD4 was <350 in 40/55 patients (73%) and 39% had an AIDS defining diagnosis. There were 10/44 deaths(23%) in this group. 21 of the surviving 34 patients are now under regular HIV care and have a VL<40 on HAART, 12/21 now have a CD4>200.
Conclusion: Patients with undiagnosed HIV spend longer in hospital, often require multiple admissions and 16% require ITU/HDU admission.

93% of these have a CD4<350 and 78% have AIDS. Of those under HIV care many will still be admitted to hospital usually in the first 6 months.The overall mortality for our inpatients was 2%/yr but this is much higher at 4.6%/yr in those that have defaulted their HIV care for >1 year.

P105
Longitudinal study of TDF-associated renal toxicity in an HIV-positive treatment group compared with a chronic hepatitis B (HBV)-infected treatment group

D Fink, C Smith, S Logan, A Hall, D Onifade, M Johnson and M Jacobs
Royal Free Hospital, London, UK

Background: Studies of TDF use in HIV-positive patients found that the drug is associated with a small but significant loss of kidney function. For chronic HBV infection, deterioration of renal function has been found only in very small numbers of patients with endstage liver disease. Our study is the first to directly compare the renal function in an HIV-infected group compared with a chronic HBV-infected group over the first year of TDF treatment.
Methods: We studied 582, 216 and 17 patients with HIV, chronic HBV and HIV/HBV co-infection starting TDF between January 2007 and September 2010. We looked at estimated glomerular filtration rate (eGFR) in ml/min/1.73 m^2 calculated using the MDRD (Modification of Diet in Renal Disease) formula at baseline, 3, 6 and 12 months after starting TDF.
Results: 76% and 68% of HIV and HBV mono-infected patients were male respectively, 61% and 21% were of white ethnicity. The most common ARVs co-administered with TDF in HIV patients were 92% FTC, 36% EFV and 25% LPV. 57% of HBV patients were receiving TDF monotherapy. eGFR results are presented in the table. Changes in creatinine and phosphate were similar.

	Median (range)			
	Baseline	3 months	6 months	12 months
HIV	(n = 564)			
N	564	423	381	430
Median eGFR	103 (3,247)	99 (5,195)	97 (47,209)	98 (5, 204)
Change from baseline	-	−5 (−115,+71)	−6 (−64, 85)	−6 (−96, +80)
HBV	(n = 214)			
N	214	148	118	52
Median eGFR	95 (17,191)	92 (14,186)	94 (9,209)	86 (28, 141)
Change from baseline	-	−2 (−53, +28)	−1 (−35, +50)	−7 (−69, +24)
HIV/HBV	(n = 17)			
N	17	15	11	17
Median eGFR	114(75,148)	105 (71,123)	100 (85,140)	96 (70,135)
Change from baseline	-	−14 (−37,+18)	−10 (−35,+17)	−10 (−50,+14)

Conclusion: A small, statistically insignificant decline in eGFR occurs with TDF therapy independent of the HIV status and baseline eGFR of the patient.

P106
Impaired glucose tolerance in HIV-positive patients: a neglected cardiovascular risk factor?

J Bayley, S Shaw, N Bradley, L Waters and D Churchill
Lawson Unit, Royal Sussex County Hospital, Brighton, UK

Background: Diabetes is a well-established risk factor for cardiovascular disease (CVD), and the prevalence of diabetes is increased in some HIV positive patients. Impaired glucose tolerance (IGT) is also associated with a 50% increase in the risk of developing cardiovascular disease. In addition around 30% of those with IGT will subsequently develop diabetes.
Methods: We analysed 40,577 random plasma glucose results collected between 1998 and 2010 from 2,604 patients. Results were stratified into diabetic (2 results >11 mmol/L), non-diabetic (all results <7.8) and probable IGT (at least one result >7.7 but not fulfilling diabetic definition).
Results: Using these definitions, the point prevalence of diabetes at entry to the cohort was 0.77%, and the point prevalence of probable IGT was 1.57%. These are lower than the population prevalences (in much older people) of diabetes in the UK (4.2%), and of IGT in the USA (7%). However, the cumulative prevalences of diabetes (patients who had *ever* had 2 blood glucose results >11 mmol/l) and IGT (patients who had *ever* had at least one glucose >7.7 but were not diabetic) were 2.9% and 16.4% respectively in our study.
Conclusion: Almost one patient in 5 had at least one result suggesting impaired glucose tolerance or diabetes. Many current algorithms for calculating cardiovascular risk do not include IGT as a risk factor. Unrecognised IGT may account for some of the increased rate of cardiovascular disease in our patients.

P107
Prevalence of chronic kidney disease in an HIV-infected cohort in central Ghana

R Keegan[1], FS Sarfo[2], L Longstaff[1], R Phillips[2], S Shakoor[1], L Appiah[2] and D Chadwick[1]
[1]The James Cook University Hospital, Middlesbrough, UK and [2]Komfo Anokye Teaching Hospital, Kumasi, Ghana

Background: HIV infection is associated with an increased risk of chronic kidney disease (CKD). Relatively little is known about the prevalence and severity of CKD in HIV-infected populations in Africa, particularly West Africa. One common cause of CKD is HIV-associated nephropathy, which is almost exclusively seen in those of black African race. This study aimed to determine the prevalence of CKD in an HIV infected population in Ghana and to identify factors associated with renal disease.
Methods: we conducted a cross-sectional study in adults attending a large government hospital in Ghana to determine the prevalence of HIV-associated chronic kidney disease (HACKD). Clinical, demographic and laboratory data was collected. The presence of CKD was defined by either persistent proteinuria on dipsticks or estimated glomerular filtration rate (eGFR) < 60ml/min by Cockcroft-Gault equation in the absence of alternative causes of renal dysfunction. Factors associated with CKD were determined by logistic regression analysis. In those with proteinuria on dipsticks urinary albumin and protein/creatinine ratios were estimated.
Results: 218 patients were screened of which 26 were excluded due to incomplete data or other identified causes of CKD. Of the 192 patients analysed, 141 were on antiretroviral therapy (ART) and 51 were naïve to ART. The prevalence of HACKD in the cohort was 22.4% (95% CI 16.5,28.3%), and 39.2% (95% CI 25.8%,52.6%) in the ART-naïve sub-population. Patients naïve to ART had significantly lower eGFRs than those on ART (69 vs 103ml/min, p=0.001) and were more likely to have proteinuria. The only factors independently associated with CKD were lower Body Mass Index (OR 0.61, 95% CI 0.31,0.92, p=0.006) and being naïve to ART (OR 0.44, 95% CI 0.24,0.76, p=0.009). In the 16 patients with significant proteinuria, 6 had uPCR > 100mg/mmol, and half had high uPCR:uACR ratios suggestive of tubular, rather than glomerular disease. Few patients with HACKD had symptoms or signs such as hypertension or oedema.
Conclusion: asymptomatic HACKD is common in Ghana, particularly in patients naïve to ART. Screening new patients by urine dipsticks and eGRF may be warranted to identify those who could start ART earlier. Prospective studies are needed to determine the clinical significance of

HACKD in Africa and potential benefits or risks of ART, particularly since patients are surviving longer on ART and tenofovir use is increasing.

P108
Prevalence of vitamin D deficiency in newly diagnosed HIV-positive patients registering for care at the Mortimer Market Centre

K Gedela[1], S Edwards[2], P Benn[2] and A Grant[1,2]
[1]London School of Hygiene & Tropical Medicine, University of London, London, UK and [2]Mortimer Market Centre, Camden Primary Care Trust, London, UK

Background: Vitamin D deficiency may be more prevalent in people with HIV. The British HIV Association are considering whether vitamin D levels should be assessed routinely among newly diagnosed patients with HIV. The aim of this study was to describe the prevalence of vitamin D deficiency among individuals newly diagnosed with HIV.
Methods: We included consecutive antiretroviral-naïve patients diagnosed with HIV infection and registering for care at the Mortimer Market centre from 01/01/2008 to 31/12/2009. Data included demographics; glucose, bone, renal and liver function; CD4 cell count and HIV viral load; and serum 25-hydroxycholecalciferol (25-OHD), which was measured routinely for all new patients.
Results: Among 253 patients, 207 (81.8%) were male and the median age was 36 years. Among 233 with ethnicity data available, 150 (64.4%) self-reported white, and 83 (35.6%) black or other ethnicity. The median CD4 count and HIV viral load were 450 cells/mm^3 and 8,600 copies/mL respectively. 148 (58.5%) were 25-OHD deficient (25-OHD <50nmol/L), including 32 (12.6%) who were severely deficient (25-OHD <25 nmol/L). 73.5% (61/83) patients of non-white ethnicity were 25-OHD deficient compared with 50.7% (76/150) of those reporting white ethnicity ($p<0.001$). 7/8 (87.5%) patients with hypocalcaemia (<2.12nmol/L) were 25-OHD deficient, as were 7/15 (46.7%) with hypophosphataemia (<0.8mmol/L) and 7/11 (63.6%) with high alkaline phosphatase (>130IU/L). The prevalence of 25-OHD deficiency was higher in winter and spring vs. summer and autumn (89/129 [69.0%] vs. 59/124 [47.6%], $p<0.001$). 25-OHD deficiency was not associated with gender, CD4 count, HIV viral load or KC60 HIV clinical stage.
Conclusion: 25-OHD deficiency was common among recently diagnosed, ART-naïve HIV infected patients, with patients of non-white ethnicity at highest risk. Variables such as CD4 count, HIV viral load and HIV clinical staging do not help to target those at risk, but low serum calcium or high alkaline phosphate should prompt investigation of 25-OHD levels. We recommend that vitamin D status should be checked routinely among patients newly diagnosed with HIV.

P109
Clinical outcomes of a combined HIV/renal clinic: a service evaluation

G Jagjit Singh[1], M McClure[2], M Rayment[1], J Levy[2] and R Jones[1]
[1]Chelsea and Westminster Hospital, London, UK and [2]Imperial College Healthcare NHS Trust, London, UK

Introduction: The improved life expectancy of individuals living with HIV in the HAART era has highlighted the increased prevalence of renal disease observed in an ageing population. A new initiative was developed in the form of a consultant-led combined HIV / Renal clinic to improve the management of this emerging burden. Patients needing urgent care were referred directly to the nephrology service.
Aims: To review all patients who have attended the clinic in order to evaluate the service.
Methods: Between 2008 and 2010 clinical, demographic and laboratory data were collated from patients attending the combined clinic using electronic patient records.
Results: Following the first eighteen months of inception, 79 patients had attended the service. Mean age of attendees was 50 (28–79), of whom 69 (87%) were male. The majority (74%) of patients were white European. Raised creatinine(67%),proteinuria(65%) or a combination of both were predominant reasons for referral.Twenty-three(29%) had previous renal pathology whilst 33(42%) had risk factors for vascular disease, namely diabetes 8(10%),hypertension 31(39%) or overt cardiovascular disease 4(5%).Of those reviewed, 49(62%) had a change in medical therapy including a switch in HAART(22%),addition of an ACE inhibitor(30%) or optimisation of antihypertensive agents(22%).Six(12%) required specialist renal investigations including MRA. Three(6%) required a repeat renal biopsy and one patient(2%)was activated on the renal transplant list.Fifty five(69%)of the patients were found to have a non-HIV related renal diagnosis.Forty two(53%) of individuals reviewed have improved renal parameters.
Conclusions: There is a high prevalence of renal disease in this cohort, mostly non-HIV related, and the complexity warrants joint specialist input. Our combined service has demonstrated a significant change in therapy, focused investigations and optimal management of both HIV and non-HIV related renal disease, with improved renal outcomes.

P110
How should we be screening for proteinuria in an HIV-positive population?

S Hill and T Robinson
West Hertfordshire Hospitals NHS Trust, Watford, UK

Background: It has been suggested that approximately 17% of HIV positive patients have chronic kidney disease (CKD). Although HIV associated nephropathy is relatively rare in the UK, several commonly used antiretrovirals are associated with nephrotoxicty. With an ageing cohort, it is likely that an increasing proportion will go on to develop CKD. Hence, HIV-infected patients should be regularly screened for proteinuria. Proteinuria has been defined as ≥+ protein on urinalysis or a urine protein:creatinine ratio (uPCR) of >30mg/mmol. Currently, uPCR only is performed annually for all patients attending our service, and 3–4 monthly in those receiving tenofovir. We sought to evaluate this practice by correlating uPCR with conventional urinalysis.
Methods: Since October 2010 data has been collected prospectively from patients undergoing uPCR as part of routine HIV care. Age, gender, ethnicity, antiretroviral therapy, CD4, viral load (VL), creatinine, co-morbidities, uPCR and urinalysis results were entered into excel for analysis.
Results: 114 patients have been included so far: 51% male, 62% black; median age 46.1 (range 24–77), median CD4 533 (range 34–1071) and 66% VL <50 copies/ml. 64 patients had <+ proteinuria and uPCR ≤30. 5/39 (13%) of patients with ≥+ proteinuria had a uPCR >30. 5/16 (31%) of patients with a uPCR >30 had significant dipstix proteinuria.

Protein on urinalysis	uPCR (mg/mmol)					
	<15	16–30	31–60	61–90	>90	Total
0	38	6	6	3	1	54
Trace	19	1	1	0	0	21
+	21	5	1	0	0	27
++	5	1	0	0	3	9
+++	1	1	1	0	0	3
Total	84	14	9	3	4	114

Conclusion: The majority of patients with <+ dipstix proteinuria had a correspondingly low uPCR (≤30). There was poor correlation between dipstix proteinuria and raised uPCR. Only 5/50 (10%) of patients with either dipstick proteinuria or a raised uPCR had concordant results. The significance of these discrepant results merits further investigation. Performing urinalysis alone would have missed 11 patients with a

significantly raised uPCR and uPCR alone would have missed 34 patients with ≥+ proteinuria on urinalysis. Based on these results, performing urinalysis routinely, uPCR if ≥+ protein, plus an annual uPCR for those with ≤+ proteinuria, would overall detect more patients with significant proteinuria, and is likely to be a more time and cost effective strategy.

P111
HIV mortality audit 2005–2010

I Cormack
Croydon University Hospital, Croydon, Surrey, UK

Background: a quarter of all deaths from HIV/AIDS in the U.K. are attributable to late diagnosis of HIV.
Methods: all known deaths in HIV+ve patients attending our department have been recorded prospectively on database since January 2005. Data is recorded on demographics, date of diagnosis, baseline CD4, date of death, CD4 at death, viral load at death, anti-retroviral therapy, cause of death and whether a post-mortem was done.
Results: There were 35 deaths between January 2005 and December 2009. 25 patients were black-african, 5 UK MSM, 1 black-caribbean, 2 UK heterosexual and 2 UK IVDU's. 20/35(57%) patients were diagnosed very late ie CD4<200 at diagnosis, in 5/35 the CD4 at diagnosis was unknown, 10/35 patients had CD4>200 at baseline. 14/35 (40%) patients had a CD4<200 at death but data was not available on 12/35 (34%) as death occurred before a CD4 count was taken. Only 12/35 (34%) were on HAART at time of death with 10/35(28.5%) having an undetectable viral load at death since some had only recently started treatment.
There were 17 definite AIDS related deaths ie 17/35(48%). 3 died from hepatocellular carcinoma and 1 possible death from IRIS (CD8 encephalitis).
15/35 (40%) deaths were not obviously related to HIV.
In 12/35 (34%) cases a post-mortem was carried out. 12/17 (70%) AIDS deaths were known to have a CD4 <200 at diagnosis. AIDS diagnoses varied but PCP was the commonest diagnosis PCP (4), CMV (2), kaposi's sarcoma (2), TB(1), cryptococcal meningitis (1), toxoplasmosis(1), NHL (1), MAI (1), PML (1), HSV encephalitis (1), haemophagocytic syndrome(1), cancer cervix(1). In the 4 deaths from PCP the patients were undiagnosed prior to hospitalization and the HIV test was delayed by more than 1 week.
6/17 (35%) AIDS related deaths were a result of a very recent late diagnosis of HIV ie presented with AIDS without a prior HIV diagnosis, 3/17 patients were established on HAART but still died from an AIDS related illness, 8/17 (47%) AIDS deaths were patients that had defaulted their HIV clinic >1 year or had declined HAART. Of the 3 cases of hepatocellular carcinoma 1 was stable on HAART and 2 were patients that had defaulted HIV care.
Conclusion: Late diagnosis of HIV remains an important factor in mortality. 3 patients developed AIDS despite HAART as CD4 recovery can take years. Patients who default care or decline HAART are likely to die from AIDS related illnesses. 40% deaths were from other causes than HIV.

P112
Late HIV diagnosis is a major risk factor for intensive care unit (ICU) admission in HIV-positive patients

L Campbell[1], J Shrosbree[2], F Ibrahim[1], J Bayley[2], P Hopkins[2], S Strachan[2], M Vizcaychipi[3] and F Post[1]
[1]King's College London, London, UK, [2]King's College Hospital, London, UK and [3]Chelsea and Westminster Hospital, London, UK

Background: HIV-induced immunodeficiency is an important risk factor for opportunistic infections, non-infectious co-morbidities and mortality. Despite widespread availability of effective antiretroviral therapy (ART) in the developed world, immunodeficiency remains common, chiefly as a result of late HIV diagnosis (initial CD4 count <350 cells/mm^3 or AIDS within 3 months of HIV diagnosis). We evaluated the implication of late HIV diagnosis on ICU admission rates in a deprived area of London over a 10-year period.
Methods: ICU admissions among HIV patients between January 2000 and December 2009 were retrospectively identified and used to calculate the incidence rate. Logistic regression was used to analyse the effects of baseline parameters including late HIV diagnosis, and Poisson regression to analyse the effects of time-updated covariates (AIDS [CDC-C], CD4 count, HIV RNA and ART use) on the incidence of ICU admission. Data are presented as median [IQR], rate [95% CI], adjusted odds ratio (aOR) or incidence rate ratio (aIRR).
Results: 2869 HIV patients, age 35 [29, 40] years, 57% male, 62% black ethnicity, initial CD4 count 305 [138, 474] cells/mm^3, 7% hepatitis B and 9% hepatitis C coinfection, were followed for 3.1 [0.8, 6.6] years. 4.1% (118 patients) required 122 ICU admissions, with an incidence of 1.0 [0.8, 1.2] per 100 person-years. The median CD4 count on admission to ICU was 80 [21, 191] cells/mm^3, and 58% of ICU admissions took place within 3 months of HIV diagnosis. Late HIV diagnosis applied to 85% of patients admitted to ICU and 49% of those without ICU admission (p<0.001), and was an independent risk factor for ICU admission 11.9 [6.95, 20.6]. In time-updated analyses, the following factors were significantly associated with ICU admission**:** 1) AIDS 6.59 [3.59, 12.1]; 2) immunodeficiency with CD4 count <50: 6.08 [2.97, 12.5], CD4 count 50–100: 3.15 [1.17, 8.46], CD4 count 101–200: 2.30 [1.05, 5.03] when compared to CD4 count >350/mm^3; 3) female gender 2.69 [1.45, 4.98]; and 4) use of ART 0.13 [0.08, 0.22].
Conclusion: Late HIV diagnosis was a major risk factor for ICU admission in this study. AIDS, CD4<200, non-use of ART and female gender identifies subjects at increased risk of ICU admission. Earlier HIV diagnosis provides an important opportunity to reduce the need for ICU admission.

P113
Prevention of steroid-induced osteoporosis in HIV-positive patients: clinical audit

J Vera, S Butt and N Mackie
Imperial College London, Jefferiss Wing, St Mary's Hospital, London, UK

Background: Oral steroids are frequently used among HIV positive individuals. Administration of long-term oral glucocorticoids (> 3 months) has been associated with low bone mineral density (BMD), osteoporosis and increased fracture risk. Guidelines for the prevention of glucocorticoid-associated osteoporosis have been developed by the Royal College of Physicians and NICE. It is well established that HIV positive patients have higher rates of low BMD and increased fracture risk. The aim of this audit was firstly to evaluate compliance with the RCP guidelines and secondly to examine the indications for steroid therapy in our HIV unit.
Methods: A retrospective case note audit of HIV positive patients who were taking oral steroids for a minimum of three months between January 2009 and January 2010 was performed. For each patient we collected demographic data, markers of HIV disease, bone biochemistry, DEXA scan results, indication for and length of time on steroids.
Results: 23 patients were identified. 78% were male and the mean age was 46.9 (SD**:** 11.8) years. 86% were on suppressive antiretroviral regimens and the median CD4 count was 160 (range, 0 to 848) at the time of starting oral steroids. 60% (14) were on long-term prednisolone mean dose 7.6mg (SD: 2.6) .The median duration of oral therapy was 5 months (range, 3 to 12). The most common indications for oral glucocorticoids were TB/IRIS (50%), lymphocytic interstitial pneumonitis (14%) and chronic asthma (14%). 19 (85%) had evidence of baseline metabolic bone screening. In 14 (64%) there was no evidence of DEXA scanning before or after commencing oral steroids. Of the 5 (35%) patients who had a DEXA scan 2(40%) had a normal result, 2(40%) had osteopenia and 1(20%) had osteoporosis. All 3 patients with low BMD were started on bone protection therapy with alendronate. No fractures were reported in any of the cases studied.
Conclusion: With the significantly increased level of osteopenia and osteoporosis in HIV positive patients, screening for bone disease in such

patients commencing long-term oral glucocorticoid therapy is crucial. Our audit found that although biochemical markers of bone turnover are frequently evaluated, baseline DEXA scanning was not routinely performed before or whilst on long-term steroid therapy. As a consequence patients who may have benefited from bone protection treatment were not properly evaluated.

P114
Renal stones in patients taking atazanavir

S Capocci, S Logan, N Marshall, M Youle and M Johnson
Royal Free Hospital, London, UK

Background: Renal stones have been reported on atazanavir treatment, the prevalence of which is unknown.
Methods: Nine patients in our centre have had symptoms and radiological evidence of urolithiasis in the past 2 years whilst taking atazanavir. Their notes, biochemical data, pharmacology records and radiology were reviewed.
Results: 570 patients were prescribed atazanavir at our centre over the last 2 years. Urolithiasis occurred in 9. Eight out of nine were male (5 were men who have sex with men), 7 (77%) of white British ethnicity. Their ages ranged from 40 to 62. Duration of atazanavir therapy ranged from 2 to 7 years (median 5 years). One patient recalled a family history of renal calculi. All patients had normal serum calcium and creatinine levels. 3 patients had had Escherichia coli urinary tract infections around the time of their stone investigations. 4 patients had urinary stones sent for analysis, of which 3 were composed partially or entirely of atazanavir (two with a proportion of calcium oxalate). Urinary calcium levels were only measured in 3 patients, all were normal. Two patients had anatomically abnormal renal tracts on scan. Six had bilateral stone disease, two presented with hydronephrosis requiring JJ stenting. 6 had previously taken indinavir (one had suffered from indinavir renal stones). Eight (88%) were also taking a nucleotide reverse transcriptase inhibitor, for 66% (n=6) this was tenofovir. Four patients were taking calcium supplements, none were taking proton pump inhibitors. No patients had cirrhosis, one patient had hepatitis C coinfection, another had non-alcoholic fatty steatohepatitis.
Conclusions: Within our centre the incidence of urolithiasis in patients on atazanavir is 1.4%. Patients presented heterogeneously and did not all have traditional risk factors for calcium stones (family history, previous infections, abnormal renal tract). Unlike the reported cases in the literature none had liver cirrhosis.
As atazanavir becomes used increasingly as a first line agent of HAART, urolithiasis is likely to increase in incidence in the HIV population.

P115
The use of faecal elastase to screen for pancreatic insufficiency in HIV-infected individuals

A Scourfield, T Martin, N Rockwood, L Waters, S de Silva, P Holmes, M Bower, B Gazzard and M Nelson
Chelsea and Westminster Hospital, London, UK

Background: Pancreatic elastase-1 is a proteolytic enzyme produced exclusively by the pancreas which is stable in the GI tract and detectable in stool sampling. Reduced levels are associated with a diagnosis of pancreatic exocrine dysfunction. Common causes of chronic pancreatitis include alcohol excess and hyperlipidaemia. In non-HIV infected healthy controls the incidence of pancreatic insufficiency, defined by low faecal elastase is approximately 2%. There is sparse data on the use of this test in HIV infected individuals, one small cohort of 8 subjects with low faecal elastase suggested that didanosine may play a role. We performed a review of individuals from our HIV cohort who underwent faecal elastase as investigation into chronic diarrhoea.
Method: A retrospective analysis was performed to identify individuals who had undergone faecal elastase sampling from 1/1/2000–31/12/2010. A case notes review was performed on subjects with reduced level of pancreatic elastase (<200ug/g) to identify demographics, pathology results and antiretroviral history.
Results: 147 stool samples had been examined for pancreatic elastase with median value of 269 ug/g (<15 to >500) with 62 (42%) of these below the threshold of 200ug/g. In this group 60 (97%) were males, median age was 45 years (range 31–77). Median CD4 count was 430 cells/mm^3 (range 7–1052) and 52 (84%) had undetectable HIV RNA, 4 (6%) were naïve to ART. Median duration of HIV diagnosis and time on ART were 13 years (range -2.5–29) and 5 years (range −1–19) respectively. Median total cholesterol level was 4.5 mmol/l (range 2.2–6.5), triglycerides 1.58 mmol/l (range 0.43–13.59). 23 (37%) had received didanosine for median 15 months (range 1–102) and 24 (39%) stavudine, 10 months (range 1–108). Documented evidence of alcohol abuse was found in 10 (16%) of subjects. 33 (53%) of individuals with pancreatic insufficiency had been commenced on enzyme replacement therapy.
Discussion: While this data does not show any obvious relationship of pancreatic insufficiency to hyperlipidaemia, didanosine or stavudine use, alcohol was an identifiable aetiological factor. It is important to note that in a large proportion of individuals no obvious cause was identified. Clinicians need to be aware of pancreatic insufficiency as a differential diagnosis in HIV infected individuals with chronic diarrhoea.

P116
Tenofovir in HIV: a retrospective audit of renal toxicity

K Walesby, C Leen and S Morris
Regional Infectious Diseases Unit, Western General Hospital, Edinburgh, UK

Background: Tenofovir (TDF) is chiefly excreted by the kidney. Studies have shown that Tenofovir-linked renal toxicity is rare. Complications are proximal renal tubular acidosis [RTA] (including Fanconi's syndrome) and renal impairment.
RTA can be present with a normal estimated glomerular filtration rate (eGFR). Therefore, hypophosphataemia, a common adverse reaction, is an important indicator. The Medicines Compendium recommends blood phosphate (PO_4^-) checks every 3 months.
This audit analyses hypophosphataemia monitoring practice in patients on TDF in a regional infectious diseases unit. It aims to establish if renal toxicity (hypophosphataemia, abnormal eGFR, or abnormal urinalysis [protein:creatinine ratio (PCR)] is a primary consideration in stopping TDF.
Methods: Laboratory reports and case notes of patients taking TDF were analysed for the PO_4^- measurement within the last 3 months (''recent'') and if low, whether PCR or urinalysis was performed around this visit.
Data on a second group (HIV patients who had stopped TDF) were analysed to establish if renal toxicity was the reason, and the length of time to stopping TDF.
Results: 347 patients were on TDF. 314 had a normal phosphate (PO_4^-); 32 phosphate <0.8mmol/l. 1 never had a PO_4^- level done. Of these, 261 (75%) had a recent phosphate determination within 3 months. 27 patients on TDF with hypophosphataemia had a PCR or urinalysis recorded (10 abnormal, 37%).
77/424 TDF exposed, living patients had stopped TDF; 42% patients due to renal toxicity. Renal causes: Fanconi's=3, abnormal eGFR=18, proteinuria=10, low phosphate=1. Mean length of treatment with TDF (prior to stopping) was 304 days (Range 6–3177; median 1154).
Conclusions: A significant proportion of patients stopped TDF due to renal toxicity, highlighting the need for vigilant monitoring for early signs of tubulopathy. 42% of patients stopping due to renal toxicity had normal eGFR. 25% of patients on TDF have not had a PO_4^- checked within the last 3 months. 3 patients have failed to have a urinalysis or a PCR done.
Obtaining a urinalysis can be difficult in busy clinics. Patient education, raising awareness of the reasons, is crucial. A patient leaflet when urinalysis is first requested on a new TDF patient will facilitate this. Educating clinicians regarding the high number of patients stopping TDF due to renal toxicity and implementing a TDF monitoring proforma will improve adherence to active surveillance for tubulopathy.

P117
A study looking at the use of quantitative MRI of the brain in HIV

E Elliot[1], R Patel[1], N Dowell[2], M Fisher[1], P Tofts[2], N Perry[1] and R Haynes[2]
[1]Lawson Unit, Brighton and Sussex University Hospitals NHS Trust, Brighton, UK and [2]Brighton and Sussex Medical School, Brighton, UK

Background: Early detection of HIV-Related Neurocognitive Disorders (HAND) is clinically important. Despite HAART, it still presents in patients on stable treatment, but could be prevented by earlier initiation of ART. Early HAND is not visible on conventional neuroimaging (normal appearing), hence the need for more sensitive biomarkers of the preclinical effects of HIV on the brain. In previous studies, quantitative MRI (qMRI) techniques have identified subtle changes in normal-appearing brain in neurodegenerative diseases such as MS. Moreover, studies of *cognitively impaired* HIV patients have correlated qMRI parameters with symptoms. We used these techniques to determine whether *non-cognitively impaired* HIV patients (both treated and untreated, with normal-appearing brains) exhibit detectable brain damage compared to healthy volunteers.

Methods: MRI parameters measured were**:** ADC (measure of water diffusivity; indicative of cellular breakdown); FA (measure of diffusion directionality = axonal integrity marker); MTR (demyelination marker). Relative metabolite concentrations in white matter were also measured using MR spectroscopy. Data was collected from 3 groups of gay men aged 30–50. Selection relied on strict inclusion/exclusion criteria and screening to exclude cognitive impairment.

No of pixels in grey, white matter and whole brain images were quantified and plotted against MTR and DTI parameters yielding histograms with peak heights and positions. The peaks in the MR spectra were fitted to calculate relative concentrations of metabolites NAA, Cho, Cr. Means for each imaging parameter were analyzed to identify potential group differences using a series of one-way ANOVAs.

Results: ADC and FA showed no significant difference between groups ($Fs(2,33)<2.5$; $p>0.1$). MTR showed no statistical difference between disease and control groups ($Fs(2,26)<1.16$; $p>0.33$). However, metabolite ratios (NAA**:**Cr and Cho:Cr) showed a trend towards abnormality in HIV+ patients (although not significant, $Fs(2,33)<2.5$; $p>0.1$), larger groups may provide statistical power to confirm these differences.

	n		
Groups	DTI (FA & ADC)	MTR	MRS
A) Unreated HIV, CD4=300–500	12	7	11
B) Treated HIV, VL<40, CD4>500, ART CHARTER Score (2008) ≥ 1	12	12	12
C) HIV- controls	12	10	12

Conclusion: qMRI in our study did not detect early brain changes in neurocognitively asymptomatic HIV+ patients despite good measurement sensitivity. This suggests qMRI may be better suited to quantify and monitor more advanced CNS disease.

P118
Hypophosphataemia in HIV-positive patients taking non-tenofovir-containing antiretrovirals

E Wainwright[1], L Dorrell[1], J Sherrard[1] and B Shine[2]
[1]Genito-urinary Medicine, Oxford, UK and [2]Department of Clinical Biochemistry, Oxford, UK

Background: HIV physicians monitor the phosphate of patients taking tenofovir as this drug is associated with a rare but serious disorder of the proximal renal tubule (Fanconi's syndrome). Fanconi's syndrome leads to renal wasting of phosphate, urate, glucose, bicarbonate and amino acids. However, it has been noted that hypophosphataemia can occur in HIV-positive patients that are not taking tenofovir. Studies have shown the prevalence of hypophosphataemia in HIV to be between seven and 26%. Hypophosphataemia is important, not only because it can mark the development of Fanconi's syndrome, but also because chronic hypophosphataemia could lead to disorders of bone mineralisation such as osteomalacia.

Aims/Objectives: This investigation aimed to determine the prevalence of hypophosphataemia in the HIV-positive patients that attend our clinic.

Methods: A fasted blood sample for phosphate measurement was taken from 123 consecutive patients that attended our outpatient service. Details of age, gender, ethnicity and antiretroviral treatment were recorded.

Results: The mean phosphate for the 123 patients was 0.91mmol/L. 32 patients (26%) had a phosphate below the lower limit of normal (<0.8mmol/L).

Four of 42 patients (10%) not taking anti-retrovirals, and 28 of 81 patients (35%) taking antiretrovirals had values below the lower limit of normal (P value 0.002; relative risk 3.6). Seven of 33 patients (21%) on regimens containing tenofovir, and 21 of 48 patients (44%) on regimens without tenofovir had values below the lower limit of normal (not significant). Three of 17 patients (18%) on a protease inhibitor (PI)-containing regimen and 25 of 64 patients (39%) on a non-nucleoside reverse transcriptase inhibitor (NNRTI) had hypophosphataemia (not significant). The length of ARV treatment and ethnicity was not significantly associated with hypophosphataemia.

Conclusion: These results suggest that hypophosphataemia frequently occurs in patients not taking tenofovir and that there is not a significantly increased prevalence of hypophosphataemia in those that are taking tenofovir. There is, however, a significantly increased prevalence of hypophosphataemia in those that are taking antiretrovirals compared to those that are not taking antiretrovirals.

This may suggest that phosphate levels should be monitored in all patients on antiretrovirals rather than just those that are taking tenofovir.

P119
Antiretroviral drug dosing in renal impairment

D Awoyemi, B Gazzard, M Bower, S Yau and M Nelson
Chelsea and Westminster Hospital, London, UK

Background: Renal dysfunction is common in HIV infected individuals. Many antiretroviral drugs are renally cleared and below an eGFR of 50ml/min dose reduction may be necessary especially for NRTIs.

Method: A clinic database of HIV infected individuals on antiretroviral treatment including either efavirenz,kaletra,darunavir or atazanavir and two NRTIs was used to identify those developing an eGFR <50 ml/min with a previous eGFR above this level between june 2006 and february 2010. The pharmacy dispensing system was searched to determine the dose of antiretroviral prescribed and whether the dose was appropriately adjusted. The product summary sheet instruction was used to guide dosing and to determine whether the drugs were adjusted appropriately and that if the eGFR improved, standard dose was reinstated.

Results: 51 patients were on antiretroviral drug therapy and developed an eGFR<50 ml/min on 2 consecutive readings. 22 patients contained one or more NRTI drugs requiring dose adjustment. 6 patients, 5 of which were on lamivudine, 1 on zidovudine, had their dose adjusted appropriately. Only, one patient's eGFR returned to above 50 ml/min and their lamivudine dose was readjusted, zidovudine was stopped in one patient and another patient was changed to a nucleoside sparing regime. 15 patients did not have their dose modified appropriately. Of these, 4/15 (27%) were on tenofovir, 1/15 (7%) on zidovudine, 5/15 (33%) on emtricitabine, 10/15 (67%) on lamivudine. In 4 patients the eGFR returned to above 50 without dose modification.

One patient did not require dose adjustment as truvada was stopped and a nucleoside sparing regime was initiated. Mean time to eventual dose adjustment or return of eGFR to >50 ml/min was 16 weeks.

Conclusions: The results from this audit show that doctors would benefit from continuing education on drug dosing in renal impairment. Also, clear guidance on antiretroviral drug dosing should be available for doctors at the time of prescribing so that they have the tools readily available to dose adjust appropriately.

P120
Low number of patients with suspected cognitive impairment referred to HIV neurology, psychology and inpatient services

L Haddow[1], A Accoroni[2], H Manji[3], P Benn[2] and J Cartledge[2]
[1]University College London, London, UK, [2]Camden Primary Care Trust, London, UK and [3]National Hospital for Neurology & Neurosurgery, London, UK

Background: Studies of HIV-associated neurocognitive disorders (HAND) have shown 9–18% prevalence of HIV dementia and 43–69% prevalence of all types of HAND including asymptomatic impairment. We aimed to quantify and describe patients referred to HIV neurology, psychology and inpatient services with suspected cognitive impairment (SCI).
Methods: HIV neurology and psychology appointments and hospital admissions at a single centre from August 2009 to July 2010 were identified by computerised searches. Data was collected retrospectively from clinic letters, case notes, laboratory records, and routinely-collected electronic data.
Results: Of 107 HIV neurology patients, SCI was the primary reason for referral in 18 (17%). Other common reasons were peripheral neuropathy (n=34; 32%), seizures (n=17; 16%), and headache (n=10; 9%). Investigation of SCI included MRI in 13 (72%) and neuropsychological (NP) assessment in 10 (56%). Median age of patients with SCI was 45.4 years (interquartile range [IQR] 40.2–51.9), 15 (83%) were male, median CD4 count was 555 cells/mm^3 (IQR 480–900) and 17/18 (94%) had an undetectable viral load. Final diagnoses in those with SCI were anxiety/depression (n=9; 50%), normal (n=3; 17%), HAND (n=2; 11%), old opportunistic infection (OI) (n=2; 11%), drug-related (n=1; 6%) or unknown (n=1; 6%). Four further patients were seen with other primary problems and were diagnosed with HIV encephalopathy**:** in each, there was impaired cognition and mood, but none had NP assessment. During the same year, 5 additional patients out of 245 psychology referrals (2%) were assessed for SCI, of whom 1 had possible HAND and 2 had other cognitive deficits. Ten patients out of 175 hospitalised under the HIV inpatient team (6%) were admitted for symptoms including SCI. Diagnoses in hospitalised patients were: HIV-associated dementia (5, of whom 2 had a longstanding diagnosis); OI (3); cerebrovascular disease (1); anxiety / depression (1). Thus the overall rate of assessment for SCI in subspecialty services was 33 out of 3772 patients attending for care (0.9%).
Conclusion: In 1 year, SCI was the reason for referral to HIV neurology clinic, clinical psychology or HIV inpatient unit in only a small proportion of patients, and few cases of HAND were seen. This may be reconciled with published reports of high prevalence of HAND by the low rate of cognitive screening and assessment at our centre. We are now implementing a referral and assessment pathway for SCI.

P121
Raltegravir-induced Drug Reaction with Eosinophilia and Systemic Symptoms (DRESS) syndrome – implications for clinical practice and patient safety

M Perry, N Almaani, N Desai, J Fox, N Larbalestier and D Chilton
Guy's and St Thomas' NHS Foundation Trust, London, UK

Introduction: Integrase inhibitor raltegravir is being used increasingly in patients with potential drug interactions[1]. We describe a case of DRESS syndrome in a patient who was switched to raltegravir from a PI based regime.

Case Report: A 55 yr old patient was diagnosed with HIV in 2005 with a nadir CD4 30. Virological suppression was achieved on NNRTI based HAART. Following the development of resistance this was later switched to a PI based regime with a good virological response. In order to treat her severe post herpetic neuralgia secondary to multi dermatome herpes zoster, she was given epidural corticosteroid, triamcinolone. Forty one days later she presented with Cushing's syndrome. This was due to the interaction of corticosteroid with PI.
The PI was changed to raltegravir to avoid further interactions; the patient maintained viral suppression. Four weeks after commencing raltegravir she presented with a 2-day history of a rapidly progressive generalized maculopapular rash, pruritis, malaise and pyrexia. Eosinophil count was 1.5x10^9/l. A clinical diagnosis of DRESS syndrome was made. The timing of raltegravir initiation made it the most likely cause. Dermatologists advised treatment with emollients, topical steroid and prednisolone 30mg daily (a lower dose than usually used for DRESS syndrome, to compensate for the PI interaction). Raltegravir was stopped and PI recommenced. Skin biopsy was consistent with a drug eruption. The rash improved over the subsequent two weeks. The patient continues on a reducing steroid regime. The eosinophil count is declining.
Discussion: This is the first report of a severe reaction to raltegravir. DRESS syndrome is previously described in other anti retrovirals[2] but not in relation to raltegravir. Clinicians should be aware of this potential adverse event.

P122
A voyage of CMV discovery

H McConkey, H Williams, E Graham and R Kulasegaram
Guy's and St Thomas' NHS Foundation Trust, London, UK

Background: We report the first known case of iatrogenic cushingoid features following orbital floor Triamcinolone, a synthetic corticosteroid, prescribed for likely late immune reconstitution syndrome (IRS) cytomegalovirus (CMV) retinitis in a patient taking Kaletra® and Truvada®.
Case report: A 39 year old female was diagnosed with HIV in 2002 when she presented with CMV retinitis. She was commenced on ganciclovir and made a slow recovery. Initial CD4 count was 8 cells/mm^3, HIV viral load (VL) was 500000 c/ml. The CMV caused blindness in her right eye, with low vision and a small visual field in the left. She was started on Kaletra® and Truvada® and her VL was suppressed <50 c/ml, CD4 count was >300 cells/mm^3 and she suffered no further HIV related complications.
The patient was under regular ophthalmological follow up and 8 years later developed decreasing left visual acuity. Optical coherence tomography (OCT) showed cystoid macular oedema (CMO). This was presumed to be slow IRS uveitis (CD4 492 cells/mm^3) and 40mg of orbital floor triamcinolone was given, with dramatic resolution of CMO on OCT when reviewed 4 weeks later. Unfortunately, CMO had recurred when reviewed 3 months after the first orbital floor injection, and therefore a further 40mg triamcinolone was injected. When reviewed 4 weeks later, the patient had cushingoid changes in facial appearance. A random cortisol level was 6nmol/l (reference range 64 – 327) and ACTH level was less than 5 ng/l. Kaletra® was changed to Raltegravir to minimise further drug interaction and within 2 weeks her cushingoid features had noticeably improved. A further dose of steroid was administered following switch of HAART without further adverse effects.
Discussion: Lopinavir is almost exclusively metabolised by the iso-enzyme CYP3A in the hepatic cytochrome P450 system and Ritonavir is a potent CYP3A inhibitor therefore inhibiting the metabolism of Lopinavir, increasing plasma levels. Triamcinolone, like other corticosteroids, is mainly metabolised by CYP3A medicated-6-beta-hydroxylation. Therefore taken together, these drugs will cause increased plasma concentrations and prolonged adverse effects of corticosteroids. This case highlights the need for vigilance for late IRS and the potential for unhelpful interactions between anti-retroviral treatment and local

corticosteroid treatment. Alternatives in this case could have included dose reduction of the local glucocorticoid or use of a glucocorticoid which was not a substrate for CYP3A.

P123
No impact of ritonavir reformulation on markers of renal function in patients on tenofovir

S Shaw, J Bayley, S Fossey, S Tilbury, M Fisher and L Waters
HIV/GUM Research Dept, Elton John Centre, Brighton, UK

Introduction: Reformulation of RTV from capsules to heat stable tablets has resulted in wholesale change to the new formulation. Pharmakinetics demonstrate the maximum plasma concentration of ritonavir is increased by ~26% with tablets compared with capsules. The inhibitory action of ritonavir on renal cell excretion of TDF is well documented. We investigated changes in markers of proximal renal tubular function in patients on TDF switching from RTV capsules to tablets.
Methods: 35 patients due to change to ritonavir tablets were identified. Before and after switching, fasting plasma and urine was collected and analysed for plasma and urinary creatinine, protein and phosphate levels. Fractional excretion of phosphate (FEP) and urinary protein:creatinine ratio (uPCR) were calculated.
Results: At baseline 4 patients had an eGFR of <60. 18 patients had a fasting plasma phosphate below the reference range (0.87mmol/L). Three had abnormal uPCR values (>30 mg/mmol). None had an elevated FEP (mean 3.41, IQR 1.70). The length of time between baseline and repeat sampling ranged from 27–122 days.
At repeat testing one patient had a reduction in eGFR, but normal urinary phosphate and FEP values. Three patients had abnormal uPCR values, and seven showed increased FEP >20%.

	Pre transition	Post transition
eGFR (mL/min)	85 (Range 58–121)	85 (Range 50–126)
Fasting plasma phosphate (mmol/L)	0.82 (Range 0.59–1.18)	0.87 (Range 50–126)
Median uPCR (mg/mmol)	12.5 (IQR=9.4–20.9)	12.5 (IQR=9.6–21.5)
Median FEP	2.77 (IQR=2.39–4.64)	19.79 (IQR=14.33–24.87)

Discussion: The majority of patients in this group tolerated the transition without significant deterioration in renal function; however the mean FEP did increase significantly. The clinical significance of this in the context of normal plasma phosphate is unclear. Enhanced monitoring of parameters of renal function is recommended for patients on TDF commencing on reformulated RTV tablets. Follow-up for a longer period than in this study may be required.

P124
Dupuytren's disease in patients infected with HIV – is there an emerging pattern?

Z Mickute, B DeSouza and M Nelson
Chelsea and Westminster Hospital, London, UK

Background: The increased prevalence of Dupuytren's disease in patients infected with HIV may be an important marker of disturbed metabolism of free radicals. The aim of this study was to evaluate the development of Dupuytren's disease in patients infected with HIV.
Methods: A retrospective study of patients with HIV infection referred for Dupuytren's disease (2000–2010) was carried out. Data analysed consisted of date of diagnosis of Dupuytren's disease, the features of the disease and all known associated risk factors. The date of HIV antibody detection, CD4 count, viral load and antiretroviral medication were also recorded.
Results: Eleven male patients (age range; 43–76 years) infected with HIV were identified. Dupuytren's disease developed on average 14 years (range; 3–21 years) after detection of HIV antibodies. The mean CD4 count was 604 (range; 252–1521), viral loads were undetectable (<50). In most cases Dupuytren's disease was bilateral (n=9), affecting both palmar and digital fascia (n=10) and grade 3 in severity (n=7). Six patients developed recurrence after fasciectomy (n=8). The rate of recurrence was independent of CD4 count (p=0.56).
Conclusions: There is a paucity of literature with regard to the association of Dupuytren's disease and HIV infection and results of current prevalence studies are conflicting. Results from our small case series show that Dupuytren's disease is related to longstanding HIV disease and although progressive, recurrence appears to be unrelated to severity of HIV infection or antiretroviral medication.

P125
Time to start of HAART for HIV seroconverters

K Manavi
University Hospitals Birmingham, Birmingham, UK

Background: Threshold for start of anti-retroviral therapy has lowered over the recent years. HAART is now recommended for anyone with CD4 less than 350 cells/mm^3. Historically, the majority of this group of patients have been considered not to require HAART for several years. Little data are available on the impact of recent guidelines on time of start of HAART on HIV seroconvertors. The aim of the present study was to investigate the time of start of HAART in a group of HIV seroconvertors according to the current guidelines.
Methods: Serum specimens of all newly diagnosed HIV infected patients in a large HIV centre were tested according to Serological Testing Algorithm for Recent HIV Seroconversion' (STARHS) by the health protection agency since June 2009. HIV seroconversion was defined as avidity index of less than 80%. Case notes of HIV seroconvertors were reviewed for their age, ethnicity, route of HIV transmission and baseline CD4 and viral load counts. The most recent CD4 and viral load counts and duration of HAART when applicable were also recorded.
Results: Of the 21 HIV seroconvertor patients diagnosed by STARHS algorithm, 16 (76%) were men, including 10 MSM. Seven (33%) patients had baseline CD4 count of less than 350 cells/mm^3 (3 with CD4<200). After a median of 25 (IQR:15, 34) weeks of follow up, patients not on HAART lost a median CD4 of 100(IQR 42, 271) cells/mm^3. None of the patients with low baseline CD4 count recovered their CD4 count to above 350 cells/mm^3.
Discussion: A third of HIV seroconvertors in this study had low baseline CD4 counts. Because they did not recover their CD4 count above 350cells/mm^3 after 5 months, time to start of HAART for those patients should not differ from that of for patients with chronic HIV infection.

P126
Case report: HAART treatment of HIV-related hyperviscosity syndrome

J Langton-Lockton and T Blanchard
North Manchester General Hospital, Manchester, UK

Case report: A 30 year old African woman with a stable CD4 count (430) and low viral load (VL), complaining of headaches and general malaise. On investigation she had developed very high plasma viscosity 6.44 (1.50–1.72) and hypergammaglobulinaemia IgG 101.9 (5.4–18.2) with a total serum protein of 143 (64–83). In addition she had macrocytic anaemia, thrombocytopenia, hypertension, proteinuria 0.6 g/24h, urine protein/creatinine ratio of 44 (<20), low serum albumin 24g/l, normal eGFR.
She had negative laboratory investigations for paraproteins and myeloma, auto antibodies, Hepatitis A, B and C, Cytomegalovirus & Epstein Barr virus, malaria and leishmaniasis. Normal intrinsic factor, B12/folate and a normal renal USS. No precipitating factors for hypergammaglobuliaemia other than HIV could be identified.
She was started on HAART (Atripla) and suppressed her HIV VL <40 within one month. The plasma viscosity reduced to 3.5 and IgG to 70.0 by

3 months. All her symptoms resolved but unfortunately she developed hepatic toxicity to Efavirenz. Her antiretrovirals were switched to Kaletra monotherapy and Kivexa was added 2 weeks later.
Hyperviscosity usually results from raised circulating serum immunoglobulins (macroglobulinaemia, multiple myeloma) and from increased cellular blood components in hyperproliferative states (leukaemias, polycythaemia and thrombocythaemia). The severe hyperviscosity reported here is associated with coma, seizures, deafness, hypertension and heart failure. Had she not responded to HAART then plasmapheresis would have been necessary. Severe HIV-driven polyclonal IgG hyperviscosity has been reported in children but is very rare in adults.
Conclusion: HAART was started much earlier on the grounds of life-threatening hyperviscosity. There was a rapid suppression of HIV VL and marked improvement in plasma viscosity without resorting to plasmapheresis. The exact cause of marked polyclonal IgG increase is uncertain, but we postulate that it is due to a combination of B cell stimulation by HIV infection and inadequate regulation of B cell replication. Interestingly in both our patient and the only other adult case report in the literature the CD4+ cell count was well preserved with a relatively low HIV virus load, suggesting that the immune response seen in these individuals is not entirely harmful. It is not clear whether it is viral or host factors that are primarily responsible for this unusual syndrome.

P127
An unusual chest infection in an English HIV patient returning from Thailand

R Abdulla, A Savva and Z Ahmed
Musgrove Park Hospital, Somerset, UK

Background: A 46 year old HIV positive heterosexual Caucasian male previously treated for HIV returned from Thailand. He had become depressed and stopped ART but was on prophylactic Septrin. He was admitted systemically unwell with a productive cough and shortness of breath, blurred vision, a painful eye and suicidal thoughts. There was no rash.
Investigations: He was febrile, tachycardic, respiratory rate 20, saturations 95%. CRP 79, WBC 3.7 (N1.9, L1.3), Hb 9.5, normal CXR with negative septic screen including blood cultures, sputum samples, CMV and TB screen.
Subsequently: He was rehydrated and after 10 days discharged with a settling cough, fever and iritis. 18 days later he was readmitted, again unwell with productive cough and short of breath, febrile but without remarkable physical signs. CXR showed a mediastinal mass and a subsequent chest CT showed widespread lymphadenopathy with diffuse non-specific miliary nodules. BAL was negative for mycobacteria. A fungus was isolated from sputum and tested positive for Penicillium marneffei. He was started on amphotericin IV and slowly improved.
Learning points: Penicillium marneffei is now the third commonest opportunistic infection in HIV patients in Thailand. Most (70%) have fever and skin lesions – pustules with umbilicated centres – with anaemia and lymphadenopathy or hepatomegaly. Half also present with respiratory symptoms. Most cases are detected by blood culture. This case was interesting because the patient presented with respiratory symptoms, without skin lesions, and was identified by sputum culture. Most clinicians would search for PCP or TB and not suspect Penicilliosis. The case highlights atypical presentations in immuno-compromised individuals who return from endemic areas with pyrexia of unknown origin.

P128
New-onset arthralgia temporally related to raltegravir therapy

C Mullooly and S Ahmad
University Hospitals of South Manchester, Manchester, UK

Background: Raltegravir is an HIV-1 integrase strand-transfer inhibitor with potent antiretroviral activity. It is a generally well tolerated antiretroviral agent. Reported side effects include nausea, dizziness, headache, diarrhoea, myalgia and creatinine kinase elevations.
Methods: We report a case of raltegravir-associated arthralgia in a 35 year old well controlled (CD4 505 x10^6/L and viral load < 40copies/ml) HIV positive French male.
Results: The patient was diagnosed with HIV in 2002. He commenced antiretroviral therapy in 2007. Baseline testing showed K103N and Y188L. Following side effects with fosamprenavir and atazanavir he settled on Truvada and Kaletra. In September 2008 the Kaletra was switched to raltegravir 400mg bd due to perceived lipoatrophy. He attended for review at 1 month complaining of marked generalised arthralgia associated with fatigue and occasional palpitations. He continued on raltegravir for 3 months in total and was reviewed in clinic each month. The symptoms persisted during this time. He had no other significant past medical history and there was no family history of any rheumatological conditions. On examination there was no joint swelling, muscle tenderness or evidence of active arthritis or enthesitis. Laboratory testing was unremarkable throughout this period, including normal creatinine kinase and urate. Thyroid tests, rheumatoid factor and an autoimmune screen were also normal. At 3 months the patient opted to switch to boosted darunavir due to the side effects. All his symptoms resolved rapidly following the change.
Conclusion: The symptoms of arthralgia developed shortly after starting raltegravir and resolved on its discontinuation. There were no findings clinically or on blood testing to suggest an alternative cause. We therefore conclude that the arthralgia was related to the raltegravir. We suggest that patients who report arthralgia whilst taking raltegravir be considered for switching to an alternative antiretroviral agent when alternative causes have been ruled out.

Diagnosis and Testing

P129
Gathering evidence for expanding HIV testing in England: an overview of eight pilot projects

A Thornton, V Delpech and A Nardone on behalf of the pilot project lead investigators
Health Protection Agency, London, UK

Background: Prevention of late diagnosis is key to improving health outcomes for HIV-infected individuals and may have an important public health impact. Therefore opportunities for individuals to test for HIV should be maximised. In 2008, the Department of Health funded eight pilot projects to assess the feasibility and acceptability of expanding HIV testing. We present an interim review of the results from these pilots.
Methods: Routine offer of an HIV test was piloted in hospital services (three projects, all included acute care units, one also included an emergency department, an outpatient service and a single general practice) and primary care (two projects involving 18 and 10 general practices respectively). Targeted HIV testing was piloted in community settings (three projects targeting either black African or gay communities). Standard indicators, including uptake of testing and seropositivity, were used to assess the success of pilots.
Results: Of 10,478 tests performed 50 individuals were newly diagnosed with HIV - a positivity rate of 0.5% (95% confidence interval 0.4–0.6%). In four of the five hospital settings, overall uptake of HIV testing was 71% (4,523/6,413), ranging from 61% to 91% in the different services. In primary care, uptake was estimated at 65% (4,310/6,664), ranging from 62% to 75% in the different projects. Fewer tests were conducted in the community (59–305). In hospital services seropositivity was 0.4% (ranging from 0 to 1%) and in primary care it was 0.5% (ranging from 0 to 0.7%). Higher seropositivity was seen in community settings: 1.2% overall, ranging from 0 to 2.1%. In one community setting, one primary care and one hospital setting (a dermatology service) no new diagnoses were made. Between 67% and 100% of newly diagnosed patients were

successfully transferred to care. High levels of patient acceptability (>90%) were reported in all settings where measured.

Conclusions: The high number of tests offered and accepted indicate that routine HIV testing in healthcare settings is feasible and acceptable to staff and patients. This strategy was effective in diagnosing persons previously unaware of their HIV infection. The high seropositivity seen in community settings indicates that these testing in these should be further explored. Expanding HIV testing in healthcare settings should be prioritised in areas of high diagnosed prevalence.

P130
Ch@tspace – a novel patient internet forum for users of a large, multi-ethnic HIV clinic

T Welz[1], S Lynch[1], B Nathan[1], S Lockyer[1], K Adegbite[1], P Clift[1] and R Blakeborough[2]

[1]King's College Hospital NHS Trust, London, UK and [2]Brightonart, London, UK

Background: HIV-related stigma is a key barrier to accessing practical and emotional support.

Every HIV clinician will have experience of caring for patients with severe psychological distress who feel unable to access face-to-face support due to stigma. Stigma appears particularly severe among Ethiopian/Eritrean patients attending our clinic. The internet offers unparalleled opportunities to assist such patients. However, most public internet HIV support groups do not touch on local concerns and do not have the potential for face-to-face interaction between users.

Methods: We have created 'ch@tspace' (www.mychatspace.net), an anonymous, internet support network for patients attending our HIV Clinic. Patients may choose to participate in online chatgroups for Africans (French/English), Caribbeans, MSM, straight men and women and Amharic speakers (Ethiopian/Eritrean).New groups can easily be created should the demand arise.

Unlike generic HIV internet forums, 'ch@tspace' is restricted to patients attending our clinic. Patients choose a username to log onto the website and are able to post and receive anonymous messages with email alerts. The email addresses and identity of participants are highly protected but a user may request to correspond privately with another user. For discreet internet access in public places, the homepage does not contain any reference to HIV.

Patient volunteers will be trained as group moderators who will refer difficult questions or inappropriate postings to a Health Advisor.

Results: There has been huge enthusiasm for the project from patients and clinic staff. Although the registration process is quick, there are significant manpower and logistic challenges in registering over 2000 patients. Committed staff and patient champions have been essential for start-up.

Conclusion: Our vision is for our HIV clinic users to share experiences and information to create a supportive on-line clinic community. 'Ch@tspace' also provides a forum for user feedback on the clinic and for dissemination of general announcements e.g. changes in clinic times. The local clinic-based nature of 'ch@tspace' and the potential for users to eventually meet one another is highly novel. This is also the first Amharic language HIV support group in the UK. There is potential to replicate this forum in other UK HIV clinics for the benefit of users and services.

P131
Outreach HIV testing

A Umaipalan, S Creighton and D Millett

Homerton Hospital, London, UK

Background: A high rate of undiagnosed HIV infection leads to an increased risk of HIV transmission. This provides a strong rationale for greater diffusion of HIV testing within the community. City & Hackney represents an inner city, multi-ethnic, socially deprived borough with a prevalence of undiagnosed HIV infection of 0.25%. This project aimed to assess the acceptability and effectiveness of non-conventional HIV testing sites within the community.

Methods: Established HIV testing sites in the area include GUM clinics, antenatal departments, substance misuse units, primary care sites, specialist hospital outpatient clinics and acute inpatient departments. In addition, outreach HIV testing was established in further sites. These included point of care testing alongside NHS cardiovascular health checks at a church hall (church) and a community centre (Com); point of care testing at colposcopy (Colp); HIV serology for male partners of pregnant women attending antenatal scans (fathers); HIV serology in a sauna frequented by MSMs (sauna). The number and demographic data of attendees was collected prospectively and compared to established sites over a 4 month period.

Results: In 4 months 5,967 HIV tests were performed in established sites of which 47 (8%) were positive. Outreach testing results are outlined below.

	Attendances (%)	Female (%)	Black (%)	Previous HIV test (%)	Accepted HIV test (%)	Positive HIV test (%)
Church	85 (4)	39 (46)	75 (88)	42 (50)	68 (80)	1 (1)
Com	76 (4)	27 (35)	70 (92)	43 (57)	63 (83)	0 (1)
Colp	467 (24)	467(100)	97 (20)	234 (47)	353 (76)	1 (0.2)
Fathers	1003 (51)	0 (0)	102* (27)	543 (46)	372 (33)	0 (0)
Sauna	324 (17)	0 (0)	5 (2)	237 (73)	281 (89)	5 (2)
TOTAL	1955	533 (27)	522 (27)	1099 (56)	1137 (58)	7 (0.36)

*data from individuals accepting HIV test

Conclusion: HIV testing in non-traditional settings was acceptable with an uptake of 58%. Outreach targeted an at risk population of whom 44% had never had a HIV test. These additional testing sites contributed to 16% of the HIV tests performed in the borough, and detected 15% of the new diagnosis.

P132
Were HIV tests routinely carried out in patients with lymphadenopathy or rash attending a London hospital between 2009 and 2010?

M MacKenzie, S Winchester, D Johnston, M Tenant-Flowers and M Zuckerman

King's College Hospital NHS Foundation Trust, London, UK

Background: Late diagnosis has been identified as a driver of HIV mortality and transmission. The 2008 UK National Guidelines for HIV Testing suggest all general medical admissions should be tested where the diagnosed prevalence in the population exceeds 2 in 1000. Furthermore, routine testing is advised for "all patients presenting for healthcare where HIV, including primary HIV infection, enters the differential diagnosis". Indicator diseases include toxoplasmosis, lymphadenopathy of unknown cause and mononucleosis-like syndrome (primary infection). Our hospital serves a population where HIV prevalence exceeds the threshold in the guidelines. We performed an audit to establish whether patients undergoing tests for these conditions were also tested for HIV at different locations in the hospital.

Methods: Using the Virology database, all patients >16 years old who had a 'Lymphadenopathy Screen' comprising Epstein-Barr virus VCA IgM, cytomegalovirus IgM and toxoplasma IgG (with HIV antibody/antigen added if consent given) or 'Rash Screen' comprising rubella virus IgM, parvovirus B19 IgM, measles IgM (with HIV antibody/antigen added if consent given) at our hospital between 2009 and 2010 inclusive, were identified. The database was also reviewed to ascertain request information, location of test, whether the patient had ever had an HIV test and test dates.

Results: 946 patients had a lymphadenopathy or rash screen in the study period. 139 were known to be HIV positive and 149 were concurrently tested for HIV. 19 (2.8%) of the remaining 658 patients

subsequently tested HIV positive and 315 (47.8%) had previously or subsequently tested negative for HIV. 322 (48.9%) had never had an HIV test at our laboratory. Of the 'never HIV tested' group, 132 were inpatients, 129 outpatients, 18 unknown/miscellaneous and 43 A&E attendees. According to request details, 42 (97.6%) of these A&E attendees had one or more of the clinical criteria for primary HIV infection and 11 (25.5%) had two or more criteria.

Conclusions: A significant proportion of patients who attended hospital with features consistent with HIV infection were not tested despite being investigated for indicator conditions. These patients were investigated at diverse locations throughout the hospital. We intend to target interventions to increase HIV testing in these specific departments.

P133
Routine HIV testing in the colposcopy clinic – acceptable and sustainable

M Rayment[1], S Ogden[1], D Raben[2], J Lundgren[2], N Wales[1] and A Sullivan[1]
[1]Chelsea and Westminster Hospital NHS Foundation Trust, London, UK and [2]Copenhagen HIV Programme, University of Copenhagen, Copenhagen, Denmark

Background: The HIV in Europe initiative seeks to provide an evidence base for indicator disease-based HIV testing. Patients presenting with one of eight HIV indicator diseases are routinely offered an HIV test, measuring the point prevalence of previously undiagnosed HIV infection. As part of this multi-site survey, we established a service of routine HIV testing in the Colposcopy Clinic of a busy teaching hospital, offering an HIV test to all women presenting with any degree of cervical dysplasia. We report our experience to date.

Methods: All new and follow-up patients attending the Colposcopy service, not known to have HIV infection, were offered an oral-fluid based HIV test. The test was offered by medical staff, specialist nurses and healthcare assistants, all of whom had undergone focused training. Results governance was handled by the local GU service. All patients received their HIV test result, most commonly via SMS. Any patient with a reactive screening test was telephoned and asked to attend the local GU clinic for assessment.

Results: To date, there have been 528 attendances pertaining to 517 individuals. The mean age of attendees was 34 (range 21–70) and 61% of patients were white. There were 11 attendances from known HIV-positive patients. 418 patients were offered an HIV test (offer rate**:** 83%) and 298 accepted the offer (test uptake: 71%). All HIV test results to date have been negative. 91% of women accepting an HIV test had cytological or histological evidence of cervical dysplasia. Women offered a test did not vary significantly from women not offered a test by age, ethnicity or referral diagnosis. Women accepting an HIV test did not differ by age or ethnicity from those declining. The test offer rate between providers varied considerably (range: 48 – 100%) as did test uptake (46 – 82%).

Conclusion: HIV testing in the Colposcopy Clinic appears feasible and acceptable, with generally high overall offer and uptake rates. There is no evidence of targeted testing, but offer and uptake rates differ considerably between colposcopists. This may be due to underlying beliefs or anxieties about the merits or utility of routine HIV testing in this setting. Addressing this issue is central to the establishment of sustainable testing services. Feedback from the colposcopists, however, suggests that the addition of routine HIV testing has had a negligible impact upon the operation of clinics, and should be sustainable in the long term.

P134
Automated laboratory-based oral fluid HIV testing in HIV-screening programs – "Automatic for the People"?

M Rayment[1], E Doku[2], A Thornton[3], A Nardone[3], M Sudhanva[4], P Roberts[1], M Tenant-Flowers[4], J Anderson[5], A Sullivan[1] and M Atkins[6]
[1]Chelsea and Westminster Hospital NHS Foundation Trust, London, UK, [2]Imperial College Healthcare NHS Trust, London, UK, [3]Health Protection Agency, London, UK, [4]King's College Hospital NHS Foundation Trust, London, UK, [5]Homerton University Hospital NHS Foundation Trust, London, UK and [6]Imperial College London, London, UK

Background: Guidelines in the UK recommend routine HIV testing in general medical settings when the local HIV prevalence >0.2%. We offered oral fluid-based HIV tests as part of large-scale, pilot programs in four acute settings. Due to operational pressures, we elected to use laboratory-based testing of oral fluid, rather than point-of-care tests, which require clinical expertise to perform and read, and time and space. Samples were collected in the field and results were released some days later. Samples were tested manually using the Bio-Rad Genscreen Ultra HIV Ag-Ab test (n=3800). Validation work before screening commenced showed this to be methodologically robust, but manual handling of samples was labour intensive and mean turn-around time was eight days due to batch testing. Initially, whole saliva was collected in sterile containers. Subsequently we employed the Oracol+ oral fluid collection device (Malvern Medicals PLC, UK) in light of patient and laboratory feedback. Once the initial pilots were over, a validation study was performed to ascertain whether automation of oral fluid HIV testing using the 4th generation HIV test on the Abbott Architect platform was possible, with the aim of replacing manual testing in future programs.

Methods: Oral fluid was collected from 143 patients (56 known HIV+ volunteers and 87 other participants having contemporaneous HIV serological testing) using the Oracol+ device. Oral fluid samples were tested concurrently**:** manually using the Genscreen Ultra test and automatically on the Abbott Architect.

Results: For oral fluid, the level of agreement of results between the platforms was 100%. All results agreed with HIV serology. The use of the Oracol+ device produced higher quality samples with fewer re-tests required than in the whole saliva phase. Questionnaires administered during the initial pilot programs showed oral fluid sampling plus laboratory testing to be acceptable to 96% of 528 respondents.

Conclusions: Laboratory-based HIV testing of oral fluid requires less training of local staff, with fewer demands on clinical time and space than near-patient testing. It is acceptable to patients. The validation exercise suggests automation is possible with test performance preserved. This reduces laboratory workload and quickens releasing of results. Automated oral fluid testing is therefore a viable option for large scale HIV screening programs.

P135
New UK diagnoses of paediatric HIV in the era of prevention of mother-to-child transmission: presentation and outcomes

E Fernández-Cooke, C Foster, J Dodge, T Sainz Costa and H Lyall
Family Clinic, Imperial College Healthcare, NHS Trust, London, UK

Background: In the UK the rate of mother to child transmission (MTCT) of HIV is <1%, however new paediatric diagnoses continue. Late presentation in the era of HAART in adults results in reduced life expectancy but there are less data for children.

Method: Case note review of new paediatric referrals to a tertiary centre between Jan 2007- Dec 2009.

Results: Of 39 new referrals, 15 were excluded as not new diagnoses; 6 were followed up at another UK centre and 9 were transfers on antiretroviral therapy (ART), 6 from sub-Saharan Africa, 3 other UK centres. Median length on ART was 5.7yrs (IQR 2.2–9); median CD4 700 cells/ul (range 445–916) and 5/9 had a pVl <50.

Of the 24 new diagnoses with perinatally acquired HIV, 13 (54%) were born in UK, 21 (88%) were Black African, 2 mixed race, 1 Caucasian. The median age of presentation was 4.6 yrs (IQR 0.25–9.7), however the UK born median age at diagnosis was 5 months (IQR 2.2–24) compared to Africa born median age 9.4 yrs (IQR 7.3–11.5). 5/13 mothers delivering in the UK were aware of their HIV status in pregnancy, all had C Sections. Risk factors for transmission included; prolonged rupture of membranes and prematurity (2), no antenatal care (2) and documented poor adherence (1). Antenatal test information for remaining 8 UK mothers: delivered pre 1997 (1), declined test (2), tested negative at 12/40 (1) and unknown (4). The median initial CD4 count of the 24 children was 471 (CD4 17%), IQR 290–782, (13–25%), and 15/24 (63%) presented with severe immunodeficiency with a CD4 count <200 cells/ul or < 20%. 13/24 were diagnosed following screening and 11 were symptomatic, 4 of the 6 presenting to PICU died within 12 weeks: PCP + CMV (3 infants), hemophagocytic lymphohistiocytosis (1 aged 10yrs). 6 children had evidence of delayed diagnosis in UK healthcare. 15/20 survivors commenced ART, 10 within a month of diagnosis. At last follow up, median age 9.4 yrs (IQR 2.4–11.2), median length on ART 12 months (IQR 10–26), 12/15 (80%) maintained a pVL <50, with a median CD4 1140 (29%) IQR 505–2064 (20–42%). 5 remain asymptomatic and ART naïve.
Conclusion: In addition to children presenting from Africa, a small number of infants continue to be born with HIV in the UK. Delay in diagnosis and presentation with advanced immunosuppression was common with a continued high mortality at diagnosis (17%), however response to ART was good in those surviving.

P136
HIV testing patterns in primary care in two high-prevalence primary care trusts using laboratory testing data to monitor and support local implementation

S Tugrul[1], M Ruf[2], A More[2], A Brock[3], J Crompton[2] and R Kunasinga[2]
[1]Chelsea and Westminster Hospital NHS Foundation Trust, London, UK, [2]Lambeth Primary Care Trust NHS, London, UK and [3]South East London Health Protection Unit, HPA, London, UK

Background: The 2008 UK National HIV testing guidelines recommend expansion of HIV (Human Immunodeficiency Virus) testing in high prevalence Primary Care Trusts (PCTs) and identify these as key auditable standards. Currently, the Health Protection Agency data on HIV testing is largely confined to antenatal and GUM (genito-urinary medicine) settings.
This study evaluates results from primary HIV testing surveillances from two inner London PCTs, Lambeth and Southwark, which have the highest HIV prevalence in the United Kingdom. This pilot aims to establish the feasibility of using such primary care laboratory data as a basic surveillance system to support the implementation of the guidelines.
Methods: Anonymised laboratory HIV testing data from two large acute trust laboratories serving >90% of local general practices were extracted and cleaned. Data fields included healthcare setting, HIV test result, reason for test (antenatal or other), age and gender. Sex and age-specific testing rates per 1,000 were calculated for patients aged between 15–59. Data from April 2008 to September 2009 was used for analysis. Mid-year GP registered population was used as denominator to calculate HIV testing rates.
Results: Over the period, 3,954 males and 8,591 females had HIV screening in primary care. 22% of the HIV tests were for antenatal screening. HIV testing rates (excluding antenatal tests) were 12.25 and 17.29 per 1,000 practice population in males and females respectively. The test positivity rates were significantly higher in males (3.07%) than females (1.10%) (p value= 0.0001). HIV test rates were significantly higher in Lambeth GP surgeries than Southwark, at 17.6 and 11.9 per 1,000 practice population.
Conclusion: This is the first study to look at laboratory based HIV testing patterns in primary care at PCT level. HIV testing rates in primary care are comparatively low at present compared to tests from GUM clinics and antenatal care. The high number of HIV positives and lower testing rate in males may suggest targeted testing and warrant further investigation. Although there are limitations to using laboratory data, initial results suggest this is a feasible and timely method for monitoring HIV testing patterns to support the commissioning of local interventions.

P137
Offering HIV testing in an acute medical admissions unit

S Ellis[1], L Graham[2], D Price[1] and E Ong[1]
[1]Royal Victoria Infirmary, Newcastle upon Tyne, UK and [2]Newcastle University, Newcastle upon Tyne, UK

Background: There are an estimated 22000 people living in the UK with HIV who are unaware of their diagnosis. Late diagnosis in Newcastle remains a problem and in 2008, 60% of new diagnoses had a CD4 count CD4 <350 compared to 55% nationally. In 2008, the UK National Guidelines for HIV Testing were published in an attempt to increase testing nationally. They state that HIV testing should be offered to all general medical admissions where the reported prevalence of HIV is > 2/1000. Newcastle Primary Care Trust has an HIV prevalence of 3–4/1000. We undertook a prospective audit offering HIV testing to all patients attending the Acute Medical Admissions Unit (AMU) to assess feasibility, acceptability and point prevalence.
Methods: Patients attending AMU with capacity to consent were offered HIV testing during two block periods in 2009/2010. The first period was physician led, the second physician-assistant led (newly appointed health care workers performing phlebotomy). Patients who gave their consent were tested with a fourth generation antigen/antibody blood test and the result available within 36 hours.
Results: 3753 eligible patients were admitted during the audit period and 586 (15.6%) were considered for testing. 108 (18.4%) of those approached were clinically ineligible to test due to lack of capacity to consent. Of the 478 patients offered a test, 396 consented (uptake rate 82.8%). There were two new HIV diagnoses (point prevalence 0.5%). Patient and physician barriers to testing were identified. 95% of results were available within 36 hours with 100% within 48 hours.
Conclusions: Offering HIV testing in an AMU setting is feasible and acceptable to the majority of patients. The high uptake rate but low proportion of admissions tested suggests a lack of confidence of medical staff in offering a test. Physician assistants can successfully augment medical staff in offering testing. Misconceptions regarding HIV testing remain and greater education is required for healthcare workers.

P138
Routine HIV testing in colposcopy

R Dhairyawan, D Millett and S Creighton
Homerton University Hospital, London, UK

Background: BHIVA testing guidelines recommend screening women with cervical intraepithelial neoplasia (CIN) 2 or 3 for HIV. We report on a pilot of routine HIV testing in an inner city colposcopy clinic in an area where the prevalence of diagnosed HIV infection is 0.8% and of undiagnosed HIV infection, 0.25%.
Methods: Women attending the colposcopy unit between 01/09/2010 and 01/01/2011 were invited for opt out point of care HIV testing.
Results: In the first four months 467 women attended, of whom 353 (76%) accepted HIV testing. 103 of the women had CIN 2 or 3. 47% of women had previously had an HIV test. 87% of previously untested women accepted HIV testing, compared to 65% of women who had already had one HIV test (p < 0.0000001). 54 were black African and in total 27% of the women were of black ethnicity. Median age was 31 years (range 18–51 years). 12 /467 (3%) were already known to be HIV positive. Of the remainder, 1/353 (0.3%) tested positive for HIV. She has since accessed HIV care and had a CD4 of 210 at diagnosis.
Conclusion: Opt out HIV testing in the colposcopy unit was acceptable and feasible, with 76% of women accepting the test. Women who had

never previously tested for HIV were significantly more likely to accept HIV testing in the colposcopy unit. The prevalence of previously diagnosed HIV was 12/467 (3%). This was considerably higher than the local background prevalence of 0.8%. One new case of HIV was diagnosed who had a CD4 count in the treatment range for antiretroviral therapy. This initiative targeted an at risk population who may not attend for HIV testing in more traditional settings.

P139
Testing the fathers: performing HIV tests on partners of pregnant women

R Dhairyawan, L Sivyour, E Dorman, J Anderson and S Creighton[1]
Homerton University Hospital, London, UK

Background: The success of the antenatal HIV testing program has resulted in a marked reduction in mother to child transmission of HIV. Concerns persist around HIV seroconversion during pregnancy after antenatal testing from untested HIV positive male partners and this group has been traditionally difficult to access. We report on a pilot of targeting men attending routine antenatal ultrasound screening in an inner city hospital with a local estimated prevalence of undiagnosed HIV of 0.25%.

Methods: Men attending routine antenatal ultrasound screening between 01/08/2010 and 31/12/2010 were proactively offered on site serology for HIV, syphilis, hepatitis B and hepatitis C and urine testing for *Neisseria gonorrhoeae* and *Chlamydia trachomatis*. Results were followed up using the clinical governance structure of the local genitourinary medicine clinic. Referral pathways were established for patients with positive results.

Results: In the first five months 1003 male partners of 3106 women attended for antenatal ultrasound, of whom 372 accepted HIV testing (37%). Median age was 31 (range: 18–51) years. 56/372 were black African and a total of 102 (27%) were of black ethnicity. 46% had previously had an HIV test. There was no difference in ethnicity in the proportion of individuals accepting HIV testing. 12 infections were diagnosed, including one case of hepatitis C, six of hepatitis B and five of *Chlamydia trachomatis*. No new cases of HIV were diagnosed.

Conclusion: This initiative targeted an at risk population in an area where an estimated 2.5/1000 people have an HIV diagnosis of which they are unaware. The prevalence of undiagnosed HIV in the borough is 1/400, so it is not unexpected to have diagnosed no new cases of HIV after testing 372 men. One third of the men accepted HIV testing and of these more than half had never been previously tested for HIV. A quarter of the men were black ethnicity. 3% of individuals tested had an infection, and diagnosing and treating these positively impacted on the outcome of the pregnancy. This is a setting where HIV testing is acceptable to men who have not previously accessed testing elsewhere.

P140
The UK national guidelines for HIV testing: lessons from one general practice

P Arkell[1], B Taylor[2], M Abouyannis[3] and E England[2]
[1]West Midlands Deanery, Birmingham, UK, [2]The University of Birmingham, Birmingham, UK and [3]Mersey Deanery, Liverpool, UK

Background: There is currently little evidence concerning the level to which the BHIVA UK national guidelines for HIV testing have been incorporated into primary care, or the practical barriers faced when attempting to increase HIV testing in this setting. This study aimed to assess the feasibility of implementing the BHIVA guidelines in one routine general practice, and to measure adherence.

Methods: Cases of indicator disease presentation in adults during sample period 1st Jan 2009 – 31st June 2009 were identified by searching read-codes on practice EMIS® software. Data collection was by retrospective manual review of patient notes. Demographic and presentation-related variables were collected, with primary outcome 'HIV test considered or done within 3 months of presentation'. Feasibility of implementing the BHIVA guidelines was assessed by the primary researcher.

Results: 148 indicator disease presentations were identified, and estimated incidence was 32.54 per 1000 adult patients per year (95%CI = 27.30–37.79). The most common indicator diseases were 'any sexually transmitted infection' (40 individuals), and 'bacterial pneumonia'(35 individuals). Overall adherence to BHIVA guidelines was 16% (95%CI=11–23%), and this was lowest for indicator diseases diagnosed outside general practice.

Conclusion: Low adherence indicates missed opportunities for HIV testing in the practice studied. Potential difficulties in applying the guidelines in this setting include difficulty defining and identifying indicator disease presentations, lack of communication between primary and secondary care, and unawareness of local as well as national guidance on HIV testing among GPs. The BHIVA guidelines could be adapted or revised for use in primary care.

P141
Views on home testing for HIV from target audiences and people with HIV (PWHIV)

L Power and G Slade
Terrence Higgins Trust, London, UK

Background: Home testing for HIV is currently illegal in the UK and kits illegally available on the internet are unregulated and often unreliable. Previous research suggests that 0.5% of gay men had used a home testing kit despite this and just under 6% would prefer to test in this way in future. Reliable home testing technology will shortly become available and approved in the US. An NGO in the UK solicited views from its membership and others with an existing interest in HIV about home testing.

Method: A Survey Monkey questionnaire was devised and piloted with key audiences. The survey was advertised via newsletters, Facebook, Twitter and other online media. Respondents were asked a small amount of demographic data and a range of questions about the acceptability and usefulness, or otherwise, of home testing for HIV. A comments section was included for free text responses. Data was analysed and a full analysis report is available.

Results: In all, 654 people responded of whom 337 (52%) were gay men and 167 (26%) were HIV positive. 64% of HIV positive respondents believed home testing should be legalised and regulated, compared to 77% of those whose last test was negative. 62% of negative respondents overall said they would consider using home testing kits if they were legally available and 51% of negative respondents said they thought they would test more often for HIV if home kits were legally available. 35% of people diagnosed with HIV thought they would have been diagnosed earlier if home testing had been available and this rose to 44% of those diagnosed with CD4 <350.

Of the 47% of gay men who last tested negative or had never tested, 3% had used an illegal home testing kit, 65% would consider using home testing if it were legally available and 60% thought they would test more often.

While a majority of comments supported legalisation of home testing, a considerable minority did not. These comments most commonly expressed concern about levels of support available with home testing and a strong desire for proper regulation should it occur. Those in favour cited patient choice, convenience and increased access but many also supported regulation.

Conclusion: If legalised in the UK, home testing could be an acceptable choice for many individuals and could increase testing behaviours and reduce late diagnosis. However, proper regulation is seen as vital by many.

P142
Will earlier diagnosis of HIV reduce the presentation of serious opportunistic infections?

A Scourfield, L Waters, T Martin, N Rockwood, M Bower, M Nelson and B Gazzard

Chelsea and Westminster Hospital, London, UK

Background: Since the introduction of ART the frequency of opportunistic infections (OI) has declined. We performed a review to see if those presenting for the first time with serious OI had previously undergone HIV testing.

Method: We performed a retrospective analysis to identify individuals presenting with a new diagnosis of cryptococcal meningitis (CM), cerebral toxoplasmosis or *Pneumocystis jirovecii* pneumonia (PCP) from 01/01/2005–31/12/2010 using electronic clinical codes. We then performed a case based notes review to determine HIV test results prior to the diagnosis of OI (defined as >3 months) and CD4 and HIV-viral load at admission. Data was included for individuals with CM on basis of culture positive CSF, PCP on positive immunofluorescence or high clinical suspicion based on radiology and oxygen desaturation on exercise, toxoplasmosis on compatible radiology with response to treatment. Where subjects had more than one admission, data was collected for the primary presentation of each OI.

Results: During this time period 117 serious OI occurred, 9 cases of cryptococcal meningitis, 7 cases of toxoplasmosis and 101 cases of PCP. The median CD4 count was 52 (range 1–476) and viral load 84,000 copies/ml. 73 (62%) had previously undergone an HIV test and were aware of the result. In those known to have HIV the median duration from diagnosis to presentation of OI was 8.5 years (range 0.5–21). None of the individuals diagnosed with toxoplasmosis or cryptococcal meningitis were on ART. Seven cases of PCP (7%) had undetectable HIV-1 RNA, mean CD4 in this subset was 205 (17%), one was receiving chemotherapy and one was on interferon; none were taking PCP prophylaxis.

Discussion: This data shows that even in the era of effective ART the majority of individuals presenting with serious opportunistic infections in this cohort had already received a diagnosis of HIV. There are a multitude of reasons why these individuals present with serious OI including poor compliance to treatment, defaulting from follow up, substance abuse, denial of diagnosis and inadequate prophylaxis. Due to the retrospective nature of this study individual patient attitudes towards their health could not be explored but may benefit from future research.

P143
HIV testing in acute medical admissions

B Rudran, M Jarvis, D Thomas, L Sanmani, N Ranaweera, A Cook, S George, A Cummin and D Morgan

Royal Bournemouth Hospital, Bournemouth, UK

Background: The BHIVA guidelines published in 2008 recommend consideration of HIV testing in all general medical admissions in areas where the diagnosed prevalence is greater than 2 per 1000, and routine testing of all patients presenting with clinical indicator conditions. This seaside town is perceived by many health care professionals to have an elderly population who are at low risk of HIV infection. Yet according to the 2009 prevalence data, our town has an estimated HIV prevalence of 3.10 per 1000 population. This is the highest in the region and thus according to the recommendation we should consider testing all acute admissions. We hypothesise that we are not meeting the recommendations for either testing acute medical admissions or clinical indicator conditions.

Methods: Retrospective data collection from hospital notes and electronic records (including pathology results) of patients admitted via our emergency department during a random week last year. 215 cases were identified of which we were able to analyse 198.

Results: There was a roughly equal split between male and female. The average age of our population was 71, with a range from 17 to 98. 90% were local residents and 84% identified themselves as white British. Of the 198 admissions analysed, only 3 were offered and tested for HIV infection. They were all under 60. 18 presented with clinical indicator conditions, of which only one was tested. The 18 clinical indicator conditions comprised of 12 diagnoses of pneumonia, 1 each of aseptic herpes encephalitis, pyrexia of unknown origin, space occupying lesion and anal cancer and 2 diagnoses of dementia. Clinical indicator diseases present on admission, but not the main reason for admission included genital herpes, other sexually transmitted infection, diarrhoea of unknown cause and dementia. Information regarding risk factors was also obtained – notably a history of intravenous drug use (current or past) was taken in 22 patients, none of whom were tested.

Conclusions: We are falling far behind in our recognition and action upon the presence of clinical indicator diseases and risk factors with regards to HIV testing. However targeting only 'at risk' groups would mean patients are missed. We plan to address this by the formation of a working party to address testing in acute medical admissions, as well as education of our medical and nursing professionals and our patients.

P144
HIV testing on women seeking termination of pregnancy (TOP): population characteristics and attitude to HIV testing

S Madge[1], J McDonnell[2], C Miller[1], S Radhakrishnan[1], A Evans[1], M Johnson[1] and A Rodger[2]

[1]Royal Free Hospital, London, UK and [2]University College London, London, UK

Background: BHIVA Guidelines (2008) on HIV testing suggest there should be universal opt out testing for HIV for all women attending TOP clinics in the UK [1]. As yet this is not widespread and little data exists on its acceptability and uptake. It is known however from anonymous seroprevalence studies that women attending London TOP services were a higher risk population for HIV infection than women attending antenatal services (0.8% compared to 0.4%) [2].

Methods: Funding was obtained from Gilead Sciences Ltd to offer opt out HIV testing to all women attending the TOP service at the Royal Free Hospital in London. Clinical TOP staff were keen to offer HIV testing along with routine chlamydia screening .Protocols and pathways were developed and training conducted for TOP staff. Routine opt out HIV testing was commenced and patients were offered a brief discussion pre testing and an information sheet was given to all women on arrival in clinic. The first 100 women offered testing were asked to complete a semi structured questionnaire to identify any issues in establishing this service. Basic data and reason for refusing an HIV test were also obtained for the first 202 women offered testing from the clinical database.

Results: Of the first 202 women offered HIV testing, 170 (84.2%) accepted. The commonest reason for declining testing was having a negative test in the past 12 months (n=8), already being HIV positive (n=2) and not feeling they were at risk (n=2). Only 2 refused because they were unhappy about testing that day. 72 women completed the brief questionnaire about HIV testing in the TOP service. Age range was 16–43 years with a mean age of 28 years. Fifty seven percent (41/72) were born overseas. Seventy four percent (53/72) had accepted HIV testing that day, 80.6% in those born in the UK and 68.3% in those born overseas. Fifty percent had never had an HIV test before. Only 2% thought it was unacceptable to offer HIV testing in the TOP service.

Conclusions: HIV testing is acceptable in the TOP setting. This data suggest that patients are frequently non UK born and have not previously tested for HIV making it a worthwhile area to offer HIV testing. Uptake was high and offering testing was easily incorporated into routine workloads for clinic staff.

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P145
Fourth generation point-of-care testing for HIV: validation in an HIV-positive population

E Naylor, D Axten, F Makia, W Tong, J White and J Fox
Guy's and St Thomas' NHS Foundation Trust, London, UK

Background: Identification of primary HIV is valuable to reduce onward transmission and enable early antiretroviral therapy (ART). Fourth generation (4G) HIV tests detect p24 antigen (Ag) in addition to antibody (Ab) and therefore allow detection of HIV before Ab development. 4G point of care tests (POCTs) have been widely adopted despite an absence of prospective clinical trial evidence supporting their use and reports of reduced Ag sensitivity. The rate of p24 positivity in chronic infection has not been investigated. The performance of a widely used POCT and the influence of concomitant illness, vaccination and sexually transmitted infection (STI) were therefore assessed in acute and chronic HIV infection.
Methods: The Determine HIV-1/2 Ag/Ab Combo POCT (Alere Medical, Stockport, UK [formerly Inverness Medical UK]) was tested on whole blood samples obtained by finger prick from HIV-infected patients attending for routine HIV care. Early p24 Ag-only infection was determined with the ARCHITECT HIV Ag/Ab Combo (Abbott Diagnostics, Wiesbaden, Germany) 4G serological assay.
Results: 147 HIV-infected patients were recruited prospectively between June and October 2010. 19/147 (13%) POCTs were excluded because the visual control line on the test strip was absent. Of the remaining 128 individuals, 94 (73%) were men, mean age 41 years (range, 24–73), mean CD4 count 515/μL (46–1186), mean time since diagnosis 67 months (0–326); 90 (70%) were on ART and 42 (33%) had concomitant illness, vaccination or STI. 79 (62%) had HIV viral load < 100 copies/ml.
5/128 (3.9%) tested positive for p24 Ag by POCT. Of these, 3/5 had a history of recent influenza-like symptoms and had been diagnosed with primary HIV infection in the previous two months. All three had been p24 Ag positive only (HIV Ab negative) on serology in the two months preceding their POCT but were both Ag and Ab positive by the time of POCT testing. The remaining 2/5 patients had no history of concomitant illness, vaccination or UTI. These two patients had been diagnosed with HIV infection more than five years previously and were taking ART with viral load < 20 copies/ml.
Conclusion: In a real life setting the p24 Ag component of the Determine HIV-1/2 Ag/Ab Combo POCT has an acceptably low false-positive rate in chronic infection and was not affected by concomitant illness, vaccination or STI. Further prospective evaluation of the test's sensitivity in primary infection is required.

P146
Failure of the 2008 BHIVA HIV testing guidelines to influence the rate of late presentation to an infectious diseases unit in the North East of England

N Premchand[1], P Falkous[2], K Golds[2], PY Tan[2], I Bittiner[2], N Sankar[3] and E Ong[1]
[1]Royal Victoria Infirmary, Newcastle upon Tyne, UK, [2]Newcastle University Medical School, Newcastle upon Tyne, UK and [3]Newcastle Genitourinary Medicine Clinic, Newcastle upon Tyne, UK

Background: Late presentation of HIV infection remains a continuing burden in North East (NE) of England with between 53–63% of patients presenting to the infectious diseases (ID) unit with a CD4 count of <200 between 2007–9. Only 21–31% of patients presenting to the local genitourinary medicine (GUM) clinic presented with a CD4 count of <200.
Methods: A case note audit of patients whose HIV care was initially managed by the ID Unit and GUM in 2010 was undertaken to determine the number newly diagnosed with HIV in 2010. Patients who were late presenters (CD4<200, AIDS at diagnosis) were noted. Clinical indicator diseases for adult HIV infection stated in the 2008 testing guidelines were documented.
Results: In 2010 42 patients newly diagnosed with HIV were managed by the ID department and 22 by GUM. Of the newly diagnosed patients in ID, 22 (52%) were diagnosed as late presenters and their median CD4 was 65 cells/μl (Range 0–379 cells/μl). Median viral load for the late presenters to ID was 338,376 copies/ml. Of the newly diagnosed patients in GUM, only 1 (5%) was a late presenter with a CD4 count of 162 cells/μl and VL of 295,558 copies/ml.

	ID 2010	GUM 2010
New HIV Diagnosis	42	22
Late Presenters (L.P)	22	1
Late Presenters %	52	5
Gender M:F %	69:31	95:5
MSM %	17	68
White British %	64	77
Black African %	31	18
Median CD4 Count at Diagnosis	195	389
CD4 Range at Diagnosis	0 - 1145	162–851
Previous Indicator Disease %	48	23
AIDS at or Prior to Presentation %	26	0

Conclusions: There has been negligible impact of the 2008 testing guidelines on late presentation with a consistent majority of patients being diagnosed with HIV when they present with AIDS or CD4 < 200 in our regional ID unit. Most of these patients (59%) have previously been treated for an indicator disease. Greater awareness of the HIV National 2008 Testing guidelines is needed in the the NE.

P147
Low uptake of routine HIV testing in women referred for colposcopy

M Rosenvinge, C Muggeridge, M Wood, W Majewska, P Carter and M Pakianathan
St George's Hospital, London, UK

Background: National HIV testing guidelines recommend routine testing for HIV in women diagnosed with cervical intraepithelial neoplasia (CIN) 2 and above. The prevalence of HIV in this cohort is unknown. The acceptability and feasibility of HIV testing in a Colposcopy clinic setting is also unclear.
Methods: A pilot project on routine HIV testing in Colposcopy in collaboration with GU Medicine. Clinicians received training that included obtaining informed consent for HIV testing. Data was collected prospectively on the referral cervical smear result, uptake of testing, outcome and reasons for refusal. Serology samples taken in phlebotomy clinic and tested using an Abbott paired HIV p24 antigen/antibody assay. Screening started 7/6/10 for women with new/previous history of CIN 2/3. From 1/8/10 all new referrals to Colposcopy were offered testing. From 1/10/10 an automated prompt on HIV screening was generated by the IT software. Data collection period: 7/6/10–31/12/10.
Results: Mean age 29.9 years. 386/429 (90%) of those declining reported having had a 'recent' HIV test, 14/429 (3%) said that they were HIV positive - known HIV prevalence of 14/829 (1.7%) in this cohort. Those who declined were more likely to have had a normal referral smear, 117/455 (26%) compared to 14/102 (14%) p<0.01. 54/131 (41%) of those consenting to testing chose not to wait to have blood taken. 77/131(59%) samples were tested; all 77 were HIV negative.

Time interval	Number patients eligible	Number patients offered	Number patients accepted	Number results available
7/06/10–31/07/10	161	47 (29%)	25 (53%)	17 (68%)
1/08/10–30/09/10	210	119 (57%)	28 (24%)	17 (61%)
01/10/10–31/12/10	458	394 (86%)	78 (20%)	43 (55%)

Conclusions: The proportion of patients offered HIV testing improved over time with simpler eligibility criteria and the use of an automated prompt. Uptake of HIV testing was low. The majority of patients stating that they had recently tested for HIV elsewhere. Near patient tests for HIV may improve uptake but would impact on clinician time. More data regarding testing in this situation is needed.

P148
Opinions of general medical registrars on their competence and education in HIV: correlation with under- and post-graduate teaching and clinical rotations

T Wingfield, A Herbert and A Ustianowski

Monsall Infectious Diseases Unit, North Manchester General Hospital, Manchester, UK

Background: The advent of HAART has led to considerable improvements in the life-expectancy of HIV-positive people. Consequently, more HIV-positive patients with health problems not directly related to their HIV (e.g. diabetes, heart disease) come into contact with healthcare professionals of other specialties. It is imperative that HIV teaching and exposure are adequate for all physicians. We aimed to establish the opinions of regional medical registrars on the provision of HIV teaching and their confidence in HIV medicine.

Methods: We performed a cross-sectional evaluation of 123 general medical registrars within a local deanery via a written questionnaire. Responders were asked how competent they felt in areas such as HIV counselling and testing, ART, advising on needlestick injuries, opportunistic infections (OIs) (1 = not at all; 3 = sufficient; 5 = very) and how they would rate their under- and post-graduate teaching in HIV and infectious diseases (1 = did not receive; 3 = adequate; 5 = excellent).

Results: 102/123 registrars completed the questionnaire. Registrars (n=102) felt most competent dealing with needlestick injuries (mean score 3.6) and pre-test HIV counselling (3.8), of borderline competence in OI knowledge (3.0) but not competent in post-test counselling (2.7) or knowledge of ART (2.3). Postgraduate teaching was uniformly scored as inadequate in all subject areas. All undergraduate teaching areas apart from Microbiology (mean 3.2) and Infectious Diseases (3.1) were also scored as inadequate. Those without previous pre-registrar jobs in ID / GUM / HIV (n=17) scored their overall HIV and infection education significantly worse than those with previous pre-registrar jobs in ID / GUM / HIV jobs (n=85) [difference −0.74, 99% Confidence Interval (CI) −1.23 to −0.24, p=0.002]. Undergraduate teaching in all infection subjects was scored as significantly poorer in doctors qualifying from our region [mean score 2.47, 99% CI 2.19 – 2.75] when compared to those who obtained medical degrees from other UK areas [3.08, 99% CI 2.77 – 3.38] and outside of the UK [3.19, 99% CI 2.83 – 3.56; p=0.0001].

Conclusions: Medical registrars do not feel competent in their knowledge of ART or post-test counselling and feel both undergraduate and postgraduate HIV and infection education has been inadequate. Registrars' perceptions of the quality of the education they had received in these areas significantly improved with pre-registrar jobs in ID / GUM / HIV.

P149
First contact: exploring relationships between HIV clinics, primary care, geography and HIV diagnoses in North East London

S Longwill[1], A Nori[2], C Orkin[1], B O'Connell[2], S Creighton[3], J Dorward[1] and I Reeves[3]

[1]Barts and The London NHS Trust, London, UK, [2]Newham University Hospital NHS Trust, London, UK and [3]Homerton University Hospital NHS Trust, London, UK

Background: Local PCTs play an important role in reducing late diagnosis of HIV by setting policy and priorities for HIV testing. Primary care has an increasing role in testing for HIV and in the management of HIV+ patients. We sought to investigate the clinical setting of first positive test across 3 clinics covering 3 contiguous PCTs in inner NE London as well as disclosure of HIV status to GPs.

Methods: All new HIV diagnoses from 1/1/10 to 31/12/10 were considered. Transfers of care were excluded. Electronic and paper records were used to record patient demographics, site of first positive test, PCT of residence and clinical data. Comparisons were made between each clinic and chi-squared used to compare proportions.

Results:

Gender, n (%): *Clinic 1*: Male 108 (75), Female 36 (25), Unknown 1 (0.1); *Clinic 2*: Male 27 (44), Female 34 (56); *Clinic 3*: Male 47 (53), Female 41 (47)

Ethnicity, n (%): *Clinic 1*: Black 43 (30), White 65 (45), Asian 15 (10), Other/No data 22 (15); *Clinic 2*: Black 43 (71), White 8 (13), Asian 4 (6), Other/No data 6 (10); *Clinic 3*: Black 60 (68), White 25 (28), Other/No data 3 (4)

Risk, n (%): *Clinic 1*: Hetero 58 (40), MSM 59 (41), Other/ No data 22 (15); *Clinic 2*: Hetero 50 (82), MSM 10 (16), Other/ No data 1 (2); *Clinic 3*: Hetero 60 (68), MSM 22 (25), Other/ No data 6 (7)

Proportions first tested in primary care were: Clinic 1: 10 (7%); Clinic 2: 3 (5%); Clinic 3: 24 (27%), $p < 0.0001$. Disclosure of HIV status to GPs as follows: Clinic 1: 53 (36%), Clinic 2: 31 (51%); Clinic 3: 59 (67%), $p = 0.0007$.

In each PCT numbers tested in primary care were: Tower Hamlets 8/48 (17%), City and Hackney 21/84 (25%), Newham 8/75 (11%). These differences were not statistically significant.

Conclusions: Clinic 3 saw a higher proportion of patients tested in primary care and a higher rate of disclosure to GPs. It is also in the PCT with the highest rate of primary care diagnosis. Clinics 2 and 3 have similar patient demographics but very different rates of primary care diagnosis, suggesting that factors other than different testing behaviour in different populations are at play. These data are limited by incompleteness in clinic databases and cannot account for all diagnoses in NE London due to the open access nature of GUM/HIV services. However they suggest that exploring differences in engagement of primary care with HIV may prove fruitful in improving diagnosis and patient care.

P150
HIV specialists must lead the way to make HIV testing truly routine

L Byrne[1], T Whitburn[2], S Vearncombe[2], C Orkin[1] and H Noble[2]

[1]Barts and The London NHS Trust, London, UK and [2]Newham University Hospital NHS Trust, London, UK

Background: BHIVA HIV testing guidelines recommend opt-out testing of all general medical admissions in areas of high prevalence. Three recent Department of Health pilot studies of opt-out or targeted testing in different settings have shown uptake of 27 to 40%. We report outcomes of a pilot of opt-out HIV testing for an easily identifiable subgroup of acute medical admissions, implemented with no additional resource.

Methods: All patients admitted with community-acquired pneumonia in Feb-April 2010 were offered opt-out HIV testing. Preparations included an education program for clinicians, and a new inpatient HIV testing pathway. Discharge summaries of all patients coded for pneumonia during the testing period were reviewed. Exclusion criteria were: below 18 years old; non-medical specialty; underlying chronic lung disease; hospital-acquired pneumonia. We reviewed case-notes of all included patients.

Results: 130 Patients were coded for pneumonia. 46/130 met inclusion criteria (eligible group). Mean age = 56 years (19–99). Female = 25/46. 3/46 were known to be HIV-positive. 17/43 (39.5%) were tested for HIV (tested group). Mean age of tested group = 39 years, (range 24–72). 7/17 patients had consent documented in the notes. No instances of decline of

test were recorded. 2/17 of the tested group were found to be HIV antibody positive, both in high-risk groups. One was later diagnosed with PCP.

Conclusion: Uptake rates of testing compare favourably with larger and better-resourced services, but could be better. The difference in mean age between the eligible and tested groups suggests that the tests may have been targeted to patients perceived by clinicians to be at risk. The pilot period was short, and we anticipate rates would improve with time as testing becomes normalised. Testing in non-GU settings is acceptable to patients, and barriers remain clinician-related. Reducing the burden of undiagnosed HIV will require more routine testing, as has already been achieved in antenatal clinics. The current economic climate makes it unlikely that additional funding for widespread testing will be available. We need to design sustainable interventions to ensure HIV testing is embedded from primary to tertiary care. HIV clinicians must lead the way to make all HIV testing easy, and most of all, routine.

P151
Late diagnosis of HIV: outpatient audit 2011

I Cormack

Croydon University Hospital, Croydon, Surrey, UK

Background: Late diagnosis is now defined as a CD4<350 at baseline.

Methods: Case notes of 244 patients under my care in the outpatient department were reviewed and database analysis performed on baseline CD4 at diagnosis, virological response to anti-retroviral therapy (HAART) and immune reconstitution.

Demographics: 118 men and 126 women attend my HIV outpatient clinic. Overall 136/244(56%) are black-african, MSM 55/244(22.5%), UK heterosexual 16/244(6.5%), black-caribbean 16/244(6.5%). Men : black-african 46/118(39%), UK MSM 51/118(43%), UK heterosexual 9/118(7%); black-caribbean 3/118; Women : black-african 90/126(71%), black-caribbean 13/126(10%), black-british 8/126(6%), white UK 7/126(5.5%).

Results: overall 165/244 (67%) patients were diagnosed with a baseline CD4<350, 113/244(46%) CD4<200, 61/244(25%)CD4<50. In the men 80/118(68%)CD4<350, 58/118(49%)CD4<200, 38/118(32%)CD4<50. In the women 85/126(67%)CD4<350, 55/126(44%)CD4<200,23/126(18%)CD4<50.

Rate of late diagnosis by year was 2010:11/14 (79%), 2009: 9/13(69%), 2008:14/23 (61%). At least 30% of my patients suffered serious harm as a result of late diagnosis of HIV. I defined serious harm as damage to brain, eye, kidneys, admission to ITU, cancer diagnosis or harm to baby (HIV+ve baby) occurring as a result of late diagnosis.

108/118(91.5%)men have been on HAART>6months(105/108 VL<40, 108/108 VL<400; ie 3 have persistent low level viraemia with no evidence of resistance).

103/126(82%) women have been on HAART >6months (102/103 VL<40, 103/103 VL<400; 1 low level viraemia, no evidence of resistance).

Immune reconstitution: 229/244(94%) patients now have a CD4>200, 188/244(77%) CD4>350. All 8 men with CD4<200 are on HAART, 7/8 women with CD4<200 are on HAART (1 declines HAART).

Conclusion: late diagnosis of HIV is dangerous for the patient, complex to manage and expensive for the hospital. 67% of my patients were diagnosed late and many have suffered harm as a result. 98% of my patients are undetectable on HAART after 6 months. Reassuringly 94% patients now have a CD4 count>200 and 15/16 of the rest are on HAART and still immune reconstituting. We are committed to reducing the late diagnosis of HIV by engaging with community and hospital teams but the late diagnosis of HIV is likely to continue until a more universal approach to testing is adopted.

P152
Why do men who have sex with men who are at high risk of HIV infection decline HIV testing?

G Whitlock[1], Z Warwick[2], Nicky Perry[3], M Ottewill[3], D Richardson[3], M Fisher[3] and R Gilson[1]

[1]Mortimer Market Centre, London, UK, [2]Plymouth Hospitals NHS Trust, Plymouth, UK and [3]Brighton and Sussex University Hospitals NHS Trust, Brighton, UK

Background: In the UK the uptake of HIV testing in sexual health clinics is increasing, and is already high (~90%) amongst men who have sex with men (MSM). However the unlinked anonymous HIV testing programme in sexual health clinics found 27% of HIV-infected individuals leave clinic with their HIV still undiagnosed. This missed opportunity to diagnose HIV contributes to the number of HIV-related deaths attributed to late diagnosis. Reasons for declining an HIV test remain unclear, especially amongst MSM. The aim of the study was to determine the reasons for declining an HIV test among MSM at high risk of HIV acquisition.

Methods: Anonymous questionnaire survey of MSM assessed as high-risk for HIV who decline HIV testing at two UK sexual health clinics between April 2008 and December 2010. The survey enquired about sexual behaviour, HIV risk perception, knowledge about HIV, reasons for declining testing and the benefits and disadvantages of HIV testing. High-risk for HIV was defined as unprotected anal intercourse (UPAI) since their last HIV test (last tested ≥3 months ago) or ever participating in UPAI and never tested for HIV.

Results: 19 MSM were recruited. In the previous 3 months, 13 (89%) had engaged in UPAI; all had engaged in unprotected oral intercourse. 9 (47%) had a regular male partner, of whom 2 were known to be HIV positive. 15 (79%) considered themselves as low HIV-risk. All were aware that treatment for HIV was available. 18 (95%) were aware that prosecutions had occurred as a result of alleged HIV transmission, however for most (16/18, 89%) this did not cause them to decline a test. The most commonly cited reason (15, 79%) for declining an HIV test was being emotionally unprepared for a positive result. Stated benefits of HIV testing were: peace-of-mind (16, 84%) and timely access to HIV treatment (16, 84%). For 17 (89%), HIV testing was stressful; a further disincentive.

Conclusion: In MSM at high-risk of HIV who attend a sexual health clinic the most frequent reason for declining HIV testing was a lack of emotional preparation. Most responders perceived their HIV risk to be low, despite their sexual behaviour history, but also reported finding HIV testing stressful. Studies of strategies to overcome resistance to testing in high risk MSM are required.

P153
HIV testing in acute medical settings – are non-specialist doctors confident in carrying out the test?

S Herbert[1], S Bradley[2], S Mguni[2], J Ainsworth[2] and C Wood[2]

[1]Mortimer Market Centre, London, UK and [2]North Middlesex University Hospital, London, UK

Background: BHIVA 2008 HIV testing guidelines suggest that HIV testing be considered in acute medical settings where the population prevalence of HIV is 2 per 1000. Other groups have reported patient acceptance of this testing strategy but indicated that doctors may not be comfortable carrying out HIV testing in this setting. We surveyed a group of medical staff working in a large district general hospital in a high prevalence area, in order to identify any barriers to HIV testing and any training needs, prior to roll out of HIV testing for acute admissions.

Method: We surveyed a random group of doctors using a non-validated questionnaire to establish their confidence in discussing and carrying out HIV testing. We examined confidence across grades of seniority.

Results: 40 questionnaires were completed by doctors from all medical specialties and grades. Consultants 27.5% (11/40) were the majority of

respondents. Overall, 22.5% (9/40) felt confident and experienced to offer HIV testing, 45% (18/40) felt confident but had limited experience, 32.5% (13/40) felt unconfident but were prepared to offer testing. No respondents felt inexperienced and unconfident. Senior doctors were more confident than juniors, but many reported lack of experience.

When asked about their experience of pre-test discussion (PTD), the majority of doctors 60% (24/40) had rarely carried out pre-test discussion, 30% (12/40) sometimes, 2.5% (1/40) often and 5%(2/20) had no experience. 55%(22/40) had received some training in HIV PTD, training being carried out at medical school in the majority of cases 25% (10/40). 17.5% (7/40) respondents thought HIV testing could only be carried out by ID/HIV physicians or HIV nurses and only 15% (6/40) thought that any doctor could do the test. 50% (20/40) respondents were unaware of indicator conditions for HIV testing; of those 20% (5/20) were consultants, 40% (8/20) FY1, 15% (3/20) FY2, 15% (3/20) ST2, 5% (1/20) ST3. 90% (36/40) expressed an interest in further training prior to implementation of HIV testing in acute settings.

Conclusion: It is reassuring that, in our survey, the majority of senior doctors working in acute medical specialties were confident and prepared to carry out HIV testing, though many currently have limited experience. We have identified an important training need to overcome potential barriers to implementing the BHIVA recommendations in the acute setting and to ensure doctors are able to carry out HIV testing when appropriate.

P154
Health promotion (HP) and health outcomes: impacts of old and new media campaigns on referral patterns for HIV testing: implications for the National HIV Saving Lives Campaign

D Hartland[1,2], R Duffton[3,4], J Home[2,3,4], C D'Aguilar[2], L Berktay[2], A Tomkinson[2], S Price[2], A Wressel[2], S Hussain[2], J Sheridan[4], N Anderson[3,4], C Barnett[3,4], J Williams[3,4], S Begum[4] and S Taylor[1,2,3,4] for the National HIV Saving Lives Campaign[2]

[1]National HIV Saving Lives Campaign, www.HIVsavingLIVES.com, [2]Heart of England NHS Foundation Trust, Birmingham, UK, [3]Birmingham Heartlands HIV Service, Birmingham, UK and [4]Birmingham Heartlands Hospital, UK

Background: Promotion of public health messages across mainstream media outlets have the potential to increase HIV testing and combat both prejudice and transmission. This analysis explored the effectiveness of old and new media communication strategies in terms of their impact on HIV/sexual health clinic referral rates and access patterns

Methods: We analysed public demand for HIV and sexual health testing services in terms of web traffic and telephone enquiries, over a 24 month period. Further, over a 3 month period clinic attendees completed questionnaires on awareness of external HP materials influencing attendance. This was mapped to patterns of HP and media activities. For this analysis specific HP activities were selected as most clearly identifiable**:** student events, ticketing sporting events, media advertising, placement on radio and television news and online activity including columns, news items and podcasts.

Results:

1. Web activity increased significantly following major media campaigns
2. Weekend activity was less effective in terms of stimulating web traffic
3. Isolated activity was less effective than sustained and multi-platform campaigns
4. According to surveyed patients, word of mouth was the most important in spurring attendance (40.3%): excellent services is likely key to this viral effect; so, too, however, may be indirect effects of media activity
5. Google was the second most important source of attending patients (10.9%), emphasising the importance of a strong, search engine optimised, web presence
6. No individual campaign was cited by more than 5% of attendees. However, at least one of the campaigns was cited by up to 20% of clinic attendees
7. Though phone enquiries increased following media activity, it was found that close to 50% of these calls went unanswered due to insufficient capacity!

Conclusions: Analysis of HP activity and resulting clinic referral patterns allows rational targeting of resources based on efficiency of relevant activity, as well as estimates of required intensity and optimum positioning in the news cycle. However, the main driver of effectiveness was the formation of a highly motivated Sexual Health Media Group able to sustain and capitalise upon consistent messaging, enabling limited resources to carry out the necessary activities. NHS organisations need to consider holistically the cost/returns of funding HP, particularly in terms of providing the administrative support for handling increased demand.

P155
Newly diagnosed HIV-positive patients and stage of disease presentation analysis: 6-year data from Worcestershire

C Green and M Roberts

Worcestershire Acute Hospitals NHS Trust, Worcestershire, UK

Background: The period since 2005 has witnessed the introduction of national guidelines for clinicians to undertake HIV testing on clinical or demographic grounds. This comes on the background of continued Public Health measures to promote patient-initiated presentation and improved access to confidential testing. What remained unclear was whether any local objective data supported improved rates of early detection over the last 6 years.

Method: All newly diagnosed infections from the last 6 years were analysed for their demographics, CD4 count at diagnosis, mode of transmission and the indication that prompted the test.

Results: A total of 85 patients were diagnosed positive in Worcestershire between 2005 and 2010.

Year of diagnosis	Number diagnosed	Average age (yrs)	Average CD4 count (cells/mm^3)	% of patients with <350 cells/mm^3	% of patients with <200 cells/mm^3
2005	4	34.5	229	100	75
2006	12	44.7	253	75	58
2007	21	39.6	386	46	29
2008	23	36.9	364	61	48
2009	6	41.2	302	50	25
2010	16	40.0	357	56	19

Conclusion: Initially there was a marked improvement in the mean CD4 count at diagnosis with a similar reduction in the proportion of patients presenting with a CD4 count below 350 cells/mm^3. In the last 3 years no further improvements have been made which may be a reflection of the ongoing high infection rates in MSM. Nevertheless a dramatic reduction in the proportion of patients with a CD4 count below 200 cells/mm^3 is demonstrated. Although heterosexual transmission represents the commonest mode of transmission overall, MSM rates are rising despite targeted attention to improve HIV testing.

P156
Uptake of HIV testing among GUM clinic attendees in South Wales – what are the barriers?

CW Saing, T Wynne, K Yoganathan and S Danino

Singleton Hospital, Abertawe Bro Morgannwg University Health Board, Swansea, UK

Background: Standards for management of STIs in UK calls all services offering STI testing for 100% offer of HIV test with at least 60% uptake

by those offered. Our primary aim was to find out the level of uptake of HIV testing among GU clinic attendees' in a South Wales clinic and our secondary aim was to compare the difference between doctors and nurses.

Methods: We undertook a case note review of a total of 200 consecutive patients attending open access GUM clinic during a 4-week period between October and November 2010. 100 patients were seen by doctors and another 100 by nursing staff. Cases were included if they presented with a new episode and underwent STI screening. Known HIV positive patients, follow-up patients and those with incomplete medical records were excluded.

Results: The study involved 105 male patients and 95 female patients (mean age**:** males = 29.4 years; females = 27 years). 52.5% of patients presented with genito-urinary symptoms whereas 47.5% attended for asymptomatic screening. 43.5% admitted at least one risk factor for HIV. Doctors recorded the offer of HIV test in 95% of patients and the corresponding figures for nurses were 96%. Overall HIV test uptake was 60%. More patients seen by doctors agreed to have HIV testing (69%) than those seen by nurses (51%), although demographic and clinical profiles between two groups were quite similar.

In subgroup analysis male patients accepted HIV testing more readily (68.57%) than females (50.52%). Patients over 35 years showed highest acceptance (65.9%), followed by the 25 – 35 year group (65%) and the <25 year group (54.5%). There was only a slight difference in HIV test uptake between asymptomatic group (61.5%) and symptomatic group (58.7%).

Of 80 patients who refused HIV testing, 27.5% declined to give any specific reasons. The remainder gave the following reasons: window period (18.75%); recent HIV test (12.5%); perceived low risk (12.5%); regular blood donation (7.5%); other reasons (6.25%); no documentation (15%).

Conclusion: Overall HIV test uptake meets minimum standard set out by BASHH. In comparison, doctors performed better than nurses in getting more patients tested for HIV. The outcome could be improved with better record keeping and training.

P157
Diagnosing HIV in non-GUM secondary care settings

R Thomson-Glover, D Mandal and L Smalley
Warrington & Halton Hospitals NHS Foundation Trust, Warrington, UK

Background: This audit aims to measure the adherence to UK HIV testing guidelines in a secondary care setting. The UK National Guidelines for HIV testing 2008 suggest routinely offering the test to all patients where HIV is one of the differential diagnoses.

Methods: Data was collected over a 6 month period (November 2009-April 2010) from an NHS hospital trust. Using ICD-10 coding patients diagnosed with a clinical indicator disease for HIV were found. Evidence of an HIV test being carried out was then looked for.

Results: Data was gathered from 249 patients of whom only 6% had an HIV test, results which were all negative. Detailed data from individual specialities was collected, for example**:**

Gastroenterology:

Condition	Number of tests	Number of HIV tests
Hepatitis B	3	3
Hepatitis C	1	0
Candidal stomatitis	1	0

Conclusion: 93% of patients who met the criteria for HIV testing were not tested. Further education and support is needed in order to increase the routine offering of an HIV test within secondary care.

P158
HIV in the older patient: an overlooked population?

A Nori, N Jethwa, E Chung and C Orkin
Barts and The London NHS Trust, London, UK

Background: It is widely reported that late HIV diagnoses are disproportionately represented in patients over the age of 60 years, despite being better connected to primary care than younger patients. We report 3 consecutive acute admissions in 2010 in patients aged 60 years and over where there were opportunities for an earlier diagnosis.

Case 1: A 62 years old Cypriot Caucasian lady in a 30 year monogamous relationship presented with shortness of breath. She had been unwell for 2 years with lethargy, oral thrush and weight loss and was investigated for lupus following positive antinuclear antibodies. She requested an HIV test and was positive. A chest x-ray showed interstitial shadows in both mid-zones. Bronchoscopy confirmed a diagnosis of *Pneumocyctis jerovici* pneumonia (PCP). She was oxygen dependent for a prolonged period but responded well to treatment. She had a good response to antiretroviral treatment (ART) and at review 3 months later was well and back at work.

Case 2: A 72 years old Jamaican gentleman, who had been an inpatient for a year with central pontine myelinolysis, presented with collapse and pyrexia. After 2 weeks he developed type 1 respiratory failure requiring intubation and ventilation. Chest x-ray showed extensive interstitial shadowing. A diagnosis of PCP was made; HIV test was positive. He improved slowly with treatment but deteriorated 2 weeks after starting ART. Immune reconstitution was suspected but he had radiological and clinical evidence of aspiration pneumonia. He also developed cutaneous and palatal Kaposi sarcoma. He had recurrent aspiration episodes over the next 6 weeks and died.

Case 3: A 61 year old British Caucasian man with known alcohol dependence and under investigation for unexplained weight loss for 2 years presented to the emergency department with confusion and was diagnosed with Wernicke's encephalopathy. The CT scan of the brain at admission was unremarkable. He deteriorated over the next 4 weeks and became unresponsive. MRI brain showed progressive multifocal leucoencephalopathy. HIV test was positive. He was started on ART and showed minimal neurological improvement over the next 4 weeks. Despite feeding by gastrostomy, he developed recurrent aspiration pneumonia and died.

Conclusion: Age should not be a barrier to HIV testing, especially where clinically indicated in the national guidelines, regardless of risk factors. Routinely testing in primary care may prevent excess morbidity and mortality due to HIV.

Epidemiology and Surveillance

P159
Population-based estimates of UK-acquired HIV infections among persons born abroad and infected heterosexually

B Rice[1], R Smith[1], J Elford[2] and V Delpech[1]
[1]Health Protection Agency, London, UK and [2]City University, London, UK

Background: Targeting of HIV prevention requires good knowledge of transmission dynamics, including place of infection. However, given that HIV-infections often remain asymptomatic for many years the collection of reliable information on place of infection is difficult. We present population based estimates of UK acquired HIV derived from clinical and demographic information and compare these to national estimates based on clinic reports.

Methods: National surveillance data of newly HIV diagnosed adults (15 years and over) in 2009 born abroad and infected heterosexually. Population based estimates of UK acquired infections were derived using a two step process. (1) An infection was categorised as ''UK acquired'' or ''non-UK acquired'' based on year of UK arrival and CD4 cell count at diagnosis using published estimates of CD4 decline. (2) Records with

missing year of arrival and/or CD4 were stratified according to UNAIDS national HIV prevalence estimates of the patient's country of birth (low <1%; medium 1-<4%; high ≥ 4%). Adults were categorised as "UK acquired" if the officially reported HIV-prevalence of their country of birth is less than the estimated diagnosed prevalence within the UK among their ethnicity group.

Results: Among adults born abroad, infected heterosexually and diagnosed in 2009, 14% (285/2004) were reported on clinic reports as having "probably acquired HIV in the UK" and 13% (263) as having "sexual contact in the UK and abroad". In comparison, our overall population estimate of UK-acquisition among these adults is higher at 34% (688/2004) (step 1 categorised 39% (468/1201) of records as "UK acquired" and step 2 27% (220/803) of the remaining records).

Conclusion: We estimate that about one third of adults born abroad, infected heterosexually and diagnosed in 2009 acquired their infection in the UK. The estimate of UK-acquisition is more than double that based on clinic reports which rely on an assessment of sexual risk behaviour but similar to that presented by the authors of a study of newly diagnosed HIV-positive Africans attending 15 HIV treatment centres in London 2004 to 2006. Estimates based on routinely collected data may provide greater accuracy and address clinicians concerns of assigning place of infection on sexual behaviour which may span many years. High completion rates and data quality is important however in order to better identify populations most at risk of acquiring HIV within the UK and track changes over time.

P160
Among migrant African women, increased duration of stay in the UK or Ireland reduces the risk of detectable maternal HIV viral load at delivery

S Tariq[1], J Elford[1], M Cortina-Borja[2] and P Tookey[2]
[1]City University London, London, UK and [2]UCL Institute of Child Health, London, UK

Background: Over 80% of women diagnosed with HIV giving birth in the UK/Ireland are from sub-Saharan Africa (SSA). It has been suggested that migration could impact upon mother-to-child transmission (MTCT) and adherence to HAART. This has not been explored in detail in large observational studies. We describe the association of duration of stay in the UK/Ireland with: (i) detectable maternal HIV viral load at delivery (VL) and (ii) MTCT in pregnancies among women with HIV born in SSA.

Methods: An analysis of data from the UK and Ireland's National Study of HIV in Pregnancy and Childhood. We included all live singleton and still births between 2000 and 2009 to women of black/mixed ethnicity, born in SSA and diagnosed with HIV before delivery. Medians were compared using the Kruskal-Wallis test. Logistic regression models were fitted, with mixed effects where appropriate, to estimate adjusted odds ratios (AOR).

Results: Over a third (2702/7139) of pregnancies had missing date of arrival in the UK/Ireland. This analysis is based on 4437 pregnancies with available date of arrival. A fifth (21.9%) of all pregnancies were in women with < 1 year duration of stay at the time of conception; approximately 10% (487/4437) had arrived during pregnancy The median duration of stay at conception increased over time from 1.5 to 5.6 years (p<0.001). Increasing duration of stay was associated with older age, diagnosis of HIV before pregnancy and longer duration of HAART (all p<0.001). Among women on HAART, each additional year of stay was associated with a decreased risk of detectable VL at delivery (AOR 0.96; 95% CI 0.93, 0.99; p=0.01).There was no association between risk of MTCT and duration of stay for women on HAART (AOR 0.90; 95% CI 0.79, 1.02; p=0.11).

Conclusions: Among pregnant women from SSA who have been prescribed HAART, the risk of detectable VL at delivery decreased by 4% with each additional year of stay. MTCT risk was not affected by duration of stay. This analysis was limited by poor reporting of date of arrival which may bias our results. More robust reporting of date of arrival in the UK /Ireland would allow us to explore the association between migration and clinical outcomes with greater confidence. Further work is needed to elucidate the complex socio-economic factors that may underlie possible associations between migration, adherence and virological control, in order to identify appropriate interventions.

P161
Where do we diagnose HIV? Monitoring new diagnoses made in non-traditional settings

M Kall, V Delpech, A Thornton and A Nardone
Health Protection Agency, London, UK

Background: The 2008 BHIVA guidelines recommend that HIV testing should be routinely offered in a variety of medical settings in order to diagnose HIV infection early and to provide appropriate treatment. Little is known about diagnoses made in such settings in the UK and the impact of expanded testing on late diagnosis.

Methods: National surveillance data of newly HIV diagnosed adults (aged 15+years) for the years 2006 – 2009 with a testing facility reported were analysed. Where available, CD4 count within 91 days of diagnosis was used to determine late diagnosis.

Results: From 2006 to 2009, 28,343 individuals were diagnosed with HIV, and 72% (20,645) had a place of diagnosis reported. 73% of new diagnoses were made in sexual health (STI) clinics, 6.5% in antenatal, 6.5% in GPs, 5.0% in medical admissions or A&E (MA/A&E), 4.7% in infectious disease units, and 2.1% in outpatient services (such as tuberculosis, TOP, haematology, and infertility). Late diagnosis (<350) ranged from 52% in STI clinics to 85% in MA/A&E. Very late diagnosis (CD4<200) was most common in MA/A&E (73%), followed by infectious disease units (51%), outpatient services (44%), GP (38%), GUM (29%) and antenatal (22%). Non-pregnant women were significantly more likely than men to be diagnosed by GP, outpatient services, or infectious disease units possibly reflecting health care seeking behaviour. Black Africans were significantly more likely to be diagnosed by GP or infectious disease units compared to other ethnicities. After STI clinics, older adults (>50 yrs) were most frequently diagnosed in MA/A&E (9.7%). Over the four years, STI clinics remained the main source of new HIV diagnoses. However, as a proportion, new diagnoses from STI clinics decreased, while diagnoses by GPs rose from 5.3% to 8.4% (p<0.001). From MA/A&E, diagnoses rose from 4.1% to 6.5% (p<0.001) and outpatient diagnoses rose from 1.7% to 2.9% (p<0.001). No significant variation was seen between rates of late diagnosis by setting over the time period.

Conclusion: HIV diagnoses made outside STI clinics has increased alongside changes in testing recommendations. Given high rates of late and very late diagnosis outside the STI clinic setting, efforts must be maintained to continue expanding testing outside traditional settings. Close monitoring and evaluation of where new HIV diagnoses are made will guide future recommendations and implementation.

P162
A comparison of inpatient admissions in 2005 and 2010 at a tertiary centre

V Tittle, C Fernandez, A Scourfield, B Gazzard, M Bower and M Nelson
Chelsea and Westminster Hospital, London, UK

Background: Since the introduction of combined antiretroviral therapy (cART) HIV infected individuals are living longer and therefore at a greater risk of long-term health complications. We examined how HIV inpatient admissions had altered between 2005 and 2010 at a tertiary hospital.

Methods: HIV admissions were identified using electronic medical codes from 1st January to 30th June for 2005 and 2010. A retrospective case notes review was performed for each patient utilising electronic records for demographics, pathology results, discharge summaries and pharmacy notes.

Results: The total number of admissions during the defined study period was 244 with 5 deaths for 2005 (admission rate of 8.5 per 100 person

years) and 235 with 6 deaths for 2010 (admission rate of 7.3 per 100 person years). Number of female patients decreased from 15% to 11% in 2010. Both years have a mean inpatient stay of 8 days. There was a marginal increase in mean age from 42 to 44 years old in 2010. The mean CD4 count increased from 270 to 290 cells/mm^3, however there was no significant difference in the number of patients presenting with an undetectable viral load at 41% and 43%. A greater percentage of patients were on cART in 2010 (74% compared to 61%) with fewer admissions to commence cART (0.4% of all admission compared to 4% in 2005). Malignancy-related admissions (including chemotherapy and complications) increased from 10% to 18% in 2010, with a 6% increase in the number of AIDS-defining malignancies, whilst the number of AIDS-defining opportunistic infections dropped from 27 (11%) to 18 (8%) admissions in 2010. There was an increase in patients presenting with type 2 diabetes (from 0 to 3 admissions) and gastroenterological complaints (14 to 23 admissions) in 2010, but a decrease in palliative care (3 to 0 admissions), neurological (11 to 6 admissions) and psychiatric conditions (4 to 2 admissions).

Discussion: Over the past five years there has been an improvement in CD4 count along with an increased number of patients on cART. This is likely to have contributed to a decline in admissions secondary to AIDS-defining opportunistic infections. However a change of disease pattern can be noted by a significant increase in AIDS defining malignancies, gastroenterological complaints and type 2 diabetes.

P163
An audit of the sexual and reproductive healthcare of women living with HIV/AIDS (WLHA) at a single HIV centre

M Wood, T Owen and M Bradley

Royal Liverpool and Broadgreen University Hospitals NHS Trust, Liverpool, UK

Background: National guidelines exist which recommend the standard for the sexual and reproductive healthcare of women living with HIV and AIDS (WLHA). An audit was performed to assess current practice compared to these guidelines at a recently combined HIV centre incorporating an infectious diseases (ID) unit and genitourinary medicine clinic (GUM).

Methods: A retrospective review of all available patient records (n=210) for HIV-infected women who attended for HIV care between 1st June 2009 and 31st May 2010 with a comparison made between current ID and GUM practice. Methods of contraception and unplanned pregnancies are also reviewed in further detail.

Audit Standard	ID	GUM	Significant difference?#
Contraception discussion documented in last one year?	55/67 (82%)	135/143 (94%)	Yes**
Pre-conception discussion documented since diagnosis (if applicable)?	55/64 (86%)	143/143 (100%)	Yes***
Barrier methods discussed since diagnosis?	64/67 (96%)	138/143 (97%)	No
Basic STI screening in last 12 months?	16/67 (24%)	92/143 (64%)	Yes***
Sexual history in last 6 months?	47/67 (70%)	120/143 (84%)	Yes*
Sexual history in last 12 months?	54/67 (81%)	128/143 (95%)	No
Cervical cytology documented in last 12 months if appropriate? (N/A = 22)	32/60 (53%)	96/128 (75%)	Yes**
If Cytology indicated but not documented, patient was advised to have done?	12/28 (43%)	14/32 (44%)	No

#Chi squared test (*p=<0.05 **p=<0.01 ***p=<0.001)

Results: Average age 37 years (range 18–62). 32% were of white ethnicity, 65% black ethnicity. 30% of women were born in the UK, 46% were known asylum seekers. 68% of women were primarily cared for by the GUM service (n=143), 32% by the Infectious diseases unit (n=67).

Conclusion: This data indicates that there is a discrepancy in documented sexual and reproductive healthcare between the specialities managing WLHA in this centre, although STI history and screening rates need to improve across the board. Post-integration combined clinical screening policies have been developed and a re-audit will be undertaken after their implementation.

P164
BASHH Scotland/Scottish HIV and AIDS Group (SHIVAG) national audit 2009/10: sexual health care for people with HIV

R Hembrom[1], L Goodall[1], V Bateman[2], R MacDonald[3], AA Syed[4], R Taylor[3] and DJ Clutterbuck[1]

[1]Chalmers Centre for Sexual Health, NHS Lothian, Edinburgh, UK, [2]Infection Unit, Aberdeen Royal Infirmary, Aberdeen, UK, [3]The Sandyford Initiative, Glasgow, UK and [4]Falkirk & District Royal Infirmary, NHS Forth Valley, Falkirk, UK

Background: BASHH Scotland /SHIVAG agreed in 2009 to audit GUM, Infectious Diseases and combined units in Scotland against Quality Improvement Scotland (QIS) Sexual Health Standards March 2008 and where possible against BASHH UK Audit Results 2006.

Methods: Retrospective case note review of 282 patients attending for CD4 monitoring between 01/04/09 and 31/07/09 in 13 clinics of Scotland using a standardised proforma and Microsoft Excel spreadsheet. The first 36 cases attending each site (or all cases where <36) were selected.

Results: QIS standard 5.1**:** 55% of all cases had syphilis serology recorded within the last 6 months (range 12%–97%). 4 clinics met the QIS standard of 90%. In 5 clinics, 100% of audited cases had syphilis serology recorded within the last year. QIS standard 5.2: Sexual history was recorded within 4 weeks of diagnosis in 67% of cases. 6 units achieved QIS standard of 80%. 51% of cases (range 8–90%) had partner's serostatus recorded within 4 weeks. 45% (range 0–91%) of cases had had condom use recorded within 4 weeks. 7% (range 0–57%) were offered and accepted condoms within 4 weeks of diagnosis, 17% (range 0–100%) in the last 6 months and 19% (range 0–100%) in the last year. PEPSE was discussed or prescribed in 16% (range 0–53%) in the last year and was not required in a further 18% (range 0–50%) of cases. QIS standard 5.3: 45% of cases were offered and accepted an STI screen including Chlamydia testing within 4 weeks of diagnosis (range 4–96%), 22% (range 0–100%) in the last 6 months and 32% (range 0–100%) within the last year.

Conclusion: Rates of syphilis testing were high in some units but less than half of all clinics met syphilis testing and history taking standards. There was wide variation in condom and PEPSE offer although this may be partly due to lack of documentation. Interventions are required to improve performance in the following areas of practice**:** condom offer, acceptance and usage; safe sex and PEPSE advice; cervical cytology and contraception.

P165
Introducing a new online partner-notification service for men who have sex with men

D Heath[1] and S Wayal[2]

[1]GMFA, London, UK and [2]Centre for Sexual Health and HIV Research, London, UK

Background: Around a third of HIV infections in the UK are undiagnosed and the onward transmission of HIV is more likely in the presence of other STIs. To reduce undiagnosed HIV and other STIs amongst gay men in the UK, a new online service has been developed to increase the opportunities for men who have sex with men to notify their partners when they are diagnosed with an infection. The new service allows patients to use one website to send notifications to various partners on

multiple dating sites, via text message and by email. The service also allows clinics to carry out provider referral in the same way.

Methods: The project began by ascertaining the attitude of gay men towards PN and reviewing how PN is carried out in GUM clinics today. 3000 men who are members of three different dating websites completed an online survey about their experiences of PN and their expectations of a new service, and face to face interviews were held with staff in 8 GUM clinics around the UK about their current PN practise. A review of studies and practise of PN online in the last 10 years around the world was also conducted.

Results: Over 98% of men in the survey said they would want a partner to let them know if they were diagnosed with HIV or another STI. Of those who had tested positive for an STI in the last five years, a significant proportion of MSM in the survey had notified their sexual partners, post-diagnosis. However, one-fifth of respondents had not notified their partners. An even greater proportion of MSM had not notified all their sexual partners. Embarrassment and lack of availability of contact details are the main reasons for not notifying their partners. Most clinics are not able to carry out a provider referral if the only contact information a patient has for a partner is his dating site profile name.

Conclusion: The project has learned that modern partner notification methods are not aligned with modern dating practices; gay men need more opportunities and assistance to deliver PN, in particular when they have limited contact information for their partners or are too embarrassed to do it; and clinics need the ability to deliver PN via dating websites as well as a more reliable method to confirm and measure the successful notification of partners by their patients. To address these needs the new service will launch a six month pilot in April 2011, at 8 GUM clinics. As part of the pilot, all GUM clinics in the UK are encouraged to record when any patient attending for tests has received a notification via the new service.

P166
Are we routinely screening for mental health problems in HIV-infected people at baseline? A study from a district general hospital in the UK

P Thayaparan and T Balachandran
Luton and Dunstable Hospital, Luton, Bedfordshire

Background: The effect of mental health problems on the management of HIV is multifaceted; also, cellular and molecular changes that occur in depression are similar to the brain changes associated with HIV infection. We aimed a study to assess the prevalence of mental health problems in our HIV positive patients.

Methodology: All HIV positive patients who attended over a two week period, total of 110 were included in the study. A self administered, validated questionnaire was used to collect information and analysed by using SPSS statistical program.

Results: Prevalence of any mental health problem among HIV infected people attending for care is 63%**:** depression 40%; anxiety 49% and post traumatic stress disorder (PTSD) 35%. None of them were abusing substances.

Prevalence of mental health problems were significantly higher in women 65.6% than in men 59% (P< 0.05) and women suffer with more complex mental health issues and PTSD than men.

Mental health problems are more common among people with HIV at either end of the age spectrum. Of the 10% of the sample population < 25 yrs of age and > 56 years - 100% reported some sort of mental health problem.

Discussion: A high rate of co morbidity of mental health problems and HIV exists. In the United States, the prevalence of depression in the HIV-infected population is significantly higher 36%, compared to 7.6% in the general population, whereas in our study population 40% reported depressive symptoms.

Maximizing the efficacy of HIV management in these individuals should start at the initial evaluation; regular evaluation of both the HIV and mental health treatment plans will provide patients with optimal care and enhance the quality of life.

Conclusion: Around two thirds of people living with HIV are experiencing mental health problems; particularly, women and people at either end of the age spectrum.

We recommend that all newly diagnosed HIV patients should have a mental health assessment at baseline and yearly thereafter.

P167
Trends in respiratory presentation over 10 years in a single-centre HIV-positive cohort

A Abbara, B Chatterjee, E Thomson, J Main and G Cooke
St Mary's Hospital, Imperial College Healthcare NHS Trust, London, UK

Background: HIV-infected patients are susceptible to a wide variety of respiratory infections. There is little published data on respiratory illnesses in HIV-positive individuals in the post-highly active antiretroviral therapy (HAART) era. We aimed to retrospectively identify the aetiology of respiratory infection in HIV-infected patients presenting to a single centre over a 10 year period.

Methods: Retrospective case note and computer record review were performed on inpatient discharge summaries to identify patients admitted to hospital with a respiratory infection between 1998 and 2008. Demographic, virological, microbiological and radiological data were collated in order to identify the incidence of respiratory disease within a single-centre HIV-positive patient population.

Results: The total HIV-positive population rose from 1576 to 2708 over the time period examined. Data was gathered for 268 patients admitted to hospital with a respiratory presentation, of whom 76% were male and 24% female. The mean age at admission was 41 (range 19–70 years) and CD4 count 285/mm^3. The most common presenting complaints were bacterial lower respiratory tract infection (65%; incidence 7/1000 patients/year), *Pneumocystis jeroveci* pneumonia (28%; incidence 3/1000), pulmonary thromboembolism (PTE; 9%; 1/1000), Mycobacterial infection (7%; 0.4/1000), airways disease (asthma or COPD; 3%; 0.2/1000) and viral pneumonitis (*Influenza*, *Parainfluenza*, *Varicella zoster* and *Cytomegalovirus*; 2%; 0.1/1000). A causative organism was isolated in 41% of cases of presumed bacterial LRTI. The most common was *Strep pneumoniae* (45%), followed by Mycobacterial infection (25%), *Haemophilus* (8%), *Staphylococcus aureus* (8%), *Klebsiella* (5%), *Moraxella* (3%), *Pseudomonas* (3%) and atypical pneumonia (*Mycoplasma* and *Legionella*) 2%. *Pneumocystis* incidence decreased from 4 per 1000 patients to 2 per 1000 between 2001 and 2008 (p=0.003) while bacterial LRTIs did not show a significant change in incidence. Both bacterial LRTI and PCP infections were associated with lower CD4 counts (p=0.001 and p<0.0001 respectively).

Conclusions: Respiratory presentation is one of the most common causes for admission to hospital in this London-based HIV-positive population. Pneumocystis pneumonia incidence has decreased in the post-HAART era as might be expected but is still common. Pneumococcal and Mycobacterial organisms are the most prevalent causes of bacterial LRTI.

P168
Psychology service evaluation in a clinic for young people (over 16 years) living with HIV and transitioning to adult care

G Frize, C Foster, S Fidler, S MacDonald and I Taylor
Imperial College NHS Trust, London, UK

Background: There is little published data on the psychological outcomes for young people with perinatally acquired HIV transitioning to adult services. The dedicated transition service established in 2005 is based on a multidisciplinary team approach with psychology integral to the service providing direct clinical work and contributing to patient management and research.

Methods: Psychology case notes for the years 2008–2010 were reviewed to determine the demographics, rates of referral, presenting

problems and outcomes for the client group. These were checked against the clinic's database of all clients who attended clinic during that period.
Results: There were 63 perinatally infected young people attending the clinic during this period. Of these 40 were female and 23 male with ages ranging from 16 to 25 (median 18y). The ethnicity of the group comprised 84% black/african, 13% white/european and 3% asian. In this cohort, 54% were identified as having clinically significant psychological issues (22 female, 13 male). Of these, 18 female and 8 male clients have had direct psychology intervention and 9 more were referred but declined to take up the service. Males were more likely to decline psychology (38% vs 18%, p<.01). The most common primary presenting problems included; mood (58%), anxiety (21%), adherence (8%) and disclosure/relationships (8%). However, the majority presented with multiple issues (e.g. mood *and* adherence problems) and a significant number reported body image concerns of whom 5 have been referred for plastic surgery to treat lipodystrophy. 17 clients (27%) were considered to have complex needs. This included 5 (3 female, 2 male) who have self-harmed, 4 of whom required hospital admission and 8 clients have been prescribed psychotropic medication (13%). Four clients were referred for neuropsychological testing due to concerns about the impact of neurocognitive impairment on their functioning.
Conclusion: This client population have a high level of psychological support needs due to the difficulties faced negotiating late adolescence in the context of HIV. As a result of the evaluation it was decided to implement an annual review of all clients attending the service using the SF-12v2 and CORE (with additional body image items) to improve monitoring and management of these needs.

P169
Sexual and reproductive health in adults perinatally infected with HIV: audit of a single centre cohort

A Croucher, C Foster, S Fidler and S McDonald
St Mary's Hospital, London, UK

Background: Increasing numbers of adolescents with perinatally acquired HIV-1 (PaHIV) infection are entering adulthood but as yet there is little published UK data describing their sexual and reproductive health.
Methods: Retrospective case note audit of young adults aged 16–25 yrs with PaHIV attending a transition clinic from January 2005–11. Data collected**:** reported sexual behaviour; sexually transmitted infections (STIs); pregnancy; contraception; cervical cytology; hepatitis B vaccination and serological response.
Results: 51 patients, 31 (61%) female, 40 (78%) black African, median age at last consultation 20yrs (IQR 18–21) were identified. Median age transfer from paediatric services 17yrs. 24 (77%) female and 13 (62%) male patients had reported being sexually active. Median age coitarche was 16yrs (IQR 14–18) for females and 16yrs (IQR 15–17) for males. Median number of lifetime sexual partners was 3.5 (IQR 1.5–5.5, range 1–40). 5 reported non-consensual sex (4 females, 1 male).
13 (100%) and 20 (83%) sexually active males and females respectively had a STI screen (4 declined); median age 1st screen 18yrs. 7 STIs were diagnosed: human papilloma virus (HPV) (4); chlamydia trachomatis (2), genital herpes simplex (1). 11 pregnancies occurred in 8 patients, resulting in 6 live births, 4 elective terminations and 1 miscarriage. Median age of 1st pregnancy 18yrs (IQR 17–20). 1 male aged 20 fathered a child. 22/24 (92%) of females reported condom use at last sexual intercourse. Exceptions: non-consensual sex (1); patient with IUD, partner aware (1). 7 (29%) were using a long-acting form of contraception at the time of audit. 18/24 (75%) females had had a cervical smear. Median age of 1st smear 19.5 yrs (IQR 18–20), median interval from coitarche to 1st smear 2 yrs (IQR 1–5). 5 abnormalities: borderline cytological changes and HPV (4) and cervical intraepithelial neoplasia grade 1(1).
51/51 patients had baseline hepatitis B serology: 3 had known hepatitis B co-infection. 38/51 (75%) accepted vaccination. 13/20 (65%) completing the vaccination course achieved satisfactory hepatitis B surface antibody titres >100mIU/ml.
Conclusion: Median age of coitarche occurred in paediatric care. The STIs and cervical smear abnormalities found in this cohort highlight the importance of sexual behaviour in the health of young adults with PaHIV. The hepatitis B vaccination response rate raises the possibility that those with PaHIV should be vaccinated whilst in paediatric care.

P170
New kids on the block – HIV diagnosis among adults aged 50 years and over

A Vas, C Whitfield, D Cousins, C Papoutsos and V Lee
Central Manchester University Hospitals NHS Foundation Trust, Manchester, UK

Background: Since 2000 there has been an increase in the number of individuals accessing care and a fourfold increase among older (greater than 50 years) individuals.The numbers becoming infected with HIV in that age group have more than doubled in seven years. The aim of this study was to determine how older patients were diagnosed with their HIV infection and examine their sexual behaviour.
Methods: Retrospective case note review of patients over 50 yrs of age attending an urban HIV clinic between January 2000 and December 2010. Information including demographics, sexual behaviour and HIV parameters was collected and analysed.
Results: 91 patients, 74 males (58% MSM) and 17 females were included. The median age was 54 yrs (range 50–79). 31 (34%) patients were diagnosed in the GUM clinic, 21 (23%) diagnosed by another medical specialty and 9 (10%) by their GP. At the time of diagnosis, the median CD4 was 256 (range 10–1000) with a median VL of 91965 (range 815–2657588). 10 patients were diagnosed following the introduction of BHIVA testing guidelines. In 3 cases it was felt there had been a missed opportunity to diagnose HIV infection.8 (9%) had a sexually transmitted infection (other than HIV) diagnosed within the last 2 years of attendance. Median number of documented sexual partners over the last 3 and 12 months was 1 (range 0–13 and 0–30 respectively). 45% were documented as being sexually active; of these 68% claimed to use condoms consistently.
Conclusion: Increasing numbers of patients over the age of 50 yrs are living with HIV. This is due to a combination of improved life expectancy following the introduction of HAART and the growing number of new diagnoses amongst older adults. When compared with younger adults with HIV, older people were more likely to have been infected through sex with men. Safe sex messages remain important in this age group. It highlights the need for increased targeted prevention efforts and strategies to increase HIV testing among older adults to prevent late diagnosis.

P171
Did we follow BHIVA guidelines for initiation and follow-up of antiretroviral (ARV) medication in 2009?

A Baugh[1] and A Apoola[2]
[1]Nottingham University Hospital, Nottingham, UK and [2]Royal Derby Hospital, Derby, UK

Background: Our ARV Network was set up in 2008 as a virtual clinic to consider ARV choice, discuss difficult patient scenarios and to facilitate audit work. This Network audit was to provide information on ARV initiation and compare this with BHIVA guidelines. We audited our prescribing of ARVs in 2009.
Methods: We performed a retrospective audit of case notes of all patients starting ARVs in 2009 from the four centres providing HIV care in the region.
Results: In total, 98 patients started ARVs in 2009. 54 (55.1%) were men. 77 (78.6%) of patients had a CD4 count below $350x10^6$/L. 40 (40.8%) had a CD4 count $<200x10^6$/L. The mean CD4 count prior to starting ARVs was $247x10^6$/L (range 2–1220). Viral load (VL) data was

available for 96, 2 patients were undetectable, 94 had a detectable VL, with a mean VL of 227,431 copies/ml (range 89–3,200,000). 79 (80%) patients had pre-ARV resistance test.

Ninety seven patients had data regarding ARV choice. Emtricitabine/Tenofovir was the backbone in 80 (82.5%). In this group the third agent was Efavirenz in 62 (63.9%) of patients, Nevirapine in 7 (7.2%), Raltegravir in 2 (2.1%), Atazanavir 5 (5.2%), Darunavir 4 (4.1%) of patients. 10 (10.3%) were started on Abacavir/Lamivudine, with Efavirenz (4), Nevirapine (4) or Lopinavir/ritonavir (2). 7 (7.2%) patients were started on Zidovudine/Lamivudine with Lopinavir/ritonavir.

Six month data was available on 93 patients. 78 (83.9%) had VL <50 copies/ml, 15 (16.1%) had detectable VL (range 51–141,000). Only 41 (44.1%) patients now had a CD4 count <350x10^6/L. The mean CD4 count was 389x10^6/L (range 12–1385).

Conclusion: Overall, ARV initiation was in line with treatment guidelines with most patients started on treatment with CD4 counts above 200 and the choice of therapy was in line with BHIVA recommendations. The network would next like to tackle the problems associated with late and undiagnosed HIV infection in line with the recent "Halve it" paper by new audits to know why patients in our area present and start treatment late. The percentage of patients with a suppressed VL at 6 months also provides some data which may be useful for commissioning services.

P172
Over 50 Clinic: how to assess for neurocognitive disorders?

S de Silva, T Barber, B Ward, J Catalan, E Williams, D Ratcliffe, A Magretts, D Asboe, A Pozniak and M Boffito

Chelsea and Westminster Hospital, London, UK

Background: A HIV older population is more likely to have co-morbidities, polypharmacy, HIV-associated neurocognitive disorders, and social issues (such as isolation and financial difficulty) contributing to increased anxiety and depression. We introduced a clinical service dedicated to those aged over 50 two years ago, and have now introduced formal psychological and neurocognitive assessments to further assess symptomatic individuals and optimize referral pathways.

Methods: Following multi-disciplinary-team meetings with psychologists, psychiatrists, neurologists and HIV specialists, a FLOWCHART has been agreed. This involves: i) GAD7, a simple questionnaire (10 minute) used for screening and grading of generalised anxiety disorder; followed by referral to psychology with a score >10; ii) PHQ9, a 10 minute questionnaire to score all DSM-IV criteria for depression. PHQ9 should be repeated six months later if scored >5, referrals psychology if >10 and to psychiatry to consider pharmacotherapy if >15 should follow; iii) questioning regarding concerns on memory, attention, cognition and whether others have noticed any changes in such functions; iv) in case of a positive answer, the "Everyday Memory Questionnaire" (EMQ) is then administered as a subjective measure of memory failure in daily life; v) International HIV Dementia Scale (IHDS). If either are abnormal, the patient is referred to psychology, however if both are abnormal, they receive a full neuropsychometric test (vi) that requires 4 to 6 hours to perform.

Results: Fourteen HIV-infected males were seen in the Over50 Clinic between September and December 2010. All were administered GAD7 and PHQ9 questionnaires and 11 were also administered EMQ and IHDS, as provided positive answers to having concerns regarding memory, attention, and cognition. Two had a >10 score with GAD7 and were referred to psychology, 3 had a score > 10 with PHQ9 and were referred to psychology, 3 men with borderline scores between 5–10 were also referred to psychology. EMQ scores were impaired in 2 and IHDS scores were low (<12) in 5. Two were referred For neuropsychometric testing and a brain MRI was requested in 3.

Conclusions: Excluding anxiety and depression when testing for HIV-associated neurocognitive disorders in individuals over 50 years of age is important, as mental slowing, memory loss, and motor disorders are common manifestation of these disturbances.

P173
Pre-exposure prophylaxis: a risk-reduction strategy for serodiscordant couples wishing to conceive

E Rutland[1], A Blume[2] and R Mani[2]

[1]Western Sussex Hospitals NHS Trust, Chichester, UK and [2]Portsmouth Hospitals NHS Trust, Portsmouth, UK

Background: The most effective HIV transmission risk reduction strategy for HIV discordant couples wishing to conceive a child in the UK involves sperm washing. This method is however costly and funding is often refused by Primary Care Trusts. Many patients choose to conceive through timed unprotected sexual intercourse (UPSI) when the uninfected partner has an undetectable viral load. Increasingly pre-exposure prophylaxis (PrEP) is being used as a further risk reduction strategy in these patients, however large trial data on the safety and efficacy of intermittent PrEP is currently unavailable.

Methods: This HIV discordant couple (Mr & Mrs X) were referred for sperm washing but were refused funding. They decided to try timed UPSI and requested PrEP. Mr X was diagnosed with HIV infection in 2004 and remained asymptomatic with a CD4 count of 500 cells/ul. HIV genotyping demonstrated no resistance. To reduce the risk of transmission he started Truvada/Atazanavir/Ritonavir. Baseline fertility investigations in Mrs X were normal (follicular and luteal phase hormone profiles, pelvic ultrasound scan and hysterosalpingogram) as was full STI screening in both partners (microscopy, Chlamydia Trachomatis and Neisseria Gonorrhoea DNA). Once Mr X had an undetectable HIV serum viral load for over 3 months, they commenced timed UPSI. Mrs X used urine ovulation predictor tests twice daily to measure Luteinising Hormone (LH) peak and PrEP with 1 Truvada tablet at LH surge repeated 24 hours later (36 and 12 hours before intercourse). She also used topical vaginal oestrogen cream to reduce microtrauma during SI. A 4th generation HIV Ag/Ab test was performed prior to each cycle.

Summary of Results: Mrs X became pregnant on the 4th cycle and is negative for HIV infection (negative 4th generation Ag/Ab test at 3/12). They have been consistently using condoms for SI since the last PrEP cycle. She tolerated the medication without side effects and urinalysis and renal biochemistry remained normal throughout. The 20/40 detailed anomaly scan was normal.

Conclusions: Large phase III trial data on PrEP will not be available until 2012/13 and phase II data on intermittent PrEP is pending. In the interim serodiscordant couples wishing to conceive will continue to seek health professionals' advice about reducing the risk of UPSI. Establishment of a register and the collection of a wide case series may help develop a consensus opinion within the UK on the use of PrEP in this setting.

P174
Causes of death in the HIV-positive population: 15-year data analysis from Worcestershire

C Green and M Roberts

Worcestershire Acute Hospitals NHS Trust, Worcestershire, UK

Background: It has long been established that early detection of infection and treatment with HAART reduces morbidity and mortality. This has developed a cohort of patients who can expect to die with their HIV infection, but not because of their HIV infection directly.

Method: Patients were identified from a register maintained within the Department of Infectious Diseases that contains data between 1994 and 2009. A retrospective study of medical records and post-mortem findings on all patients with confirmed HIV infection and who died within the region was performed.

Results: A total of 18 HIV positive patients died between1994 and 2009 (15 male, 3 female). The average age at diagnosis was 38 years.

- 9 died of AIDS; 9 died from other causes
- 5 of the 9 non-HIV related deaths occurred in 2008–2009
- All but 3 patients were receiving HAART at the time of their death (one refused, one withdrawn for palliation, one diagnosed at post-mortem)

- CD4 counts were low at the time of diagnosis (average 141 cells/mm^3) and remained low at the time of death (average 214 cells/mm^3)
- Cause of non-HIV related death were as follows
  - Bronchogenic carcinoma
  - Liver disease (4 cases, all of whom co-infected with HCV)
  - Pneumonia
  - Squamous cell carcinoma of the tongue
  - Cardiovascular disease (2 cases, one co-infected with HCV)

Conclusions: Non-HIV causes of death are becoming a higher proportion of all causes of death and in particular co-infection with HCV remains a significant risk factor. The CD4 counts remain low at diagnosis and despite HAART little CD4 reconstitution was observed by the time of death. In line with others cohorts, improved early detection and active management of non-HIV related disease are identified as crucial areas for future HIV-related healthcare to reduce long term mortality.

HIV Treatment and Pharmacokinetics

P175
Pooled week-48 safety and efficacy results from ECHO and THRIVE Phase III trials comparing TMC278 vs EFV in treatment-naïve HIV-1-infected patients receiving FTC/TDF

M Nelson[1], B Gazzard[1], S Walmsley[2], P Ruane[3], D Jayaweera[4], S Vanveggel[5], P Williams[5], K Boven[6] and B Guyer[7]

[1]Chelsea and Westminster Hospital, London, UK, [2]Toronto General Hospital, Toronto, Canada, [3]Light Source Medical, Los Angeles, CA, USA, [4]University of Miami, Miami, FL, USA, [5]Tibotec BVBA, Beerse, Belgium, [6]Tibotec Inc., Titusville, NJ, USA and [7]Gilead Science, Foster City, CA, USA

Introduction: TMC278 (Rilpivirine/RPV) can be combined with FTC/TDF into a single tablet regimen (STR). The pooled 48-week primary analysis results of the subset of subjects receiving FTC/TDF as a background regimen in two double-blind, randomized, double-dummy RPV versus EFV Phase III studies, ECHO and THRIVE, are presented.

Methods: Treatment-naïve adult patients (N=1096) received RPV 25mg qd or EFV 600mg qd in combination with FTC/TDF in ECHO (n=686) and in a subset of subjects in THRIVE (n=410). The primary objective was to demonstrate non-inferiority (12% margin) of RPV to EFV in confirmed virologic response (ITT-TLOVR) at Week 48.

Results (see table): RPV in combination with FTC/TDF was non-inferior to EFV in combination with FTC/TDF across all categories of baseline VL. Adherence was a strong predictor for response. Incidences of the following tolerability measures were significantly lower in the RPV+FTC/TDF group than in the EFV group: adverse events (AEs) leading to discontinuation, grade 2–4 AEs possibly related to treatment, rash, dizziness abnormal dreams/nightmare, and grade 3/4 laboratory abnormalities for lipids. There were fewer virologic failures in the EFV group.

Conclusions: At Week 48, RPV+FTC/TDF demonstrated a high virologic response rate (≥83%) and was non-inferior to EFV+FTC/TDF across a broad range of patients. The incidences of AEs leading to discontinuation were significantly lower in the RPV+FTC/TDF group. There were fewer virologic failures in the EFV group. Overall, the data support the clinical benefit of FTC/RPV/TDF currently in development as a once-daily, STR for the treatment of HIV infection.

P176
Prevalence and predictors of protease inhibitor (PI) mutations in HIV-infected UK adults treated with ritonavir-boosted lopinavir as their first PI

T Barber[1], L Harrison[2], D Asboe[1], I Williams[3], L Bansi[4], D Pillay[3] and D Dunn[2]

[1]St Stephen's AIDS Trust, London, UK, [2]Clinical Trials Unit, Medical Research Council, London, UK, [3]University College London, London, UK and [4]UK CHIC Coordinating Centre, London, UK

Background: Many trials of first line boosted protease inhibitor (PI) therapy demonstrate rare occurrence of PI resistance mutations (RAMs) at virological failure (VF) with predicted maintainenance of viral susceptibility to the same or different PIs. Our aim was to assess the applicability of such data to the UK population through analysis of UK patients initiating lopinavir (LPV) with ritonavir as first PI.

Methods: *Pol* sequences retrieved from UK HIV Drug Resistance Database and linked to demographic/clinical data via UK Collaborative HIV Cohort Study. Eligible if ≥16yo with LPV as first PI. VF: viral load (VL) >400c/ml after suppression <400c/ml or >400c/ml for first 6/12 LPV. Genotypic resistance tests (GRTs) whilst failing LPV or ≤30d after stopping were analysed. RAM analysis list defined from IAS-USA 2008 after polymorphism exclusion. PI RAM predictors tested using Wilcoxon rank sum test. LPV exposure duration/area under viraemia curve (AUC) calculated from LPV initiation to first GRT with PI RAMs or last GRT performed. Predicted sensitivity (susceptible/potential low level) determined according to Stanford HIVdb.

Results: 3056 patients included. 1580 (52%) ART naïve, 569 (19%) received prior NNRTI ART. 2627 (86%) commenced LPV with NRTIs only, 269 (9%) with NRTIs and an NNRTI. LPV response equivalent between naïve vs. NNRTI experienced. 811 (27%) had VF. 291 (36%) had 427 GRTs. 130 (45%) subtype B, 59 (20%) subtype C. 32 (11% those with GRT) had

Table for P175

	RPV +FTC/TDF (n=550)	EFV +FTC/TDF (n=546)	Difference between groups
Efficacy (Week 48 outcomes)			
VL <50 c/mL (SNAPSHOT) % [95% CI]	454 (82.5)	441 (80.8)	1.8[−2.8, 6.4]
VL <50 c/mL (ITT-TLOVR), % [95% CI]	459 (83.5)	450 (82.4)	1.0[−3.4, 5.5]
Virologic failures†, %	52 (9.5)	23 (4.2)	ND
Never suppressed	32 (5.8)	12 (2.2)	ND
Rebounders	20 (3.6)	11 (2.0)	ND
Discontinued due to AE/death, %	12 (2.2)	40 (7.3)	ND
Discontinued for other reasons, %	27 (4.9)	33 (6.0)	ND
VL <50 c/mL (ITT-TLOVR), % in patients with > 95% Adherence	392/453 (86.5)	375/425 (88.2)	ND
Safety			
Grade 2–4 AEs, %	87 (15.8)	170 (31.1)	p<0.0001
Total Neurologic Events of Interest	91 (16.5)	205 (37.5)	p<0.0001
Total Psychiatric Events	84 (15.3)	136 (24.9)	p<0.0001
Rash (any type)	20 (3.6)	77 (14.1)	p<0.0001
AEs leading to discontinuation, %	17 (3.1)	43 (7.9)	p<0.0001
Lipid change from baseline(mmol/L, fasted) mean [95% CI]			
Total Cholesterol	−0.01 (−0.07, 0.05)	0.67(0.59, 0.74)	P<0.0001
LDL	−0.06 (−0.11, 0.00)	0.34(0.28, 0.40)	P<0.0001
HDL	0.08 (0.05, 0.10)	0.25(0.22, 0.27)	P<0.0001
Triglycerides	−0.14 (−0.22, −0.06)	0.13(−0.02, 0.28)	P<0.0001

PI RAMs. 18 had single, 9 had two. 16 had no accompanying RT RAMs. Most common mutations I54V (n=12) and M46I (n=11). Of major LPV RAMs - V82T in 7; V32I and I47V/A in 2 each. VL at/closest to GRT date range 170–304,000c/ml. No relationship between RAM pattern/viral subtype seen. Predicted sensitivity LPV 14/32 (44%), tipranavir 10/32 (31%), darunavir 27/32 (84%). Median (IQR) LPV exposure was 50% longer in those with PI RAMs (1.5 (1.0–2.4)yr) than without (1.0 (0.5–2.2)yr; p=0.03). Similar trend for AUC (log_{10} c/ml-yr)**:** median (IQR) 4.2 (2.5–6.0) with and 2.8 (1.5–6.0) without PI RAMs (p=0.05).

Discussion: Data from a large clinical cohort suggests prior NNRTI failure does not compromise LPV response. RAMs at positions 32 46 47 54 76 82 were associated with LPV failure. Increasing RAM risk in failures with high AUC suggests maintaining LPV in failing regimen may have higher resistance costs than currently assumed, with particular relevance to a developing world setting of limited virological monitoring.

P177
The 10-year safety and efficacy of a tenofovir disoproxil fumarate (TDF)-containing, once-daily highly active antiretroviral therapy (HAART)

C Herath[1], I Cassetti[2], JV Madruga[3], A Etzel[4], JM Suleiman[5], Y Zhou[6], M Rhee[6] and DR Warren[6]

[1]Gilead Sciences, Cambridge, UK, [2]Fundacion Centro Estudios Infectologicos, Buenos Aires, Argentina, [3]Centro de Referencia e Treinamento DST/AIDS, Sao Paulo, Brazil, [4]Hospital Guilherme Álvaro, Santos, Brazil, [5]Brasilmed Assistência Médica e Pesquisas, Sao Paulo, Brazil and [6]Gilead Sciences, Foster City, USA

Background: Study 903 was a Phase III randomized double-blind (DB) 3 year study comparing TDF to stavudine (d4T) each in combination with lamivudine (3TC) and efavirenz (EFV) in HIV-1 infected antiretroviral naïve patients. TDF was associated with durable efficacy and safety (better lipid profile, and less lipodystrophy and peripheral neuropathy). A subset of these patients now provides 10 years of longitudinal efficacy and safety data of TDF-containing once-daily HAART.

Methods: Subjects in Argentina, Brazil, and the Dominican Republic who completed the 3 year DB period of study were eligible to roll-over into an open-label (OL) study (Study 903E) of the once-daily HAART regimen, TDF+3TC+EFV. At DB baseline 86 subjects were randomized to TDF (62% male, 70% white, mean age 33 yrs, mean HIV RNA=4.9 log10 c/mL, and mean CD4 count=299 cells/mm3). At OL baseline, 85 subjects (60% male, 64% white, mean age 37 yrs, median CD4=621 cells/mm3) switched from d4T to TDF.

Results:

	TDF/TDF[a] N=86	d4T/TDF[a] N=85
Weeks on HAART/TDF	480/480	480/336
HIV RNA <50 (copies/mL) at Week 480 (ITT, M=F)	63%	64%
HIV RNA <50 (copies/mL) at Week 480 (ITT, M=E)	92%	96%
Change in Mean (SD) CD4, cells/mm^3	545 (287)	180 (290)
Drug-related Adverse Events (Grades 1-4)	66%	46%
Change in Mean (SD) Creatinine Clearance[b], mL/min	+2.5 (23.4)	−10.7 (22.6)
Median Limb Fat at Year 10, kg	10.4	7.5
Percent Change in Mean (SD) BMD[c]		
Spine	−2.44 (5.08)[d]	0.04 (4.72)
Hip	−2.94 (4.95)[d]	−1.86 (4.67)[d]
Discontinuations during open-label extension	25 (29.1%)	19 (22.4%)
Adverse event	2 (2.3%)	2 (2.4%)
Suboptimal virologic response	5 (5.8%)	1 (1.2%)
LTFU[e], Nonadherent, Pregnancy, Consent Withdrawn, Death	13 (15.1%)	9 (10.6%)
Other	5 (5.8%)	7 (8.2%)

[a]TDF/TDF results measured from DB BL; d4T/TDF from OL baseline, [b]Estimated by Cockroft-Gault equation

[c]Bone mineral density, [d]p<0.01 by Wilcoxon Signed Rank Test, [e]Lost to follow-up

Conclusion: Antiretroviral-naïve subjects who received TDF-containing once-daily HAART for up to 10 years demonstrated sustained virologic and immunologic benefit, improved limb fat, stable renal function, and their BMD remained stable after a clinically insignificant decrease that occurred during the first year of TDF therapy.

P178
The central nervous system effects of maraviroc: a study to assess cerebrospinal fluid exposure and cerebral metabolites

L Garvey[1], M Nelson[2], N Latch[1], A Mitchell[1], O Erlwein[1], J Allsop[1], V Watson[3], S Kaye[1], D Back[3], S Taylor-Robinson[1] and A Winston[1]

[1]Imperial College London, London, UK, [2]Chelsea and Westminster NHS Trust, London, UK and [3]University of Liverpool, Liverpool, UK

Background: We conducted a pharmacokinetic and *in vivo* cerebral ^{1}H-magnetic-resonance-spectroscopy (^{1}H-MRS) study to assess cerebrospinal fluid (CSF) exposure and cerebral metabolite ratios (CMR) following maraviroc (MVC) intensification.

Methods: HIV-infected, neuro-asymptomatic adults receiving tenofovir, emtricitabine and lopinavir (LPV)/ritonavir with plasma HIV RNA <50 copies/mL were eligible. Subjects intensified therapy with MVC 150 mg twice daily. ^{1}H-MRS was performed in several cerebral locations including the right basal ganglia (RBG) to assess CMR including N-acetyl aspartate/creatine (NAA/Cr) at baseline and after 14 days. Subsequently on day 15, blood samples were obtained to determine plasma concentrations of MVC and LPV pre-dose *(Ctrough)* and then paired blood and CSF samples collected at 4 or 6 hours post-dose (*C4h or C6h*). Associations between MVC exposure, clinical parameters and changes to CMR were evaluated.

Results: 12 subjects (75% male) participated with mean (SD) CD4+ cell count 503 (199) cells/uL. Mean (SD) plasma concentrations at *Ctrough*, *C4h* and *C6h* were 337 (74), 842 (174) and 485 (100) and 6088 (1215), 9048 (870), 9253 (1441) and mean (SD) CSF concentrations at *C4h* and *C6h* 7.5 (1.3), 5.1 (1.2) and 75.1 (45.0), 76.8 (30.8) ng/mL for MVC and LPV respectively. Mean CSF:plasma ratios [range] were 1.01% [0.57–1.61] and 0.85% [0.32–1.83] for MVC and LPV. An increase of 14.8% was observed in the RBG NAA/Cr ratio, which was significantly associated with higher MVC plasma *Ctrough* (p=0.05, r=0.61) but not CSF concentration (p=0.16, r=0.46).

Conclusions: After 14 days of MVC intensification, increases in cerebral metabolite markers of neuronal integrity (NAA/Cr ratios) are observed and are associated with trough MVC plasma concentration.

P179
Eighteen-month follow-up of HIV-infected subjects switching antiretroviral therapy from efavirenz to etravirine

A Scourfield[1], L Waters[1], A Jackson[1], A Winston[2], L Garvey[2], W Hadley[3], M Fisher[3], N Perry[3] and M Nelson[1]

[1]Chelsea and Westminster Hospital, London, UK, [2]St Mary's Hospital, London, UK and [3]Royal Sussex County Hospital, Brighton, UK

Background: Etravirine (ETR) is an effective treatment option in HIV infected individuals who are naïve to ART or, treatment experienced and as a switch option for those burdened by ongoing ART related adverse events. There are however, little data on the long term efficacy on the use of ETR in clinical practice. We therefore performed a service evaluation to assess clinical outcomes of individuals switching to ETR at 12 and 18 months after initiation.

Method: All subjects switching to ETR from efavirenz across three HIV centres were identified from pharmacy records from 1st July 2008 to 31st March 2009. Pathology results were reviewed at baseline, 12 and 18 months to determine CD4 count, HIV-1 RNA, lipid profiles and liver enzymes. We also identified those remained on an ETR containing regimen at the follow up time points.

Results: Thirty eight subjects were identified; all were male with a median age of 43 years (range 26–64). All subjects were switching for CNS toxicity, receiving ETR once daily with 2 NRTI and had undetectable HIV-1 RNA at time of initiation of therapy. Mean values (SD) at baseline and for the two time points are shown in the table below (patients who discontinued ETR excluded from analysis).

Of the 6 individuals who had discontinued ETR by 18 months, 2 reverted back to efavirenz for simplification, 4 subjects with ongoing CNS adverse events switched to PI based regimens (one each to ritonavir boosted atazanavir and saquinavir, and 2 switched to darunavir).

	Baseline	12 months	18 months
Number on ETR	38	33	32
CD4 count cells/uL	478 (201)	622 (233)	699 (220) *
% HIV-1 RNA <50 copies/mL	100%	100%	100%
Total cholesterol mmol/L	5.33 (1.24)	4.55 (0.91)	4.54 (0.8)**
HDL mmol/L	1.34 (0.61)	1.16 (0.30)	1.18 (0.29)
HDL:cholesterol (ratio)	4.42 (1.41)	3.97 (1.12)	4.01 (1.30)
Triglycerides mmol/L	1.54 (1.11)	1.52 (0.97)	1.71 (0.91)
Alanine transferase IUl	30.6 (15.1)	30.6 (11.5)	34.3 (15.8)

P-values are change from baseline to month 18, * p=0.002, ** p=0.025.

Conclusion: ETR appears to be a well tolerated, efficacious treatment over 18 months in HIV-infected individuals. Interestingly significant improvements CD4 count and total cholesterol were also observed.

P180
Once-daily (OD) maraviroc (MVC) in combination with ritonavir (/r)-boosted darunavir (DRV) (800/100mg): 300mg or 150mg: a little too much or a little too little?

C Okoli[1], S William[2], N Dufty[2], G Hickinbottom[2], G Gilleran[2], K Schulz[1], K Ghandi[2], J Ainsworth[1], J Watson[2], E Smit[2] and S Taylor[2]

[1]North Middlesex University Hospital, London, UK and [2]Birmingham Heartlands HIV Service, Birmingham, UK

Background: MVC is a CCR5 antagonist used for treatment of HIV-1-infected individuals with R5-tropic virus. Licensed dosing of MVC is 300mg BD in the absence of enzyme inducers or inhibitors or 150mg BD when combined with most boosted protease inhibitors (bPIs). Pilot studies have suggested that [MVC]'s when dosed at 150mg OD with ATV/r 300/100 achieves comparable concentrations equivalent to 300mg of MVC without PIs. However MVC interacts at varied extents with different PIs so extrapolation of therapeutic [MVC]s cannot be made with other bPIs. The Minimum Effective Concentration (MEC) of MVC has not yet been defined, but [MVC] >25ng/ml have been associated with good viral suppression. This investigation reports the C_{trough} and C_{peak} of 150mg and 300mg of MVC given OD with a DRV/r and compares to [MVC] given at the licensed dosing of 300mg BD given in combination with NRTI's, predominantly Truvada.

Methods: We conducted a retrospective case-notes review of HIV-1-infected adults from two large UK treatment centres. Standardised clinical protocols were followed for novel MVC use including [MVC] drug level monitoring. Patients were grouped as: 150mg or 300mg OD MVC with DRV/r 800/100 and compared to patients on MVC BD with Truvada (TVD) and historical controls of MVC 150mg OD with ATV/r 300/100. Data was analysed using Microsoft Excel.

Results: 52 patients were reviewed providing 77 samples for analysis (see table).

There were no [MVC] C_{trough} <25ng/ml. 6 of 38 patients in the 300mg OD arm had [MVC] C_{peak} >1000ng/ml all were of black African origin. In contrast, 0/x Caucasian subjects had [MVC] C_{peak}>1000ng/ml; median 399ng/ml (range 209–690). None of subjects with C_{peak}>1000ng/ml reported adverse event.

[MVC] ng/ml	MVC BID +TVD (n=16)	MVC 300mg OD + DRV/r (n=38)	MVC 150mg OD + DRV/r (n=18)	MVC 150mg OD +ATV/r* (n=15)
Peak Median	546	698	-	650
Mean (Range)	390 (291–1408)	745 (167–1112)	-	644 (178–14,790)
Trough Median	48	70	52	37
Mean (Range)	48 (25–88)	95 (28–294)	65 (27–190)	36 (8.4–93)

Peak=2h median (range 1–4h) Trough=12h range (12–13h) for BD, Trough=24h (22–26) for OD regimens (median time * Historical data

Conclusion: MVC administered at 300mg OD with DRV/r OD achieved comparable C_{peak} and higher C_{trough} [MVC] when compared to the licensed BD dosing with NRTIs. There was a trend towards higher [MVC] in subjects of black African origin that needs further investigation. Is the optimal dose 300mg or 150mg OD with DRV/r? Further work is needed.

P181
Clinical significance of hyperbilirubinaemia in the CASTLE study

D Butcher[1], J Uy[2], W Hu[3], V Wirtz[3], T Hosey[3], SJ McGrath[3] and A Farajallah[2]

[1]Bristol-Myers Squibb, Paris, France, [2]Bristol-Myers Squibb, Plainsboro, NJ, USA and [3]Bristol-Myers Squibb, Wallingford, CT, USA

Background: While unconjugated hyperbilirubinemia is associated with the use of ritonavir-boosted atazanavir (ATV/r), the nature of the hyperbilirubinemia over time and its clinical significance has not been well-characterized in controlled studies. The purpose of this study is to describe the patterns and clinical significance of hyperbilirubinemia in patients treated with ATV/r in the CASTLE study.

Methods: CASTLE was a randomized, 96-week study to assess the efficacy and safety of ATV/r vs. lopinavir/r, each with tenofovir/emtricitabine, in treatment-naïve patients. This analysis included only ATV/r patients. The proportions of patients with hyperbilirubinemia (grades 3–4 total bilirubin elevation) were tabulated for each study visit. The impact of hyperbilirubinemia on symptoms (jaundice or scleral icterus), ASL/ALT elevations, quality of life (MOS-HIV physical and mental summary scores), and adherence (MACS adherence questionnaire) were described.

Summary of Results: Although the proportion of patients with hyperbilirubinemia at any time throughout the study was 44%, the proportion of ATV/r patients with hyperbilirubinemia at any single visit was between 12.5% and 21.6%. Of patients with hyperbilirubinemia at any time, 11% had grades 2–4 treatment-related jaundice or scleral icterus at any time (0 of patients without hyperbilirubinemia), and 4% had grades 3–4 AST/ALT elevations at any time (3% of patients without hyperbilirubinemia). Quality of life and adherence in patients without and with hyperbilirubinemia:

	Patients without hyperbilirubinemia	Patients with hyperbilirubinemia
MOS-HIV Physical Summary Score Categories at Week 96		
Improvement	76/138 (55%)	70/128 (55%)
No change	35/138 (25%)	29/128 (23%)
Worsening	27/138 (20%)	29/128 (23%)
MOS-HIV Mental Summary Score Categories at Week 96		
Improvement	97/138 (70%)	92/128 (72%)
No change	25/138 (18%)	18/128 (14%)
Worsening	16/138 (12%)	18/128 (14%)
Adherence Through Week 96		
To regimen	154/186 (83%)	147/176 (84%)
To ATV	159/186 (85%)	153/176 (87%)

Conclusions: Hyperbilirubinemia, while common in patients on ATV/r at any time through 96 weeks in the CASTLE study, was less frequent at any single time point and not associated with related symptoms in most patients. The presence of hyperbilirubinemia did not affect AST/ALT elevations, quality of life, or adherence. These data suggest that hyperbilirubinemia observed with ATV/r does not impact clinical outcomes.

P182
Significant decline in T-cell activation among patients with suppressed viraemia switching to a maraviroc-containing regimen

P Vitiello[1], D Brudney[1], M Macartney[1], C Smith[2], M Johnson[1] and AM Geretti[1]
[1]Royal Free Hampstead NHS Trust, London, UK and [2]University College London, London, UK

Background: The aim of this pilot study was to evaluate patients on suppressive ART switching to a MVC-containing regimen based upon a genotypic tropism test (GTT) performed on PBMC-derived proviral DNA. One specific aim was to evaluate the impact on the soluble T-cell activation marker CD30.
Methods: The study population comprised 20 adults who started MVC with plasma HIV-1 RNA load (VL) <50 copies/ml. We evaluated changes in clinical and laboratory parameters after median 2 [range 1–4] (T1) and 6 (T2) months of follow-up.
Results: Baseline characteristics: median nadir CD4 count 169.5 [30–417] cells/mm^3; ART duration 10.7 [3–23.5] years; duration of VL <50 copies/ml 4 [0.5–10] years. Reasons for switching: dyslipidemia, GI disorders, renal dysfunction, diabetes, ART simplification, lipodystrophy and low CD4 counts. The Genotypic Sensitivity Score of the MVC-containing regimen (MVC excluded) was 1.75 [1–3]; 11/20 patients received dual therapy with MVC+DRV/r, while 8/20 patients received MVC without a PI/r. Over median 7.5 [3–10] months of follow-up, 3/20 patients discontinued MVC due to severe headache, fatigue and VL rebound, respectively. GI disorders resolved in 6/6 patients. Changes in median [range] laboratory values at T1 are summarized in the table. Findings were confirmed at T2, with a further reduction in triglycerides levels (median 1.2). The greatest reduction in sCD30 levels was observed in patients with the highest baseline values.

Laboratory marker	Baseline	T1	Change	p-value
Cholesterol (mmol/l)	5.2 [3.2–11.4]	5.3 [3.1–8.1]	-0.1 [−3.3, +2.5]	0.45
HDL (mmol/l)	1.3 [0.7–2.7]	1.3 [0.8–2.1]	+0.05 [−1.1, +0.3]	0.96
LDL (mmol/l)	3 [1.6–9.2]	3.1 [1.5–6.1]	-0.1 [−3.1, +1.3]	0.60
Triglycerides (mmol/l)	1.8 [0.6–5.7]	1.4 [0.6–3.6]	-0.2 [−4.7, +0.8]	0.05
Creatinine (mmol/l)	92 [61–909]	93 [59–330]	-1 [−579, +26]	0.77
eGFR (ml/min)	73 [47–87]	76 [26–87]	0 [−5, +7]	1.00
ALT (IU/L)	34 [16–77]	31 [11–128]	-2.0 [−51, +93]	0.67
AST (IU/L)	28 [13–58]	26 [11–79]	-1 [−16, +39]	0.91
Glucose (mmol/l)	5.0 [3.9–16.9]	4.9 [3.6–15.5]	-0.1 [−1.4, +6.5]	0.92
CD4 (cells/mm^3)	581 [287–1097]	603 [263–1186]	-3 [−358, +184]	0.65
CD4%	27 [16–46]	26 [17–39]	1 [−10, +5]	0.69
sCD30 (ng/ml)	27 [17–237]	25 [8–86]	- 7 [−152, +13]	0.02

Conclusions: Switching suppressive ART to a MVC-containing regimen improves GI tolerability and triglycerides with a low risk of virological rebound in treatment-experienced patients with R5 proviral DNA-based GTT predictions. The observed significant impact on T-cell activation warrants further investigation.

P183
The 5-year safety and efficacy of the once-daily antiretroviral-naïve patient regimen of efavirenz (EFV)/emtricitabine (FTC)/tenofovir disoproxil fumarate (TDF)

M Johnson[1], A Lazzarin[2], E Ribera[3], L Weitner[4] and SS Chen[5]
[1]Royal Free Hospital, Hampstead, UK, [2]San Raffaele Vita-Salute University, Milano, Italy, [3]H General, Barcelona, Spain, [4]IPM Study Centre, Hamburg, Germany and [5]Gilead Sciences, Foster City, USA

Background: The goal of highly active antiretroviral therapy (HAART) is to suppress HIV RNA to undetectable levels over many years and is primarily dependent on adherence, which is aided by using a once daily regimen with good tolerability and low pill burden. In Study 934 the time to discontinuation for the twice daily regimen of EFV qd + zidovudine/lamivudine bid was significantly shorter than for the once daily regimen (EFV+FTC+TDF) (p=0.003). Herein are the 5 year safety and efficacy data for this once daily regimen.
Methods: 160 subjects (89% male, 64% white, mean age 41 yrs) in Study 934 originally randomized to the once daily regimen of EFV+FTC+TDF who completed 144 weeks agreed to switch to the single tablet formulation (EFV/FTC/TDF) and remain on study for an additional 96 weeks for a total of 240 weeks.
Results: At baseline (BL), mean HIV RNA= 5.03 log10 c/mL, mean CD4 count= 243 cells/mm3, and 88% had symptomatic HIV or AIDS. After 240 weeks of follow-up: 87% had HIV RNA <400 c/mL and 84% <50 c/mL (M=F); mean CD4 cell increase from BL= 346 cells/mm3. The mean (range) adherence rate was 97% (83–100%). Seventeen subjects discontinued EFV/FTC/TDF: withdrew consent (6); lost to follow-up (5); adverse events (2: osteoporosis (1) and anal cancer (1)); incarceration (2); non-adherence (1); and relocated (1). No patient discontinued due to renal adverse events. Mean change from BL in estimated glomerular filtration rate (e-GFR) by Cockcroft-Gault was −7 mL/min (Mean BL e-GFR, 129 mL/min).
Conclusion: Through 240 weeks, the once daily HAART regimen of EFV+FTC+TDF (dosed as single tablet regimen, EFV/FTC/TDF, from Week 144–240) demonstrated durable antiretroviral efficacy and immunologic recovery in antiretroviral-naïve patients. The decline in e-GFR was mild and not clinically significant.

P184
Maraviroc (MVC) switch: novel once- and twice-daily MVC-containing regimens are efficacious and well tolerated: clinical experience in over 80 switch patients in the UK

S Thomaswilliam[1], C Okoli[2], N Dufty[1], G Gilleran[1], S Barrett[1], C Cody[1], J Ainsworth[1], E Smit[1], M Van der Lind[1], R Cook[1], J Freemantle[1] and S Taylor[1]
[1]Birmingham Heartlands HIV Service, Birmingham, UK and [2]North Middlesex University Hospital, London, UK

Background: MVC, a CCR5 antagonist, is licensed to be used in antiretroviral experienced patients with R5-tropic HIV-1 virus in the UK. We evaluated the reasons for switching to MVC in treatment experienced individuals and the impact on virological and clinical outcomes.
Methods: HIV-1-infected adults attending two large UK centres who were switched to MVC were identified using respective department HIV databases. Data were collected on demographics, reasons for switch, dosing regimen for MVC, OBT used with MVC, CD4, VL and laboratory parameters. Descriptive analysis done using Microsoft Excel.
Results: Overall, eighty two patients were switched to MVC in both centres from Jan 2005 to Dec 2010. The demographics were 64% females, 44% white, 48% black african and mean age 45yrs (20–73 yrs). The reason for switch was grouped into complex patients (61%), drug toxicity (23%), co-morbidities (13%) and resistance (3%). Several factors (average 4, range 1–10) leading to the switch were analysed and subsequently grouped into one of the above categories. Of those switched, the OBT included RTV boosted protease inhibitors (PI/r) (78%) and NRTI (22%).

Overall, darunavir (DRV/r) (67%) and Truvada (TVD) (18%) was the most common PI/r and NRTI used with MVC. Different MVC dosing regimens were used including 300mg OD (61%), 300 BD (23%), 150mg OD (10%) and 150mg BD (3%). The mean weeks on MVC (all doses) was 49 (3 - 292). The commonest regimens were 300mg OD for complex patients (76%), co-morbidities (45%), DRV/r OBT (82%) and ATV/r OBT (43%), and 300mg BD for drug toxicity (53%) and TVD OBT (100%). An increase in CD4 count (mean 92 cells/mm^3, −17 to 147) and reduction in VL (mean 9768 copies/ml, - 4 to 123880) was observed following switch with any ARV class. Following switch 82% had undetectable viral load (<50 copies/ml) and 78% had CD4 count >350cells/mm^3 compared to 61% and 60% at start respectively. Three patients had low level viraemia from undetectable after switch with 150mg OD (n=1) and 300mg OD (n=2) while 5 patients failed to suppress at 24 weeks on 300mg BD with TVD OBT (n=1) and 300mg OD with DRV/r OBT (n=4). No cases of postural hypotension and no significant change in baseline biochemical parameters following switch noted.

Conclusion: Maraviroc performed well as an ART switching agent in treatment experienced HIV 1 infected patients. The novel dosing regimen of MVC 300mg OD with DRV/r 800/100 mg OD performed well and was well tolerated.

P185
Medication use and prevalence of drug–drug interactions in older HIV-positive patients

K Seden[1], M Bradley[2], A Miller[2], D Back[3] and S Khoo[3]
[1]NIHR Biomedical Research Centre, Royal Liverpool and Broadgreen University Hospital Trust, Liverpool, UK, [2]Royal Liverpool University Hospital, Liverpool, UK and [3]University of Liverpool, Liverpool, UK

Background: With the advent of highly active antiretroviral (ARV) therapy in the mid 1990s and the licensing of new ARVs in recent years, life expectancy for HIV positive patients is increasing. ARV regimens are often complex, have a high propensity for drug-drug interactions (DDIs) and are increasingly taken alongside medicines associated with older age. Many factors need consideration in older patients, such as co-morbidities and altered pharmacokinetics. Polypharmacy may also complicate treatment, as patients are likely to receive medication from general practitioners, other hospital departments and over the counter (OTC). This retrospective review aims to evaluate the type and number of co-medications taken by older patients, prevalence of DDIs, and self-reported adherence.

Methods: Data were analysed from patients who had been seen by a pharmacist during routine care. Patients were ≥16 years, taking ARVs and accessing HIV outpatient services. Potential DDIs were assessed using www.hiv-druginteractions.org.

Results: Of 126 consecutive patients 27(21.4%) were aged ≥50 years; mean age was 41.5 years. A correlation was observed between increasing age and greater number of co-medications (rho=0.292 p=0.001), and number of DDIs (rho=0.214 p=0.016, Spearmans rank). Patients aged ≥50 were taking more co-medications than those <50 years (p=0.0412, Mann-Whitney test). Table 1 shows categories of medication taken by patients ≥50 and <50 years.

Table 1 Medication categories taken by HIV positive patients aged ≥50 and <50 years

Medication Category	≥50yrs (n=27)	<50yrs (n=99)	P-value
Cardiovascular	14(51.8%)	22(22.2%)	*0.0035**
CNS	8(29.6%)	22(22.2%)	0.2866
Analgesics	5(18.5%)	18(18.1%)	0.5818
Anti-infectives	4(14.8%)	17(17.1%)	.5153
Gastrointestinal	7(25.9%)	10(10.1%)	*0.0403**
Bronchodilators	1(3.7%)	10(10.1%)	0.2691
Endocrine	2(7.4%)	2(2.0%)	0.2008
Erectile dysfunction	2(7.4%)	2(2.0%)	0.2008

**Statistically significant (Fishers exact test)*

Use of OTC medicines, herbals, vitamins and supplements did not differ significantly with age. There was no significant difference in adherence in patients aged ≥50.

Conclusion: Older HIV patients are likely to take greater numbers of co-medications alongside their ARVs, and may be more susceptible to DDIs. Regular assessment of medication from all sources, including vigilance for and management of DDIs may be of particular importance in older patients.

P186
Outcomes of using boosted protease inhibitors with a single nucleoside reverse transcriptase inhibitor

J Sirokosta, S de Silva, T Barber and A Pozniak
St Stephen's Centre, Chelsea and Westminster Hospital, London, UK

Background: Combination antiretroviral therapy (ART) with three drugs has been standard for the treatment of HIV-1 infection since 1996 but clinical trial data is accumulating regarding the efficacy of boosted protease inhibitor (PI) monotherapy. Using a boosted PI with one nucleoside reverse transcriptase inhibitor (NRTI) is increasingly common in clinical practice. We examined the use and outcomes of this strategy in our HIV infected cohort.

Methods: Patients receiving one PI with low dose ritonavir + 1 NRTI from 1/8/2008 to 1/12/2010 for more than 2 months were identified from the electronic database and their clinical records reviewed.

Results: 154 patients on a dual regimen of this nature were identified. 3 were excluded as they had been taking the regimen for <2 months. None of the patients were previously naïve to ART. 88 (58%) had stopped one drug from a triple ART regimen due to toxicity or perceived future development of toxicities. 8 (5.3%) were switched to dual therapy following review of resistance tests. 5 (3.3%) were switched from Trizivir or double-boosted PIs. Others switched for a variety of reasons.

Results: 2 subjects died over the study period. 25 (16.6%) patients were switched for simplification or enrolled on to clinical trials. 6 (4%) switched from their dual regime due to toxicities (3 PI related and 3 NRTI related). 2 (1.3%) were re-prescribed triple ART as they were commencing HBV and HCV treatment respectively. No virological failures were seen with the patients on dual therapy. 2 (1.3%) patients experienced viral load blips and re-suppressed when re-commenced on triple ART.

Discussion: A number of patients already established on triple ART have switched or simplified to dual therapy, which is not recommended by current BHIVA guidelines, mainly to avoid adverse effects from NRTI. For those who start with an undetectable viral load the strategy appears to be an efficacious and safe treatment that warrants further research.

P187
Etravirine dose modification in response to TDM in patients with chronic liver disease

A Grant, C Robinson and R Kulasegaram
Guy's and St Thomas' NHS Foundation Trust, London, UK

Background: There are limited data on the use of Etravirine (ETV) in patients with advanced liver disease. We report two cases where Therapeutic Drug Monitoring (TDM) was used to dose ETV in patients with liver fibrosis.

Methods: A case note review of two patients with known liver fibrosis and HIV-1 drug resistance. ETV was used as part of combination anti-retroviral (ARV) therapy.

Case 1: A 64-year old Caucasian man diagnosed with HIV-1 in 1984. History of liver cirrhosis and portal hypertension, fibro scanning 35.3kPa. ARVs changed early 2009 due to low-level HIV-1 viraemia**:** Raltegravir 400mg bd, Darunavir 600mg bd, Ritonavir 100mg bd and ETV 200mg bd. HIV-1 viral load (VL) was 214. TDM ETV at that time showed 16.5 times trough level. ETV was reduced to 100mg bd (VL<20) and repeat TDM

showed 4.5 times target trough level. The patient has since been maintained on reduced dose of ETV and VL remains fully suppressed to date. Current ARV-regimen: Etravirine 100mg bd, Enfuvirtide 90mg bd, Raltegravir 400mg bd, Tenofovir 300mg od.

Case 2: A 59-year old Caucasian man diagnosed with HIV-1 in 1996. History of chronically deranged liver function tests and severe liver fibrosis, fibro scanning 12.8kPa secondary to previous chronic alcohol use. ETV 200mg bd was started in combination with Enfuvirtide 90mg bd, Raltegravir 400mg bd and Tenofovir 300mg od in 2007 as patient has extensive drug-resistance and HIV-1 VL 73,000. TDM ETV checked at 1-year, 10.5 times target trough and again at 2-years, 16.5 times target. ETV dose was reduced to 100mg bd (VL<20) and repeat TDM showed 5.5 times target trough level. The patient has been maintained on this reduced dose of ETV and VL remains fully suppressed to date. Current ARV-regimen**:** Etravirine 100mg bd, Darunavir 600mg bd, Ritonavir 100mg bd, Raltegravir 400mg bd.

Conclusion: These two cases highlight the benefits of TDM for ETV in patients with significant liver fibrosis. Both patients have maintained HIV VL suppression on this reduced dose of ETV for greater than 1 year.

P188
A study of the prevalence of viral suppression (< 40 copies/ml) in HIV patients on antiretroviral treatment at the HIV clinic in South Wales in 2010

C Williams, R White, C Saing and K Yoganathan
Singleton Hospital, Swansea, Glamorgan, UK

Background: The aim of antiretroviral therapy (ART) is to achieve a viral load less than 40 copies/ml which is an important prognostic factor. The primary objective of the study was to ascertain the level of viral suppression in our cohort. Several studies have reported complete viral suppression varying from 55% to 95%. Additional objectives were to check that adherence was addressed at each clinic appointment and to describe the common ART regimens used.

Method: This was a retrospective study of HIV patients who attended clinic in 2010. Viral loads of patients who had been on ART for more than 6 months were examined and the percentage of viral suppression was calculated. The question of whether adherence was addressed at each clinic appointment and the ART combination of each patient was also noted.

Result: 285 HIV patients attended clinic in 2010. 222 were on ART. 10 patients had been on ART for less than six months and 3 had discontinued therapy against medical advice. These 13 patients were excluded from the study.

The study group consisted of 209 patients. 206 (98.5%) had a viral load of less than 40 copies per ml.

Adherence had been addressed at each clinic appointment for all patients.

The most common combinations were:

- 2 NRTI's and 1 NNRTI - 140 patients (66.9%)
  - efavirenz 92 (65.7%); nevirapine 48 (34.2%)
- 2 NRTI's and a boosted protease inhibitor - 51 patients (24.4%)
  - atazanavir 40 (78.4%); darunavir 10 (19.6%); lopinavir 1(1.9%)

Conclusion: Our cohort of patients achieved a high prevalence (98.5%) of viral suppression of < 40 copies/ml. Adherence issues were addressed at each clinic appointment. The common ART regimens prescribed in our clinic followed first line choices as described in BHIVA 2010 guidelines.

P189
Switching to maraviroc in combination with two NRTIs: experience at a large London teaching hospital

N Marshall, M Macartney, L Swaden, A Garcia and M Johnson
Royal Free Hospital, London, UK

Background: The use of the genotypic HIV viral tropism assays to determine HIV co-receptor tropism using PBMCs for patients with undetectable HIV RNA (VL) could allow the use of the CCR5 receptor antagonist maraviroc (MVC) in a switch strategy.

Method: Retrospective review of all patients switched to MVC in combination with 2 NRTIs between January 2009 and June 2010. Data were collected on; reason for switch, nadir CD4, tropism determination, VL/CD4 at switch, 6 months and last follow up (FU).

Results: 15 patients switched to MVC+2NRTI during the period. CCR5 tropism was determined prior to switch by genotypic assay, performed in triplicate. At switch mean CD4 was 754 mm^3 (214, 1223), mean nadir 240 mm^3 (40, 418) and 12/15 had VL<50c/ml. Mean time on ART was 6.7 (3.1, 21) years prior to switch, mean 3.3 (1, 10) prior regimens. 4/15 had prior viral failure (VF) on ART, 2/4 developing mutations. ART regimens pre-switch included 2 NRTIs with either PI/r (12), NNRTI (2) or un-boosted PI (1). All NRTI backbones were maintained at switch.

Indication for switch to MVC included dyslipidaemia (4), GI disturbances with PI/r (4), sleep disturbances/mood swings related to ART (3), lipodystrophy (1), familial diabetes (1), and concern over NNRTI resistance (1). One patient was lost to FU at 4 weeks (VL 26170 c/ml at switch, 85c/ml at 4 week) and will not be included in efficacy analysis. At 24 weeks on therapy, 14/14 achieved/maintained VL<50c/ml. 6/14 had 48 weeks FU, 5/6 maintained VL<50cps/ml, 2 subsequently switched to PI/r based therapy after 53 and 57 weeks due to VF related to poor adherence. 1 other patient experienced viral blip (201 c/ml) at 16 weeks, resuppressing VL 2 weeks later. Of the VFs/blips, 1/4 had repeat CCR5 genotype, maintaining CCR5 tropism.

Symptoms related to switch improved in 10/14. Side effects possibly related to MVC occurred in 4/14, including persistent headache (1), transaminitis (1), constipation (1), tingling (1, also receiving thalidomide), none directly lead to cessation.

Conclusions: A switch strategy to maraviroc in combination with 2 NRTIs may be feasible for CCR5 tropic patients with undetectable VL without archived resistance. The use of the genotypic tropism assay has significantly changed the way we use maraviroc in clinical practice, and formal switch studies are eagerly awaited.

P190
Outcomes of maraviroc-based regimens in HIV-infected individuals

S Douthwaite, L Collier, A Pennell, A Uriel and E Wilkins
North Manchester General Hospital, Manchester, UK

Background: Maraviroc is a chemokine co-receptor type 5 (CCR5) which inhibits the entry of the human immunodeficiency virus (HIV). We set out to evaluate the efficacy and safety of Maraviroc in routine clinical practice.

Methods: Patients on Maraviroc-based regimens were identified using pharmacy records. Data on demographic, clinical, immunological and virological characteristics were retrospectively collected from clinical case-notes.

Results: Twenty-seven patients were on Maraviroc-based regimens of whom 81% were males and 81% were Caucasians. Median age at Maraviroc initiation was 41 years (range 20–56). Median nadir and pre-Maraviroc initiation CD4 counts were 112 (range 10–411) and 272 (range 15–1086), respectively. Co-receptor tropism testing was performed in 81% (22/27) of patients. The Trofile® and genotypic V3 loop tropism assays were used in 16 and 6 patients, respectively. Twenty patients had CCR5 tropic virus, one patient had mixed tropism, and one patient with undetectable viral load in plasma failed genotypic tropism testing on a peripheral blood mononuclear cells sample.

There were 26 treatment-experienced patients and one treatment-naïve patient. The latter was enrolled as part of a clinical study. Those with ≥10 previous regimens accounted for 46.2% (12/26) of treatment-experienced patients. Median duration of clinical follow-up whilst on Maraviroc was 59 weeks (range 3–281).

Absolute CD4 counts improved post-Maraviroc in 78% (21/27), remained unchanged in 11% (3/27), and did not improve in 11% (3/27) of cases.

Median increments in absolute CD4 counts prior to initiation of Maraviroc were 94 (range 0 to 756) and 131 (range 0 to 453) in patients with unsuppressed and suppressed viral replication at the time of Maraviroc switch, respectively. Corresponding median post-Maraviroc CD4 count increments were 106 (range −54 to 357) and nine (range −103 to 244).

Maraviroc was discontinued in 18.5% of patients (5/27). Reasons noted were: poor compliance (2/5), hypersensitivity skin rash (1/5), change in co-receptor tropism status (1/5), and death attributed to advanced HIV disease (1/5). The patient with skin rash was on concomitant Darunavir therapy. Change in co-receptor tropism was observed in a patient who was originally tested using the Trofile® assay.

Conclusion: Maraviroc-based regimens are safe and efficacious as most of our patients achieved virological suppression and immunological recovery.

P191
Switching to a simplified single-tablet regimen (STR) of Atripla (ATR) from a two- or three-pill combination of the individual components (efavirenz [EFV], emtricitabine [FTC] and tenofovir DF [TDF]) maintains virological suppression: primary endpoint results of a 48-week, open-label study

G Moyle[1], C Orkin[2], M Fisher[3], S Taylor[4], J Ross[5], H Wang[6] and C Simcock[7]
[1]Chelsea and Westminster Hospital, London, UK, [2]Barts and The London Hospital, London, UK, [3]Brighton and Sussex University Hospital, Brighton, UK, [4]Birmingham Heartlands Hospital, Birmingham, UK, [5]Selly Oak Hospital, Birmingham, UK, [6]Gilead Sciences Inc, Foster City, USA and [7]Gilead Sciences Ltd, Cambridge, UK

Background: The individual components of ATR have demonstrated efficacy and safety in HIV subjects[1]. Simplification of therapy reduces treatment intrusiveness and improves patient perception of treatment[2] whilst maintaining efficacy[3]. This study evaluated the efficacy, safety and tolerability of simplification to ATR in subjects with established viral suppression and that ATR taken on an empty stomach is non-inferior to the individual components.

Methods: A 48-week prospective, open-label, UK multicentre, single arm study in subjects stable on either EFV+FTC+TDF, EFV+ Truvada [TVD] or EFV+ lamivudine [3TC]+TDF for ≥24 weeks who had not had any other HAART regimens. Subjects had HIV-1 RNA <50 copies/mL for ≥12 weeks prior to screening and were switched to receive ATR at baseline. ATR was taken in the evening on an empty stomach. The primary endpoint was pure virological response (PVR_{50}) defined as the proportion of subjects who maintain virological suppression <50 copies/mL without pure virological failure (PVF). PVF was the earliest date of 2 consecutive HIV-1 RNA ≥50 copies/mL, or 1 HIV-1 RNA ≥50 copies/mL followed by discontinuation from study. Frequency and type of adverse events (AE), and laboratory results were assessed.

Results: 115 subjects received at least 1 dose of ATR. Subjects were mostly male with a mean age of 41 years. 96 (83.4%) subjects completed 48 weeks on study. The most common reason for study discontinuation was protocol violation due to disallowed concomitant medications; no subjects discontinued due to lack of efficacy.

The PVR_{50} at Week 48 was 99.0% (95% CI [97.1%, 100%]). The lower bound of the CI was higher than the 82.5% needed to show non-inferiority versus EFV+FTC+TDF dosed without regard to meals. 1 subject met the criteria for PVF at Week 36, but this subject had no HIV-1 RNA values ≥400 copies/mL during the study. 3 subjects discontinued study drug due to AE (depression, which was considered related, fatigue and hyperlipidaemia). There were no study-drug related SAEs.

Conclusion: Simplification to the STR of ATR maintained virological suppression and was well tolerated, making it a viable alternative to the components given as a 2 or 3-pill regimen.

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P192
Therapeutic drug monitoring (TDM) of antiretrovirals (ARVs) in a South London HIV clinic

A Grant, G Boon, S Castelino, J Fox and R Kulasegaram
Guy's and St Thomas' NHS Foundation Trust, London, UK

Background: TDM is defined as**:** ''the analysis of drug concentrations and adjusting dosage regimens based on these measurements''

There is limited evidence for the routine use of TDM with ARVs.

Aim: To audit TDM requests against recommendations in BHIVA 2008 Guidelines.

Secondary Aims: Evaluate any change to patients' drug therapy in response to the TDM result and identify the 'did not attend' (DNA) rate for this test.

Method: We included all patients booked over a 6-month period for a TDM between 01/01/10 to 01/07/10 and conducted a retrospective case note and request form review.

Results: 30 requests (22 patients); 11/30 DNA'd (37%). Total**:** 19 requests (18 patients)

Demographics: Sex: 16 male, 2 female (neither pregnant)

13 white,1 Malaysian, 3 Black African, 1 Black British

BMI: mean 23.32 (18.31–30.23)

20/24 (83%) requests were within the guidelines for indication of TDM and the most common indication was liver toxicity (raised liver function tests) which was mainly in patients with hepatitis B or C co-infection.

19/28 TDMs were within therapeutic range, 8 TDMs supra-therapeutic and 1 TDM sub-therapeutic.

1 TDM result could not be accurately analysed due to timing of the sample.

The most common drug measured was Efavirenz, 8/28.

3/19 drug regimens were changed:

1. Dose of efavirenz reduced from 400mg to 200mg based on high TDM, patient with liver cirrhosis. Efavirenz was subsequently switched to Raltegravir.
2. Efavirenz changed to raltegravir, hepatitis B co-infection.
3. Efavirenz changed to raltegravir, hepatitis C co-infection, TDM within range.

There was no obvious correlation between liver toxicity and a high TDM level.

Conclusion: Majority of requests were within BHIVA guidelines.

There was a high DNA rate for TDM.

TDM abnormal results did not always result in change management.

Liver toxicity/impairment was the most common indication for TDM for NNRTI-based Highly Active Anti-Retroviral Therapy (HAART). We are developing our protocol to minimise DNA rates and define liver impairment to include other markers, for example, fibro scan results.

Management Issues in HIV

P193
Sexual and reproductive health (SRH) awareness in adolescents infected with HIV

S Patel and K Prime
St George's Hospital, London, UK

Background: Adolescents infected with HIV are becoming sexually active. Although sex and relationships education (SRE) is promoted amongst schools it is not compulsory. We sought to identify SRH awareness within our cohort in relation to sexual debut. This has allowed

provision of targeted and age specific SRH intervention to our growing cohort of 41 adolescents.

Methods: Adolescents <24yrs attending the HIV transition clinic between 1/8/09–17/1/11 were asked to complete a structured questionnaire, during their consultation, by their HIV clinician.

Results: 36/41 (88%) adolescents attended and completed a questionnaire, 17 male and 19 female; median age 20 (range 18–24). 83% black African, 14% white British, 3% black Caribbean. SRE was covered at school for 33/36 (92%) between 9–16 yrs of age and included condom use, contraception, sexually transmitted infections (STIs) and emergency contraception (EC). The remaining 3 patients aged 15–16 acquired knowledge from transition clinic staff. There were no reports of post exposure prophylaxis (PEP) education during SRE.

23/36 (64%) were sexually active (13/23 girls) with mean age at first sexual intercourse 16 yrs. 17/23 (74%) had undergone a STI screen (10/17 girls) and 3/23 (13%) had been diagnosed with an STI (gonorrhoea or chlamydia). 17/23 (74%) were aware of PEP at the time of the questionnaire (all via HIV clinic). 12/23 (52%) reported unprotected sexual intercourse/condom accident (7/12 girls), but only 4/13 (31%) sexually active girls had used EC and 4/23 (17%) adolescents had brought partners in for PEP. 6/13 (46%) sexually active girls had cervical cytology, with age of first smear ranging from 17–24 yrs. 1/6 has CIN II and is under colposcopy follow up. There were nine pregnancies; 1 current, 4 births (all HIV negative infants), 2 TOPs and 2 miscarriages.

Conclusion: This clinician-led questionnaire was a useful tool to identify gaps in SRH knowledge. 64% (23/36) of our adolescent cohort are sexually active; worryingly 26% had never had a sexual health screen, 52% reported unprotected sex but only 31% had used EC and only 17% brought partners for PEP. Age appropriate SRH awareness is essential for our HIV positive adolescents as they become sexually active. HIV multidisciplinary team's need to work closely with this transitioning group to offer appropriate STI screening and reinforce information regarding cervical cytology, contraception, EC and PEP.

P194
Patients' willingness to switch from a single-tablet regimen (STR) to individual drugs as part of a potential cost-saving strategy

L Baber, S Sonecha, S Mandalia, M Bower, B Gazzard and M Nelson
Chelsea and Westminster Hospital, London, UK

Background: Given the current economic climate methods to reduce costs whilst maintaining a high quality service must be developed. Lamivudine will soon become generic and one such strategy would be to switch patients taking Atripla as one pill once a day to three separate drugs, which could incur significant cost saving. We investigated patients' willingness to switch, the impact patients feel that a one pill once a day ARV regimen has on their adherence, and the variables that influence these two factors.

Method: Patients taking Atripla for at least three months with an undetectable viral load were asked to complete an anonymous survey recording the total number of pills and number of times a day they took them. They also marked on a non-hatched visual analogue scale their willingness to switch from a one pill once a day regimen to three pills once a day, and to rate the importance of having one pill once a day to their adherence. The investigator measured the mark on the line to the nearest 10mm increment to give a value from 0 to 10. A Mann-Whitney U test was used to determine any statistical difference.

Results: 154 patients completed the questionnaire, median age was 43, and 137 (89%) were Male. 93 (60.4%) were taking only Atripla and 127 patients (82.5%) were taking a once daily regimen. The median score for the importance of taking one pill once a day to patients adherence was 1 (0 = very important, 10 = not important) and this was not related to gender, age, total number of pills taken a day or the number of times a day they took medication. The median score for patients willingness to switch was 2 (0=unwilling, 10 = very willing). Willingness to switch Atripla to three separate pills once a day was higher in Males (3.4 v 2.4 p= non-significant), in patients older than 43 (3.8 v 2.7 p =0.047), in patients taking two tablets or more a day as opposed to one tablet (4.1 vs 2.7 p=0.016) and in those taking medication more than twice a day (4.1 v 3.1 p = non significant). Unwillingness to switch was strongly correlated with increased importance to the patient of one tablet once a day to aid adherence (p< 0.001).

Conclusion: Atripla is the first choice treatment in many centres. A large proportion of patients receive medications other than Atripla. The majority of patients expressed an unwillingness to switch from Atripla and an individualized approach to such a strategy would appear to be needed.

P195
Sexual health screening and treatment of pregnant HIV-1-positive female patients at Chelsea and Westminster Hospital from 2002–2009

K Wheatley and D Hawkins
Chelsea and Westminster Hospital, London, UK

Background: Genito-urinary infections can have adverse effects on pregnancy. This risk is increased in HIV positive women, highlighting the importance of regular screening for infection.

Method: Retrospective analysis of HIV-1 positive pregnant women between 2002–09 comparing management against BHIVA guidelines. Recommendations are that STI and STS serology screens should be performed early in the pregnancy and repeated at 28 weeks, infections should be treated as per national guidelines, test of cure provided and partners notified.

Results: 75/85 (91%) had an initial screen at a mean gestation of 12/40 (range 5–32 weeks). 38/75 patients (50%) were infected**:** 16 with candida, 3 BV & candida, 9 BV, 2 TV, 1 BV, 1 TV & HPV, 1 BV & HPV, 2 HPV, 1 BV & CT and 1 with candida & HPV. Treatment followed national guidelines in 89% of patients. 34/38 (89%) did not receive a test of cure. No partner notification was documented.

60/85 patients (72%) had a 2nd screen at a mean gestation of 30/40 (range 11–36). 27/60 (45%) were infected, 9 with candida, 9 with BV & candida and 3 with HPV. 93% were treated appropriately. 25/27 (93%) did not receive a test of cure following treatment. 77/85 (91%) and 58/85 (68%) of patients had an STS screen at 1st and 2nd screen respectively with no positive STS results.

Discussion: The high proportion of GU infection in this cohort demonstrates the importance of screening to prevent foetal complications. The absence of STIs at 2nd screening, with only BV, candida and HPV being isolated, shows that early GU infection screening may prevent future adverse consequences. BHIVA recommends that all patients should be recalled for a test of cure and partners notified. In line with BASHH guidelines for non-pregnant females, only patients with TV were recalled for a test of cure. Recommended treatments are known to be effective in eradication of STIs in the general population. This should also be the case for pregnant patients, which is supported by the lack of STIs isolated in the 2nd screen. This questions the need to check eradication of infection following treatment in HIV positive pregnant females. Partner notification is likely underestimated due to lack of documentation; our data suggests partners are being notified and hence treated to prevent re-infection. Clearer guidance from BHIVA is required on test of cure. The uptake of screening in the 2nd half of pregnancy along with partner notification documentation requires improvement.

P196
Frequency of routine serological monitoring of adult HIV-1-infected individuals

R Sacks, A Mulroy, J Smith, L Garvey and J Walsh
Imperial College Healthcare NHS Trust, London, UK

Background: The current financial climate has focused attention on optimum use of tests and investigations in the management of HIV

infected patients. In response, BHIVA has drafted new guidelines on the recommended frequency of virological marker monitoring in HIV-1 infected patients.

Aims: To assess whether the number of CD4 and viral load (VL) tests, performed in our HIV-1 infected patients, conforms to the recommended frequency of testing as proposed in the draft guidelines.

Methods: Retrospective audit of all adult HIV-1 infected individuals attending our service for HIV care, between April 2009 and March 2010, using data on our computerised patient management system.

Results: 2750 patients attended our clinic for HIV care during the 12 month study period. 2270/2750 (83%) were on antiretroviral medication (ARVs) of which 1712/2270 were stable on their medication for over one year, 241/2270 had recently initiated ARVs. In patients on ARVs for more than one year, 570/2270 had a viral load blips and 159/2270 had a persistent detectable VL. The results are detailed in Table 1.

Table 1. CD4 and VL testing frequency compared with draft BHIVA guidelines recommendations

	CD4 Test Frequency			Viral Load Test Frequency		
		In our clinic			In our clinic	
	per BHIVA draft (/yr)	Mean (/yr)	Range (/yr)	per BHIVA draft (/yr)	Mean (/yr)	Range (/yr)
ARV naïve patients (n=399)*	2 - 4	2.5	0 - 9	2	2.3	0–7
ARV initiated within last 12mths (n=241)	4 - 5	4.5	1 -10	4 - 5	4.8	1 -10
ARV >1yr and stable** (n=1712)	2	3.1	0 - 9	2 - 4	3.1	0 - 9
Switching or stopping ARVs within last 12mths (n= 428)	3 - 4	3.9	0 - 11	3 - 4	4.4	1 - 14
ARVs >1yr and VL blips (n=570)	3 - 4	3.3	0 - 11	3 – 4	3.6	1 - 14
ARVs >1yr and persistent detectable VL (n=159)	3 - 4	3.7	1 - 10	3 – 4	4.3	1 - 12

* Of 480 patients not on ARVs during the study period, 81 had been on ARVs previously

** "Stable" = on ARVs>12mths and viral load undetectable

Conclusions:

- Mean number of CD4 and VL load requests per patient are not significantly different from the frequency of testing recommended by the BHIVA guidelines.
- Wide variation in the range of the frequency of tests were seen which suggests there may be training opportunities.
- Further work is needed to understand why some patients are having more than the BHIVA recommended virological marker test frequency, in order to reduce the frequency of testing in line with the new draft guidelines.

P197
Managing vaccines – defining the remit of primary care and specialist HIV clinics in the delivery of immunization to individuals with HIV

K Quinn, E McCarty, S Quah, R Maw, C Donnelly and C Emerson
Royal Victoria Hospital, Belfast, UK

Background: The British HIV Association (BHIVA) recently published guidelines for immunization of HIV-infected adults. The aim of our study was to review our current practice in vaccinating individuals within our cohort of HIV-infected adults against a range of infections and address which vaccines should be performed in primary care and which at specialist HIV services.

Methods: A chart review of 200 patients diagnosed 1984–2009 was conducted. Data was collected on administration of 3 categories of vaccinations**:** 1. Vaccines used in all individuals with chronic disease (pneumococcal PV, influenza SI, swine flu H1N1) 2. Targeted vaccinations used in non-immune individuals with HIV who are at risk of exposure (hepatitis A HAV and hepatitis B HBV) 3. Routine vaccines traditionally delivered to the whole population (measles/mumps/rubella MMR, diphtheria/tetanus/pertussis DTP and Meningitis C/ACWY MenC/ACWY).

Results: Within category 1;based on CD4 count, 97% individuals (194/200 CD4 ≥ 200) were eligible for pneumococcal vaccine and this was delivered to 54% patients (105/194). 69.5% (139/200) had chart documentation of SI administration; 36.7% (51/139) were administered at HIV clinic and 63.3% (88/139) in primary care. 61.5% (123/200) had documentation of H1N1; 19.5% (24/123) was administered at HIV clinic and 78% (96/123) delivered in primary care. Within category 2; based on risk through sexual exposure in men who have sex with men (MSM) or area of endemicity, HAV was indicated in 75% (n=150) and delivered to 36% (54/150) of eligible individuals. 41% of individuals completed a full HBV program and 21% were naturally immune. In subgroup analysis, 25% MSM did not receive a full HBV course compared with 56% heterosexuals and 63% endemic contacts. Within category 3; none of the patients were screened for needing MMR, DTP or MenC/ACWY and none were offered these vaccines.

Conclusions: With increasing demands on resources, it seems unlikely that HIV services will have the ability to deliver on performing all routine vaccines for service users; it will be important to harness resources of primary care in vaccine programs in relation to routine vaccines where 'catch up' may be required e.g for category 3 vaccines. By improving communication between primary and secondary care appropriate guidance can be given regarding live vaccination decisions; HIV services should continue to perform targeted and chronic disease vaccines i.e for category 1 and category 2 vaccines.

P198
Young people and self-reported adherence to antiretroviral therapy: a HYPNet survey

S McDonald[1], J Griffiths[2], N Tanna[3], D Levitt[4] and C Foster[1]
[1]Imperial College Healthcare NHS Trust, London, UK, [2]NHS Newham, London, UK, [3]Body and Soul Charity, London, UK and [4]Royal Free Hospital, London, UK

Background: Cohort studies have shown that young people (aged 12–24) living with HIV, infected either perinatally or sexually, have poorer adherence to highly active antiretroviral therapy (HAART), resulting in reduced rates of optimal viral suppression (VL <50 c/ml) when compared to either adults or younger children. As part of a wider collaborative approach to developing adolescent adherence guidelines on behalf of HYPnet, a self report questionnaire was designed to collect treatment adherence information from young people currently on HAART.

Methods: An adherence questionnaire designed by multidisciplinary health professionals and voluntary sector representatives was piloted by two HIV positive young people, gained ethical approval and was distributed to 28 hospitals and voluntary sector sites across the UK between September 2009 and March 2010. Participation was anonymous, voluntary and inclusion criteria included**:** age 12–24 yrs, HIV infected (any route of transmission), aware of status and currently on HAART. Completed forms were returned by post.

Results: 138 young people responded from 14 sites, median age 16 yrs (IQR 15–17). Of participants responding to each question; 67/111 (60%) were female, 50/96 (52%) were born abroad and 95% were living with family. 83/131 (63%) self reported good adherence defined as >95% HAART doses taken in the last month. 79/138 (57%) reported their latest VL result, 41 (52%) with a VL<50 c/ml. 72/138 (52%) reported a CD4 count, 52% with > 350 cells/mm. Of HAART regimens taken**:** 67% once daily, 59/136 (43%) 4+ pills/day and 76/135 (56%) had been on HAART> 4 yrs. Factors identified as supporting adherence: reminders from family/carers (45%), peer support (45%), memory aids (35%), regular routine

(27%) and health benefits (20%). Barriers included: forgetting (46%), too busy with other activities (28%), keeping HAART secret from friends/family (17%), side effects (14%), pill fatigue (14%) and a daily reminder of HIV (9%). Reported views on what might further improve adherence were; once daily regimens (35%), less (34%) and smaller pills (24%), no side effects (21%), being able to share with friends (12%) and talking to someone else on HAART (8%).

Conclusion: Despite increasing independence associated with adolescence, the role of the family remains as important as that of peers in supporting adherence for this cohort. Stigma and secrecy remain a barrier to adherence for one in five of the young people surveyed.

P199
CT and MR brain imaging in HIV-positive patients: variation in indication and outcome with CD4 cell count

K Conway, E Naylor, T Shalaby, M Samuel, D Chilton, B Peters and R Kulasegaram

Guy's and St Thomas' NHS Foundation Trust, London, UK

Background: Clinicians often choose between CT and MR brain imaging in HIV positive patients with neurological symptoms. We characterised indications and outcomes of these 2 modalities.

Methods: A retrospective cross sectional analysis of brain imaging of HIV positive patients in a large inner city hospital 1/8/09–31/7/10.

Results: 216 brain scans performed on 131 patients (65 CT, 151 MRI). 84(64%) male, 65(50%) Black African, median age 42y (18–82). Median CD4 300/μl (3–231); median HIV 1 VL 1.6 log (0–7.0); 107(83%) were taking antiretrovirals. Patients had a median of 1 scan (1–10); 42(32%) had ≥2 scans. 27(21%) had CT brain only; 80(61%) had MRI brain only and 24(18%) had both.

The commonest indications for imaging were headache (29/131, 22%), cognitive impairment (22, 16%) and focal neurology (19, 14%). 27(39%) CTs and 115(77%) MRIs were abnormal. Of 20 who had CT followed by MRI, 40% had a normal CT with subsequent abnormal MRI.

Indications for imaging varied with CD4 count. Headache was common at both high (>350 cells/μL) and low (<200) CD4, at 25 and 26% respectively. Cognitive impairment was more common at high CD4(21%) than at low CD4(11%). Focal neurology (12% and 19%) and confusion (2% and 11%) were more common at low CD4.

53 patients had CTs in our study period. Of their first scans, 36(68%) were normal; 5(9%) showed cerebral atrophy; 4(8%) space occupying lesion (SOL); 2(4%) white matter changes. 106 patients had MRIs. Of first scans, 31(29%) were normal; 36(34%) white matter changes; 13(12%) SOL. The clinical significance of MRI white matter changes was unclear in 18(50%) of patients.

The higher rate of abnormality on MRI scans was sustained across CD4 counts, though both CT and MRI were more likely to be abnormal at lower counts. In those with a CD4 <200/μl: 12/29(41%) CTs were abnormal; 33/37(89%) MRI scans were abnormal. In those with CD4 >350: 2/13(15%) CT scans were abnormal; 24/45(53%) MRI scans were abnormal.

Conclusion: Indications and outcomes for brain imaging varied with CD4 count. MRI scanning identified more abnormalities than CT at all CD4 counts, with the difference most pronounced at higher CD4 counts. The clinical significance of MRI findings is sometimes unclear. Nonetheless these findings may suggest that MRI should be chosen as 1st line, where possible, in order to increase sensitivity.

P200
Starting antiretroviral therapy (ART) in the era of the CQUIN (Commissioning for QUality and INnovation payment framework)

S Singh, C Robinson, S Castelino, A de Ruiter and D Chilton

Guy's and St Thomas' NHS Trust, London, UK

Background: According to the 2010 CQUIN target and BHIVA guidance, patients without baseline resistance to any class, should start ART witha non-nucleoside reverse transcriptase inhibitor (NNRTI) based regimen. We undertook an analysis of patients starting antiretroviral therapy (ART) to characterise our cohort, audit our practice against current BHIVA guidelines and comment on the appropriateness of the CQUIN target that 80% of patients without baseline resistance should start on an NNRTI based regime.

Methods: Patients starting ART between December 2009 and November 2010 were identified and regimen recorded. Further data was gathered from case notes including**:** baseline resistance, nadir CD4 count, disease stage, and reason for choice of ART regime.

Results: 80 patients started ART. 50 and 30 patients started a NNRTI and protease inhibitor (PI) based regime respectively. 5 patients had baseline NNRTI resistance, meaning that 55/80 (69%) of patients fell within BHIVA guidelines and met the CQUIN target. Patients falling within guidelines had a median CD4 count of 218 cells/mm3 (range 5 – 587). One patient had an AIDS defining illness. Where cases fell out-with guidance, identified reasons were as follows–Resistance test not back when starting ART (n=9); Patient deemed chaotic, therefore NNRTI unsafe (n=6); Patient planning pregnancy, and CD4 count too high for nevirapine (NVP) (n=3); Primary HIV infection (n=3); working patterns precluded use of efavirenz (EFV) + Hep B co-infection, therefore NVP unsuitable (n=2); working patterns precluded use of EFV and CD4 too high for NVP (n=1); drug interaction precluded NNRTI (n=1). Patients in the PI group had a median CD4 count of 223 cells/mm3 (range 18–375). 4 patients had AIDS defining illnesses.

Conclusions: Whilst 31% fell out-with guidelines and short of CQUIN target, valid reasons for doing so were found in all, in line with current best practice. This indicates that the CQUIN targets are unrealistic for a cohort of patients needing to start ART. In the era of NHS budget cuts, the cost implication of different ART regimes has become paramount. Currently, there is dual financial benefit to meet CQUIN targets as cost comparisons show a potential saving of over £1500 per year per patient for an NNRTI regime vs PI regime. However, this may change as there are predictions that the price of PIs may be more comparable to NNRTIs in the near future.

P201
Using the FRAX® tool to determine 10-year probability of major osteoporotic fracture in HIV-positive patients

C Mullooly[1], A Vas[2], V Lee[2] and S Ahmad[1]

[1]University Hospitals of South Manchester, Manchester, UK and [2]Central Manchester University Hospitals, Manchester, UK

Background: Evidence suggests that HIV infected patients may be at increased risk of osteopenia. Both uncontrolled HIV viraemia and specific antiretroviral agents are thought to have a direct effect on bone formation and turnover. With the increasing life expectancy of HIV patients it is important to identify those patients at risk of fracture. The FRAX® tool is an individual patient model that integrates clinical risk factors for fracture as well as bone mineral density. It can be used to identify those patients at increased risk of fracture, using validated UK guidelines, and to determine those patients who would benefit from further testing with bone mineral density measurement.

Methods: We performed a cross-sectional analysis of FRAX® scores measured in a cohort of HIV patients. For each patient we used the FRAX® tool (without DEXA) to calculate the 10 year probability of major osteoporotic fracture. All patients aged <40 were entered as 40 years old. The FRAX® score was then used to classify the patient, depending on age, to be at low, intermediate or high fracture risk.

Results: 507 patients (416M, 91F) were included. The median age was 40 yrs old (range 20–81). 81% (410/507) patients were on treatment. 26 had a 10 year probability of major osteoporotic fracture of >5%. Of these, 1 was classified as high, 13 intermediate and 12 low risks for their age. The high risk patient was treatment naive. Of the intermediate risk group, 11 were on treatment, 82% and 0% were receiving Tenofovir and Atazanavir respectively.

Conclusion: The FRAX® tool is an easy tool to determine risk of osteoporotic fracture in HIV patients, and to identify patients that may require treatment or further investigations.

P202
Frequency and clinical consequence of HIV-1 viral load blips after switching from Cobas Amplicor to Cobas TaqMan

K MacGregor[1] and C Leen[2]
[1]The University of Edinburgh, Edinburgh, UK and [2]Regional Infectious Diseases Unit, Western General Hospital, Edinburgh, UK

Background: Clinicians suspected that there were more patients with detectable HIV RNA when the assay was changed from Cobas Amplicor to Cobas TaqMan in November 2006. This study compared the frequency of blips in HIV RNA and their clinical consequence between the two assays.
Methods: A retrospective analysis of detectable HIV RNA in all patients who were fully suppressed on HIV treatment between November 2004 and November 2008 was performed. The number of patients blipping, blips per 100-patient years, the number of patients with persistent low-level viraemia (PLLV) and those with virological failure (VF) was calculated. Notes were examined for changes in medication as a result of the blips. A blip was defined as a viral load between 50 copies/mL and 1000 copies/mL in a patient with undetectable viral load in a preceding and succeeding sample. Median follow-up time for clinical consequence and medication change was around 14 months for Cobas Amplicor, and 29 months for CobasTaqMan. Statistical analysis was performed using PASW.
Results: 98 patients (17%) blipped with TaqMan compared with 36 (7.2%) with Amplicor ($p<0.0005$). This gave 4.95 episodes per 100-patient-years with Amplicor and 12.21 with TaqMan. The increase in blips was not associated with increased risk of clinical consequence as only 2% of Taqman blippers subsequently developed VF and 14.3% PLLV, compared to 19% ($p=0.002$) and 36% ($p=0.001$) respectively with the Amplicor assay. Only 1 patient who blipped on the TaqMan had their medication changed during the follow-up period.
Conclusion: The TaqMan assay was associated with a higher blip frequency. These blips were not of clinical consequence.

P203
Review of practice and use of phosphodiesterase type-5 inhibitors in men with HIV at a regional centre

K Quinn, E McCarty, S Quah, C Emerson and W Dinsmore
Royal Victoria Hospital, Belfast, UK

Background: Phosphodiesterase type-5 inhibitors (PDE5i's) are effective and well-tolerated drugs for treatment of erectile dysfunction (ED). Three drugs in this class have been approved and are currently used by approximately 20–25 million men worldwide. Recent reports of potential use of these agents as ''recreational drugs'' by selected groups of men has raised concerns about a variety of health risks**:** primarily, the association of these drugs with high risk sexual risk behaviour, as well as the increasing co-use with known drugs of abuse. The study aims were to quantify use of PDE5i's within a cohort of 350 HIV infected men, to assess for concurrent use of recreational drugs, screening for sexually transmitted infections (STI's) and acquisition of STI's amongst HIV infected users of PDE5i's.
Methods: Patients receiving PDE5i's were identified from hospital pharmacy database; a chart review was undertaken to define aetiology of ED, use of antiretrovirals (ARV's), viral loads and documentation of STI screening.
Results: 50 out of a cohort of 350 male HIV infected patients were identified as receiving PDE5i's. 80% (n=40) were men who have sex with men (MSM) and 20% (n=10) heterosexual. 46%(n=23) had a regular partner, 42% (n=21) were single and 12% (n=6) were in an open relationship. 48% (n=24) of the cohort were screened for STI's subsequent to initiating PDE5i's of whom 18% (n=9) have been diagnosed with ≥1 STI. STI's diagnosed included early syphilis, urethral and rectal chlamydia and urethral gonorrhoea. 90% (n=40) patients had an undetectable viral load; documentation of discussions on condom use and post-exposure prophylaxis for HIV (PEPSE) was high (≥80%). Overall, there were low rates of discussions on the use of poppers and recreational drug use (84% and 72% respectively not documented). 12 episodes of STI's were diagnosed; 6 episodes occurred in patients in open relationships, 5 in patients with regular partners and 1 episode in a patient with no regular partner.
Conclusion: The use of PDE5i's in HIV infected men is controversial due to the risks of facilitating transmission of infection. There is however an ethical duty to provide care in those with ED. There should be full documentation of discussion surrounding condom use and PEPSE especially in those with a detectable viral load. Caution should be exercised in those on ritonavir-boosted protease inhibitors and avoided in those using certain recreational drugs e.g. poppers.

P204
An audit of HIV patients attending a specialist service for contraception and cervical smears

J Joshi[1], M Boothby[1] and K Jaffer[2]
[1]Whittall Street GU Clinic, Birmingham, UK and [2]Heart of Birmingham PCT Family Planning Services, Birmingham, UK

Background: A specialised consultant led clinic provides contraception and cervical smear services for HIV positive female patients once a month within the general HIV outpatients department. Our aim was to assess how well the clinic is utilised in terms of patient load, reason for attendance, outcome, contraceptive advice offered, and whether smear test was performed.
Methods: Retrospective case notes review of patients attending from January 2009 - December 2009. Data was collected for demographics, type of contraception before and after attending the clinic, use of ART and smear test performed with its result.
Results: 403 female patients attended the general HIV outpatients clinic. Of these, 29(7.2%) women attended the contraception clinic (25 new and 14 follow up episodes).12 contraception clinics ran with a mean attendance of 3 patients per clinic (range 1–6). 25 patients had a smear test performed.
The age range was 18–45 years. 75.9% women were of Black or Black British ethnicity. Of the 29 women, 14 were using contraception before attending the clinic whilst 15 were not. Following attendance to the contraception clinic, the number of patients using contraception increased to 19 with 5 new prescriptions for use of LARCs. 25 of 29 women had smears performed at the clinic. 27 of the 29 were taking ART.

Method of contraception before and after clinic attendance

Type of contraception	Before	after
No contraception	15	10
Depo Provera	6	8
Mirena intrauterine system	5	8
Implanon	2	1
Combined Oral contraception	1	0
Progestogen Oral contraception	0	2

Conclusion: Utilisation of the contraception and smear clinic should be enhanced by increasing awareness of its availability amongst all HIV patients and clinicians. Uptake of smears can be increased by initiating a nurse led smear clinic. HIV positive patients should be offered information allowing them to make appropriate contraceptive choices to protect their sexual wellbeing and prevent unplanned pregnancies. Recommendations are made to improve the uptake of contraceptive and smear services for this patient group. The audit will be reviewed after one year of implementing changes

P205
Frequency of treatment interruptions over calendar time: the impact of the results of the SMART study

C Smith[1], A Phillips[1], M Johnson[2], R Lodwick[1], V Cambiano[1] and F Lampe[1]
[1]UCL Medical School, London, UK and [2]Royal Free Hospital, London, UK

Background: The results of the SMART trial demonstrated that treatment interruptions could lead to an increased risk not only of new AIDS and death but also of non-AIDS serious adverse events. We investigated the impact of these results on the frequency of treatment interruptions in a complete clinic population.
Methods: Follow-up time was chosen to include years both before (2003–2005) and after (2006–2008) the SMART findings were released. Individuals receiving ART at the beginning of each calendar year were identified and the percentage interrupting ART during this year was calculated. Treatment interruptions were defined as a complete drug discontinuation for >2 weeks; thus documented interruptions rather than discontinuations because of lost-to-follow-up were considered.
Results: After a stable frequency in 2003–2005, treatment interruptions were less common after the SMART results were available (Table). Reasons for stopping also changed over time; in 2003 the most common reasons were patient choice (with no toxicities; 60% increasing to 82% in 2008) and viral load/CD4 failure (15%; decreasing to 0% in 2008). However, the percentage restarting ART within 12 weeks of interruption remained constant. Lower CD4 counts (adjusted odds ratio=0.95 per 100-cells higher; 0.90–0.99; p=0.02), younger age (0.77 per 10 years older; 0.66–0.89; p=0.0003), longer time since first starting ART (1.04 per 1 year; 1.01–1.07; p=0.01), viral load>50 cps/ml (3.20 vs <50 cps/ml; 2.55–4.00; p<0.0001) and earlier calendar years (p<0.0001; see table) were associated with a higher chance of treatment interruption.
Conclusions: These results suggest that treatment interruptions are becoming more infrequent in light of evidence suggesting that they can lead to inferior clinical outcomes.

P206
Screening for mental health problems in HIV using the Client Diagnostic Questionnaire (CDQ)

S Zetler, J Anderson and I Reeves
Homerton University Hospitals NHS Trust, London, UK

Background: HIV infection is associated with high rates of mental health problems that may go unrecognised resulting in increased morbidity. The Client Diagnostic Questionnaire (CDQ) screening tool has been validated in ethnically diverse HIV + populations in the USA. It can be administered by staff who are not mental health specialists so could be a useful screening tool to identify mental health problems in those living with HIV. We describe the use of the CDQ in a busy, diverse inner-city HIV service.
Method: The CDQ was administered by a team of health advisors under supervision of a clinical psychologist. The sample population was all newly diagnosed HIV patients attending the HIV service in an inner city hospital between January 2010 and September 2010. Appropriate onward care was provided through a stepped-care model for mental health. Demographic data, CDQ results, onward referral patterns and diagnostic outcomes were collected prospectively.
Results: Between January and September 2010, 73 people (38 men, 35 women) diagnosed with HIV in the preceding 10 months attended the HIV clinic, of whom 36 (49%) were screened using the CDQ. 23 were men and 13 women, mean age 37 (range 19–56 years). 23 were of Black (or mixed race) ethnicity and 13 were White. 18 (23%) patients were not screened**:** lost to follow-up (6), transferred care to another centre (1), existing mental health service users (4), antenatal patients (5), DNA (2). For 19 (26%) the CDQ assessment is pending. 23/36 (64%) of those screened were identified as having one or more mental health problem while 13 (36%) screened negative. 13 patients screened positive for Major Depressive Disorder, 11 for Generalised Anxiety Disorder, 5 for Panic Disorder, 8 for alcohol misuse and 9 for drug misuse in the past 6 months. Of the 23 patients who screened positive, 17 (74%) were confirmed through assessment by psychiatrist or clinical psychologist, 4 are awaiting further assessment and 2 refused further assessment. There were no false positive screens.
Conclusion: In this newly diagnosed population the overall rate of positive screens was 64% with the majority confirmed as having mental illness. The CDQ is an accurate and appropriate screening tool for mental health problems in this population which facilitates speedy referral to mental health services. We postulate that this is likely to improve engagement with HIV related care. Minor modifications may make the CDQ more user-friendly and reliable.

P207
The prevalence of vitamin D deficiency in HIV-positive patients in the West Midlands

N Hettiarachchi, K Manavi, H Bowen and S Kaur
Selly Oak Hospital, Birmingham, UK

Background: Vitamin D has been shown to have immunoregulatory properties in addition to its role in bone metabolism. Therefore, identification and treatment of vitamin D deficiency may be an important aspect of HIV management. The predominant source of vitamin D is sun exposure, which depends on seasonal, geographical, social and cultural factors.
The aim of this cross sectional study was to investigate the prevalence of Vitamin D deficiency amongst HIV positive patients in a West Midlands HIV centre during the summer of 2010.
Methods: All HIV patients who had their vitamin D level assessed for the first time between June 2010 and August 2010 were included. The following information was extracted; age, sex, ethnicity, duration of HIV, CD4 count, HIV viral load, calcium, phosphate, alkaline phosphatase, haemoglobin, eGFR and the duration of HAART where applicable.
A normal vitamin D was defined as >50nmol/l. SPSS package was used for statistical analysis.
Results: 204 patients with median age of 38 (33 – 45) years had their vitamin D level assessed, 120(59%) were female and 162(79.5%) were non-white. They had a median CD4 count of 483 (375 – 613) cells/mm^3. Their median duration of HIV diagnosis was 36 (16 – 60) months and 182 patients were on ART. Median vitamin D level was 37 (28.25 – 50) nmol/l.
Sub-normal vitamin D levels were detected amongst 151(74%). On linear regression analysis, non white ethnicity was significantly associated with sub-normal vitamin D levels [HR = 0.505 (95%CI 0.062 – 0.948) P = 0.026], whilst the duration of HIV was inversely correlated with sub-normal vitamin D levels [HR = 0.005 (95%CI 0.01 – 0.001) P = 0.015]. There was no association found between sub-normal vitamin D levels and age, sex, CD4 count, alkaline phosphatase level, calcium, haemoglobin, eGFR, or use of ART.

Table for P205

	Pre-SMART			Post-SMART		
	2003	2004	2005	2006	2007	2008
Receiving ART on 1st January	1226	1390	1565	1669	1779	1888
Interrupted ART during year	65 (5.3%)	91 (6.6%)	96 (6.1%)	84 (5.0%)	68 (3.8%)	44 (2.3%)
Adjusted OR (95% CI) of interrupting ART	1.87 (1.28, 2.74)	2.75 (1.91, 3.96)	2.68 (1.85, 3.89)	2.28 (1.60, 3.25)	1.78 (1.22, 2.60)	1.00
Restarted ART within 12 weeks	38%	42%	38%	32%	36%	44%

Conclusion: A significant proportion of non-white ethnicity patients had sub-normal vitamin D levels even during the summer period. Additionally, vitamin D levels were found to be significantly lower at an early stage of the diagnosis. Routine screening of vitamin D may be helpful in all newly diagnosed non-white HIV patients.

P208
Development of an HIV support campaign to meet identified patient communication needs

C Howland[1], B Marett[1] and J Hummel[2]
[1]Bristol-Myers Squibb, Uxbridge, UK and [2]HIVE Health, London, UK

Aims: To identify and understand any concerns and difficulties HIV+ patients have in communication with Health care professionals, and to develop materials to enhance communication, meet information needs and empower patients.
Methods: Interviews were conducted before and after a series of simulated patient-doctor consultations to identify perceived messaging and any unmet patient communication needs. Patient information materials available to HIV+ patients in the UK were collated and assessed for communication attributes. Materials were reviewed by 5 patient group leads. Patient support materials were developed to enhance currently available and address any identified unmet need.
Results: The key unmet communication needs identified were differences in perceived information needs and priorities between patients and their doctor. Patients wanted knowledge about treatment, the language to be able to understand and the questions that they can ask to check that everything is going as well as possible. Doctors tended to be in control of treatment decisions, despite sometimes being unaware of full impact of side effects as patients felt unable to disclose true impact on life to Doctors. Over 50 materials were reviewed. The majority (75%) provided solely written information and a quarter used pictures or diagrams. Only 20% of materials were printed in colour and 10% were specifically for women. New patient information leaflets and a website were developed with concise written information and pictorial representations of treatment scenarios to engage both patients and HCP.
Conclusions: It is important to identify and understand HIV+ patients concerns and difficulties in communication with health care professionals to ensure patients' needs are met. The use of concise written materials with pictorial representations may enhance communication and meet unmet information needs. We developed patient information materials and a website to support and empower patients.

P209
Audit on factors influencing the choice of first-line HAART

L Sanmani[1], C Priestley[2] and K Schroeder[1]
[1]The Royal Bournemouth Hospital, Bournemouth, UK and [2]The Park Centre for Sexual Health, Weymouth, UK

Background: Highly active antiretroviral therapy (HAART) should be individualised for the patient in order to achieve a maximum benefit. British HIV Association (BHIVA) 2008 guidelines recommend either Truvada or Kivexa and Efavirenz as a first line of HAART.
The main aims of this study was to look at what proportion of patients were on first line of HAART as per BHIVA guidelines and to explore various factors influencing the choice of first line antiretroviral therapy.
Methods: A retrospective case notes review of all HIV patients who started their treatment in 2010 was carried out in January 2011. 3 HIV centres in the region were included. 2008 BHIVA guidelines on management of HIV-1 infected adults was the set standard.
Following data was gathered: socio-demographics, date of HIV diagnosis, nadir CD4 count, pre-treatment VL, baseline genotypic resistance, other co-infections, mental health, type of HAART started, reasons for choosing a particular HAART, adherence issues and patient's preference.
Data was analysed using Microsoft Excel.
Results: 35 patients were included in the study. 40% of patients were aged between 35–44 years. 75% of them were White males. 56% were heterosexual. 52% of patients were diagnosed in 2010. 75% of patients had nadir CD4 count below 350. Pre-treatment viral load was > 100,000 in 57% of patients. 10% of patients had a baseline genotypic resistance. 14% of patients had increased cardiovascular risk on Framingham score. 16% of patients had co-infection hepatitis C and mycobacterium avium complex. 5% of patients had mental health problems. Truvada (97%) was the most common nucleoside reverse transcriptase inhibitor (NRTI) backbone. 50% of patients were on non-nucleoside reverse transcriptase inhibitor (NNRTI) and 50% of patients were on protease inhibitors (PI). Reasons for PI based regimen were patient's choice based on toxicity profile, baseline NNRTI resistance, depression, night shifts, AIDS defining illness and initiation of treatment before the resistance test results were available.
Conclusion: Although BHIVA guidelines recommend Efarivenz as a preferred third agent along with NRTI (Truvada/Kivexa), only 50% of patients were on it. PI was started in 50% of patients as a third agent for valid reasons. Half of the patients were late diagnosis despite being residents from an area of HIV prevalence of > 2/1000. This audit highlights the importance of tailoring anti-retroviral therapy to individual patient's needs.

P210
Indications and outcomes of switching patients to raltegravir in an HIV clinic

A Vas, D Cousins, S Leech and V Lee
Central Manchester University Hospitals NHS Foundation Trust, Manchester, UK

Background: Raltegravir (RAL) is an antiretroviral licensed for both treatment naïve and experienced patients. The aim of this study is to describe virological and immunological changes seen following treatment switch to a Raltegravir containing regimen.
Methods: Retrospective case note review of patients attending a HIV clinic between 2008–2010. Demographic data and test results were collected. Patients were followed for 48 weeks.
Results: 33 patients, 25 males (19 MSM, 56%) and eight females were included. The median age was 44.5 years (range 29–69). 64% were Caucasians. 14 patients switched from Didanosine following reports of its exposure and association of non-cirrhotic portal hypertension. The remaining patients switched for other reasons including virological failure, cardiovascular risk, intensification, compliance and lipodystrophy. 20 out of 33 (61%) patients were virologically suppressed prior to switching therapy. All of these patients remained undetectable at 12 months. 13 out of 33 (39%) patients had detectable viraemia at baseline, only one patient remained detectable at 12 months. The median CD4 count at baseline and 12 months was 438 cells/mm^3 and 467 cells/mm^3 respectively.
Lipid changes seen in the follow up period were minimal. The median cholesterol, HDL and triglycerides at baseline was 5.4mmol/L, 1.13mmol/L and 2.1mmol/L respectively and 5.2mmol/L, 1.205mmol/L and 1.5mmol/L at 12 months. ALT remained stable at baseline and 12 months.
Conclusion: This small study demonstrates that RAL is an efficacious antiretroviral to use in patients needing to substitute drugs due to toxicity or side effects.

P211
Outcome of HIV patient cardiovascular risk assessment and management by an HIV specialist within two small GUM clinics

L David
George Eliot Hospital NHS Trust, Nuneaton, UK

Background: Metabolic complications in HIV patients are multi-factorial in origin.

Studies have shown that HIV is an independent risk factor for cardiovascular disease (CVD). Evidence continues to accumulate that antiretroviral therapy (ART) is associated to a variable extent with increase in serum cholesterol and triglyceride, trunk fat, insulin resistance and development of hypertension.

There are no studies to evaluate the outcome of the management of metabolic disorder in HIV patients within primary care, HIV specialist or metabolic disorder specialist settings. Small HIV centres usually lack the resources to involve metabolic specialists to manage CVR of their HIV patients.

Methods: We reviewed the notes of HIV patients managed by one GUM consultant who also managed their metabolic disorder at two small GUM clinics between August 09 - July-10. 104 patients were identified. Those < 30 years old (11) were excluded. None of those excluded had deranged lipid profiles or CVR >10%.The outcome of CVR assessment and management was compared with the BHIVA Guidelines.

Results: There were 93 patients (34 female and 59 males) identified for review purposes, mean age was 44. Three had a history of CVD, 4 had diabetes, 19 were hypertensive, 21 were smokers. CVR was assessed according to Framingham criteria within a year in 97%. CVR was >20% in 10% and was 10–20% in 21%.

All had their lipid profile checked within a year and within 3–6 months of initiation of ART. Cholesterol was > 5.00mmol in 33% and in 10% TC/HD was > 5. 18% were on a lipid lowering agent, all apart from one were initiated by the GUM physician. All had their weight checked, 98% were given life style advice and 22% were referred to a dietician. All smokers were given advice, 90% were referred to smoking session clinics. Smoking status was not recorded in 2. Of those hypertensive, 79% were on medication. In 97% the GP was aware of their HIV status and CVR and shared the management of their diabetes and hypertension.

Conclusion: our study showed that assessment and management of CVR of HIV patients could be done effectively within a GUM setting. CVR among HIV patients is higher than the general population and its management is more complicated due to drug interactions and ART side effects. Patient care could be improved by managing two related chronic conditions at the same time.

Author Index

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The Abstract, of up to 250 words, should be divided into sections entitled Objectives, Methods, Results and Conclusions. It should describe the content of the paper and the important conclusions accurately, couched in terms which will be understood by the majority of readers of the Journal. The Abstract is entered separately in the submission process, but should also be prepended to the main article.

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Examples of references:
1 Vanderpump MPJ. The epidemiology of thyroid disease. In: Braverman LE, Utiger RD, eds. *Werner and Ingbar's the Thyroid: A Fundamental and Clinical Text*. Philadelphia, PA: Lippincott Williams and Wilkins, 2005.

2 Benhamou Y, Fleury H, Trimoulet P *et al.* Anti-hepatitis B virus efficacy of tenofovir disoproxil fumarate in HIV-infected patients. *Hepatology* 2006; **43**: 548–555.

3 Meduri GU, Stein DS. Pulmonary manifestations of acquired immunodeficiency syndrome. *Clin Infect Dis* 1992; **14**: 98–113.

4 Maggi PPG, Panebianco A, D'Eramo C *et al.* Hyperhomocysteinemia in HIV-1 positive patients: the role of antiretroviral therapy.

16th International AIDS Conference. Toronto, Canada, August 2006 [Abstract #WEPE0170].

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Acknowledgements

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PRESERVING
BODY & MIND

Stay Undetectable

Stay in Shape

Stay Sharp

KALETRA®
(lopinavir/ritonavir)

Prescribing Information Kaletra® (lopinavir/ritonavir)
Refer to Summary of Product Characteristics for full information

Presentation: *Oral Solution:* 5 ml contains 400 mg lopinavir co-formulated with 100 mg ritonavir as a pharmacokinetic enhancer. *200mg/50mg Film-coated Tablets:* Each contains 200 mg lopinavir co-formulated with 50 mg ritonavir as a pharmacokinetic enhancer. *100mg/25mg Film-coated Tablet:* Each contains 100 mg lopinavir co-formulated with 25 mg ritonavir as a pharmacokinetic enhancer. **Indication:** Treatment of HIV-1 infection in adults and children above the age of 2 years, in combination with other antiretroviral agents. **Dosage and Administration: Adults:** *Kaletra Oral Solution:* 5 ml (400/100 mg) twice daily with food. *Kaletra film-coated tablets:* Standard recommended dosage 400/100 mg, two tablets (200/50 mg) or four tablets (100/25 mg) twice daily taken with or without food. May be administered as 800/200 mg (four 200/50 mg tablets) once daily with or without food, where necessary. Once daily dosing should be limited to those adult patients having only very few protease inhibitor (PI) associated mutations (i.e. less than 3 PI mutations in line with clinical trial results, see section 5.1 for the full description of the population) and should take into account the risk of a lesser sustainability of virologic suppression and higher risk of diarrhoea compared to twice daily dosing. **Children older than 2 years:** *Kaletra Oral Solution:* 230/57.5 mg/m^2 twice daily with food. Maximum dose of 400/100 mg twice daily. If co-administered with efavirenz or nevirapine, a dose increase to 300/75 mg/m^2 twice daily should be considered. Body Surface Area (BSA) is calculated as: BSA (m^2) = √(Height (cm) x Weight (kg) / 3600). *Kaletra 200mg/50mg film-coated tablets:* Children weighing 40kg or greater with a BSA ≥ 1.4 m^2 and who are able to swallow tablets, may take 2 tablets twice daily with or without food. Children with a BSA <1.4 m^2, Kaletra oral solution or 100/25mg tablets is recommended. *Kaletra 100mg/25mg film-coated tablet:* Children with BSA ≥0.5 to <0.9 m^2, 2 tablets twice daily. Children with BSA ≥0.9 to < 1.4 m^2, 3 tablets twice daily. The adult dose of Kaletra tablets (400/100 mg twice daily) may be used in children 40 kg or greater or with a BSA greater than 1.4 m^2. Concomitant therapy with efavirenz or nevirapine: BSA ≥0.5 to <0.8 m^2, 2 tablets (200/50mg) twice daily. BSA ≥0.8 to <1.2 m^2, 3 tablets (300/75mg) twice daily. BSA ≥1.2 to <1.4 m^2, 4 tablets (400/100mg) twice daily. BSA≥ 1.4 m^2, 5 tablets (500/175mg) twice daily. If more convenient for patients, Kaletra 200/50mg tablets and Kaletra 100/25mg tablets may be combined to achieve the recommended dose. Kaletra dosed once daily has not been evaluated in paediatric patients. **Contraindications:** Hypersensitivity to lopinavir, ritonavir or any of the excipients. Severe hepatic insufficiency. Do not administer with medicinal products highly dependent on CYP3A for clearance, including: astemizole, terfenadine, oral midazolam, triazolam, cisapride, pimozide, amiodarone, ergot alkaloids, lovastatin, simvastatin, vardenafil and sildenafil used for the treatment of pulmonary hypertension. Do not administer with St. John's Wort *(Hypericum perforatum).* Kaletra oral solution contraindicated in children under 2 years, pregnant women, patients with hepatic or renal failure, patients treated with disulfiram or metronidazole due to risk of toxicity from excipient propylene glycol. **Precautions and Warnings:** Patients with hepatic impairment, renal impairment, hepatitis B or hepatitis C. Haemophiliac patients should be made aware of the possibility of increased bleeding. Pancreatitis. Combination antiretroviral therapy (CART) has been associated with lipodystrophy. Immune reactivation syndrome may occur, especially in patients with severe immune deficiency at initiation of CART. Protease inhibitors are also associated with metabolic abnormalities (i.e. hypertriglyceridaemia, hypercholesterolaemia, insulin resistance and hyperglycaemia, new onset diabetes mellitus, or exacerbation of existing diabetes mellitus). Cases of osteonecrosis have been reported in patients with advanced HIV disease and/or long term exposure to CART. Rare reports of 2nd or 3rd degree atroventricular block in patients with underlying structural heart disease and pre-existing conduction system abnormalities or in patients receiving drugs known to prolong the PR interval (such as verapamil or atazanavir) have been reported in patients receiving Kaletra. Supratherapeutic doses of Kaletra (800/200mg twice daily) have been shown to increase the QTcF interval. Patients taking oral solution who have renal impairment or decreased ability to metabolise propylene glycol should be monitored for adverse reactions relating to propylene glycol toxicity. The oral solution contains alcohol (42% v/v). Please refer to Interaction section for precautions with other medicinal products. **Interactions:** Lopinavir and ritonavir are inhibitors of the P450 isoform CYP3A and are likely to increase plasma concentrations of products primarily metabolised by CYP3A. The combination of Kaletra with atorvastatin is not recommended. If strictly necessary the lowest possible dose of atorvastatin should be used with safety monitoring. If Kaletra is used concurrently with rosuvastatin, exercise caution and consider reduced doses. If treatment with an HMG-CoA reductase inhibitor is indicated, fluvastatin or pravastatin is recommended. Co-administration with sildenafil or tadalafil for the treatment of erectile dysfunction can substantially increase these drugs' concentrations. Concomitant administration with glucocorticoids/corticosteroids metabolised via CYP3A (e.g. fluticasone propionate or budesonide) is not recommended unless benefit outweighs the risk of systemic corticosteroid effects. Medicinal products known to induce QT interval prolongation (e.g. chlorpheniramine, quinidine, erythromycin, clarithromycin) should be used with caution. Dose reduction of clarithromycin should be considered in patients with renal impairment. Caution in administering clarithromycin with Kaletra to patients with impaired hepatic or renal function. Alternative/additional contraceptive measures needed when co-administered with oestrogen-based oral contraceptives. Kaletra may reduce zidovudine and abacavir plasma concentrations and can increase tenofovir concentrations with potentially increased tenofovir associated adverse events, including renal disorders. Increased dosages of Kaletra tablets to 500/125 mg twice daily should be considered when co-administered with nevirapine or efavirenz. Dual therapy with protease inhibitors is generally not recommended, for further information refer to SmPC. Appropriate doses of indinavir and nelfinavir have not been established when co-administered with Kaletra. No dose adjustment is necessary when Kaletra is administered with saquinavir. Careful monitoring of adverse effects (notably respiratory depression but also sedation) is recommended when fentanyl is concomitantly administered with Kaletra. Concomitant administration of fosamprenavir and Kaletra is not recommended. Concentrations of antiarrhythmic drugs, dihydropyridine calcium channel blockers and anticancer agents (eg vincristine, vinblastine, dasatinib, nilotinib) may be increased resulting in the potential for increased adverse events associated with these agents. Caution and monitoring when co-administering Kaletra with digoxin as digoxin levels might increase. Low dose ritonavir (200mg twice daily) increased trazodone concentrations that led to increases in trazodone-related adverse events. It is not known whether co-administration of Kaletra and trazodone has the same effect and this combination should be used with caution. Due to decreases in bupropion concentrations, bupropion efficacy might be reduced therefore co-administration should be closely monitored. Warfarin concentrations may be affected. Anticonvulsants may decrease lopinavir concentrations. Caution and monitoring when administering carbamazepine, phenobarbitol and phenytoin with Kaletra. High doses of ketoconazole or itraconazole (>200 mg/day) are not recommended. Do not co-administer voriconazole and Kaletra unless benefit outweighs the risk of reduced voriconazole levels. Dexamethasone may decrease lopinavir concentrations. Cyclosporin, sirolimus, tacrolimus and clarithromycin concentrations may be increased. Kaletra may lower plasma concentrations of methadone. Rifabutin dose reduction of 75 % is recommended when administered with Kaletra. Rifampicin causes large decreases in lopinavir concentrations and co-administration is not recommended. Kaletra increases the AUC of midazolam 13 fold (oral midazolam) to 4 fold (parenteral midazolam) and should not be co-administered with oral midazolam and extreme caution should be used when co-administered with parenteral midazolam. Kaletra must not be administered once daily in combination with efavirenz, nevirapine, amprenavir, nelfinavir, carbamazepine, phenobarbital or phenytoin. **Side-effects:** *Adults: Very common side effects (> 1/10):* diarrhoea, nausea and upper respiratory tract infection. *Common side effects (> 1/100, < 1/10):* lower respiratory tract infection, skin infections including folliculitis and furuncle, anaemia, leucopenia, neutropenia, lymphadenopathy, hypersensitivity including urticaria and angioedema, blood glucose disorders including diabetes melitus, hypertriglyceridemia, hypocholesteremia, weight decrease, decreased appetite, anxiety, headache (including migraine), neuropathy (including peripheral neuropathy, dizziness, insomnia, hypertension, pancreatitis, gastroesophageal reflux disease, gastroenteritis and colitis, abdominal pain (upper and lower), abdominal distension, dyspepsia, haemorrhoids, flatulence, hepatitis including AST, ALT and GGT increases, lipodystrophy including facial wasting, rash including maculopapular rash, dermatitis/rash including eczema and seborrheic dermatitis, night sweats, pruritis, myalgia, musculoskeletal pain including arthralgia and back pain, muscle disorders such as weakness and spasms, erectile dysfunction, menstrual disorders – amenorrhoea, menorrhagia and fatigue including asthenia. Potentially serious *uncommon side effects (> 1/1000, < 1/100):* immune reconstitution syndrome, cerebrovascular accident, convulsion, atherosclerosis such as myocardial infarction, atrioventricular block, tricuspid valve incompetence, deep vein thrombosis, gastrointestinal haemorrhage, hepatomegaly, cholangitis, vasculitis, rhabdomyolysis, osteonecrosis, creatinine clearance decreased and nephritis. Post-marketing surveillance experience:- Stevens Johnson syndrome, erythema multiforme and jaundice. In paediatric patients the nature of the safety profile is similar to that seen in adults. Prescribers should consult the summary of product characteristics for further information on side effects. **Pregnancy and lactation:** No data in pregnant women - do not use unless clearly necessary. It is not known whether Kaletra (capsule/oral solution/tablet) is excreted in human milk. HIV infected women must not breast-feed their infants under any circumstances to avoid transmission of HIV. **Overdosage:** Treat by general supportive measures and if indicated, emesis, gastric lavage or administration of activated charcoal. **Legal category:** POM. **Marketing Authorisation Numbers/presentations:** Oral Solution: EU 1/01/172/003; 300 ml of solution (5 bottles of 60 ml) Cost: £ 307.39. Film-coated tablet 200mg/50mg: EU 1/01/172/004; 120 tablets (each pack containing 1 bottle of 120 tablets) Cost: £ 285.41. EU 1/01/172/005; 120 tablets (3 cartons of 5 foil blisters of 8 tablets) Cost: £ 285.41. EU 1/01/172/008; 120 tablets (1 carton of 10 foil blisters of 12 tablets) Cost: £ 285.41. Film-coated tablet 100mg/25mg EU 1/01/172/006; 60 tablets (Each pack contains 1 bottle of 60 tablets) Cost: £ 76.85. Further information is available on request from Abbott Laboratories Ltd., Vanwall Road, Vanwall Business Park, Maidenhead, Berkshire SL6 4XE. 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Date of Preparation: February 2011. AXKAL110467

KALETRA (lopinavir/ritonavir) is indicated for the treatment of HIV-1 infected adults and children above the age of 2 years, in combination with other antiretroviral agents. In adult patients the standard dosing regimen of KALETRA is twice daily, however it can be administered once daily if necessary for patient management. This once daily regimen might be associated with lesser sustainability of virologic suppression and a higher risk of diarrhoea. KALETRA dosed once daily has not been evaluated in paediatric patients.

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