patients receiving Reyataz with concomitant low dose of ritonavir. Co-sildenafil, tadalafil, or vardenafil) for the treatment of erectile dysfunction in abnormalities. Particular caution is required when prescribing PDE5-inhibitors antiretroviral therapy has been associated with lipodystrophy and metabolic that may increase QT interval. Caution in haemophiliac patients. Combination syndrome which have been reported. Reyataz should be discontinued if severe monitoring for Stevens-Johnson syndrome (SJS) erythema multiforme, toxic skin dysfunction must be monitored according to practice. In worsening liver disease treated with combination antiretroviral therapy are at increased risk of severe SPECIAL WARNINGS AND PRECAUTIONS:

Co-administration of Reyataz with simvastatin or lovastatin is contraindicated. no dosage adjustment required.

**INDICATION:**

Antiretroviral combination treatment of HIV-1 infected

**DOSAGE AND ADMINISTRATION:**

Oral. 300mg with ritonavir 100mg

**CONTRAINDICATIONS:**

SmPC UPDATE – GUIDANCE FOR USE IN PREGNANCY*

*Please refer to the REYATAZ® Summary of Product Characteristics sections 4.2, 4.6 and 5.2.

**PACKAGING:**

UKRZ-135292

Date of preparation: February 2013   687UK12PM107

**PREGNANCY AND LACTATION:**

*Refer to SPC for further information on clinical use of Reyataz during second and third trimesters.

**SIDE EFFECTS:**

Common:
nausea, headache, ocular

Uncommon:
icterus, vomiting, diarrhoea, dyspepsia, abdominal pain, jaundice, rash, fatigue

Rare:
dizziness, drowsiness, depression, somnolence, insomnia, hallucinations, tremor, gastrointestinal discomfort, anxiety, chest pain, angina, palpitations, myocardial infarction, mastocytosis, anaphylaxis, angioedema, stinging, burning, pruritus, angio-oedema, periorbital oedema, perioral edema, arthralgia, myalgia, arthropathy, myopathy. Consult SPC for other side effects.

**LEGAL STATUS:**

POM.

**REFERENCES**

5. REYATAZ® (atazanavir) Summary of Product Characteristics.

**ACKNOWLEDGEMENTS**

Portions of the data contained in the REYATAZ® Summary of Product Characteristics have been reprinted with permission from the U.S. Patent and Trademark Office and other authors.

**DISCLAIMER**

The REYATAZ® Summary of Product Characteristics includes only selected data from the REYATAZ® prescribing information. For complete prescribing information, please refer to the REYATAZ® prescribing information.
Based on ECHO and THRIVE 48-week data, EDURANT is now licensed for patients new to antiretroviral (ARV) therapy with a viral load ≤100,000 copies/mL.
Abstracts of the 19th Annual Conference of the British HIV Association (BHIVA)
Manchester, UK
16–19 April 2013

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**Oral Abstracts**

**Behaviour, Attitudes and Testing**

**O1**

Is primary care prescribing for people with HIV safe? A review of practice in an inner London setting

R Wellesley, A Whittle, C Griffiths, R Castles, J Dunne, M Sharp, J Figueroa, J Anderson and W Leber

1Barts and The London School of Medicine and Dentistry, London, UK; 2NHS City and Hackney Primary Care Trust, London, UK; 3Homerton University Hospital NHS Foundation Trust, London, UK

**Background:** Safe prescribing for people with HIV is a key BHIVA care standard. Safe prescribing in General Practice requires practitioners (GPs) to know which (if any) antiretrovirals (ARVs) the patient is taking. This means effective communication between secondary and primary care (PC) together with accurate documentation in PC medication records. Few data exist on GP documentation of ARVs and GP awareness of drug interactions.

**Methods:** General practices in an inner London PCT were invited to take part in a retrospective clinical record review for all known HIV positive patients aged ≥ 15 registered at the practice. Data was collected on the existence and contents of letters from HIV specialist clinicians, the coding of ARVs in the PC record, and evidence of co-prescribing of contraindicated combinations.

**Results:** 44 practices were invited to take part and 22 have completed the review. Records of 681 eligible patients were examined. Of these, 477 (70%) had letters from HIV clinics in the past 12 months. 50 (10.5%) of the most recent clinic letters did not specify ARVs. 531 patients (78%) were known to be on ARVs (either from clinic letters or the PC consultation records); 73 patients (10.7%) were known NOT to be on ARVs by practice and in the remaining 77 records (11.3%) it was not clear if patients were taking ARVs. Of the 531 patients known to be on ARVs, only 268 patients (50.4%) had their ARVs correctly coded in the PC medication records. Following the review 233 patients (34%) had their PC medication records updated. Contact was generated to clarify the ARVs for the remaining patients. Data on three specific contraindicated medication pairings were sought within PC records; 11 patients were prescribed simvastatin with any ARVs, 12 were on intranasal/inhaled fluticasone/budesonide/mometasone with a protease inhibitor, and four were prescribed a proton pump inhibitor with atazanavir.

**Conclusion:** Our data show significant risks to safe prescribing in PC for people with HIV. Secondary care letters received in the past 12 months falls below the 95% recommended by the BHIVA 2013 standards. Even when letters were available they did not always contain the information needed. Within PC the medication records must be coded and kept up to date. Key drug interactions should be flagged to alert prescribers of potential hazards. This will become ever more important as the HIV patient population ages and co-prescribing becomes more common.

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**O2**

Increasing opportunities for HIV diagnosis in primary care: a borough-wide evaluation of HIV testing and pre-diagnosis care in general practice


1City and Hackney Public Health Department, London, UK; 2Centre for Primary Care and Public Health, Blizard Institute, Barts and The London School of Medicine and Dentistry, London, UK; 3Clinical Effectiveness Group, Centre for Primary Care and Public Health, Blizard Institute, Barts and The London School of Medicine and Dentistry, London, UK; and 4Centre for the Study of Sexual Health and HIV, Homerton University Hospital NHS Foundation Trust, London, UK

**Background:** "Late" and missed diagnosis of HIV in clinical settings continues to compromise patient outcomes. From April 2013 this will be a public health indicator for local authorities. Despite an increase nationally in the proportion of people with HIV diagnosed in general practice (4.8% in 2003 to 10.4% in 2010) opportunities for earlier diagnosis still go unrecognised. We report on a high HIV prevalence PCT (8.8%,1,000) commissioned analysis of general practice case notes designed to assess rates of HIV diagnosis in this area, identify missed diagnostic opportunities and act as an educational tool for surgery staff.

**Methods:** All general practice surgeries across the borough were invited to take part. Patients known to be HIV+, ≥ 15 yrs, diagnosed after 01/10/2008 with at least two year of pre-HIV diagnosis notes available were identified using READ code searches. A local general practitioner (GP) supported by a project team member recorded "problem titles" of GP face to face consultations and laboratory entries of blood dyscrasia for up to five of the most recently diagnosed patients. GPs then discussed the cases with other colleagues at the surgery to disseminate learning points.

**Results:** To date 22 surgeries have been evaluated. In two eligible patients were identified, who presented to their GP at an average of 6.6 times (range 0-29) in the two years preceding diagnosis. 20 (30.8%) patients were diagnosed by their GP (UK av. 10.4), 19 (29.2%) were diagnosed at a genitourinary clinic (UK av. 53.8%), 5 (7.7%) in outpatients (UK av. 7.1%) and 13 (20.0%) during an acute admission (UK av. 14.7%). 35 patients (53.8%) presented to their GP with one or more HIV indicator conditions (ICs). Of these, 18 (51.4%) were offered an HIV test by their GP. Nine ICs were identified, most commonly unexplained blood dyscrasia (14 patients) and bacterial pneumonias (14 episodes in 11 patients). 48 (73.8%) patients were recorded as being at high HIV risk of whom 23 (47.9%) were offered an HIV test by the GP.

**Conclusion:** People living with undiagnosed HIV frequently consult their GPs with problems including ICs and blood dyscrasia, but are not always offered an HIV test. However, our data show that HIV diagnosis in general practice in the study area is well above the national average (30.8% vs 10.4%). This supports the view that HIV testing in general practice can be increased, which may enable a reduction in both undiagnosed and late diagnosis of HIV.
Prevalence of, and risk factors for, human immunodeficiency virus, hepatitis B and hepatitis C infections among men who inject image- and performance-enhancing drugs in England & Wales

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1Health Protection Agency, London, UK, 2Centre for Public Health, Liverpool John Moores University, Liverpool, UK, 3European Monitoring Centre for Drugs and Drug Addiction, Lisbon, Portugal, 4Public Health Wales, Cardiff, UK and 5Department of Public Health, Aarhus University, Aarhus, Denmark

Background: People who inject drugs’ vulnerability to infection is widely recognised; however, studies have rarely focused on image and performance enhancing drug (IPED) use. IPEDs, such as anabolic steroids, are used for cosmetic and aesthetic reasons, as well as to improve athletic performance. In the United Kingdom, Needle and Syringe Programme (NSP) use by IPED injectors has grown substantially, and in many areas the majority of NSPs users are now IPED injectors.

Methods: A voluntary unlinked-anonymous survey recruited male IPED injectors from 19 NSPs. Participants completed a questionnaire and provided an oral–fluid sample.

Findings: Of the 395 participants (median age 28 years) 36% had used IPEDs for <5 years. Anabolic steroids (86%), growth hormone (32%) human chorionic gonadotropin (16%) and melatonin (I/I) (8.6%) were most frequently injected; with 88% injecting intramuscularly and 39% subcutaneously. Two-thirds also used IPEDs orally (57% anabolic steroids; 23% anti-oestrogens; and 20% ephedrine). Overall, 133 (34%) had used CLS-D (p=0.001). Of these, 131 (34%) reported injection of more than one type of CLS-D, with 86% reporting sex in the preceding year (20% had 5+ female-partners, 3% male-partners). Injection site problems were common. Overall 15.5% had anti-HIV, 9% anti-HBc and 8% anti-HCV, with multivariate analyses indicating sexual behaviours and psychoactive drug use as risks. Anti-HIV positivity was associated with older age; seeking advice from a sexual health or STI clinic during the preceding year; ever had an abscess, sore or open wound at the injection site; and having had male sexual partners. However, 9% had ever shared injecting equipment (including drug vials).

Conclusions: Previous prevalence studies had not found HIV among IPED injectors. The HIV prevalence in this, the largest study of BBVs among IPED injectors, was similar to that among injectors of psychoactive drugs in the United Kingdom. Anti–HBc prevalence was about four times higher than found in a smaller study undertaken in the 1990’s. The findings suggest that level of infection may be increasing, and indicate a need for targeted interventions. Those providing voluntary confidential testing and care related to HIV should be alert to the use of IPEDs.

O5

Psychological and physical symptoms and sexual behaviour among HIV-diagnosed men who have sex with men (MSM) in the UK

F Lampe1, A Speakman1, L Sherr1, A Phillips1, S Collins2, R Gilson3, M Johnson3, M Fisher2, E Wilkins2, J Anderson3, M Daskalopoulou4, S Edwards5, J McConnell5, N Perry5, M Jones7, R O’Connell7, M Lascar6, G Hart1, A Johnson1, A Mimers1, A Geretti13, W Burman15, J Eiford12 and A Rodger1


Background: Psychological and physical symptoms are prevalent among MSM with diagnosed HIV, but their relationship with sexual behaviour is unclear.

Methods: We assessed the associations of depression, anxiety, and physical symptom distress, with sexual behaviour among 2097 HIV-diagnosed MSM in ASTRA, a questionnaire study of UK HIV outpatients in 2011/12. Depression and anxiety were classified, respectively, by PHQ-9 and GAD-7 scores (0–4 minimal; 5–9 mild; 10–14 moderate; ≥15 severe).Physical symptom score (PSS) was the sum of distress scores from 10 common symptoms (0–1 minimal; 2–6 low; 7–9; moderate; ≥10 high). Sexual activity in the past 3 months was classified as: not sexually active; condom-protected sex or HIV-positive partner(s) only; condom-less sex with HIV-negative/unknown-status-unknown partner(s) (CLS-D).

Results: Of 2097 MSM, 37% were not sexually active; 48% reported condom-protected sex or HIV-positive partner(s) only; 16% reported CLS-D. Prevalence of depression (PHQ-9 ≥10), anxiety (GAD-7 ≥10), and moderate/high physical symptom distress (PSS ≥7) varied across sexual activity groups, being highest among MSM who were not sexually active, and lowest among MSM who reported condom-protected sex or HIV-positive partner(s) only (Table).

<table>
<thead>
<tr>
<th>Sexual activity past 3 mo</th>
<th>N</th>
<th>% PHQ-9 ≥10</th>
<th>% GAD-7 ≥10</th>
<th>% PSS ≥7</th>
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</thead>
<tbody>
<tr>
<td>Not sexually active</td>
<td>775</td>
<td>31.7</td>
<td>24.4</td>
<td>32.2</td>
</tr>
<tr>
<td>C Summer or HIV+ partners</td>
<td>998</td>
<td>22.3</td>
<td>16.7</td>
<td>19.6</td>
</tr>
<tr>
<td>CLS-D</td>
<td>324</td>
<td>28.1</td>
<td>21.7</td>
<td>27.3</td>
</tr>
<tr>
<td>Chi-squared</td>
<td>p&lt;0.001</td>
<td>p=0.001</td>
<td>p=0.001</td>
<td></td>
</tr>
</tbody>
</table>

Among 1322 sexually active MSM, each symptom measure was associated with CLS-D. Using separate logistic models, adjusted odds ratios (95% CI) of CLS-D were: 1.3 (0.9–1.8), 1.4 (1.0–2.2) and 1.5 (1.0–2.3) for mild, moderate, severe depression versus minimal [p=0.020 trend]; 1.5 (1.1–2.1), 1.3 (0.8–2.0), 2.1 (1.3–3.4) for mild, moderate, severe anxiety versus minimal [p<0.002 trend]; 1.4 (1.0–1.9), 1.7 (1.1–2.6), 1.9 (1.3–2.9) for low, moderate, high physical symptom distress versus minimal [p<0.001 trend]. Models were adjusted for presence/HIV-status of stable partner; alcohol consumption; recent recreational drug use; ART/viral load group.

Conclusions: Among HIV-diagnosed MSM, depression, anxiety and physical symptoms have a complex association with sexual behaviour, being linked both with lack of sexual activity and, among those who are sexually active, with CLS-D. In addition to clinical importance, symptom management may be one important component of prevention strategies among HIV-diagnosed MSM.
Occluded hepatitis B/HIV co-infection in African migrants to the UK: a point prevalence study

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1James Cook University Hospital, Middlesbrough, UK, 2Royal Free Hospital, London, UK and 3Royal Victoria Infirmary/HPA, Newcastle, UK

Background: Hepatitis B (HBV) and HIV co-infection is common (up to 23% HBSAg+) in some areas of Africa, and African patients in the UK are more likely to be co-infected. Up to 20% of HIV-infected patients in West Africa have occult (HBSAg-negative) HBV co-infection. Although HIV drives faster progression of HBV liver disease it is not known if this also occurs in occult HBV, or whether patients develop significant liver disease at all. Few patients are routinely tested for occult HBV infection by HBV DNA in HIV clinics in the UK, and BHIVA hepatitis co-infection guidelines do not recommend screening. This study aimed to determine the prevalence of occult HBV in African patients and identify factors associated with occult co-infection.

Methods: An unlinked anonymised point prevalence study of African patients with stored blood samples was undertaken in three HIV Clinics in the UK. Samples from HBSAg negative patients never tested for HBV DNA, with an emphasis on those from patients naive to antiretroviral therapy (ART), were tested for HBV DNA by an approved real-time PCR. Data was extracted from notes or other sources on demographics, HBV serology, liver function tests and ART. Overall prevalence and prevalence in subgroups was calculated and in the ART-naive group, factors associated with occult HBV explored using logistic regression.

Results: Samples from 216 ART-naïve and 119 patients taking ART were analysed: the prevalence (95% CI) was 6.5% (3.9–9.1), with an overall prevalence of 4.6% (2.8–7.4%). Among HBCore antibody positive (HBCab+) ART-naïve patients the prevalence was 16.4% (8.3–25.6%). Median HBV DNA was 8 IU/ml, with no samples >2,000 IU/ml. Univariate analysis identified only positive HBCab+, unadjusted OR 7.4 (2.0–27.8), as predictive of occult infection. ALT levels were no more likely to be elevated in patients with positive HBV DNA. Of the ART-naïve patients who subsequently started ART, 26% were treated with lamivudine as the only HBV-active drug.

Conclusion: Occult HBV co-infection in African patients is under-diagnosed in the UK, however given low HBV DNA levels the risk of progression of HBV-related liver disease is probably small. Further work is needed to determine the clinical significance of occult HBV/HIV co-infection, potential HBV drug resistance and the cost-effectiveness of screening patients from endemic regions of the world for occult HBV co-infection.

Occluded hepatitis B/HIV co-infection in African migrants to the UK: a point prevalence study

O8

Alterations in the balance of Th1 (CXCR3+CCR5+) cells to Th17 (CCR4+CCR6+CCR10+) and Th22 (CCR4+CCR6+CCR10+) cells in HIV-1/HCV coinfection is associated with immune activation, microbial translocation and liver fibrosis

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1Imperial College London, London, UK, 2Innsbruck Medical University, Innsbruck, Austria and 3Chelsea and Westminster Hospital, London, UK

Background: Reasons for accelerated progression of liver fibrosis in HIV-1/HCV coinfection are not well defined. Increased microbial translocation (MT) and/or immune activation (IA) may play a role. Depletion in Th17 and Th22 cells have recently been implicated in driving increased IA and MT in HIV-1 mono-infection.

Methods: Study groups included: healthy controls (HC; n = 16), HCV mono-infection (HCV; n = 21), HIV mono-infection on ART (HA; n = 16), HIV mono-infection naïve to ART (HN; n = 20), HIV/HCV co-infection on ART (HHA = 18) and HIV/HCV co-infection naïve to ART (HHN; n = 10). Multi-parametric flow cytometry determined Th1, Treg, Th17 and Th22 cell frequencies and CD38 antibody binding capacity (ABC) of CD8 T cells. Neopterin, soluble CD14 and lipopolysaccharide binding protein levels were evaluated using commercially available ELISAs.

Results: As in HIV-1 mono-infection, HIV-1/HCV coinfection led to depletion in frequency of Th17 [4.54[HHN] vs 7.41[HC] p < 0.05, 7.81[HCV] p < 0.01] and Th22 [0.630[HHN] vs 1.440[HC] p < 0.05, 1.405[HCV] vs 3.634[HCV] p < 0.001] cells. There was a shift towards Treg cells away from Th17 [Th17:Treg = 0.525[HHN] vs 0.227[HC] p < 0.05, 0.192[HCV] p < 0.05] cells. Both Th17:Treg (MT r = 0.515, p = 0.1276; IA r = 0.6870 p = 0.0251) and Th22:Treg (MT r = 0.4909, p = 0.1497; IA r = 0.6121 p = 0.0800) cell ratios were negatively associated with MT and IA, but not liver fibrosis.

Conclusion: While HIV-1 mono-infection did not demonstrate any alteration in Th1 cell frequencies or ratios HIV-1/HCV coinfection did. Increased microbial translocation and/or immune activation may play a role in the acceleration of liver fibrosis in HIV-1/HCV coinfection.
Quantification of hepatic FOXP3+ T-lymphocytes in HIV/hepatitis C co-infection – a mechanism for poor outcomes?

S Williams1, E Donaldson1, T Van der Kleij2, L Dixon1, M Fisher1, J Tibble1, Y Gilleece1, P Klenerman1, A Banham1, M Howard1 and D Webster2

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Background: Co-infection with HIV adversely impacts every stage of hepatitis C (HCV) infection. Liver damage in HCV infection results from host immune response rather than direct effect of the virus. Despite depressed cellular immunity co-infected patients show accelerated rates of hepatic fibrosis compared with HCV mono-infected patients. This paradox is poorly understood. Data suggest antiretroviral therapy (ART)-mediated HIV control is beneficial for the liver in HIV/HCV co-infection, however there is no consensus on when to start ART in these patients, or on the mechanism.

T-lymphocytes in HIV/HCV co-infection

Results: HIV/HCV co-infected subjects had significantly fewer hepatic FOXP3+ (p = 0.031) and CD4+ cells (p = 0.001) than HCV mono-infected subjects. Co-infected subjects had more hepatic CD8+ cells compared with HCV mono-infected (p = 0.001), and a lower ratio of FOXP3+ to CD8+ cells (0.08 vs. 0.27, p < 0.001). Multivariate analysis showed numbers of CD4+ cells controlled for differences in numbers of FOXP3+ cells.

Conclusion: Fewer hepatic FOXP3+ and CD4+ cells in HIV/HCV co-infection compared with HCV mono-infection suggests lower Treg activity, driven by an overall loss of CD4+ cells. Higher numbers of CD8+ cells in HIV/HCV co-infection suggests higher cytotoxic activity. This may explain poorer outcomes in HIV/HCV co-infected patients and suggests a potential mechanism by which initiation of ART, even in the context of preserved CD4 count, may benefit these patients.

O10 Impact of screening on staging and survival of hepatocellular carcinoma (HCC) in HIV/HCV-coinfected patients

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Background: Current recommendations for HCC screening in HIV infected patients with cirrhosis (liver sonography every 6 months) are based on expert opinions. No data are available for the effectiveness of HCC screening in HIV/HCV coinfected patients.

Methods: We carried out retrospective analysis from 38 centres in 8 countries. All HCC cases (diagnosis by AASLD criteria) in HIV/HCV coinfected patients between 1992 to 2011 with available data on initial presentation were identified. They were classified as either 'screened' (asymptomatic at presentation, presented with abnormal AFP or imaging) or 'unscreened' (symptomatic at presentation, with work-up initiated by symptoms). We then analysed tumour characteristics, staging, therapy and survival. A lead time of 248 days for 'screened' patients was estimated using tumour doubling time.

Results: 167 individuals were indentified. 95 fulfilled 'screened' criteria, while 72 were identified as 'unscreened'. Those in the 'unscreened' group were slightly older, more commonly reported alcohol abuse, had a shorter duration of HCV/HIV co-infection, had reduced absolute CD4 T cell counts, were less likely to be undetectable and had a higher CTP score. The 'screened' group presented with more favourable tumour characteristics: solitary tumours (58% vs 42%, p = 0.038), smaller size (3.0 cm vs 5.0 cm, p < 0.001), more frequently eligible for liver transplantation (67% vs 27%, p < 0.001), less frequent portal vein thrombosis (12% vs 28%, p = 0.008) or extrahepatic metastases (8% vs 26%, p = 0.002) and lower AFP levels (63 ng/ml vs 667 ng/ml, p < 0.001). Tumour staging was more advanced in the 'unscreened' group. The BCLC stage C/D more common (76% vs 39%, p < 0.001) and a higher mean CLIP score (2.78 vs 1.48, p < 0.001). While 46% of the 'screened' group were offered potentially curative therapy only 14% of the 'unscreened' group were, while 64% compared to 25% of the 'unscreened' group were offered no therapy at all.

Conclusion: Many HIV/HCV coinfected patients with HCC had not been screened. Screening was associated with earlier HCC stages, more HCC therapy and improved survival.

The effect of antiretroviral therapy on chest radiograph appearance in HIV-associated pulmonary tuberculosis

C van Halsema1, V Chihota2, T Gorsch1, J Lewis3, E George4, K Fielding4, G Churchyard5 and A Grant1

1North Manchester General Hospital, Manchester, UK, 2The Aurum Institute, Johannesburg, South Africa, 3London School of Hygiene and Tropical Medicine, London, UK and 4Medical Research Council Clinical Trials Unit, London, UK

Background: Clinical features of tuberculosis (TB) vary with degree of immunosuppression. Combination antiretroviral therapy (cART) increases CD4 count, but its effect on TB independent of CD4 is unknown and relevant to TB control. We have previously shown that cART does not independently affect sputum smear status and now aim to examine its effect on chest X-ray appearance, particularly cavitation as a marker of potential infectiousness.

Methods: A cross-sectional study of pulmonary TB episodes in gold miners in South Africa, 2004-9, including those with known HIV and cART status, available X-ray and sputum. M. tuberculosis culture and/or smear positive (SS+). Clinical data and pre-treatment X-ray findings were recorded in a standardised format. CD4 counts were compared by Kruskal–Wallis test; categorical variables by chi² and effect of cART analysed by logistic regression.

Conclusions: Those on cART for <= 90 days were analysed separately in view of possible immune reconstitution syndrome.

CD4 category (cells/mm³) | Number (%) with cavitation
---|---
<100 | 59/67 (88) | 19/74 (26)
100-199 | 48/77 (62) | 25/82 (31)
200-349 | 45/67 (67) | 29/72 (40)
>350 | 27/36 (75) | 22/40 (55)
Total HIV+ with known CD4 | 179/247 (72) | 95/268 (35)

Conclusions: Those on cART do not have higher odds of lung cavitation than those not on cART, after adjustment for CD4. cART is likely to increase infectiousness of TB through increasing CD4 count, with implications for TB control in high HIV-prevalence areas, including nosocomial settings.
Effects of renal tubular dysfunction on bone in HIV-positive patients

L Hamzah1, A Samarawickrama2, L Campbell1, M Pope2, K Burling3, A Norden1, M Fisher1, Y Gilleece2, K Walker-Bone2 and F Post3

1King’s College London, London, UK, 2Brighton and Sussex University Hospitals, Brighton, UK and 3Cambridge University Hospitals NHS Foundation Trust, Cambridge, UK

Background: Renal tubular dysfunction, characterised by an impaired ability of the proximal renal tubule to reabsorb phosphate, has been reported in HIV positive patients receiving antiretroviral therapy (ARVs). Reduced phosphate reabsorption may affect bone mineralisation and contribute to low bone mass and increased fracture risk.

Aims: To analyse the prevalence of renal tubular dysfunction and its association with bone turnover and bone mineral density (BMD).

Methods: Urinary retinol-binding protein (RBP) was used as a measure of renal tubular dysfunction. RBP/creatinine ratio (RBPCR, reference range 0.12–2.93 µg/mmol) was measured in stored urine samples from fasted HIV positive patients taking part in a study to evaluate BMD. Bone turnover was assessed by serum type 1 procollagen (P1NP) and carboxy-terminal collagen crosslinks (CTX), and BMD by femoral neck dual x-ray absorptiometry (DXA). RBPCR was log-transformed; correlation coefficients and multivariate linear regression were used to evaluate relationships between variables.

Results: 422 men (94% white ethnicity, 93% MSM, diagnosed HIV positive for a median [IQR] of 9.2 [4.7,15] years, 94% on ARVs, mean [SD] CD4 621 [258] cells/µl, 89% with HIV RNA <40 copies/mL) were included. The mean (SD) estimated glomerular filtration rate (eGFR) was 93.2 (17.2) ml/min/1.73 m² patients (20.6%) had renal tubular dysfunction (RBPCR >2.93). In analyses adjusted for confounders (age, time since HIV diagnosis, prior AIDS, nadir CD4, HIV RNA and protease inhibitor use), RBPCR remained associated with tenofovir (TDF) use (β = 0.4, p = 0.017) and eGFR (β = –0.2, p < 0.0001). RBPCR correlated with phosphate reabsorption (PEPO4/r² = 0.26, p = 0.0001), but not with P1NP (r² = –0.02, p = 0.62) or CTX (r² = 0.01, p = 0.82). After adjusting for confounders (age, time since HIV diagnosis, prior AIDS, time on ARVs, HIV RNA, body mass index, smoking, steroid use, sedentary lifestyle and hypogonadism), the association between RBPCR and BMD was of borderline statistical significance (β = –0.008 p = 0.05).

Conclusion: RBP–defined renal tubular dysfunction was observed in 21% of HIV positive men and associated with TDF exposure and impaired renal function. RBPCR was associated with reduced phosphate reabsorption. In this cross-sectional analysis, we found no evidence that sub-clinical renal tubular dysfunction affected bone turnover or BMD.

Table comparing PET findings with final clinical diagnosis

<table>
<thead>
<tr>
<th>PET scans</th>
<th>Final clinical diagnosis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low grade uptake</td>
<td>Toxoplasmosis</td>
</tr>
<tr>
<td>Normal uptake</td>
<td>Toxoplasmosis</td>
</tr>
<tr>
<td>Low and high grade uptake</td>
<td>Tuberculosis</td>
</tr>
<tr>
<td>High grade uptake</td>
<td>PCNSL</td>
</tr>
<tr>
<td>Vasculitis</td>
<td>Dementia</td>
</tr>
<tr>
<td>Variable uptake</td>
<td>NBCLC</td>
</tr>
<tr>
<td>Alzheimer’s Disease</td>
<td>Alzheimer’s Disease</td>
</tr>
<tr>
<td>HIV encephalitis</td>
<td>TB</td>
</tr>
<tr>
<td>Infection</td>
<td>PML</td>
</tr>
</tbody>
</table>

Pregnancy, Young Adults and Gender

014

Does initiation of highly active antiretroviral therapy (HAART) before pregnancy increase risk of adverse outcomes: miscarriage, prematurity, stillbirth?

H Dale, J Chigiga and K Manavi

University Hospital Birmingham, Birmingham, West Midlands, UK

Background: Objective – to determine whether initiation of highly active antiretroviral therapy (HAART) before pregnancy increases risk of adverse outcomes: miscarriage, prematurity, stillbirth.

Methods: Retrospective cross-sectional observational study. Routine data collection of all pregnant women under HIV services, including data from clinic notes, pathology systems, meeting records and midwifery notes.

Results: Between October 1997 and June 2012, 150 women (208 pregnancies) were under HIV pregnancy services. Women still pregnant at the end of the study or on transferring out of area were excluded; 180 pregnancies were analysed. Median age at referral was 30.5 years; 35 women were >35 years. Miserriage rate was 8.3% (15/180) (median gestation 11 weeks [interquartile range (IQR) 8 – 17], preterm delivery 2.8% (5/180) (median gestation 29 weeks [IQR 28 – 32]) and stillbirth 0.6% (1/180) (gestation: 39 weeks). Viral load (VL) at pregnancy event was <50 copies/mL in: 60% (9/15) of misserriages, 80% (4/5) of preterm deliveries, and 100% (1/1) stillbirths. Late presentation (>13 weeks gestation) was 53.8% overall, 13.3% (2/15) for misserriages, 60% (3/5) for preterm deliveries and 100% (1/1) for stillbirths. Late presentation was higher in women starting HAART during pregnancy (70.3% (71/101)) compared to 32.9% (26/79) starting HAART pre-pregnancy. Misserriage was higher in women initiating HAART pre-pregnancy (16.5% (13/79)) compared to those starting HAART during pregnancy.
pregnancy (2.0% [2/101]); OR 0.75 (95% CI 2.13 – 44.62), P = 0.003. This effect remained after adjustment for confounders (late presentation, VL detectable at pregnancy event, time HIV diagnosed pre-referral) using multivariate analysis; OR 8.87 (95% CI 1.21 – 64.89) P = 0.032. Prematurity was greater in women initiating HAART pre-pregnancy (5.1% [4/79]), compared to 1% (1/101) during pregnancy, but this was not statistically significant (OR 5.33 [95% CI 0.58–48.70]). Stillbirth was higher in the pre-pregnancy HAART group compared those starting during pregnancy: 1.3% and 0% respectively; due to small numbers, this was not significant.

Conclusions: Initiating HAART before pregnancy appears to increase the rate of miscarriage in HIV-infected women; trends of increased prematurity and stillbirth were found, but were not significant due to small numbers.

O15 Elevated leukocyte adhesion marker VCAM-1 in HIV–infected in women initiating PI-based ART during pregnancy compared to women conceiving on PI-based ART and women initiating triple–NRTI ART

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Background: HIV infection is a cause of preterm delivery (PTD) and increasing evidence suggests an elevated risk in association with protease inhibitors (PIs). Some data suggest that this risk is greatest when PIs are initiated in pregnancy. The underlying mechanism is unknown. Causes of PTD are multifactorial and include placental dysfunction and inflammation. Vascular injury markers, particularly the leukocyte interactive proteins, have been associated with chorioamnionitis and PTD. To date, vascular markers have not been studied in HIV–pregnant women. This study compared the effect of HIV infection, antiretroviral regimen and treatment timing on vascular markers and CRP during pregnancy.

Method: 51 HIV+ and 12 HIV–pregnant women were prospectively studied at 12, 20, 28, 34 and 36 weeks gestation. Maternal characteristics, immunovirologic parameters and pregnancy outcome were recorded. Therapy was categorized as PI/NRTI based ART[39] or NRTI only[12]: 5 AZT and 7 AZT/3TC/ABC. Multiplex immunoassays were used to measure concentrations of CRP, ICAM-1, VCAM-1 and SSA in plasma. Preterm delivery was defined as delivery <37 weeks. Mean vascular marker concentrations, repeated measure ANOVA, and regression analysis were used to compare biomarkers by HIV status, therapy and preterm delivery.

Results: HIV+ and HIV–women were of similar age. Baseline antenatal CD4 count did not differ by therapy group: PI/NRTI 390 cells/mm³ (range 170–1520) v NRTI-only 492 cells/mm³ (range 260–810) P = 0.18. 22 women received PI-based ART. 5 HIV+ women (4PI/1NNRTI) and 1 HIV–woman had a PTD, p = 0.86. Plasma concentrations VCAM-1 and ICAM-1 but not CRP or SSA, were 2-3 fold higher in women with HIV infection vs uninfected at week 20 (p < 0.01). VCAM-1 and ICAM-1 plasma concentrations in women initiating PI-based ART during pregnancy were 2 fold higher vs women conceiving on PI-based ART at weeks 12–34 (p < 0.05). VCAM-1 concentrations were also 2 fold higher in women initiating PIs compared to NRTI only therapy and HIV infected women at weeks 12–34 (p < 0.05). There was no significant difference in vascular markers or CRP by prematurity.

Conclusion: VCAM-1 and ICAM-1 leukocyte interactive proteins are expressed in the placenta, up regulate neutrophil infiltration, endothelial disruption and activate the coagulation cascade. Elevated concentrations of these proteins in women initiating PI-based ART in pregnancy supports an underlying vascular process which may increase risk of PTD.

O16 Loss to follow-up after pregnancy among women living with HIV in England, Wales and Northern Ireland: the role of African ethnicity

S Tariq1, C Chau2, C French3, J Elford1, M Cortina-Borja1, A Brown2, V Delpech2 and PA Tookey5

Background: Approximately 1500 HIV-positive women are reported pregnant annually in the UK; over 75% are black African. Little is known about loss to follow-up (LTFU) from HIV services in women after pregnancy. We explored the association between LTFU in the year after pregnancy, and ethnicity and African region of birth, in HIV-positive women in England, Wales and Northern Ireland (EW&NI).

Methods: We conducted an analysis of combined data from two national datasets: the National Study of HIV in Pregnancy and Childhood (NSHPC), and the Survey of Prevalent HIV Infections Diagnosed (SOPHID). We included pregnancies in 1998–2009 in women diagnosed with HIV. The analysis was restricted to pregnancies in women who were matched in both datasets (88%). LTFU was defined as not attending an EW&NI HIV clinic during the calendar year following the end of pregnancy. Logistic regression models were fitted with robust standard errors to estimate adjusted odds ratios (AOR).

Results: Overall, 1055/8695 (12.1%) women did not access HIV care in the year after pregnancy. Of these, 34.2% (361/1055) returned for care by the end of 2010. Factors associated with LTFU at one year included younger age, last CD4 in pregnancy ≥ 350 and detectable HIV viral load at the end of pregnancy (all p < 0.001). On multivariable analysis, LTFU was more likely in black African women than white women (AOR 1.98; 95% confidence interval (CI) 1.45–2.69; p < 0.001). Women born in Southern Africa (AOR 1.99; 95% CI 1.48, 2.66; p < 0.001) and West Africa (AOR 1.53; 95% CI 1.23, 1.91; p < 0.001) had an increased likelihood of LTFU compared with East Africans.

Conclusions: In this first analysis of national datasets to specifically explore attendance for HIV care after pregnancy, we found that 1 in 8 HIV-positive women in EW&NI do not return for HIV care in the year after pregnancy. Black African women, especially those from Southern and West Africa, have an increased risk. Although emigration and death are possible factors, withdrawal from care may play an important role.

O17 Gender differences in outcomes to first-line treatment in the era of modern antiretroviral therapy (ART)

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Background: Previous UK studies have reported disparities in outcomes for women. We studied whether these differences persist in the modern ART era.

Methods: We studied all previously-ART naive individuals at our clinic starting triple ART from 1st January 2006 onwards with at least 1 follow-up viral load (VL). Time to viral suppression (VS; 1st VL<50 cps/ml), viral failure (VF; 1st of 2 consecutive VLs>200 cps/ml>6 months post-ART) and treatment modification were estimated using standard survival methods.

Results: Of 1131 individuals, 563 (58%) were MSM, 241 (19%) non-MSM men and 327 (29%) women. Median pre-ART CD4 count and time since HIV diagnosis in these groups were 298, 218 and 219 cells/mm³ (p<0.001), and 2.3, 0.3 and 0.3 years (p<0.0001). 41%, 44% and 37% started EFV-based regimens; 51%, 49% and 56% started a PI and 84%, 73% and 64% started FTC/TDF. VS rates were comparable between groups, but women and non-MSM males were at considerably higher risk of VF, treatment switch and ART
discontinuation than MSM. Women were less likely to switch for treatment failure than MSM, and more likely to switch for toxicity. Of those on ART at 1 yr, 98%, 93% and 92% of MSM, non-MSM males and women had a VL<200 cps/ml (p = 0.0001). Results were consistent excluding 32 (10%) women who started ART whilst pregnant.

<table>
<thead>
<tr>
<th>Experienced event</th>
<th>MSM Non-MSM men</th>
<th>MSM Non-MSM women</th>
<th>Adjusted* HR (95% CI) vs. MSM Non-MSM men</th>
<th>Adjusted* HR (95% CI) vs. MSM Non-MSM women</th>
</tr>
</thead>
<tbody>
<tr>
<td>VS (at 6 mths)</td>
<td>70% 65%</td>
<td>73%</td>
<td>0.83</td>
<td>0.92</td>
</tr>
<tr>
<td>VF (at 1 yr)</td>
<td>5% 6%</td>
<td>14%</td>
<td>2.54</td>
<td>3.54</td>
</tr>
<tr>
<td>Tx switch (1yr):</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Any</td>
<td>27% 35%</td>
<td>43%</td>
<td>1.40</td>
<td>1.92</td>
</tr>
<tr>
<td>VF</td>
<td>2% 4%</td>
<td>0.4%</td>
<td>1.65</td>
<td>0.51</td>
</tr>
<tr>
<td>Other reason</td>
<td>25% 33%</td>
<td>42%</td>
<td>1.22</td>
<td>1.72</td>
</tr>
<tr>
<td>Total ART stop</td>
<td>5% 12%</td>
<td>15%</td>
<td>0.29</td>
<td>0.66</td>
</tr>
</tbody>
</table>

*Proportional Hazards model adjusted for: age, sex, time since HIV diagnosis, pre-ART VL, pre-ART CD4, year of starting ART, type of ART, ethnicity.

Conclusion: Poorer outcomes for women compared to both MSM and non-MSM males has persisted into the modern ART era. Factors that might influence the differences between men and women include compliance, socioeconomic status and mental health disorders such as depression. Further interventions to ensure excellent response rates in women are required.

018 Reducing onward transmission: Viral suppression among key population groups living with HIV in the United Kingdom

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Health Protection Agency, London, UK

Background: We present estimates of the proportion of all (diagnosed and undiagnosed) adults who are virally suppressed (and therefore uninfected) by key prevention groups.

Method: Data from the national cohort of all adults living with diagnosed HIV infection seen at all NHS HIV clinics. Point estimates for undiagnosed fractions were derived from a Multi-Parameter Evidence Synthesis (MPES) model. Confidence intervals are not presented for simplification. Undiagnosed adults were assumed to have a detectable viral load. Numbers are rounded the nearest 100 and adjusted for missing data (VL 5%, ART <1%).

Results: An estimated 95,000 adults were living with HIV by end of 2011 of whom 72,900 (76%) were diagnosed. Differences in the estimated diagnosed fraction by demographics and risk exposure are shown below (not statistically significant – not shown). ART coverage was high overall (84%) with variation by age and sex (range: 77% of men 15–44 yrs – 91% of men 45+). Overall an estimated 37 100 (61%) adults (diagnosed and undiagnosed) were virally suppressed (≤50 copies/mL). Younger men and women aged 15–44 were less likely to be virally suppressed than those aged 45+ years. By exposure, viral suppression ranged from 46% for heterosexual men to 66% for MSM. However because of a large difference in the total numbers living with HIV, the absolute number of infectious heterosexual men and MSM is likely to be similar (circa 11,000–14,000).

Conclusions: Despite excellent link to care, less than two-thirds of adults living with HIV are virally suppressed with considerable variation by demographic and at risk populations. Increased and expanded HIV testing and increased coverage of ARV treatment is likely to significantly reduce onward transmission across all groups.

Table: Quality care indicators and estimated number and proportion of virally suppressed adults among key populations living with HIV in the UK: 2011

<table>
<thead>
<tr>
<th></th>
<th>ALL DIAGNOSED</th>
<th>% of total</th>
<th>ALL Diagnosed &amp; Undiagnosed</th>
<th>% of total</th>
</tr>
</thead>
<tbody>
<tr>
<td>All adults</td>
<td>94,900</td>
<td>72,900</td>
<td>76%</td>
<td>84%</td>
</tr>
<tr>
<td>Men 15–44 yrs</td>
<td>36,400</td>
<td>26,200</td>
<td>70%</td>
<td>77%</td>
</tr>
<tr>
<td>Women 45+ yrs</td>
<td>26,600</td>
<td>22,400</td>
<td>85%</td>
<td>91%</td>
</tr>
<tr>
<td>Men who sex with men</td>
<td>40,100</td>
<td>31,200</td>
<td>80%</td>
<td>82%</td>
</tr>
<tr>
<td>Heterosexual men</td>
<td>20,600</td>
<td>13,300</td>
<td>70%</td>
<td>88%</td>
</tr>
<tr>
<td>Heterosexual women</td>
<td>30,800</td>
<td>22,300</td>
<td>75%</td>
<td>95%</td>
</tr>
<tr>
<td>Person who inject drugs</td>
<td>2,300</td>
<td>1,600</td>
<td>83%</td>
<td>95%</td>
</tr>
</tbody>
</table>

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O19 Mental health diagnoses in HIV–infected young people: an HIV Young Persons Network audit

E Dwyer1, K Prime2, C Foster3, E Jungmann3, R Gilbey-Cross1, S Adikari7, K Rowson7, E Chesser6, E Sherlock6, S Herbert6, E Stergiopoulou6 and T Rosco6
1Croydon University Hospital, London, UK, 2St George’s Healthcare NHS Trust, London, UK, 3Imperial College Healthcare NHS Trust, London, UK, 4Central and Northwest London NHS Foundation Trust, London, UK, 5Guy’s and St Thomas’ NHS Trust, London, UK, 6Royal Sussex County Hospital, Brighton, UK, 7North Manchester General Hospital, Manchester, UK, 8King’s College Hospital NHS Foundation Trust, London, UK

Background: The 2012 HYPnet mortality audit reported deaths in 11 HIV infected young people between 01/09/03–22/02/11; 2 died as a result of suicide, and the remaining 9 had mental health problems. A National audit was therefore conducted to establish the prevalence of mental health diagnoses in this cohort. Individuals without a formal psychiatric diagnosis may still demonstrate behaviours reflecting the presence of underlying psychological distress. An attempt was therefore made to document the presence of such behaviours.

Methods: A multicentre, retrospective case note review of individuals: vertically infected with HIV; aged > 16 years; previously cared for in a paediatric setting, now attending either a transition or adult HIV clinic. An electronic proforma detailing anonymised patient information was sent to 17 HYPnet centres.

Results: Data was collected from 7 centres on 154/164 (94%) individuals fulfilling the inclusion criteria. Mean patient age was 19.3 years (range 16–26 years). 121 patients were Black African, 13 Black British, 7 White British, 11 Other and 2 unknown. Mean age at HIV diagnosis was 6.7 years (range 0–18 years). 27/164 (17.5%) had a formal psychiatric diagnosis; 10 Major Depressive Disorder, 8 Mixed Anxiety and Depressive Disorder, 5 Psychotic illness, 3 Anxiety Disorders, 1 Personality Disorder. 13/27 were diagnosed in the paediatric clinic and 14/27 had ongoing mental health issues. 2/27 had a background of HIV encephalopathy. 9/27 had engaged poorly with HIV services. 10/27 demonstrated self-harming behaviours, with 7 attempting suicide. 7/27 patients required in-patient psychiatric care and 6 exhibited violent behaviour. 47/127 (37%) without formal psychiatric diagnoses expressed damaging behaviours to self or others, which may indicate underlying psychological distress. 43/127 engaged poorly with HIV services, 3/127 had drug addiction issues, 6/127 had unplanned pregnancies, 5/127 demonstrated violent behaviour against others and 2 demonstrated self-harming behaviour, including 1 attempted suicide.
Conclusion: A high prevalence of mental health diagnoses is noted within this vulnerable cohort, with a high level of concerning behaviours in those without formal diagnoses. This reinforces the importance of vigilance regarding patients’ psychological well-being and provision of adequate emotional and psychiatric support to limit risk to self and others, particularly around the time of transition.

O20
Continued high levels of condomless sex in serodifferent couples when the positive partner is on antiretroviral therapy: the PARTNER study
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1University College London, London, UK, 2Chelsea and Westminster Hospital NHS Foundation Trust, London, UK, 3Southmead Hospital, Bristol, UK, 4Coventry and Warwickshire Hospital, Coventry, UK, 5King’s College Hospital NHS Foundation Trust, London, UK, 6Guy’s, King’s and St Thomas’ School of Medicine, London, UK, 7Brighton and Sussex University Hospitals, Brighton, UK, 8University Hospitals of Leicester NHS Trust, Leicester, UK, 9Newham Hospital, London, UK, 10University of Copenhagen, Copenhagen, Denmark and 11HIV i-Base, London, UK

Background: We report longitudinal data in frequency and characteristics of condomless sex and reasons for not using condoms in an HIV transmission study for serodifferent couples in the context of counselling on condom use and after the HPTN 052 study.

Methods: The PARTNER study follows serodifferent partners [heterosexual (HS) and MSM] reporting condom-less penetrative sex just prior to study entry, and where the HIV+ve partner is on ART. The study assesses sexual behaviour and reasons for non-condom use during follow-up (FU) and will estimate absolute risk of HIV transmission.

Results: By January 2013, 900 couples enrolled with 581 person-year of FU. Median (IQR) years condomless sex in HS couples was 4.2 (1.9–11.0) and 2.7 (1.5–5.3) in MSM. VL <50 cps in 94% of HS and 91% of MSM knew their partner’s current VL. PEP and PrEP use low in all groups (<1.6%). Overall there was little change in sexual behaviour after study entry with the % reporting condomless penetrative sex at last FU visit remaining high at 90% among HS and 89% MSM. In HS m-/f- partners, there was no evidence of change in % reporting condomless vaginal sex with ejaculation or anal sex with ejaculation (table). In HS m-/f- partners the % having condomless vaginal sex was lower at FU, whereas there was no evidence of change in condomless anal sex. In MSM not using condoms, no change was observed during FU in % of-ve partners having receptive sex with ejaculation or insertive anal sex or reporting having receptive oral sex with ejaculation, though there was a slight reduction in the % of-ve partners having receptive anal sex. Concordance in condomless sex reported by the HIV- and HIV+ partner was high in both MSM and HS couples. The % of HIV-ve HS men and MSM who did not use a condom because of the belief that risk of HIV transmission was low when VL is undetectable increased during FU (SS vs. 66, p = 0.003).

Conclusions: There was little change in sexual behaviours during FU despite in-study counselling in couples with a history of condom-less sex. The decision not to use condoms due to a belief that they are unnecessary when VL is undetectable increased significantly in –ve HS men and –ve MSM, possibly reflecting growing awareness of the prevention role of ART.

HIV status and sexual orientation

<table>
<thead>
<tr>
<th></th>
<th>Risk behaviour reported by HIV –ve partner</th>
<th>Study entry</th>
<th>Follow up</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>HS m/f- partners</td>
<td>Condomless vaginal sex with ejaculation</td>
<td>72%</td>
<td>63%</td>
<td>0.06</td>
</tr>
<tr>
<td>HS m/f- partners</td>
<td>Condomless anal sex with ejaculation</td>
<td>12%</td>
<td>8%</td>
<td>0.73</td>
</tr>
<tr>
<td>HS m/f- partners</td>
<td>Condomless vaginal sex</td>
<td>100%</td>
<td>93%</td>
<td>1.00</td>
</tr>
<tr>
<td>HS m/f- partners</td>
<td>Condomless anal sex</td>
<td>15%</td>
<td>14%</td>
<td>1.00</td>
</tr>
<tr>
<td>MSM</td>
<td>Condomless anal sex receptive</td>
<td>55%</td>
<td>46%</td>
<td>0.04</td>
</tr>
<tr>
<td>MSM</td>
<td>Condomless anal sex with ejaculation</td>
<td>26%</td>
<td>30%</td>
<td>0.39</td>
</tr>
<tr>
<td>MSM</td>
<td>Condomless anal sex insertive</td>
<td>88%</td>
<td>86%</td>
<td>0.51</td>
</tr>
<tr>
<td>MSM</td>
<td>Condomless receptive oral sex with ejaculation</td>
<td>36%</td>
<td>31%</td>
<td>0.33</td>
</tr>
</tbody>
</table>

O21
Intimate partner violence in male and female patients living with HIV
S Warren and R Drayton
Cardiff Royal Infirmary, Cardiff, UK

Background: A recent study reported that more than half of women attending an HIV clinic had experienced intimate partner violence (IPV) in their lifetime. However, there are no data investigating IPV in HIV positive men. To further investigate this we initiated a pilot project of asking all patients attending our HIV service four screening questions for IPV.

Method: All patients attending an urban outpatient HIV clinic from October–December 2012 were asked to consent to IPV questioning by a clinician using a validated IPV questionnaire. If a patient disclosed IPV, referral to a health adviser and/or a domestic violence support group was offered. To evaluate this pilot, we examined clinician and patient attitudes to the screening questions.

Results: 117 patients were invited to participate, of which 116 consented. The study included 20 women (17%) and 96 men (83%). The median age was 42 years (range 21–80 years). 85 patients were white British (73%), 19 were African born-black (16%) and 12 from other countries (10%). 40 (34%) patients were heterosexual and 76 (66%) were men who have sex with men (MSM). 57 (49%) of all patients stated that they had experienced IPV in their lifetime, with similar rates being reported by men and women (48/96, 50% cf 9/20, 45% respectively, p = 0.7). 3% of patients reported IPV in the last year (2 MSM, 1 heterosexual man). Lifetime experience of IPV was significantly associated with being British, compared to being African born-black or other nationalities (48/96, 56% cf 9/20, 45% respectively, p = 0.009). 60% (12/20) of heterosexual men reported lifetime experience of IPV compared to 47% (38/80) of heterosexual women (p = 0.31). 62/62 (100%) of all patients who completed a post IPV screening form responded positively to being asked about IPV.

Conclusion: This study found that nearly half of HIV positive patients reported lifetime experience of IPV, with similar rates in men and women, and found that 3% men reported experiencing IPV within the last year. Previous studies have reported similar findings in HIV positive women but this is the first study exploring IPV in both genders. IPV was found to be significantly associated with being British. High rates were found in both heterosexual men and MSM, though the small number of heterosexual men in the study precluded identifying any association between IPV and sexuality. This study highlights the importance of screening all patients attending HIV services for IPV regardless of gender or sexuality.

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Antiretroviral Treatment

022
The feasibility of switching efavirenz (EFV)-based highly active antiretroviral therapy to raltegravir (RAL)-based therapy in HIV-infected individuals with central nervous system (CNS) toxicity: a Phase IV open label pilot study

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Chelsea and Westminster Hospital, London, UK

Background: Efavirenz (EFV) based regimens are recommended by guidelines for initiation of HAART. However potential drawbacks include short and long-term CNS toxicity. The integrase inhibitor Raltegravir (RAL) in combination (or as part of a regimen) is an effective alternative therapy for HIV and superior to EFV in the long term. We assessed the impact of substituting RAL for EFV in individuals who had achieved virologic suppression, but continued to experience EFV-associated CNS toxicity after at least 12 weeks of treatment.

Methods: A Phase IV open label single centre pilot study was performed in individuals with virologic suppression for ongoing CNS toxicity on an EFV-based regimen. All subjects were switched to RAL 400mg bd at baseline and continued their nucleoside backbone for 12 weeks. The primary endpoint was the rate of CNS toxicity at week 4 calculated by the ACTG adverse event (AE) score and a Sleep Questionnaire (SQ). The absolute score on each questionnaire was converted to a percentage of 100. Secondary endpoints were the rate of CNS toxicity at week 12 (AE+SQ), continued virologic suppression, change in CD4 count and fasting lipids between baseline, week 4 and week 12. Comparisons between the different study time points were calculated by the Mann-Whitney U test (SAS version 9.3).

Results: 40 subjects were enrolled (38 male, 2 female). 34 were caucasian. Mean age was 43 (range 29–62 years). Mean time on EFV was 41.6 months (range 4–145). CD4 count at baseline was 550 (IQR 423–720). The median total CNS score at baseline was 45 (IQR 30–60) and had reduced at week 4 to 19 (IQR 9–29), p < 0.001. At week 12 the median CNS score was 13 (IQR 3–23). This included improvements in dizziness (p = 0.002), insomnia (p = 0.004) and abnormal dreams (p < 0.001). The median total SQ improved from 34.7 (IQR 28.6–40) at baseline to 21.9 (IQR 17.2–28.8) at week 4, and 20.4 (IQR 12.6–28.6) at week 12, p < 0.001. All patients maintained virologic suppression throughout the study. Median CD4 at baseline increased from 550 to 606, p = 0.188.

Conclusions: Switching EFV to RAL led to significant improvement in CNS toxicity and sleep quality with maintenance of virologic suppression. Identification of individuals with EFV toxicity is essential as alternative agents may lead to improvements in toxicity profile and quality of life.

023
Impairment of renal function associated with tenofovir therapy in HIV-infected patients

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Background: Tenofovir disoproxil fumarate (TDF) is an antiretroviral drug commonly used to treat HIV-infected patients. It has been associated with impairment of renal function; in the form of a decline in glomerular filtration rate (eGFR), and proteinuria. This impairment is believed to be due to the accumulation of a high concentration of TDF in the renal proximal tubules. The reversibility of impairment of renal function, upon TDF cessation, remains controversial. Renal impairment has also been associated with the use of protease inhibitor (PI) antiretroviral drugs and coinfection with hepatitis C virus (HCV). However the impact of PI therapy and HCV coinfection on TDF renal toxicity has yet to be fully elucidated.

Methods: A retrospective analysis was conducted using an HIV positive cohort (n = 376); 214 received TDF therapy, and 162 did not (control group). The former were split into those who had stopped TDF (group 1), and those currently receiving TDF (group 2). Renal function was assessed by measuring changes in eGFR, and the presence of proteinuria (defined as urine protein: creatinine ratios >45 mg/mmol). HCV coinfection and PI therapy were also investigated as possible confounders.

Results: TDF therapy was found to impair renal function. In group 1, there was a mean diminution of 8.78% in eGFR during TDF therapy. This impairment had not fully reversed at 3 months post-TDF-ceSSION. In both groups 1 and 2, an increased duration of TDF therapy was associated with a greater decrease in eGFR. Mean eGFR values were significantly higher in the control group than in groups 1 and 2. Proteinuria was not significantly more prevalent in subjects receiving TDF. Coinfection with HCV did not increase the deterioration of renal function, but it did reduce the reversibility rate. PI therapy did not affect the decline in renal function, nor its reversibility rate. The patients’ gender, age, and ethnicity did not affect renal function impairment.

Conclusion: This study further supports the work reported in a number of other studies which indicated that the use of TDF may be associated with impairment of renal function. This impairment is not fully reversible following cessation of TDF therapy. In terms of clinical impact, there is a fundamental need for monitoring renal function in patients receiving TDF therapy. Further research is required into the pre-disposing factors for impairment of renal function during TDF therapy.

024
HIV-1 RNA and HIV-1 DNA persistence during long-term suppressive ART

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Background: Whether HIV continues to replicate during apparently successful ART remains controversial. Growing evidence indicates that HIV-1 RNA and HIV-1 DNA remain detectable long-term in treated patients but the cause-effect relationship between these two viral parameters is unclear. This study aimed to investigate residual plasma HIV-1 RNA detection and cellular HIV-1 DNA burden in patients receiving first-line ART and showing a plasma HIV-1 RNA load (VL) persistently <50 copies/ml.

Methods: Eligible patients started first-line ART with either efavirenz or nevirapine (no change allowed) plus two NRTIs, achieved a VL <50 copies/ml within 6 months, and during subsequent follow-up showed all VL results <50 copies/ml (≥2 measurements per year) without blips or treatment interruptions. Patients were recruited into 10 groups according to ART duration (1 to ≥10 years). Plasma HIV-1 RNA and cellular HIV-1 DNA levels were measured by real-time PCR; the assays 50% and 95% detection thresholds were 1 and 3 HIV-1 RNA copies/ml and 20 and 40 HIV-1 DNA copies/106 PBMC, respectively.

Results: The study recruited 104 adults (median age 47 years; range 27–76) equally distributed across the 10 ART-duration strata, with a median pre-ART VL of 4.9 log10 copies/ml (range 2.8–6.9) and nadir CD4 count of 201 cells/mm3 (range 3–800); 81/104 (78%) patients were male, 59/104 (57%) white, and 53/104 (51%) MSM. Patients started ART in 1997-2011, most commonly with efavirenz (87/104, 84%). Considering all groups combined, plasma HIV-1 RNA was detected in 52/104 (50%) patients at a median level of 4 copies/ml (range 1–35; IQR 2, 7). Cellular HIV-1 DNA was detected in 102/104 (98%) patients at a median level of 2.5 log10 copies/106 PBMC (range 0.9–3.5). Over 10 years there was a mean HIV-1 RNA decrease of -0.62 log10 copies/ml (95% CI: -1.37, 0.12; p = 0.10) and a mean HIV-1 DNA decrease of -0.22 log10 copies/106 PBMC (95% CI: -0.63–0.19; p = 0.283).

Conclusion: HIV-1 RNA and HIV-1 DNA remain detectable in a large number of patients receiving apparently successful ART. There was a trend suggestive of reduced HIV-1 RNA detection in patients with the longest duration of suppressive ART. The source and significance of residual HIV-1 RNA detection during ART warrant further studies.

[BHIVA Research Awards winner 2010: Ian Harrison]
O25

Therapeutic immunisation in conjunction with IL-2, GM-CSF and rhGH improves CD4 T-cell counts and reduces immune activation in cART-treated HIV-1-positive patients: a Phase I clinical study

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Background: This randomised, open label, phase I, immunotherapeutic study investigated the effects of interleukin (IL)-2, granulocyte-macrophage colony-stimulating factor (GM-CSF), recombinant human growth hormone (rhGH), and therapeutic immunisation (the GTU-MultiHIV Clade B DNA vaccine) in combination antiretroviral therapy (cART)-treated HIV-1-infected individuals, with the objective to reverse the T-cell dysfunction that remains despite effective cART.

Methods: HIV-1+ patients (11 male, 1 female) on cART with baseline CD4 T-cell counts ≥400 cells/mm³ were randomised into one of three groups: 1) vaccine plus IL-2, GM-CSF and rhGH (n = 3); 2) vaccine alone (n = 4); or 3) IL-2, GM-CSF and rhGH alone (n = 5). Samples were collected at weeks 0, 1, 2, 4, 6, 8, 12, 16, 24 and 48. Interferon (IFN)-γ, IL-2, IL-4, and perforin ELISpot assays were performed at each time point to assess functional responses to pools of Gag p17/p24, Nef, Rev, and Tat peptides. Phenotypic analysis of CD4 and CD8 T cells was carried out to determine expression of markers associated with immune activation (CD38, HLA-DR), exhaustion (PD-1, PD-L1), senescence (CD57), and apoptosis (CD95). A random intercept model using MIXED procedure in SAS was generated to determine mean changes from baseline to each of the study time points for all results with a 95% confidence interval.

Results: Median CD4 T-cell count at baseline was 757 cells/mm³ (interquartile range [IQR] 567-886 cells/mm³), median age 48 years (IQR 42-51 years), and plasma HIV-1-RNA <50 copies/ml for all subjects. The most marked changes were observed in patients who received vaccine plus IL-2, GM-CSF and rhGH (group 1). Looking at mean changes from baseline to week 48, there were significantly elevated numbers of CD4 T-cells (p = 0.0083) and significantly improved CD4/CD8 T-cell ratios (p = 0.0033). This was accompanied by a significant reduction in percentage expression of CD38 on CD4 T cells (p = 0.0194) and significantly increased IFN-γ production in response to Gag (p = 0.0122) and Tat (p = 0.041) at week 48 compared to baseline. Subjects in all treatment groups showed significant reductions in PD-1 expression at week 48 compared to baseline.

Conclusion: Immune-based therapy in the context of fully suppressive cART has the ability to further improve CD4 T-lymphocyte counts, reduce immune activation, and improve HIV-1-specific T-cell responses, with the potential to reverse T-cell dysfunction in chronic HIV-1 infection.

O26

Therapeutic tendering: an innovative strategy to reduce the cost of antiretroviral therapy

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Background: The NHS in England is targeting efficiency savings of £15 billion by 2014/15. Following wide consultation the London Specialised Commissioning Group (LSCG) adopted a therapeutic tender (TT) approach for the procurement of antiretroviral therapy (ART) to reduce the annual drug spend on ART; £172 million in 2010/11. A multi-disciplinary panel of doctors, nurses, pharmacists, service users and commissioners oversaw the TT promoting the increased use of i) efavirenz (EFV), ii) kivexa in ART naive and iii) atazanavir as the first boosted protease inhibitor (rATV) where clinically appropriate across 23 London HIV outpatient services. We evaluated the uptake, clinical outcomes, patient experience and financial savings of this strategy.

Methods: Data regarding patient demographics, ART regimen, reasons for starting or switching ART and for not initiating a TT regimen were collected. Clinical outcome data (CD4 and viral load) were obtained from national surveillance data (SOPHID). A questionnaire developed with user involvement regarding patient experience was completed by a proportion of patients starting/switching ART.

Results: Between 1/4/11-31/3/12 a total of 4864 patients (16% of London cohort) started (48%) or switched ART (52%), with 13% (625) undergoing ≥ one further ART switch. Of 4864 patients 67% were male, white (40%), black African (30%), heterosexual (47%) and men who have sex with men (32%). Some demographic data was incomplete (3-23%). Following the TT use of EFV, kivexa and rATV increased, each agent being included in 52%, 16% and 27% of all starting/switching ART episodes (n = 5614) respectively. One in eight cited the TT as the reason for switching. Those starting/switching TT vs non-TT regimens achieved similar outcomes. 1415/4864 (29%) completed a questionnaire, >90% agreed/strongly agreed that they had i) understood why their doctor wanted them to start the new treatment, ii) been involved in this decision and iii) were managing to take the new treatment as prescribed. Responses were similar irrespective of ART regimen. Financial analysis estimates the TT will achieve an annual saving of £7.4 million by March 2013.

Conclusions: This strategy has successfully achieved an increased use of TT regimens with significant financial savings while maintaining good clinical outcomes and positive user feedback. The TT demonstrates how users, commissioners and service providers can collaborate to achieve significant financial savings for the NHS.
PREZISTA: now one tablet per day in combination with other antiretrovirals for:

- Treatment-naive patients regardless of viral load
- Treatment-experienced patients with no DRV RAMs.

HIV-1 <100,000 copies/ml and CD4 cell count >100 cells x 10^6/l.

Preparations containing darunavir/ritonavir:

- Oral suspension, 75 mg, 150 mg and 600 mg tablets
- 800 mg tablets
- 400 mg tablets
- 100 mg tablets
- 50 mg tablets
- 25 mg tablets
- 200 mg tablets
- 100 mg tablets

Possibility of increased bleeding.

Patients with one or more DRV-RAMs. Advise patients that current antiretroviral therapy does not cure HIV and precautions should be taken to avoid transmission. Do not use in children <3 years of age or weighing <15 kg.

Severe skin reactions: Discontinue PREZISTA/rtv immediately. If signs or symptoms of severe skin reactions develop. Stevens-Johnson Syndrome, toxic epidermal necrolysis and acute generalised exanthematous pustulosis have been reported. Rash: In clinical studies, mild to moderate rash more common in treatment-experienced patients receiving both PREZISTA + raltegravir compared to patients on either PREZISTA or raltegravir alone. Patients with known sulphonamide allergy: Contains a sulphonamide moiety: caution advised. Hypotension: Drug-induced hepatitis has been reported. Patients with pre-existing liver dysfunction including chronic active hepatitis or cirrhosis have increased risk of liver function abnormalities including severe potentially fatal hepatic adverse events and should be monitored. Prompt intervention or discontinuation of treatment if liver disease worsens. Neutrophilopenia: patients with pre-existing neutropenia may experience severe neutropenia. Immediate cessation of therapy may be required. Myopathy: patients with pre-existing myopathy may experience exacerbation of muscle pain. Inflammation may be required. Non-antiretroviral products:

- Highly dependent on CYP3A for clearance.
- Drug interactions may be required.

Refer to the SmPC for full details of side effects.

Poster Abstracts

Access and Service Delivery

P1
Applicability of stable patient HIV service provision for young adults
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Background: The 2011 BHIVA Guidelines on routine investigation and monitoring of adult HIV-1-infected individuals propose that stable patients (VL < 50 c/ml, CD4 count > 350 cells/ul) adherent to antiretroviral therapy (ART), may only require 6-monthly outpatient follow up. This audit assesses whether this service model is applicable to young adults attending a designated young persons’ service.

Method: Single centre retrospective case note audit of all young adults attending a young person's HIV clinic for > 1 year with an undetectable viral load (VL < 50 c/ml) for >6 months and CD4 count > 350 cells/ul. Reasons for attending clinic between October 2011–October 2012 and the resulting services provided were recorded.

Results: Of a cohort of 91 young people; 38 (42%) met stable patient criteria; median age 21 years (range 17–28), 21 (55%) female, 28% black African origin and 36 (95%) acquired HIV perinatally. The median outpatient attendances in the 1 year was 4 (IQR 3–5), 31 (82%) patients had a new medical diagnosis requiring treatment or referral; infective(10), cardiology(4), dermatology(5), orthopaedic(2), gynaecology (3), renal(2), ophthalmology(1), endocrine(1), hepatology(2), non-sclerotic portal hypertension(1). 4 (10%) patients required inpatient care during the year. 29/35 (83%) individuals known to be sexually active had at least one sexual health screen. 15/18 (83%) sexually active females had a cervical smear and 11 (61%) were provided with a long-acting contraceptive. 2/38 patients required partner post exposure prophylaxis and 8/38 had documented partner disclosure issues. 71% of patients received hepatitis B vaccination. Drug/alcohol misuse requiring intervention was documented in 6 (16%) patients. 13% of patients’ social, financial or housing issues were addressed at the clinic. A psychological issue requiring ongoing intervention was documented for 13 (34%). 92% of patients saw more than 1 member of the multidisciplinary team within the audit period.

Conclusion: This audit highlights the varied and complex needs of this young adult population. Despite patients being stable on ART and at least 1 year post transition from paediatric to adult services, patients required high levels of multidisciplinary support to maximize physical, sexual and psychological health. Surprisingly, 10% of designated “stable patients” required admission; the definition of stable patient may differ for those who have lived with HIV from birth for more than 2 decades.

P2
Are Health and Wellbeing Boards in higher HIV–prevalence areas prioritising HIV prevention?
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Background: The Health Protection Agency (HPA) identified 35 Local Authorities (LAs) with diagnosed HIV prevalence >2 per 1000 population aged 15-59 and with >50 individuals diagnosed late between 2008 and 2011. The HPA identified men who have sex with men (MSM) as the priority for prevention in 10 LAs; African communities the priority in 10 other LAs; and both the priority in 15 LAs. From April 2013, LAs are responsible for public health. In preparation, each LA has to identify clear public health priorities in a Health and Wellbeing Strategy (HWBS). The authors sought to establish whether HIV prevention is being prioritised in these higher prevalence areas.

Methods: Each LA’s Joint Strategic Needs Assessment (JSNA) and HWBS were searched for the words HIV, sexual health, gay men (or MSM or LGBT) and African and the content assessed. The HWBSs indicate when HIV is a priority so subjective assessment was not necessary.

Results: 68% of JSNAs in higher HIV prevalence LAs included data on HIV and communities most at risk, 52% did not. More than half of LAs in higher HIV prevalence areas did not prioritise HIV. Only 20% of LAs prioritised HIV in both their JSNA and HWBS. 24 of 35 (68%) JSNAs included content about HIV, sexual health, gay men and African communities. Two JSNAs did not include any of the words searched for, including Manchester. 9 JSNAs did not include content on all the topics. Of those 9, 2 are LAs where both African people and MSM are priorities for HIV prevention; Birmingham included nothing about HIV and Brent no information about MSM. 5 of the 9 are LAs where MSM are considered in the need of HIV prevention. 16% of LAs’ JSNAs did not mention of African people, including 3 which mentioned neither. No mention of MSM was made in 2 JSNAs for LAs where African communities are the priority.

P3
Positive perspectives: an inter–university study of UK medical students on their attitudes to and knowledge of HIV
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Objective: The aims of this study were to assess the knowledge, attitudes and behaviours of medical students from three medical schools in relation to HIV. The perceived quality and quantity of teaching as well as exposure to HIV medicine were also assessed.

Method: A 28-point anonymous online questionnaire was made available to medical students from Manchester, Leeds and Southampton via the medical school intranet and email system. There were four sections covering demographic information, teaching and exposure, knowledge, and views and behaviours.

Results: Ten percent of students (40) rated their knowledge as ‘Poor’ and one in five (16.6%) rated the quality of teaching they had received as ‘Poor’. 65% (26) of final year students had taken a history from a HIV positive patient. 28.6% (105) of participants had ‘Adequate Knowledge’. 16% (56) stated that homosexuality cannot form part of an acceptable lifestyle. One fifth (20.5%) expressed discomfort in taking blood from a HIV positive patient, 55% (199) would double glove when doing so and 16% (58) feel apprehensive about caring for such patients. Respondents in this group had poorer knowledge (83% vs 66% p = 0.001) and were more likely to think healthcare workers in the UK are at high risk of acquiring HIV at work (30% vs 20% p = 0.034).

Conclusion: Medical students in these universities have poor knowledge of HIV. Some still harbour homophobic views, and fear of infection remains pervasive. Medical educators must ensure the teaching of accurate knowledge and that students are exposed to HIV medicine. Training in Equality and Diversity is particularly necessary.
Can we justify use of a CD4 point-of-care test in a time of austerity?
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Background: The monitoring of absolute CD4 T-cell levels remains an important prognostic marker in the management of HIV-infected individuals. Point of care tests (POCTs) for CD4 cell counts have been developed and may be useful for streamlining patient pathways. The aim of this study was to assess the costs associated with use of a new CD4 POCT as compared to the standard laboratory assay.

Methods: Two care pathways for CD4 testing are compared: the standard care pathway using a laboratory CD4 assay and a new pathway incorporating a CD4 POCT. Newly diagnosed and stable patients (CD4 > 350, not on antiretrovirals), attending a London HIV service was prospectively recruited in two phases: prior to and following the introduction of the PIMA CD4 POCT (Alere Medical). A self-completed questionnaire was administered to all patients to capture relevant socio-demographic and clinical information, service utilisation; time spent in clinic and private costs. Further information on costs associated with each pathway was collected using available administrative data on staff pay, overhead costs, materials and a work diary to monitor time taken to complete activities. Patients’ private costs were assessed in terms of productivity loss for time taken off work to attend the clinic, transport costs and other costs. Clinical pathway data were compared to assess the impact of POCT in terms of costs and outcomes using STATA 12.

Results: In total 199 patients (43 new diagnoses, 156 stable off treatment) were recruited of whom 87.4% were male and 77.4% Men who have sex with Men. The POCT was more expensive per test for the clinic than the laboratory assay, even allowing for reduced recall rates (33% were recruited of whom 87.4% were male and 77.4% Men who have sex with Men. The POCT increased cost to the clinic and the increased amount of healthcare worker time needed to perform the test itself and the increased amount of healthcare worker time needed to perform the test in comparison with a standard venepuncture. 36% of participants reported taking time off work to attend for CD4 testing (median 2.75 hours). The median hourly wage among those employed was £15 per hour (11.7% were unemployed) and the median travel cost of attendance was £5. The overall impact on patient’s private costs will be reported.

Conclusion: Introduction of a CD4 POCT increased costs to the clinic somewhat. However, this needs to be considered in the light of the impact on costs to patients and the positive effect on patient satisfaction (reported separately).

Are generic antiretroviral drugs truly cost saving?
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Background: In 2010/2011, HIV Commissioners in our region withdrew payment for the fixed drug combination Combivir, forcing a switch to individual components. This was deemed clinically acceptable and annual savings of £44 k were expected. Preliminary work on drug costs alone estimated a much smaller saving.

Aims: We estimated the true costs of switching Combivir to its component drugs and patient outcomes with the new regime.

Methods: 65 patients used Combivir during the study period, 22 were excluded (temporary patients, lost to follow up, PMTCT only), leaving 43 patients. We used case notes to document each clinic visit or phone call in the 12 m pre- and 12 m post-switch, including clinician seen, pathology tests, consultations, and ARVs prescribed. We compared costs in these time periods using local pathology and drug costs. We also recorded viral load (VL) at 1 year post-switch, and any patient-reported problem during the switch period.

Results: The difference in cost between pre- and post-switch is not significant. Post-switch care is more expensive by £40 per patient annually (95% CI £572 to £753) giving a total increase in costs post-switch in our 43 patients of £1742/y.

Patients had more clinician contact post-switch (mean = 7.2 visits) compared to pre-switch (mean = 4.9 visits), leading to £60 additional cost per patient post-switch (95% CI £29 – £92). Mean drug costs per patient were slightly less post-switch (£7,093 vs £7,140) and pathology test costs per patient were slightly more post-switch (£140 vs £113); neither were statistically significant.

Five patients (12%) reported problems with the switch; 1 felt unable to take the new tablets and switched back days later, wasting 3 months of drugs. One patient developed a rash and 3 contacted the clinic due to confusion about the doses or timings. One patient had a detectable VL (411 copies/ul) at 1 year post switch. He had a history of adherence issues and a VL of 71 copies/ul pre-switch.

Discussion: As further generic antiretroviral drugs become available, pressure may be placed on clinicians to switch from fixed dose combinations to components if the direct drug cost is less. Our work shows that the additional clinical costs involved in this may outweigh or negate the simple cost savings of the drugs. Additionally, a switch may cause confusion or new side effects for some patients, risking loss of adherence. Hence caution needs to be exercised when considering the utility of generic antiretroviral drugs on cost grounds alone.

The importance attributed to religious belief plays an important role in the attitude of UK nurses towards people with HIV
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Background: The aim was to survey registered nurses for their level of knowledge of HIV, their self-reported attitudes towards HIV infected patients and determine associated factors. Lack of knowledge of HIV may lead to stigmatising attitudes by health care workers. Studies show stigma in health care settings lead to a decrease in uptake of HIV testing. National guidelines state that a nurse should have the competence to obtain consent and conduct an HIV test. There is little literature on the knowledge and attitude levels of registered nurses in the UK.

Methods: A cross-sectional study of a sample of nurses (n = 144) in a large hospital from all clinical departments using self-completed structured anonymous questionnaires. Descriptive analysis using frequencies was used to examine demographic variables, knowledge and attitude scores and to describe the sample participants. Spearman’s rho non-parametric test was used for all correlations as not all of the data was normally distributed. Non-parametric tests, Kruskal-Wallis and Mann-Whitney U, were used to look for associations between continuous dependent variables and the dichotomous background variables.

Results: Mean age was 43.3 years, 24 countries of birth were reported. The overall mean knowledge score was 19/25, 77% (Median 80 IQR 68–84). The mean attitude score was 4.06 (SD 0.45, Minimum 2.64, maximum 5), the median was 4.08 (IQR 3.76–4.40), the higher the score the more positive the attitude with undecided (3) the neutral point. Nurses who felt religion was “very important” to them had statistically significant worse attitude scores (Mdn 3.88) compared to other groups “important” (Mdn 4.40, p < 0.001), ”not so important” (Mdn 4.30, p < 0.001), “not at all important” (Mdn 4.36, p < 0.001). A strong religious belief was associated with lower knowledge scores.

Conclusion: The importance attribute to religious belief appears to influence attitudes toward HIV-infected people. Although overall knowledge was good and attitudes were positive those who self-identified that religion was very important to them in their religious beliefs reported worse attitudes towards HIV infected patients. On-going dialogue with religious communities is essential. In addition innovative ways need to be developed to get training to those who need it, for example short in-services on the wards, train the trainer and e-learning programs.

Providing HIV services in a GP practice
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Background: We developed a community outreach HIV service for an inner city teaching hospital. The aims were to explore the feasibility of delivering HIV out-patient care in a GP setting; provide a generic alternative to the HIV outpatient centre 3 miles away and provide a local alternative for patients living nearby. The clinic runs monthly, on a Wednesday evening from 4–8 pm.

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It was developed initially as a service for stable patients, defined as patients with no co-morbidities, CD4 > 500 and not on antiretroviral treatment, or patients on antiretroviral treatment with an undetectable HIV viral load and on home delivery. Results from previous investigations are accessed via a broadband link to the main hospital.

Methods: After 12 months we reviewed patient notes and conducted a patient satisfaction survey.

Results: After 12 months, there were 33 patients enrolled. 31 were on ARVs (1 started treatment at Paxton Green) and 2 on treatment interruption (patients’ request). 32/33 (97%) had CD4 > 200 cells/μL; 29/33 (88%) had plasma HIV viral load <40 copies/ml. Ten patients had concerns about confidentiality impairing their attendance at the main outpatient centre, and 6 had had poor adherence as a result. 18 patients selected at random completed a patient satisfaction questionnaire. 16/18 (89%) rated the service as ‘Excellent’ and the remaining 2 as ‘Good’. Comments included, ‘convenient, able to park, excellent transport links, punctual, I was seen after 6 pm, so I didn’t miss work,’ ‘I felt my privacy was maintained,’ ‘Thanks for bringing the clinic to my neighbourhood. It’s proving to be helpful and convenient,’ ‘I appreciated the atmosphere at Paxton Green and the appointment time after work was perfect.’

Discussion: Overall, these patients greatly prefer to be seen at the community outreach service. Common themes highlighted were better privacy, free parking and more convenient appointments. DNA (Did Not Attend) rates decreased as the clinic became established. It takes additional time to prepare, set up and to travel to the clinic, but poor attendees have re-engaged with services and become adherent to treatment, with the associated benefits to mortality, morbidity and infectivity.

Conclusions: Clinical outcomes have improved significantly in this group of non engaging IDUs with the introduction of this intervention. To date there has not been a significant change in HRQOL, anxiety/depression and substance misuse between cases and controls.

P9 Audit of HIV care in English prisons: 2011
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Background: In 2011 of the 66,935 adults living with diagnosed HIV infection in England, 161 were reported to be resident in English prisons. This is likely to be an underestimate. Previous studies have identified disparities in care of HIV positive prisoners compared to the general population and an unpublished survey of BASHH/BHIVA members found that 15/35 clinics estimated that > 25% of prisoners had detectable viral loads at reception. We audited the outcomes of HIV positive prisoners in England in 2011.

Methods: Audit pro formas were sent to GU clinicians reporting prisoner patients to the GUMCAD database in 2011. In addition, healthcare managers of all prisons in England were contacted to name their local GU/HIV service provider. In total, 72 GU/HIV service providers were contacted. Results: 31/72 GU/HIV service providers responded of which 11 contributed audit data. 20 providers had seen no HIV positive prisoners. Data for 133 HIV positive prisoners (16 diagnosed in prison) were analysed. Median age was 39 and 93% were male. 45% were born in the UK, 45% outside the UK and for 10% country of birth was unknown. 53% were white, 44% were heterosexual, 28% MSM and 20% people who inject drugs (PWID). Duration between arrest and first clinic visit was known for 46% (61 patients) and ranged from 1 day to 104 weeks, with 56% patients seen in <2 weeks. 78% patients were taking ARVs with only 26% on NNRTI based regimens. 3% patients were co-infected with hepatitis B, 17% with hepatitis C, with a further 5% having cleared hepatitis C after treatment. CD4/Viral load data were available on 88 patients; 66 had been prescribed ARVs before imprisonment. Of these, 43% had a VL < 40 copies/ml and 6% were known to be poor adherers. Of 22 not on ARVs, 23% had CD4 < 350 mm⁻³. At six months, viral load data was available on 24 patients, of these 20 (83%) had VL < 40 copies/ml.

Conclusion: Although the overall response rate to our survey was low, we captured data from a wide range of providers which managed relatively large numbers of HIV positive prisoners. Viral load outcomes were poorer compared to the overall population of HIV patients receiving treatment in 2011 (87% with VL < 40 at one year vs 47% in prison reception) and a higher percentage were co-infected with hepatitis C (9% vs 17% in prison). Prison may be a good opportunity to diagnose and manage HIV, but transfers, deportations, sentence length and delayed referral make this a challenging cohort.

P8 Health-related quality of life (HRQOL) and clinical outcomes of HIV-infected intravenous drug users post integration of HIV and addiction services
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Background: HIV infected intravenous drug users (IDUs) have worse clinical outcomes and health related quality of life (HRQOL) than HIV infected non-drug users. An in-reach HIV clinic from a large adult HIV provider) was developed at a psychiatry-led addiction service in January 2011.

Methods: Prospective interventional cohort study of non-engaging HIV Infected IDUs receiving integrated care versus current standard of care (Non-engagement = missing ≥2 clinic appointments over 1 yr or non-attendance for 6 months). HRQOL was assessed at baseline and 6 monthly intervals with EQ-5D and SF-36 questionnaires. Hospital Anxiety Depression scale (HADS), clinical and substance misuse data were also collected. Mean scores and preference derived utility scores were calculated from HRQOL questionnaires, and results were compared over 1 yr with repeated measures analysis on SPSS version 16. Only patients with completed questionnaires at each time point were included.

Results: 56 individuals were recruited (30 cases, 26 controls). 37 (14 cases, 23 controls) had complete HRQOL data at all time points. Substance & alcohol misuse, HRQOL and HADS data were not significantly different between cases & controls over 1 year. See Table below for comparison of clinical indices.

<table>
<thead>
<tr>
<th></th>
<th>Baseline</th>
<th>6 months</th>
<th>1 year</th>
<th>P value</th>
</tr>
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<tbody>
<tr>
<td>CD4 (cells/μL)</td>
<td>333 ± 138</td>
<td>407 ± 182</td>
<td>506 ± 239</td>
<td>0.008</td>
</tr>
<tr>
<td>CD4 (cells/mm³)</td>
<td>211 ± 217</td>
<td>238 ± 183</td>
<td>240 ± 208</td>
<td></td>
</tr>
<tr>
<td>Controls</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ART</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cases</td>
<td>9/14 (64%)</td>
<td>14/14 (100%)</td>
<td>13/14 (93%)</td>
<td>0.036</td>
</tr>
<tr>
<td>Controls</td>
<td>16/22 (69%)</td>
<td>17/22 (74%)</td>
<td>18/22 (78%)</td>
<td></td>
</tr>
<tr>
<td>HIV VL &lt; 40</td>
<td>7/10(70%)</td>
<td>11/14 (79%)</td>
<td>11/13 (85%)</td>
<td>0.014</td>
</tr>
<tr>
<td>Control</td>
<td>6/17 (35%)</td>
<td>15/17 (88%)</td>
<td>13/18 (72%)</td>
<td></td>
</tr>
</tbody>
</table>

P10 Anal cancer screening in the United Kingdom: a national survey of perceptions and practices among sexual health clinics
J Vera1, K Demarcke1, L Green1 and M Nathan2
1Imperial College London NHS Healthcare, St Mary’s Hospital, London, UK and 2Homerston University Hospital, London, UK

Background: The incidence of human papilloma virus (HPV) associated squamous cell anal carcinoma is increasing among HIV-infected individuals. In this population screening for anal intraepithelial neoplasia (AIN) could
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P11

As HIV moves towards a chronic disease, how involved are patients in their own care?
N Perry1, J Bennett2, M Jones3, R Janes1 and J Roberts3
1Brighton and Sussex University Hospitals NHS Trust, Brighton, UK, 2Freelance Nurse Consultant, London, UK and 3East Sussex Healthcare NHS Trust, Eastbourne, UK

Background: Service provision within the NHS has changed, with limited resources and a governmental drive to encourage people to take responsibility for their health. The Standards of Care for People Living with HIV state that HIV+ individuals should be enabled to maximise self-management and should have opportunities to be actively involved in decisions about their health care (BHIVA, 2012). This study explored the lived experience of people with HIV accessing healthcare services and to what extent health needs are being met.

Method: Ethics approval was granted for this qualitative study. Participants aged 18 or over, diagnosed for more than 1 year were invited to participate. Recruitment was via posters in both clinical and community settings. Written information was provided prior to participant’s consent being obtained. Focus groups were conducted with a total of 16 participants, 9 female; 7 male. Length of diagnosis ranged from 18 months to 25 years. The emergent themes were: Managing own health: this is hard to achieve in reality and participants still wanted to rely on healthcare professionals. Stigma: is a significant issue within the general community and when accessing other healthcare services. Experience of using services: participants stressed the importance of continuity of care, building a relationship with their HIV doctor and barriers to accessing GP services. Changing future service provision: attempts to ‘normalise’ HIV were felt to be unrealistic. The need to access different specialties led to concerns linked with stigma and being seen by non HIV specialists. Empowerment: a sense that those diagnosed longest felt more empowered and had a sense of knowledge and control over their condition. Coping with daily life: Chronic fatigue and uncertainty about living with a long term condition was a common concern.

Conclusion: Despite professionals viewing HIV as a manageable condition the majority of participants expressed concerns about changes in service provision and the impact on doctor-patient relationships. Participants diagnosed the longest felt more involved in decisions and were more likely to express their opinions. Those diagnosed for less time were more likely to accept the changes. Stigma in the workplace and across other healthcare settings was expressed by all as a concern.

P12

Treatment for stable HIV patients in England: can we increase productivity and improve patient care?
E Adams1, D Ogden2, A Ehrlich1 and P Hay3
1Aquarius Population Health, London, UK and 2St George’s Healthcare NHS Trust, London, UK

Background: This study aims to estimate the costs and potential efficiency gains of changing the frequency of clinic appointments and drug dispensing for stable HIV patients, and compared the costs of hospital pharmacy dispensing and home delivery.

Methods: We estimated the annual costs per patient (HIV clinic visits and either first line treatment or a common salvage regimen, with some patients switching to a salvage regimen during the year). The cost of three-, four- and six-monthly clinic appointments and drug supply options was estimated including hospital dispensing (incurring VAT) and home delivery. Three-monthly appointments and hospital drug dispensing (baseline) were compared to other strategies.

Results: The baseline was the most costly option (£10,587 if first line treatment and no switch to salvage regimen). Moving to six-monthly appointments and home delivery yielded savings of £1,883 per patient annually. Assuming patients started on different medications and may switch to salvage therapies, six-monthly appointments and three-monthly home delivery of drugs is the least expensive option and could result in nearly £2 k savings per patient. This translates to annual productivity gains of £8–10 million for the estimated 4,000 eligible patients not currently on home delivery in London.

Conclusions: Different appointment schedules and drug supply options should be considered for stable HIV patients based on productivity gains, and would free up money to be used elsewhere, in line with the Quality, Innovation, Productivity and Prevention programme. However, this should be assessed on a case by case basis per individual patient needs, especially around adherence and patient support.

P13

The impact of faith-based ‘healing’ and ‘cure’ claims on Africans living with HIV in the UK
J Stevenson, D Browne, I Otoro and A Duffy
African Health Policy Network, London, UK

Background: Faith plays a vital role for many African people and communities – the 2001 UK census shows that approximately 69% of Africans living in the UK identify as Christian, and 20% as Muslim. In terms of health, faith and prayer can be a source of strength and support for people living with HIV, however there can be negative consequences of the interaction between faith and HIV. There are increasing reports of claims by faith leaders of faith ‘healing’ and ‘cures’ where people living with HIV are influenced to stop taking their treatment and rely instead on prayer. Over the past 18 months we have carried out a programme of research to investigate the impact of these claims.

Methods: The research was conducted in three stages:
1) An online-based survey of community-based and other service provider organisations working with Africans living with HIV.
2) An expert seminar, which brought together a multi-sector group of individuals with representatives from statutory, voluntary, academic and clinical sectors.
3) Qualitative interviews conducted with members of the African community, including people living with HIV who had been affected by ‘healing’ claims.

Results: The survey recruited 14 organisations, including 8 community organisations, and asked them to respond to a series of questions about faith healing with reference to the service users of their organisations. Of the respondents, 7 were aware of cases of people being told they had been ‘healed’ and being told or pressured to stop taking medication by faith leaders. Most respondents were aware of more than one case of faith ‘healing’ claims and pressure to stop taking medication with one knowing of at least 5 cases. At

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least 15 separate cases were identified in the survey. In some of the reported cases treatment was restarted, but in others the health and mental health of clients declined, in some cases leading to death. The seminar uncovered similar findings, indicating the issue is widespread and being responded to at local levels but with a lack of overall response. The qualitative interviews are ongoing.

Conclusion: The findings from all three phases of the research indicate that cases of faith ‘healing’ claims are widespread across the UK, and becoming more common. The nature and impact of these claims varies, but in all cases pose a risk to the health and wellbeing of individuals affected. There is a lack of joined-up approaches or consensus in responding to the issue, which needs to be addressed.

P14
Audit on the application of guidance regarding the confidentiality of HIV-positive patient information by general practices in Wales
C Maciver1, S Vincent1, A Jones1 and B Healy2
1Cardiff University, Cardiff, UK and 2Infectious Disease Department, UHW, Cardiff, UK

Background: Confidentiality is fundamental in developing trust between the patient and doctor and is instrumental in developing an effective therapeutic relationship. This trust is especially important in conditions such as HIV. This audit explores current confidentiality practice, and assesses the extent to which GMC (General Medical Council) guidelines have been adhered to in GP practices across Wales.

This audit aimed to assess how HIV status information is kept by General Practices in Wales and how this relates to current guidelines on confidentiality set out by the GMC; to identify areas of good practice and areas where improvements can be made.

Methods: A questionnaire was created in order to assess the level of adherence to key confidentiality guidelines set out by the General Medical Council in Confidentiality: guidelines for doctors (2009). The questionnaire was e-mailed to every GP in Wales (489 in total).

Results: The results from 130 general practices were analysed. 80.6% of practices had HIV positive patients on their register. Only 53% had a policy of informing HIV positive patients that their infection status and information regarding their treatment would be shared openly amongst members of the health care team. Practical measures to ensure confidentiality were in place at many practices. 89.6% kept computers out of public view and 78.4% secured their virtual data. Other confidentiality measures that were in place varied significantly between practices.

Conclusions: Overall, there is evidence of a degree of adherence to confidentiality guidelines in the majority of GP practices in Wales. However there were some suboptimal measures undertaken to achieve this. This audit project proposes several ways in which practice can be improved to ensure stringent confidentiality when dealing with sensitive diseases such as HIV.

P15
Pharmacist interventions on home delivery prescriptions in three London HIV outpatient clinics
N Marshall1, S Harvey1, N Naou1, K Khonyongwa2, C Okoli2, O Odejide1, L Swaden1, R Weston1, C Lam1, N Mackie2, J Ainsworth1 and M Johnson1
1Royal Free London NHS Trust Foundation, London, UK, 2St Mary’s Hospital, Imperial College Healthcare NHS Trust, London, UK and 3North Middlesex University Hospital, London, UK

Background: Home delivery (HD) of antiretrovirals (ARVs) offers significant financial savings through dispensing of zero-rated VAT medications. As part of a CQUIN, within London, HIV units aim to recruit specific target numbers of stable patients on to the HD service. In addition to zero-rated VAT savings, HD allows specialist pharmacists to clinically verify prescriptions using pathology results that may not be available if dispensed from the hospital pharmacy on the appointment day. We looked at pharmacy interventions made on this group of patients receiving HD.

Methods: Pilot audit looking at consecutive HD prescriptions verified over 5 days across 3 HIV outpatient clinics. The British HIV Association monitoring guidelines were used to verify blood results for HIV viral load (VL), urea and electrolytes, liver function tests, and urinalysis. Undetectable VL within 6 months of the next appointment (or a locally permissible time frame) was deemed appropriate. Interventions were classed as either technical (prescribing error identified without need for blood results) or clinical interventions (availability of blood results led to the intervention). Changes in duration of supply were also included.

Results: 247 home delivery prescriptions (5.8% of home delivery cohort) were screened by the HIV specialist pharmacies. Interventions were made on 69 (27.9%) prescriptions, 27 (39.1%) were technical, 38 (55.1%) clinical in nature (8, 11.6% both). Thirty-two (13%) changes in prescription duration were made due to oversupply (17), undersupply (6) and clinical need (7). HIV VL was <50 c/ml in 240 (97.2%) patients. 21/247 (8.5%) had no result within 6 months.

Safety blood/urinalysis results were either deranged or out of date in 14 (5.7%) and 75 (30.4%) of cases, driven by lack of urinalysis for TDF-based ART, however urine dipstick results were not available for screening at all sites. 48 (19.4%) prescriptions required prescriber contact, 14 (29.2%) leading to change in drug/dose/frequency, 11 (22.9%) repeat safety blood requests and 3 (6.3%) repeat VL. In 11 (22.9%) cases no action was taken. Home delivery was suspended for 5 (2%) patients, 2 due to viral failure and 2 due to toxicity.

Conclusion: A high rate of prescription interventions, particularly those resulting from verification with pathology results was observed in this apparently stable group of patients, supporting the role of specialist pharmacy verification prior to home delivery dispensing.

P16
HIV and psychological support: a psychological needs assessment of adults living with HIV
A Ray1, C Anderton1, SY Teo2, A Evans3 and G Latchford4
1School of Medicine, University of Leeds, Leeds, UK, 2Centre for Sexual Health, Leeds Teaching Hospitals Trust, Leeds, UK and 3Leeds Institute for Health Sciences, University of Leeds, Leeds, UK

Background: The link between HIV and poor mental health is well established, with significant individual and public health implications. Recent publication of Standards for Care for People Living with HIV in 2013 has drawn attention to the unmet need for psychological support among the HIV-positive population in the UK and advocated for change. Providing services requires support from commissioning bodies however, and context-specific evidence of need. We aimed to gain an understanding of the psychological needs of adults attending a HIV clinic, to explore current support, and to establish the need for further services.

Methods: We designed a screening tool to establish baseline psychological need. This included the Hospital Anxiety and Depression Scale (HADS), the Distress Thermometer (DT), and questions regarding current support and future need. This was distributed to adults attending a regional HIV centre based in genitourinary medicine.

Results: 80 completed questionnaires were received (53% male, 47% female, mean age 39 years). HADS scores revealed 40% of respondents had clinical anxiety (12.7% severe) and 31% had clinical depression (17.7% moderate-severe). The DT identified 28.8% as having poorly controlled distress with 62.5% of these directly attributing their distress to HIV.

Only 9 participants (11%) reported receiving any type of formal psychosocial support at the time of assessment, 5 from their GP and 4 from a psychiatrist or psychologist. Those who requested mental health support all had clinical levels of anxiety or depression. No participants scoring in the normal range requested support.

Conclusion: There is a high level of unmet mental health need in this population. A point prevalence of anxiety and depression of 40% and 31% respectively in this population is far greater than in Britain as a whole (10%). Respondents had poorly controlled distress which they often attributed to HIV. Those in the clinical ranges for anxiety and depression were appropriately indicating a need for psychological support.

Appropriate psychological services specifically addressing the distressing impact of HIV, including stepped care for the range of severity should be made available to this population, as suggested by the 2013 Standards of Care and 2011 Standards for Psychological Support. Our evidence suggests that services would be used efficiently by those with a real mental health need, and resources not wasted by those without need.

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P17

A review of antiretroviral treatment initiation in a London cohort
N Naoue, S Fidler, R Weston and N Mackie
Imperial College Healthcare NHS Trust, London, UK

Background: British HIV Association (BHIVA) guidelines recommend starting antiretroviral treatment (ART) for HIV positive patients, with a CD4 count < 350 cells/mm$^3$ and advise that treatment should be considered for those with a CD4 count of 350–500 cells/mm$^3$ with certain conditions. This is in contrast to United States Department of Health and Human Services (DHHS) guidelines which recommend ART for all HIV infected individuals. BHIVA guidelines recommend that the options of ART during seroconversion and ART to reduce the risk of transmission are discussed with patients and commencement if appropriate. With increasing pressure to make efficiency savings, the treatment of these patients presents a considerable challenge to centres across the UK. The CD4 count at which ART was commenced and the indications for initiation were reviewed in a London cohort.

Methods: Retrospective clinic database analysis and case note review were undertaken to identify all patients commenced on ART in 2012, the CD4 cell count and viral load at which ART was initiated, and the reasons for starting. Viral loads results >500,000 copies/ml were reported as 500,000 copies/ml for data analysis.

Results: A total of 144 patients were initiated on ART on 2012. The median CD4 cell count at the point of starting ART was 320 cells/mm$^3$ (IQR = 150).

CD4 Cell count at which ART initiated:

<table>
<thead>
<tr>
<th>CD4 Cell count (cells/mm$^3$)</th>
<th>Number of patients</th>
<th>Mean VL (copies/ml)</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;200</td>
<td>27 (18%)</td>
<td>133,591</td>
</tr>
<tr>
<td>200–350</td>
<td>64 (44%)</td>
<td>84,728</td>
</tr>
<tr>
<td>351–500</td>
<td>36 (24%)</td>
<td>42,984</td>
</tr>
<tr>
<td>&gt;500</td>
<td>17 (12%)</td>
<td>194,189</td>
</tr>
</tbody>
</table>

Reasons for initiation of ART in patients with CD4 cell counts above 500 cells/mm$^3$ included seroconversion (6, 35%), enrolment in clinical trial (1, 6%), decompensated liver disease (1, 6%), thrombocytopenia (1, 6%), prevention of transmission (4, 24%), neurocognitive impairment (1, 6%) and symptomatic HIV infection (3, 18%).

Conclusion: The majority of cases of ART initiation were in line with BHIVA guidance. A notable proportion of patients starting ART presented with CD4 cell counts below 200 cells/mm$^3$. A high proportion of the patients initiated on ART had CD4 counts above 500 cells/mm$^3$, excluding cases where there was a specific clinical indication to start. This group of patients also had the highest mean viral load, indicating a potentially higher risk of transmission. This highlights the need to address the issue of funding for the treatment of these patients and ensuring consistency in access to treatment at a local and national level.

P18

Effect of antiretroviral treatment non-engagement due to beliefs inconsistent with conventional medical knowledge
L Johnson, M Goston and S Douthwaite
North Manchester General Hospital, Manchester, UK

Background: Although the national press and advocacy groups are aware anecdotally about individuals who disengage from Anti-Retroviral Therapy (ART) because of a belief that is inconsistent with conventional medical knowledge (e.g. faith healing or alternative therapies) little is known about the impact this has on patient outcomes.

Methods: We retrospectively identified 9 patients accessing care through our clinics in the last 10 years who had disengaged from ART for reasons that were not reconcilable with conventional medical thinking and assessed their outcomes.

Results: In this group there were 5 black African women, 1 black African man and 3 white men.

Reasons for non-engagement were a religious belief (“God will not let me die”, “I have been cured by prayer”) in 5 patients, a belief in alternative therapies in 3 and a belief in a pharmaceutical industry conspiracy in 1. 2 patients had a history of mental health problems predating their HIV diagnosis and 2 patients were diagnosed with depression during follow up.

The median CD4 count at diagnosis was 220 (IQR 78 to 399) and the median best CD4 count on treatment was 509 (IQR 207 to 737) with the median lowest CD4 count off treatment being 49.5 (IQR 28 to 78). All patients took ART with the median time from diagnosis to stopping or declining therapy was 21 months (IQR 18 to 64 months) although in 4 patients adherence was thought to be sporadic throughout their clinic history.

In addition to the significant fall in CD4 noted above, all patients experienced AIDS defining illnesses after stopping ART, however as of date of submission only 1 patient has died. Illnesses included 2 cases of HIV encephalopathy, a CMV retinitis, a cryptococcal meningitis and a cerebral toxoplasmosis. Significant resources were utilised attempting to re-engage these individuals in therapy including an adherence nurse, a specialist HIV psychologist, Psychiatrists and multiple multi-disciplinary meetings. Significant hospital bed days were also needed to address the complications of untreated HIV.

Conclusion: Patients whose belief systems conflict with conventional medical knowledge and who do not engage with ART are a group who suffer a significant range of HIV related morbidities that would not be expected given the cohorts CD4 zenith and also consume a significant amount of medical resources. Identifying successful evidence based strategies that address this would save resources and most importantly improve the well being of our patients.

P19

Re-engaging and identifying reasons for HIV patients lost to follow-up
N Ahmed, S Miller, S Mguni, L Di Rubbo, A Schwenk and C Wood
North Middlesex University Hospital NHS Trust, London, UK

Background: A significant number of HIV patients become lost to follow-up (LFU). HIV patients lost to follow-up (PLFU) are at increased risk of morbidity, mortality and onward transmission. The human impact, resource and economic implications of PLFU are unknown. We aimed to identify and contact our PLFU, to re-engage them with care, document reasons for LFU and their outcomes.

Method: PLFU (non attendance for more than one year, excluding patients that subsequently re-attended) were identified from our CLIMATE database from 1995 to 2011. Patient demographics and clinical characteristics were collated. PLFU were contacted according to the department protocol. Reasons for non attendance were explored and PLFU invited to attend.

Results: 1068 patients were registered from 1995 to November 2011. 26% (280/1088) had not attended for more than one year: 0.8% (9/1088) died, 0.9% (10/1088) left the UK, 4.7% (52/1088) transferred care and 19% (209/1088) were defined as LFU. The median age of PLFU was 42 years (range 30–68), 53.8% female, and the majority Black African, reflecting our cohort demographics. 35% were on HAART, the mean last CD4 count and viral load were 455 cells/mm$^3$ (range 30–1040) and 40694 copies/ml (range 20–704,517), respectively. PLFU were contacted by all means permissible. Phone: Of 6% PFLU (15/209) successfully contacted, ten made an appointment. 30% of PLFU had potential contact (voicemail or phone unanswered). Letters: 21% (43/209) had given permission to send letters: one patient made an appointment, and two letters were returned. GP’s: 23% (47/209) had given permission to contact their GP: Of these 43% were still registered, 41% had transferred care, 13% had never registered at the practice given and 4% gave details of non-existent practices. Overall, contact was made with 15 PLFU. Three patients re-presented independently during the evaluation period, with all with serious medical complications of HIV. Five patients successfully re-engaged. Reasons for non-attendance included: studying, family problems, too far to clinic, busy, pill burden, imprisoned abroad, using prayers, forgetfulness, or denial.

Conclusion: Overall, 17% (191/1088) of our total HIV cohort remain LFU. Five re-engaged in services, and just under half remain potentially traceable. Work to trace and re-engage these patients continue. We are using this data to improve our LFU protocol and procedures, including regular review of our database to pick up PLFU as early as possible.
P20
An evaluation of costs of a home therapy delivery system in a semi-rural HIV service
S Bhaduri1, M Roberts2, N Williams2 and S Green3
1 Worcestershire Sexual Health Service, Redditch, Worcestershire and 2 Worcestershire Acute NHS Trust, Worcester, Worcestershire

Background: In 2008, the local HIV service, based in a semi-rural area, adopted a home delivery service to both facilitate access to drugs for patients countywide and also as a cost saving to the Trust this being classified as VAT exempt. Anecdotally it appeared that patients on the homecare delivery service were not attending the clinic as frequently. This raised the important clinical question as to whether a consequence of this new service was an increase in non-attendance with a consequent loss of income by activity based payment.

Methods: The rate of non-attendance (DNA) of patients on the home delivery service was retrospectively analysed from 2009 to 2011. A standard cost was attributed to this DNA appointment and compared to the costs and savings made by the home delivery service. For analytic purposes it was assumed that the average cost of antiretroviral therapy (ART) would be similar to Atripla®. In addition the number of patient notes analysed had to be restricted to those who commenced ART prior to the home delivery service being commenced.

Results: In 42 patient case notes analysed there were 57 DNA episodes between 2009 and 2010 costing the Trust £10,260 (each DNA costs the Trust £180 per follow up). Between 2010–2011 there were 60 DNA episodes costing the trust £12,280. Prior to commencement of home delivery there were 64 episodes costing the trust £11,620. Furthermore, there were 4 patients who were responsible for 20 DNA episodes in 2009 and 2010 and 26 episodes between 2010–2011; these have had home delivery withdrawn. If the service had been withdrawn earlier the costs of DNAs to the Trust would have been £6,600 and £6,120, respectively. The savings made from home delivery is equivalent to a 20% decrease from list price for Atripla as no VAT is paid minus Trust and company costs. This would be equivalent to a saving for 42 patients on Atripla® of £11,488/year.

Conclusion: There was no significant rise in the DNA rate in this subset of the cohort with the commencement of home delivery. Given a small number of patients were responsible for 35% and 42% of the total DNA episodes in the 2 years analysed, identification of these patients and withdrawal of the home delivery service would increase the cost gains of the service. Anecdotally, this subset appear to have a higher rate of psychosocial problems associated with virological failure and would therefore merit closer monitoring encouraged by the need to attend hospital for delivery of ART.

P21
Analysing patient attitudes towards medical student participation in HIV consultations
T Kothari1, E Chung2 and L Waters1
1 UCL Medical School, London, UK and 2 Mortimer Market Centre, London, UK

Background: HIV clinics will often have medical students observing and taking part in consultations of a sensitive and private nature. Educationally it is useful for students to be exposed to HIV clinics to gain understanding of issues facing HIV positive patients. This project set out to explore patient attitudes regarding medical student participation.

Methods: A brief questionnaire composed of 6 questions and an information leaflet explaining the purpose of the study were developed. Questionnaire responses were recorded as per a 5-point likert scale. These were circulated to patients in a busy, London HIV clinic and collected over a 2 week period.

Results: 97 questionnaires were completed. The results were largely positive, with 76.5% of patients recording positive or neutral responses to medical students observing a consultation. However, 34.7% felt reluctant towards students undertaking an active role in the consultation. Of concern, 18.4% of the sample associated the presence of students with potential breaches of confidentiality. Further results are presented in the poster. 42.3% believed a leaflet explaining the presence of medical students was helpful and the majority (92.9%) felt it was necessary to inform them of the presence of a student before they entered the room.

Conclusions: The presence of medical students in a consultation may be more important to patients and our experience has seen that clinicians vary in their approach to this. We plan to formulate some guidance regarding this. Finally, our questionnaire reveals that in our clinic we particularly need to make efforts to alleviate confidentiality concerns.

P22
A voluntary performance evaluation of a regional paediatric HIV centre using quality dashboard markers
A Tan1, S Patni2, F Urooj3, K Rowson1 and P McMaster1
1 Regional Paediatric HIV Centre, North Manchester General Hospital, Manchester, UK and 2 North Manchester General Hospital, Manchester, UK

Background: Since the survival of HIV infected children has significantly improved HIV has become a chronic condition. Our regional centre has a substantial cohort of patients with HIV and we have undertaken a voluntary survey to evaluate our own service.

Aim: To establish a baseline quality survey of our Paediatric HIV service using relevant markers of published quality dashboard

Methods: Markers from the East Midlands Paediatric HIV Quality Dashboard and the CHIVA Standards were selected. All children attending a Regional Paediatric HIV Centre for at least 1 year were included. The survey was undertaken by a retrospective note and Patient Administration System (PAS) review.

Results: All 97 eligible patients were included.

<table>
<thead>
<tr>
<th>Quality Markers</th>
<th>Compliance</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Clinic Appointment within 2 weeks of HIV Diagnosis/Referral Letter</td>
<td>86%</td>
</tr>
<tr>
<td>1. CD4 count 4 weeks after HIV Diagnosis/Referral Letter</td>
<td>88%</td>
</tr>
<tr>
<td>Undetectable Viral Load (VL) 1 year after commencing treatment</td>
<td>81%</td>
</tr>
<tr>
<td>CD4 &gt; 200 copies/ml after 1 year since 1. appointment</td>
<td>100%</td>
</tr>
<tr>
<td>Clinic letters send to GP</td>
<td>93%</td>
</tr>
<tr>
<td>Children &amp; young people aware of their diagnosis</td>
<td>93%</td>
</tr>
<tr>
<td>Average Did Not Attend (DNA) Rate in 2012</td>
<td>19.5%</td>
</tr>
</tbody>
</table>

Conclusion: This service evaluation provided a useful exercise in understanding mechanism of our service delivery, both current and past. Caution has to be exercised with the interpretation when applying current quality markers on previous practice.

In future such an evaluation is best performed prospectively directly into a suitable database.

It was noted that some markers are not suitable to measure service quality, eg Annual DNA rate or undetectable VL at one time point. Valid markers should therefore be worked out in conjunction with commissioners, clinicians and especially service users.

P23
Audit of patients who do not disclose their HIV status to their general practitioner in UHW, Wales
B Healy and C Bennett
UHW, Heath Park, Cardiff, UK

Background: Patients sometimes choose not to disclose their HIV status to their GP. This creates potential risks to patient care and creates issues around Clinical Governance. The complications of chronic HIV infection and treatment, such as ischaemic heart disease, make disclosure of status to general practice ever more important. Failure to disclose exposes the patient to sub-optimal management of their disease and potentially exposes the patient to dangerous drug interactions. This audit explores disclosure of status to general practice amongst a cohort of infected individuals in Wales.

Methods: Notes of patients from a cohort of 200 infected individuals were reviewed. The notes of those patients who chose not to disclose their status were reviewed for information as to why the patient chose not to disclose and
whether any discussion had taken place to explain the risks of non disclosure to the patient.

**Results:** 200 patient notes were reviewed. 33 patients (17%) did not disclose their status and no letters regarding these patients' status or clinical management were sent to their GP. 31 of the 33 patient's notes were available for further review. Of these 31, six patients were not registered with a GP (19%). There was documentation of a discussion taking place with the patient to encourage disclosure to the GP in only 14 out of 27 cases (52%). 12 of these discussions took place with patients who were registered with a GP (in 2 cases the patients were not registered). Following a discussion of the risks involved in non disclosure 2 out of 12 cases (17%) decided to inform their GP and allow correspondence to take place.

**Conclusions:** This audit highlights issues with regard to disclosure of status to General Practitioners within our service. As many as 17% of patients choose not to disclose their status to their GP. Documentation of discussion of the risks of non disclosure took place were evident in only 52% of case notes and resulted in permission to disclose in only 17% of cases. These audit findings have prompted a review of the way requests for non disclosure to General Practice are managed within our cohort and a review of maintenance of confidentiality within GP practices in Wales.

**P24**

**T’HIV’K goes North: outcomes and experience of UK HIV Testing week in a northern UK city**

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**Background:** The first UK HIV Testing week took place in November 2012 coordinated by HIV Prevention England to increase awareness of HIV testing in gay men & African communities. The aim was to increase numbers of people testing in clinics & community venues from these most at risk populations (MARPS). We document the approach of a UK city, their testing outcomes and additional positive impact testing week had. Prior to testing week, HIV point of care testing (POCT) was offered via a community organisation (CO) during two sessions per week. Venous blood sampling is offered routinely in the genitourinary medicine (GUM) clinic with POCT if required.

**Method:** During Testing Week, volunteers from two CO, the GUM clinic and Contraception & Sexual Health service offered POCT over 14 sessions in a community venue. Advertising was via a locally adapted national poster campaign (mainly in higher prevalence areas), developing a local text number & short code (THINK to 60777) and a local radio advert. Targeted street outreach was provided by voluntary sector organisations.

**Results:** 94 people tested for HIV; 24 females and 71 males. This was the largest testing effort in Northern England. Ages ranged from 17 to 65 years, 30(32%) were MSM and 18(19%) were Black African. Therefore 51% tested were from MARPS. There were 2 reactive tests & the positive rate therefore was 2.1%.

**Conclusion:** We succeeded in reaching MARPS with a 51% testing rate in this group. Unforeseen positive outcomes included increased communication between GUM and CO; better understanding of CO roles; POCT attracting clients into full sexual health screening & Hep B vaccination. Learning points included logistics (eg. waste disposal) and engaging media earlier in the week. Using a dedicated text number on promotional materials enabled people to confidentially ask for testing and us to send directions, opening times & support information. Removing the address/venue from all advertising, increased service users confidence in the confidentiality of the service. We had an ethical & safety issue; one woman who had a reactive POCT refused immediate referral to HIV clinic; she also has a child. This situation is still evolving but continues to improve communication and referral pathways between the HIV clinic and CO involved. We will run a similar project this year engaging additional organisations. Data collection will be improved to determine whether testing in this way accesses people not already attending mainstream healthcare.

**P25**

**A review of occupational therapy and physiotherapy rehabilitation services provided on an acute HIV in-patient ward**

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**Background:** People living with HIV requiring in-patient care have complex care needs, including physical and cognitive rehabilitation. As there is limited published data exploring in-patient rehabilitation for this group, a review was conducted of the specialist HIV physiotherapy (PT) and occupational therapy (OT) rehabilitation services provided on an acute HIV inpatient ward.

**Methods:** Data was collated from the electronic patient record (EPR) linked Therapy Activity System to determine the number of new and total patient contacts, reasons for rehabilitation therapy, and rehabilitation assessments and interventions provided by PT and OT from November 2011 to November 2012. A comparison of the reason, assessments and interventions completed on first contact and the total throughout admission for each of these is made.

**Results:** OT assessed 116 new patients (401 total contacts), for a mean of 3.4 contacts per patient and a mean of 63 minutes per contact. 80% (n = 320) of all contacts were identified as being for comprehensive therapy needs, which includes physical, cognitive and social issues impacting function. Initial (30%), functional (27%) and mobility (14%) assessments were completed on first contact. Over the course of admission, functional (40%), initial (20%), mobility (16%), impairment (14%) and home (9%) assessments were completed. The commonest interventions were for education/advice (46%), functional retraining (32%) and prescription of equipment (17%).

PT assessed 316 new patients (1336 total contacts), for a mean of 4.2 contacts per patient and a mean of 41.5 minutes per contact. 49% (n = 655) of all contacts were for reduced mobility, 18% for comprehensive therapy needs and 13% for respiratory management. On first contact, initial (27%), functional and mobility (19% each), impairment (15%) and respiratory (10%) assessments were completed. Functional (26%) followed by mobility (25%), impairment (23%), initial (14%) and respiratory (10%) were the commonest assessments completed overall. Prescription of equipment (22%), education/advice (19%), treatment of impairment (18%), functional retraining (17%) and gait/mobility retraining (16%) were the commonest interventions.

**Conclusion:** The data reflects the need for comprehensive multidisciplinary rehabilitation by a specialist HIV team in an acute in-patient setting to promote a return to maximal function, self-manage impairments and disabilities and for facilitating timely discharge.

**P26**

**Clinical outcomes from a pilot combined HIV-rheumatology specialist clinic**

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**Background:** As the prognosis for individuals living with HIV has improved, co-morbidities commonly seen in an ageing population are being reported, including rheumatological conditions. To explore the need for a service to address this, we piloted a monthly combined HIV Rheumatology clinic where patients were reviewed by a HIV Consultant and a Rheumatology Consultant.

**Methods:** The pilot clinic was conducted for 7 months, accepting internal referrals from HIV physicians at a tertiary HIV centre serving approximately 6500 patients. Patients who were not suitable to wait for the next available combined clinic were seen in a General Rheumatology clinic. Data were collected in real time. Demographics, viral load and CD4 count, diagnoses, further investigations and outcomes were recorded.

**Results:** 25 patients were referred to the clinic; 20 attended, of whom four (5%) were women. Mean age was 46 years (32–62). Diagnoses included: Osteopenia or osteoporosis (25%), tendinopathies (20%), osteoarthritis (15%), mechanical pain (15%), avascular necrosis (10%) and gout (10%). There was one case each of seronegative arthropathy, Raynaud’s disease, myopathy, nerve compression, femoral impingement and flat feet. In addition to history and clinical examination some patients required further investigations including bloods (30%), imaging (radiographs, ultrasound, MRI or DEXA scans, 60%), or specialist referral (physiotherapy, podiatry, orthopaedic surgeons, 60%). 65% of patients received oral medications (analgesia,
steroids, bone protection) and/or intra-articular steroid injections. Just over half of the patients (55%) were discharged back to their HIV physicians for further follow-up.

**Conclusion:** Rheumatic conditions are common in individuals living with HIV. Providers of HIV care should be adept at recognising those at risk of rheumatic complications and be aware of methods to detect and appropriately refer those affected. Given that the majority of diagnoses made in the combined HIV-Rheumatology clinic were unrelated to HIV or antiretroviral exposure, a combined clinic although of great educational benefit to both specialists, was not felt to be warranted.

**P27**

Strategies to improve the cost-effectiveness of ARV prescribing in Leeds Centre for Sexual Health

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**Background:** The BHIVA Standards of Care published in 2013 highlighted the importance of developing strategies to maintain cost effective prescribing.

In the 2010/11 financial year our Genitourinary Medicine Department saved over £200,000 by using the Healthcare at Home (H@H) service but only 37% of patients on antiretrovirals were regularly receiving their medicines from H@H.

We sought to identify and explore the reasons why patients declined H@H delivery and looked at ways to increase recruitment, improve retention and increase savings on HIV drug expenditure.

**Methods:** H@H patient information leaflets were given out to HIV patients by clinic and pharmacy staff. Administration staff grouped patients into the following categories:

- Currently in H@H, home care sticker placed in the notes
- Not on H@H, prompt sheet placed in the notes
- Currently in H@H but not on H@H and would be interested if there was a clinic pick up option
- Patients were deemed unsuitable and a review date was set.

For patients who declined or for who H@H was not clinically appropriate, a review date was set for 6 months.

**Results:** 144 rms were completed over a 5 month period from 1st November 2011 to 31st March 2012

- 110 were from patients who were not registered.
- 34 were from patients who had previously registered but not had a recent prescription.
- 69 patients registered or resumed H@H over this period, of which 30 had complete prompt forms and 39 had incomplete forms.
- 82 patients declined H@H for various reasons, of which 61 patients had complete prompt forms and 39 had incomplete forms.
- 32 patients were deemed unsuitable and a review date was set.

Data collected after one year showed successful recruitment of 123 patients, a net increase of 46%.

**Conclusion:** The GUM homecare recruitment drive successfully increased recruitment and retention of GUM HIV patients onto the scheme. Data collected during the recruitment drive indicates that many patients who decline homecare would register if a clinic pick up option was available. We subsequently have appointed a GUM pharmacy technician to help facilitate the continued recruitment/retention of patients and have also set up a clinic pick up service.

**P28**

Retaining people living with HIV (PWH) in high-quality specialist care by means of a hub-and-spoke outreach clinic

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**Background:** Access to and retention in high quality specialist HIV care is of major priority. PWH disengage for various reasons. It is associated with worse outcomes for individual care & management of uncontrolled infection. Supervised treatment can also help prevent onward transmission. Genitourinary care at a DHG clinic had been provided by university hospital consultants since 2006 facilitated by the local sexual health network. Despite a cohort of 1600 PWH clinicians had been unable to provide HIV care at the smaller clinic due to funding restrictions so that 237 local PWH had to attend centres further afield with concerns being expressed regarding the lack of local provision.

**Methods:** To improve care & retention an outreach clinic was established at the DHG GU clinic using medical & nursing expertise from both units. It opened in November 2011 six months prior to the successful acquisition of the DHG by the university hospital trust & was funded in anticipation of this. Patients were identified by postcode, new diagnoses at either unit from the local area, regional BASHH & HIV physician group, and self-referral via word-of-mouth, community services & local media.

**Results:** Since inception patient numbers have steadily increased to 38. A third were diagnosed at the DHG, ½ transferred from the larger centre with the final ¼ transferring from other local or national clinics. Nine (24%) had disengaged from care. Two thirds (60%) require antiretrovirals and all are on ART except 1 who completed an advanced directive. The majority (88%) are undetectable or are within the first 6 months of treatment. The 2 still detectable had previously disengaged & have ongoing complex needs. 100% of respondents in a recent patient satisfaction survey rated the service as good, plan to continue attending & would recommend the clinic to a friend. 79% had no concerns about the clinic & for those who did it was for reasons of confidentiality & number of clinics which are being addressed. All those on treatment receive their medication via home delivery & to date there have been no complaints with this service.

**Conclusion:** This hub & spoke model helps keep PWH both engaged in care and bring back those lost to follow-up. Outreach provides this without impact on other HIV care remains under the auspices of a tertiary centre with a MDT approach & associated facilities. Engagement with service improves overall HIV control for individuals & can potentially reduce onward transmission.

**P29**

Ensuring implementation of BHIVA guidelines and pathways in HIV case management: an integrated care solution

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**Background:** Integrated care pathways (ICPs) are structured multidisciplinary care plans which detail essential steps in the care of patients. The development of ICP methodology has been supported by the NHS since the late 1990s and processes such as the ICP Assessment Tool (ICPAT) have made the implementation of robust ICPs possible.

**Systematic review of the implementation of ICPs has shown that ICPs can effectively support care management, adherence to guidelines, improve physicians’ agreement with treatment options and support decision-making.** A multidisciplinary team applied this process to health care of people with HIV across the UK to adopt a defined standard of case management based on BHIVA guidance, which provides robust definition for both standards of care and model care pathways for service delivery which has not been undertaken previously.

**Methods:** Using a proprietary process of facilitation and iterative development, this multidisciplinary working group of HIV specialists comprising representation from around the UK has developed an ICP for non co-morbid outpatient HIV care in accordance with ICPAT standards and current best-practice thinking.

**Results:** The ICP forms comprise a streamlined and easy to implement solution for structuring each consultation along the patient pathway. The forms ensure that the full HARS dataset is collected for each patient as they progress along the pathway. The HIV ICP comprises:

- A process map defining the consultation flow along the patient journey
- A set of forms for use at each consultation, ensuring that appropriate assessments and interventions are performed according to BHIVA guidance
A comprehensive support booklet, containing the full evidence base for HIV management with instruction for managing implementation of the ICP. This ICP is available in Word format so that it may be easily modified and implemented by HIV teams across the UK.

Conclusion: Adoption of the ICP by HIV teams across the UK may facilitate implementation of BHIVA guidelines, collation of the HARS dataset and equity of service provision. In addition, the ICP forms are designed to encourage primary care teams to support parts of the patient journey where specialist resource is not required. This group proposes that the HIV ICP offers a useful solution to structuring HIV case management within the challenging economic constraint faced by the NHS.

P30

Doctors' attitudes towards intimate examinations: a qualitative study
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Background: There exists considerable heterogeneity of practice in when and how doctors perform intimate examinations (IEs) and offer chaperones, particularly between primary and secondary care. Doctors frame the clinical benefits of IEs on expert opinion, as little objective evidence is available. Doctors hold widely differing beliefs about the value of IEs in particular clinical situations.

Within this context, such examinations may not take place with appropriate frequency, leading to missed opportunities to detect and treat sexually transmitted infections. Inappropriate decisions around or approaches to intimate examinations may have dire medicolegal consequences.

Surprisingly, there is a paucity of inductive enquiry into doctors' emotional attitudes to IEs, which likely influence practice.

The objectives of this study were therefore to ask:
- How do doctors make decisions to perform IEs?
- How do doctors make decisions to offer and to use chaperones?
- How do doctors negotiate the emotional aspects of IEs?

Method: The study followed Charmaz's constructivist grounded theory approach, comprising in-depth qualitative interviews with 38 doctors of different grades, including 7 from HIV/Genito-urinary medicine and 10 from primary care. Analysis led to theoretical sampling, the recruitment of participants who could best inform developing theory. Analysis comprised a process of initial line-by-line coding, focused coding, categorisation, and memo writing.

Results: Doctors' emotional attitudes to IEs coalesced around three key emotions they or a patient might feel: embarrassment, fear and anxiety, and vulnerability. Feelings of embarrassment and anxiety were reciprocal between doctor and patient. A doctor's vulnerability mirrored patient vulnerability. Participants' understandings of gender, sex, and power influence these emotional constructions.

These constructions also led doctors to attribute values to IEs that extended beyond 'responding to clinical indications', these included fear of 'missing something', following medical norms, and constituting part of a therapeutic relationship.

Doctors that had not resolved their own feelings of embarrassment, anxiety, and vulnerability may be less likely to perform IEs when indicated, to use chaperones appropriately, or to offer the best standard of patient care.

Conclusion: This study provides a conceptual framework for training and CPD around intimate examinations in primary care. In particular, training should recognise the conflicting emotions doctors may experience in relation to intimate examinations. If training allows doctors to reflect upon and resolve these, this will help ensure IEs take place when indicated, chaperones are used appropriately, and the encounter is not unpleasant for either doctor or patient.

P31

Description of new referral data gathered by phone from a third sector support service for adults living with and affected by HIV, 2012
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Background: People living with HIV may have multiple factors impacting their wellbeing. This needs assessment for service improvement summarises the baseline information gathered during the telephone referral process of 254 adults (age 20+) to a third-sector organisation during 2012.

Methods: When a new referral contacts the organisation basic demographic information and the individual's urgent needs are recorded: age, gender, whether or not the individual has a child/children; and whether the individual was presenting with any of the following immediate needs: problems with physical health, any mental health problems, need for psychosocial support, need for practical support (e.g. legal help, help regarding immigration status, but excluding support around hardship grants, benefits or housing/homelessness), support in applying for a hardship grant, help in understanding/applying for benefits and problems regarding housing or homelessness.

Results: Of 254 adults who were referred by telephone, basic information was taken from 252. Information on immediate needs was taken from 186 individuals. 23% presented with problems with physical health, 12% with mental health issues and 45% were in need of psychosocial support. 29% needed practical support, 17% needed help with applying for a hardship grant, 11% needed assistance with benefits and 21% had an immediate housing situation. 50% of females and 42% of males presented with 2 or more immediate needs. 54% of females and 40% of males had children. 58% of the females and 37% of males with children presented with multiple immediate needs.

Conclusion: A significant proportion (73%) of individuals approaching the organisation vocalised an urgent need for help during the initial telephone referral. Females are more likely to present with an urgent need and multiple urgent needs compared to males. Women with children are more likely to present with multiple immediate needs compared to women without children. This data provides a singular snapshot of the need profile presented upon telephone referral. It is likely that these results are underreporting the true situation. In order to have a clearer picture of the complex needs of this population, further research is advised.

P32

Calabash at George House Trust: innovating to support HIV-positive African men in the North West
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Background: In September 2011, George House Trust (GHT) received a two year grant from the Henry Smith Charitable Trust to provide a highly innovative service focussed on HIV positive African men/fathers. The Calabash project is an extension of previous work by GHT to support families, which had revealed specific issues for African men: a group that is often stereotyped and marginalised.

Methods: Calabash uses a combination of group work and one to one sessions to support HIV positive African men on a range of issues such as: HIV diagnosis; immigration; poverty and destitution; disclosure; employment advice; adherence to medication and so on. The project is led by an African man, supported by a group of HIV positive male African volunteers.

Results: To date, Calabash has supported 55 HIV positive African men. The service has: held over 150 one-to-one sessions; hosted 10 workshops sessions, attended by between 8 and 17 men, and held a reflective residential weekend, attended by 8 men. The main issues affecting men who attend the service are: understanding HIV and health management; stigma and discrimination; immigration issues; family issues; relationships problems and long distance families; poverty and destitution; difficulties in integration; and employment. Many of the men have multiple partners and the project encourages them to be open about this in order to best manage these lifestyle choices. A key finding has been that group sessions on employment and setting up in business have been the best attended and this has been influential in how the project has developed whilst it retains its

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original focus on health and parenting. Sessions on domestic violence are also planned.

Conclusions: Calabash has been successful in engaging hard to reach and marginalised HIV positive African men. It is a ground breaking and highly innovative project. It accepts their lifestyle choices and encourages them to be open about them in order to improve health outcomes. Key to its success has been its willingness to adapt and innovate to reach those whose experience of stigma makes them unwilling to approach HIV services.

Age, Gender, and Migration-related Issues

P33

Is violence a cause and consequence of HIV for women in England? A user-led mixed-method national stakeholder investigation

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Background: Associations of living with HIV & experience of gender-based violence (GBV) are known internationally but remain under-researched & relatively unacknowledged in the UK. Specialist HIV & GBV services tend to act independently which may lead to missed opportunities for identifying & adequately supporting women affected by both. A recent London HIV women’s clinic study found 52% lifetime prevalence of intimate partner violence. The aim of this user led & charity funded study was to explore the potential for a national investigation into violence as a cause or consequence of HIV for women.

Methods: Email survey of 351 organisations in England accessed by women living with HIV or experiencing GBV, supplemented by thematic analysis of 19 in-depth interviews conducted with HIV support organisation staff & relevant stakeholders (Feb–Jun 2012).

Findings: 77 surveys (recipient & response rates unknown as high ‘bounce-back’) with poor response from refuge organisations & prison services. Few HIV support organisations routinely collect data on GBV. Few GBV support organisations routinely collect data on HIV. Of 17 that could provide data, lower rates of GBV were quoted than recent research. When GBV is disclosed, HIV organisations & clinics usually offer in-house one-to-one support or make referral to a violence against women agency. A broad range of GBV found included: threats to disclose; abuse of emotional and financial power; physical violence; threatening prosecution for reckless transmission; institutional abuse e.g. failure to acknowledge discrimination against women living with HIV & GBV recognise service access needs. For migrant women, GBV could have taken place in the home country, en route to be on-going. ‘Layers of stigma’ were described whereby women living with HIV & GBV may be doubly stigmatised & fear disclosing one or both issues. Respondents described women having to deal simultaneously with multiple, complex health & personal issues whilst also being prevented from seeking assistance due to abuse. They discussed the need for identification, training, resources and better perpetrator understanding.

Conclusions: It is both feasible & desirable to further investigate the intersection of HIV & GBV in the UK, its true extent & impact at both individual & societal level. User-led research & perspectives should inform this. Women living with HIV & GBV face significant challenges to their mental & physical health & access to support services.

P34

Contraception provision and unplanned pregnancies in HIV-positive women – are we meeting the mark?

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Background: The 2007 BHIVA/BASHH/FSRH guidelines recognise that all HIV positive women may want to plan, space or avoid pregnancies – and guidance is offered on contraceptive options. Dual contraception is advocated – condoms providing a barrier to STI acquisition and onward HIV transmission, coupled with an additional contraception whose efficacy is not reduced by interactions with antiretroviral therapy (ART).

Methods: A retrospective case note review was carried out of 121 women regularly attending for their routine HIV care at a city centre GUM clinic in Edinburgh between April 2006 and April 2011, prior to a move to a new integrated GUM/family planning service. Information was sought on age, menopausal status, sexual activity, contraceptive use, pregnancy planning and unplanned pregnancies. The results would help identify limitations of contraception provision, which could be improved upon post service integration.

Results: 89% of women were between the ages of 16 and 49 years, with a mean age of 40. 73/121 women reported being “in a relationship”, 37/121 being “single”. Of all the women, 70/121 were identified as potentially requiring contraception [sexually active, pre-menopausal, not pregnant or pregnancy planning, with no history of TAH]. Of these women only 24% were using dual contraception (condoms plus another method), but 4 of these women were on hormonal methods which were likely to be rendered less effective by combination ART. 60% were using a single contraceptive method (condoms or hormonal method), 2 of these were potentially at risk of pregnancy because of drug interactions. 16% were using no contraception or had no record of a contraception discussion in their notes. 42.6% of women “at risk” of pregnancy had had one or more pregnancies following their HIV diagnosis (not including those diagnosed at ante-natal care). Of the 42 pregnancies in these women 47.6% were unplanned pregnancies (UPP) resulting in 6 terminations, 2 miscarriages, 1 ectopic pregnancy and 11 live births (all HIV negative). 5 women had 2 or more UPP.

Conclusion: The low uptake rate of dual contraception and high UPP rate in this cohort identified clear limitations of the GUM service to provide effective contraception. In a newly integrated service, there are opportunities and resources to provide specialised women’s clinics, restructuring care of HIV positive women to provide an additional focus on family planning and reproductive healthcare.

P35

Do all HIV-positive patients want to be offered sexual health screening (SHS) at routine HIV appointments?

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Background: BHIVA guidelines recommend the annual offer of a full SHS for HIV positive patients regardless of sexual history. With an ageing cohort, do we need to tailor our services with respect to age? We wanted to know patients’ attitudes towards SHS during routine HIV review and whether this differs in older patients. A previous audit in our department detected sexually transmitted infections (STIs) in all age groups.

Method: A prospective patient questionnaire was completed during routine HIV clinics regarding patient understanding and attitudes to SHS.

Results: 47 patients completed the questionnaire, 74%(35) were male. 54% (25) were White British. 33% (15) were Black African. 70% (33) of the patients were between 31 and 50 years old, 19%(9) were over 50. 82%(37) said they had been offered SHS in clinic previously, 55%(25) within the last year.

In total, 59%(27) wanted to be offered regular SHS. 81% of those were aged 31–50. Of the 41%(19) who didn’t want to be offered regular SHS, a common reason given was “I do not feel at risk of STIs”(40%). 16% said they “did not want to discuss their sexual health at HIV clinic”. One patient said they had tests elsewhere. None of the patients were worried about confidentiality. Other reasons given were “not sexually active” and “not had sex since diagnosis”. More over 50s did not want to be offered regular SHS (55%) versus 37% of under 50s.

57%(26) of patients had had sex in the last six months, 73%(19) with a regular partner. When asked how often patients would like to be offered SHS, 50%(23) said yearly, with only 13%(6) stating never. 26%(12) wanted SHS at every visit. Other answers included “when I meet someone” and “when I ask”. Of the patients who had been sexually active in the last six months, only 27%(7) felt they were at risk of STIs.

Conclusion: Our HIV cohort has strong views regarding SHS in routine HIV appointments. Generally people wanted to be offered SHS, although the reasons why patients declined the offer differed. However, many patients do not perceive themselves at risk of STIs. Our previous audit did detect concurrent STIs in patients attending for routine HIV care in all age groups, with more STIs in younger patients. Proportionally more patients over 50 would not like to be offered SHS in the clinic, although the numbers were small. We need to look at the sexual health needs for patients over 50 and tailor our services accordingly.
Background: ARV treatment success has led to an increasing number of patients living into old age. Challenges in management include co-morbidities, drug-drug interactions (DDI), altered drug PK and increased toxicity. Here we review our practice in managing patients over 75 years of age.

Methods: Records were interrogated for clinical, HIV and social demographic data on patients over 75 years of age as of the 1st January 2013.

Results: 15 patients median age 76 (range 75–80); predominantly 12 (80%) and white British (14:1) were identified. The median time since diagnosis was 15 y (2–22) and median current CD4 405 cells/mL (171–1053); only 1 patient had a detectable viral load. There were 18 instances of ARV switches because of intolerance/toxicity: abacavir (5 patients – 1 with IBD the others for increased CVD risk); tenofovir (8 – all renal dysfunction/increased P:C ratio); d4T/ZDV/ddi (10 – fat loss/accumulation and/or peripheral neuropathy); and efavirenz (4 – all for mental health concerns). The median number of co-morbidities was 5 (2–15) for which a median of 4 non-ARV medications was being taken (0–13). Common co-morbidities included dyslipidaemia (12) and hypertension (11). In addition of the 4 patients screened all had vitamin D deficiency and 2/2 undergoing DEXA scans had osteopenia/osteoporosis. There were 2 patients suffering with current depression. None had evidence of symptomatic neurocognitive impairment and adherence to appointments and medication was good: 2 cases had missed 2 or more clinic appointments and there was documented instance of poor compliance.

Conclusions: In addition to the presence of co-morbidities with inherent polypharmacy and potential for DDI; the increased likelihood of AE and altered PK, elderly patients often have reduced physical and cognitive abilities and are isolated and depressed. However, this small cohort review demonstrates that with careful choice of ARVs and regular follow-up of HIV and co-morbidities, durable virological suppression can be achieved and good health maintained.

P37
In an ageing HIV positive cohort with mixed gender and sexuality, is bone mineral density impaired?
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Background: Our department provides an ”over 60s” clinic, in which all patients have a dual-energy X-ray absorptiometry (DEXA) scan to review bone mineral density (BMD). This not only allows identification of those at risk of fractures but also aims to be cost effective by minimising admission and rehabilitation costs in the future. Our aim was to review BMD and fracture risk in our cohort, in which there are a greater proportion of female patients and homosexuals than described in similar cohorts.

Methods: All patients seen in the clinic were included. Paper notes and electronic data systems were used to gain data. The WHO fracture risk assessment tool was used to calculate 10 year major osteoporotic and fracture risk.

Results: 18 patients were included. The median age was 70 years (range 52–75 years), with 61% males and 39% females. 67% were white and 33% black African/Caribbean. Of risk factors for HIV: 50% heterosexual, 38% homosexual, 6% bisexual, 6% injecting drug use. The median date of HIV diagnosis was 1999. The mean CD4 was 471 cells/μL and 94% had an HIV viral load < 200 copies/mL. Of osteoporosis risk factors: no patients had chronic liver, renal or respiratory disease, 11% had had lifetime recreational drug use, 28% were ex-smokers (no current smokers) and 11% drank more than 3 units of alcohol per day. No patients had current glucocorticoid use. The mean 25-hydroxy vitamin D level was 49 ng/mL (range 5–122). Mean BMD was 0.711 g/cm2, with greater BMD values seen in those with higher levels of 25-hydroxy vitamin D. Mean BMD was higher in men (0.756 g/cm2) compared to women (0.651 g/cm2), and higher in black (0.795 g/cm2) compared to white patients (0.664 g/cm2). At the femoral neck, the mean T score was –1.5, 17% and 5% of patients had osteopenia and osteoporosis respectively. At the spine, the mean T score was –1.28% and 17% had osteopenia and osteoporosis respectively. The mean risk of developing major osteoporosis over 10 years was 8.8% with a mean 10 year fracture risk of 2.8%.

Conclusion: Our study shows that vitamin D levels positively correlate with BMD. Although our cohort does not have a high prevalence of osteoporotic risk factors, rates of osteopenia are high with a significant future risk of osteoporosis and fracture. DEXA scanning is an important investigation which allows us to highlight and address this risk, both beneficial for patients and cost-effective for the service.

Basic Science, Immunology and Virology
P38
HIV co-receptor tropism prediction remains stable over time in treatment-naïve patients
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Background: We assessed the evolution of the HIV third hyper-variable (V3) loop sequence and thus HIV-1 co-receptor tropism in ART-naïve patients over time. The aim was to establish how long baseline tropism testing remains valid. HIV-1 co-receptor tropism is largely dependent on the V3 loop of gp120, and is defined as CCR5 (R5), CXCR4 (X4), dual-tropic or dual mixed (DM, containing both X4 and R5-tropic viruses). Determination of co-receptor tropism is essential before prescribing the CCR5 antagonist maraviroc (MVC). Methods: Co-receptor tropism was assessed in 19 ART-naïve patients with ongoing viral replication. We retrospectively genotyped samples taken between the baseline, first clinic visit, and final sample before the start of ART, median 53 months (range 33–80 months). Each patient had samples at approximately yearly intervals.

We selectively amplified the V3 loop region of the HIV-1 envelope and performed population sequencing of amplicons. Tripletic testing was performed to increase sensitivity of detection of minority X4 variant quasispecies and the Geno2Pheno system used to predict co-receptor tropism. Samples with clonal false positive rates < 6% were deemed X4 tropic. Median plasma HIV VL was 20,049 copies/ml (range 965–882,256 copies/ml).

Results: Thirteen patients were R5-tropic at baseline and remained R5-tropic throughout a median of 54 months of follow up (range 22–81 months). All 16 patients identified as R5-tropic virus at baseline remained R5-tropic for a median of 42 months (range 22–81 months). Hence, these 16 patients eligible for MVC at baseline, remained suitable for MVC treatment for the same period. In 3 patients identified as R5- at baseline, X4-tropic virus evolved after a median of 25 months (range 24–45 months).

Conclusions: Co-receptor tropism in treatment naïve patients with ongoing viral replication appears to show a high level of stability over time. This suggests that baseline genotypic tropism prediction may be valid for a significant duration in patients delaying start of ART. 100% of CCR5 antagonist eligible patients remained so at 22 months after initial genotyping. This has significant clinical and financial implications, particularly regarding recent changes to tropism testing funding by ViV.
using tritiated thymidine incorporation. In addition, ten long-term nonprogressors (LTNP), 54 HIV-1+ chronically infected cART-naive progressors and 16 HIV-1-seronegative individuals were assessed for lymphoproliferative responses. Utilising multimer technology we examined the immune activation (CD38, HLA-DR), maturation (CCR7, CD45RA) and exhaustion (PD-1, TIM-3) profiles of total, CMV- and HIV-1- specific CD8+ T cells ex vivo in cART-naive and treated individuals. Statistical analysis was performed using the Kruskal-Wallis and Mann-Whitney U test with the Bonferroni correction for multiple analysis testing. Significance was defined as p < 0.05.

Results: All HIV-1+ individuals studied displayed increased T-cell proliferative responses to CMV following 96 weeks of cART, however responses to Gag p24 remained undetectable (median stimulation index: 17.5 [9 to 55] and 1.5 [1 to 2] respectively). In the cross-sectional study we observed a significantly higher proliferative response to CMV and Gag p24 in LTNP when compared to both healthy controls and cART-naive HIV-1+ patients (p < 0.001). Phenotypic characterisation using multimer technology showed variable frequencies of CMV TM10-specific CD8+ T cells expressing PD-1 (7.8 to 24.0%) and TIM-3 (15.3 to 48.5%). Furthermore, there was a trend for a higher proportion of HIV-1 Gag SL9-specific CD8+ T cells expressing PD-1 and TIM-3 compared to both PD-1 and TIM-3 specifically in CMV TM10-specific CD8+ T cells.

Conclusion: Initiation of cART led to a reconstitution of CMV-specific responses, however T-cell proliferation to HIV-1 Gag p24 remained absent. This may be attributed to the observed higher frequencies of TIM-3 PD-1+ CD8+ T cells specific for HIV-1 compared to CMV that might impact cART-mediated reconstitution of proliferative potential.

P40
Emerging patterns of integrase inhibitor resistance
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Background: Integrase inhibitors (INI) are increasingly being utilised in the treatment of HIV disease and are now recommended in individuals commencing anti-retroviral therapy (ART) and also those who have failed other drug classes. The relatively low genetic barrier to resistance coupled with high level of cross-resistance within the INI class has implications on optimal use in individuals who have failed raltegravir (RAL) and their subsequent ability to have other INI such as dolutegravir (DGV) or elvitegravir (EVG). We reviewed the patterns of INI resistance in our cohort failing an integrase (INI) containing regimen.

Methods: All individuals with available INI genotype tests between July 2010 and October 2012 were included. Data on HIV viral load on patients prescribed an INI were subsequently collated and virological failures recorded. The Stanford database was used as reference.

Results: Forty three INI genotype tests were performed in 37 patients, 32 of whom were male. Mean age was 40.8 years (range: 26–60). Fifteen patients were ARV experienced but INI naive. Twenty two INI-experienced patients (20 on RAL, 2 on DGV) were genotype tested due to concerns of secondary resistance. Three individuals had 2 genotype tests each at 2, 6 and 8 months apart respectively. One of the 2 patients on DGV had 4 tests over a period of 16 months. There were no reports of primary IN resistance. In the INI-experienced group, 10 patients (46%) had evidence of secondary IN resistance, 9 of whom were receiving RAL. Mutations in the individuals who failed RAL included N155H in 5 patients, Y143 in 1 patient and Q148 in 2 patients. These 7 individuals switched off RAL (2 achieved viral suppression; 1 viral rebound; 1 remains viremic; 1 died; 1 was lost to follow up; 1 had no data available). Two individuals with T66A and E157Q respectively, remained on RAL and achieved viral suppression. One of the DGV-experienced patients had mutations E138K, G140S and Q148H and failed to suppress despite combination with lopinavir. The other patient on DGV discontinued RAL due to an adverse skin reaction without INI resistance.

Conclusions: Individuals who are INI naive rarely develop integrase resistance. Approximately 50% of individuals failed a RAL regimen without developing resistance, probably due to non-adherence. Common mutations on RAL included N155H, Y143 and Q148H, all of which conferred cross-resistance to EVG. There was a single case of dual resistance to RAL and DGV.
exposure of endothelial cells resulted in a dose-dependent decrease in cell viability with 10 μM reducing viability to 78 ± 1.6%, and 30 μM reducing viability to 63 ± 1.5% (p < 0.05 vs untreated cells). ETR had no effect on apoptosis levels but did increase endothelial cell necrosis levels from 8 ± 2% to 11 ± 4%, 24 ± 7%, and 42 ± 7% for 3, 10 and 30 μM respectively (p < 0.05). Similar results were observed in the H9c2 cardiac cell line. ETR was found to increase cellular CHOP expression suggesting a role for ER stress in its induction of cardiovascular cell dysfunction.

Conclusion: This data suggests that Etravirine can cause significant loss of endothelial cell function and viability in vitro. Suggesting that HIV patients on long term Etravirine therapy may possibly be at an increased risk of developing cardiovascular complications, hence requiring long term monitoring.

P43

In vitro comparison of the hepatotoxic effects of efavirenz and etravirine on HepG2 cells

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Background and Aims: Efavirenz (EFV) and Etravirine (ET) are first and second generation non-nucleoside reverse transcriptase inhibitors (NNRTI) widely and effectively employed in treating HIV. Nonetheless, recent concerns arose regarding hepatotoxic complications of this anti-retroviral class of drugs particularly with its first generation. Pioglitazone is a thiazolidinedione peroxisome-proliferator activated receptor-γ (PPAR-γ) agonist that has been shown to protect hepatocytes from a wide-range of damaging agents as well as protecting cardiovascular cells from EFV-mediated dysfunction. The aim of this study is to investigate the hepatotoxic effects of clinically relevant concentrations of EFV and ET as well as determining any protective effects of PPAR-γ activation.

Methods: The human hepatocyte cell line, HepG2, was treated either with EFV or ET [0–100 μM] ± Pioglitazone (10 μM) for 24 h. Cell viability was determined using the MIT assay and apoptosis/necrosis was assessed by morphological analysis using propidium iodide/Hoechst staining. Inflammation was measured by IL-8 release using a commercially available ELISA kit.

Results: EFV and ET dose dependently reduced HepG2 cell viability following 24 h exposure. EFV reduced cell viability to 83 ± 3% and 53 ± 3% while ET reduced cell viability to 83 ± 4% and 65 ± 3% at 10 μM and 30 μM respectively (p < 0.05 vs untreated cells). EFV (10 μM) increased both apoptosis, from 2 ± 1% to 6 ± 0.8%, and necrosis, from 6 ± 1% to 23 ± 5%, (p < 0.05). Conversely, ET had no significant effect on apoptosis but increased necrosis from 5 ± 0.8% to 25 ± 3% (p < 0.05). Both drugs had a pro-inflammatory effect on hepatocytes significantly increasing IL-8 release from 282 pg/ml to 380 pg/ml and 828 pg/ml at 3 μM and 10 μM EFV (p < 0.05) and to 770 pg/ml and 823 pg/ml at 3 μM and 10 μM ET (p < 0.05) respectively. Simultaneous exposure to Pioglitazone (10 μM) partially protected against both EFV (30 μM), 49% reduction alone vs 40%, and ET (30 μM) 42% reduction alone vs 30%, mediated loss of cell viability. Pioglitazone also reduced EFV and ET-mediated hepatocyte IL-8 release by 38% and 18% (p < 0.05).

Conclusion: Clinically relevant concentrations of both Efavirenz and Etravirine cause significant hepatotoxic and inflammatory effects in hepatocytes, which are partially protected against by Pioglitazone. Future adjuvant therapies to minimise hepatic side effects of HIV anti-retrovirals may include PPAR-γ agonists such as Pioglitazone.

P44

HIV patients with protease inhibitor mutations: Identification of novel Gag mutations and changes in UTR RNA structure using ultra-deep sequencing

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Background: The HIV Gag polyprotein has been demonstrated to modulate HIV resistance. However, this is not usually assessed in routine clinical care. Ultra deep sequencing (UDS) technologies allow detection of such minority variants down to approximately 0.5–1% frequency. The mutations thus far described in the literature include mutations in MA/CA, NC/p1 and p1/p6. The aim of this project was to use UDS to identify novel Gag mutations and changes in the 5’ UTR when protease resistance occurs.

Methods: Patients: database was searched for patients on protease inhibitor (PI) treatment and with PI mutations who had a HIV genotyping test in the past 12 months. A total of 14 patient samples were retrieved from the laboratory storage. Amplification targets: primers were designed to PCR from 507–815 in the HIV-1 UTR (Outer F 23 mer, 507–529, Inner F 20 mer, 524–543, Outer R 20 mer, 815–797, Inner R 20 mer, 812–793) and from 779–2335 in Gag (F1 19mer, 779–798, Outer R1 20 mer, 2335–2316, Inner R1 19 mer, 2300–2282). Ion Torrent Technology was used for the sequencing and subsequent analysis.

Results: A total of 12 samples were analysed, 11 with minor PI mutations and 1 with major PI mutations, 7 subtype B, 4 subtype C and 1 CRF02-AG. 8 sequences were obtained with UTR primers; none of the associated RNA structures deviated significantly from wild type virus. 10 Gag sequences were looked at and we found the following mutations (excluding natural variations) in the cleavage sites: MA/CA = 1138L, CA/p2 = N372 K/G/A and in the non-cleavage sites: MA = 65, CA = 36, NC = 20, p1 = 3, p6 = 46.

Conclusions: Ultra deep sequencing proved to be a powerful tool for discovering novel mutations within the HIV genome. In patients on a protease inhibitor regime, known to have protease inhibitor resistance mutations, we were able to demonstrate a wide range of additional mutations in the Gag protein. This was not accompanied by changes in the 5’ UTRs, which were highly conserved.

P45

Antiretroviral therapy restores HIV-1-induced abnormal expression of immunoregulatory molecules by plasmacytoid DC

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Background: Dendritic cells (DC) in HIV-1 infected individuals are decreased and their dysfunction has been implicated in HIV-1 immunopathogenesis. We explored the effect of HIV-1 infection on the function-associated phenotypic characteristics of blood myeloid (mDC) and plasmacytoid (pDC), and also assessed whether highly active antiretroviral therapy (HAART) restored pDC and mDC phenotype.

Methods: Peripheral blood mononuclear cells were isolated from healthy controls (n = 11), untreated HIV-1+ viremic patients (n = 11), and HAART-treated patients (n = 11). Blood DC were identified by flow cytometry and assessed for expression of the following receptors: anergy and apoptosis inducing molecules (programmed death [PD]-1 and its ligands PD-L1, and PD-L2); inhibitory and regulatory T cell inducing molecules (Immunoglobulin-like transcript [ILT]-3 and ILT-4); interferon (IFN)–inhibitory receptor (ILT-7); and activation and co-stimulatory molecules (CD80, CD83, and CD86).

Results: pDC from viremic HIV-1+ patients expressed significantly higher levels of PD-L1 and ILT-3, and lower levels of PD-L2 and ILT-7 receptors compared to healthy controls. There were no associations between the percentages and levels of expression of these molecules by pDC and HIV-1 plasma load or CD4 T-cell count. No statistically significant differences were observed between pDC from HAART-treated HIV-1+ patients and healthy controls. mDC from all cohorts displayed similar expression profiles.

Conclusions: pDC but not mDC from HIV-1+ patients with detectable viremia display higher levels of apoptosis and T regulatory inducing molecules and may be predisposed to chronically produce IFN–α through down-regulation of ILT-7. Successfully suppressive HAART restored these aberrations.

P46

Failure to achieve an adequate CD4 count response despite regular engagement in HIV care and consistent viral suppression

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Background: To investigate the proportion of people who start ART with CD4 < 100 cells/mm3, are subsequently regularly monitored with consistent
viral load (VL) suppression (< 50 copies/mL) yet fail to achieve an adequate CD4 count response (>200 cells/mm³) in the first five years on ART.

**Methods:** Eligible participants started ART after 1st January 2000, with at least one year of follow-up on ART. Participants were required further to have achieved VL suppression by nine months after starting ART and to have maintained it for five years of follow-up. Participants were required to be regularly engaged with care (< 6 months between each consecutive VL assessment). Linear regression was used to estimate a CD4 count trajectory for each participant who did not achieve a CD4 count > 200 cells/mm³, to predict the timing of reaching this value.

**Results:** From a total of 1,212 starting ART with pre-ART CD4 < 100, only 168 (14%) participants met the stringent criteria and were included in the analyses. Median (IQR) follow-up was 2.9 (1.7–4.7) years, participants were 26% men-who-have-sex-with-men, 18% black heterosexual men, 29% black heterosexual women, 2% injecting-drug-user, 24% other + unknown, median age 39 years at start of ART. Of these, 45 (27%) did not achieve a CD4 count > 200 cells/mm³. The median follow-up on ART for those who did and did not achieve an adequate CD4 count was 3.4 and 2.0 years, respectively.

Among those who did achieve CD4 > 200, median time to this was 1.4 years. Morbidity/mortality rates for those who did and did not achieve an adequate CD4 count were 2.7/100 person-years (95% CI 1.3, 4.8) and 9.2/100 person-years (4.4, 16.9), respectively. Using the individual estimates of CD4 count trajectories, we predicted that the median (IQR) time to an adequate CD4 count response in people who did not achieve a CD4 count > 200 cells/mm³ over observed follow-up would be 2.4 (1.4–4.5) years. When including those projected to reach 200 by 5 years, the predicted proportion of people who do not achieve a CD4 count > 200 after 5 years of ART is 12/168 (7.1%).

**Conclusions:** In a strictly defined group of people with regular monitoring and consistent VL suppression, we predict that only a small minority do not achieve an adequate CD4 count response after five years of ART. Inadequate CD4 response is associated with greater clinical consequences. Care should be taken over interpretation as the participants in the analyses were a select subgroup of people with HIV.

### P47

**The role of interleukin-6 and interleukin-6 receptor in multicentric Castleman’s disease (MCD): frequency of polymorphism**

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**Background:** Multicentric Castleman’s disease (MCD) is a rare, lymphoproliferative disorder that occurs at high frequency in HIV/KSHV co-infection, has a high fatality rate, and is characterised by high plasma levels of viral and human IL-6, soluble IL-6R and VEGF. There is growing evidence that a single nucleotide polymorphism (SNP) in the IL-6R locus (rs2228145, A > C) may be responsible for the production of increased sIL-6R. Considering that high levels of sIL-6R have been observed in MCD patients, we hypothesised that the rs2228145 polymorphism could at least partially account for the production of increased amounts of sIL-6R.

**Methods:** Venous blood was obtained from 206 well-characterised patients, (18 of whom were HIV + KSHV + MCD + and 188 of whom were HIV + KSHV + MCD-) and DNA isolated to explore this hypothesis. Peripheral B and T cells were examined for cell surface expression of membrane bound IL-6R and of signal transducer gp130 by flow cytometry. Enzyme linked immunosorbent assays (ELISA) were performed to measure plasma levels of human IL-6, sIL-6R, sgp130 and VEGF. SNP analysis of all patients identified frequencies (af) were calculated for KS (n = 64, af = 0.32), MCD (n = 25, af = 0.22) and for the non-KS patients (n = 118, af = 0.33) as control. Furthermore, correlation analysis between the frequency of A > C SNP and sIL-6R plasma levels in our cohort was significant (p = 0.008).

**Conclusion:** Allelic frequency was calculated, confirming SNP frequency was as expected, higher in Caucasians than in Black ethnic groups. We conclude that rs2228145 does not play a significant part in the HIV + KSHV + MCD + pathology, however this SNP causes high levels of sIL-6R in HIV + KSHV + co-infection.

### P48

**Antiretroviral drugs rilpivirine and efavirenz cause cardiovascular dysfunction: role of endoplasmic reticulum stress**

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**Background:** The HIV infected population is at an increased risk of cardiovascular morbidity and mortality in comparison to the uninfected population, the cause of which is not fully understood but is likely to be due to an interplay between the human immunodeficiency virus, antiretroviral therapy and traditional risk factors. In the present study we investigated and compared the cardiovascular effects of the non-nucleoside reverse transcriptase inhibitors (NNRTI) efavirenz (EFV) to the 2nd generation NNRTI rilpivirine (RPV). Recently endoplasmic reticulum (ER) stress has been implicated in a number of cardiovascular diseases. Protease inhibitors have already been shown to cause ER stress in hepatocytes and adipocytes.

**Methods:** The rat heart H9C2 or human endothelial EA.hy926 cell line was exposed to different concentrations of RPV and EFV (3, 10, 30 μM) for 24 or 48 h. Cell viability was measured using the MTT assay while apoptosis and necrosis were assessed by morphological analysis following propidium iodide/hoechst staining. The expression of the ER stress marker protein, CHOP, was measured by Western blotting following 24 h exposure to EFV and RPV in H9C2 cells. Data was expressed as mean ± SEM from n = 4 experiments, statistical analysis was carried out by two-way ANOVA where p < 0.05 was considered significant.

**Results:** A concentration dependent loss of cell viability was measured following 24 h and 48 h exposure to both NNRTIs. Both EFV and RPV reduced cell viability in a dose and time-dependent manner. Cell viability was reduced to 48 ± 4% and 60 ± 1% following 24 h exposure to 30 μM EFV and RPV respectively (p < 0.05 vs untreated cells). Both EFV and RPV dose-dependently increased cell necrosis, however, only EFV increased cell apoptosis. EFV and RPV 30 μM increased necrosis from 0.6% to 11 ± 2% and 27 ± 9% respectively (p < 0.05). Apoptosis was increased from 0.041 ± 0.03% to 4.0 ± 2%, with 30 μM EFV (p < 0.05). Both EFV and RPV increased cellular expression of CHOP indicating ER stress may mediate the loss of cell viability. Similar results were obtained in endothelial cells with EFV and RPV decreasing cell viability and increasing cell necrosis levels, however, this was in the absence of ER stress.

**Conclusion:** Both EFV and RPV cause cardiovascular cell damage possibly through a different mechanism of damage in cardiac as opposed to endothelial cells. Our RPV data suggests that patients on this NNRTI should be monitored for cardiovascular complications.
Cancer and Malignancies

P50

Improved outcomes in HIV-associated Burkitt’s lymphoma with CODOX-M +/- IVAC combined with rituximab and cART
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Background: Burkitt’s lymphoma (BL) is a highly aggressive B-cell non-Hodgkin Lymphoma (NHL) that accounts for up to 20% of HIV infection-associated NHL. Historically, BL has a poor outcome with standard chemotherapy for NHL and studies showing better outcomes with use of CODOX-M/IVAC have resulted in this regimen being recommended as a first-line treatment in UK HIV associated lymphoma guidelines (http://www.bhiva.org/documents/Guidelines/Malignancy/080627MaligFinal.pdf). Inclusion of rituximab in both the HIV and non-HIV infected general population is of uncertain benefit and there is a paucity of data on use of this agent in HIV-associated BL. We have adopted R-CODOX-M/IR-IVAC combined with prompt initiation of cART as the preferred first-line treatment strategy at our centre since mid 2008.

Methods: Retrospective review of the treatment and outcome of consecutive HIV-infected patients with HIV-BL.

Results: Eleven patients were identified all of whom received at least one dose of R-CODOX-M. Nine of eleven were male. Median characteristics at BL diagnosis were age 44 years (range 30-55), CD4 count 250 cells/µL (range 80–560), and LDH 624 IU/L (range 211–2332). Six of eleven patients were known to have HIV infection prior to BL; four were on treatment with an undetectable viral load. Of those not on HIV treatment the median VL was 360,000 copies/mL (range 23,000 to 2,400,000) and CD4 count 130 (range 90–420). All patients were continued or started on cART which was given throughout chemotherapy. One patient had a brief cART treatment interruption due to due to patient request to change therapy (5, 7.6%).

Conclusions: Our data demonstrate excellent clinical outcomes using R-CODOX-M/IR-IVAC and cART in patients with HIV-BL. This data adds to the growing literature on the improved outcome of HIV-BL with the addition of rituximab compared to historical controls.

P51

The spectrum of non-AIDS-defining malignancy: 431 cases
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Background: The incidence of non-AIDS defining malignancies (NADM) has steadily risen in the post HAART era and a spectrum of malignancies has been observed in cohorts that may reflect the aetiology of malignancy in the immunosuppressed.

Methods: We have prospectively collected clinical data including non-AIDS defining malignancy in a prospective database for our cohort of patients since 1986.

Results: We identified 431 patients (94% male, mean age 48 years) diagnosed with NADM since 1986. Only 30 (7%) cases were diagnosed in the pre-HAART era (before 1996). The number of cases per year has risen steadily to a peak of 52 cases in 2011. At the time of NADM diagnosis, 37% had a prior AIDS diagnosis and 75% were on HAART. The mean CD4 cell count was 379/mm3 (range: 1–2977) and 86% of patients on HAART had an undetectable plasma HIV viral load. The most common NADM diagnosed were Hodgkin lymphoma 88 (20%), anal cancer 77 (18%), non-melanoma skin...
cancer 67 (16%), lung cancer 41 (9%), prostate cancer 22 (5%), germ cell tumour 18 (4%), head and neck cancer 17 (4%), melanoma 15 (3%), hepatocellular cancer 15 (3%) and colorectal cancer 14 (3%). Oncological viruses and bacteria could account for up to 263 (61%) of these NADM. The 5 year overall survival is 63% (95% confidence interval: 58–68%) and is substantially higher in the post HAART era compared to the pre HAART era (65% & 43%, log rank p = 0.004).

Conclusion: The increasing burden of NADM has been well documented and we confirm this in our sizeable cohort. Of 431 NADMs, 61% may be attributed to oncogenic infections. As with the AIDS defining cancers, the survival of NADM has improved in the post HAART era.

P52 Persistence of anal dysplasia following chemoradiotherapy for anal cancer
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Background: Anal cancer is believed to occur as the final destination of a progression from human papilloma virus (HPV) infection of the anal canal via low and high grade anal intraepithelial neoplasia (AIN). Screening at risk populations for AIN and interventions for high grade AIN may reduce the risk of anal cancer. Definitive treatment for invasive anal cancer is with chemoradiotherapy (CRT). Does CRT eradicate AIN as well as invasive anal cancer, suggesting that these patients do not require ongoing screening as they are not at risk of a second primary anal cancer?

Methods: A total of 54 patients have been treated with CRT for invasive anal cancer. Patients who had completed chemoradiotherapy and subsequent high resolution anoscopy (HRA) were identified and the anoscopic and histological findings were reviewed.

Results: Twenty two patients (all male, mean age at CRT 46 years) had follow-up HRA after completing CRT for invasive anal cancer. At latest HRA, 2 (9%) patients had no abnormal findings, 1 (5%) had persistent HPV infection, 12 (56%) had low grade dysplasia (AIN1) and 7 (32%) high grade dysplasia (AIN2/3). Two of the patients with low grade dysplasia at last HRA, had previous HRA screening following CRT that was normal raising the possibility of reinfection rather than persistence of low grade dysplasia. The median follow-up following CRT is 5.6 years. Two patients relapsed 13 and 16 months after CRT and have died. They both had persistent dysplasia (1 high grade, 1 low grade) at follow-up HRA. A further 2 patients have died of unrelated causes (1 lung cancer, 1 liver failure).

Conclusion: Anal dysplasia persists following CRT for invasive anal cancer and could result in disease relapse or development of a second primary anal cancer. Patients with invasive anal cancer who have been successfully treated with CRT should still be considered for screening HRA.

P53 Skin cancer in aging HIV-positive patients
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Background: Cutaneous cancers are the most common malignancies; multiple studies have shown an increased risk of skin cancer for immunosuppressed transplant recipients. National Institute for Health and Clinical Excellence (NICE) guidelines recommend these patients receive regular skin checks for timely detection and management of cutaneous malignancies.

Human immunodeficiency virus (HIV) patients are also at increased risk of cancers, such as Kaposi sarcoma and lymphoma; however, since the advent of highly active anti-retroviral therapy (HAART) the incidence of these acquired immunodeficiency syndrome (AIDS) defining malignancies has declined. Unfortunately, the incidence of non-AIDS defining cutaneous malignancies continues to increase with the increasing life expectancy of HIV patients and presently accounts for most cancers in this group.

Methods: We undertook a prospective observational service evaluation to establish the prevalence of skin cancer in HIV patients over the age of 50 years. Patients attending the ‘Over-50 clinic’ were invited for a skin examination. A full medical history was taken from each patient before proceeding to a full skin check including the oral mucosa and perianal area. Management recommendations for detected skin cancers were provided accordingly.

Results: Forty patients were invited and accepted screening over a 3-month period. 32 participants were white, men who have sex with men with an average age of 59 years [50–78]. The mean duration of HIV diagnosis was 15 years [0–29] and mean duration of HAART was 12 years [0–25]. Two-thirds of participants were well controlled with normal CD4 counts and undetectable viral loads.

Over 58% of the study participants had a history of previous or current cutaneous or precancerous lesions of the skin. Ten (25%) had a previously undetected skin cancer identified during the study, mostly basal cell carcinomas.

Conclusion: We have identified a high rate of previously undetected skin cancer amongst HIV patients older than 50 years. Routine skin examination will allow older HIV patients to benefit from early detection of skin cancer, decrease morbidity and perhaps mortality in this high risk group of patients.

P54 Salvage surgery for residual primary anal squamous cell carcinoma after chemoradiotherapy in HIV-positive individuals
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Background: The management of anal cancer in human immunodeficiency virus (HIV) patients as in the general population is primarily with chemoradiotherapy (CRT). However residual or recurrent disease usually warrants an abdominoperineal resection with plastic reconstruction surgery.

Methods: A prospective study to evaluate residual primary disease and the outcome of salvage surgery after CRT at a single centre since 1989.

Results: Forty-three of 53 (81%) HIV patients treated with CRT for anal cancer achieved a complete response (CR) and none recurred locally. Nine patients underwent salvage surgery for residual primary anal carcinoma after CRT. There were no peri-operative deaths and perioperative CD4 cell counts were sustained. The rate of surgical complications (55%), including delayed perineal healing (median time to healing 4 months) and hospital stay (median 29 days) were greater than reported in non-HIV individuals. Survival after salvage surgery (26% at 2 years) was similar to published data from comparable non-HIV cases.

Conclusions: Results with salvage abdominoperineal excision of residual primary anal cancer following CRT suggest a high morbidity that may be HIV-disease related. The overall survival following salvage surgery is comparable with results in non-HIV anal cancer patients.

P55 Comparison of two diagnostic criteria schemes for multicentric Castleman’s disease in 72 cases
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Background: Two clinical schemes have been proposed that define an acute episode of HIV-associated multicentric Castleman’s disease (MCD). The French ANRS (Agence Nationale de Recherche sur le SIDA) Castleman trial group definition requires: raised serum C-reactive protein (CRP) (in the absence of any other cause), pyrexia, and at least 3 of 12 clinical features (J Clin Oncol. 2007; 25: 3350–6). The National Cancer Institute (NCI) scheme requires: raised serum CRP, at least one clinical symptom and one laboratory abnormality probably or definitely attributed to MCD (Curr Opin Oncol. 2012; 24: 495–505). Of note the serum CRP cut-off was higher in the French than in the US scheme. Neither system has been validated on an independent data series.

Methods: We applied the two diagnostic schemes to our cohort of 72 patients treated for MCD. All patients had histologically confirmed MCD with IgM lambda restricted plasmablasts with positive immunostaining for KSHV.

Results: The mean age at MCD of the 72 patients (88% male) is 42 years. The median CD4 cell count 237/mm^3 (range: 37–1400). Thirty one (44%) were
established on HAART of whom 16 (52%) had an undetectable plasma HIV viral load. The median duration of symptoms prior to diagnosis of MCD was 3 months (range: 0.5–48). The specificity of this scheme were 92% for the ANRS criteria and 96% for the NCI criteria (see table). The difference between the two schemes relates to the higher cut-off used for serum CRP in the French scheme and the requirement for at least 3 specified clinical abnormalities.

Conclusion: Although both schemes categorise the majority of our patients as having active MCD, the looser criteria in the NCI scheme identifies more of our cohort as having active MCD (false negative rates 8% (ANRS) and 4% (NCI)). This study has not attempted to establish the capacity of either scheme to correctly exclude patients without MCD and so the specificity and power of the two schemes cannot be established.

<table>
<thead>
<tr>
<th>ANRS criteria</th>
<th>NCI criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td>Serum CRP &gt; 20 mg/L</td>
<td>92%</td>
</tr>
<tr>
<td>Fever</td>
<td>99%</td>
</tr>
<tr>
<td>&gt; 2 of 12 criteria met</td>
<td>92%</td>
</tr>
<tr>
<td>All findings met</td>
<td>92%</td>
</tr>
</tbody>
</table>

P56
AIDS-defining and non-AIDS-defining malignancies in an inner city clinic: A retrospective case note review
A Vas, D Gilbey, A Sukthankar and V Lee
Manchester Centre for Sexual Health, Manchester, UK

Background: Since the advent of highly active antiretroviral therapy (HAART) the rate of AIDS-defining malignancies (ADM) has rapidly declined however a rise in Non-AIDS defining malignancies (NADM) has been seen. Various reasons for this include increased longevity of HIV infected patients, possible oncogenic toxicities from HIV and HAART and traditional risk factors such as smoking.

Methods: To describe the trends ADM and NADM observed in HIV infected individuals attending a busy inner city sexual health clinic in the pre and post HAART era. A retrospective case note review was performed.

Results: Of 2567 electronic case notes reviewed 77 patients (2.99%) were found to have an ADM and 34 (1.3%) found to have NADM. Overall there has been a rise in NADM since HAART was introduced with just three cases identified in the pre HAART era compared with 31 cases identified in the post HAART era.

72% of patients with an ADM were male of whom 85% were men who have sex with men (MSM). 83% of NADM were male of whom 71% were MSM. The median age was 44 yrs (range 22–67) in those with an ADM vs 48 yrs (range 30–72) in those with a NADM.

The majority of ADM observed were KS (58/77) and the commonest NADM lack of response to treatment prompted further investigation.

Conclusion: Although both schemes categorise the majority of our patients as having active MCD, the looser criteria in the NCI scheme identifies more of our cohort as having active MCD (false negative rates 8% (ANRS) and 4% (NCI)). This study has not attempted to establish the capacity of either scheme to correctly exclude patients without MCD and so the specificity and power of the two schemes cannot be established.

P57
Isolated penile Kaposi’s sarcoma in an HIV-positive patient stable on treatment for three years
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Introduction: Kaposi’s sarcoma (KS) is an AIDS-defining condition. Typically KS affects the skin with or without visceral involvement. The extensive use of anti-retroviral therapy (ART) has decreased the incidence of KS amongst the HIV-positive population.

Case: We report a case of a 40 year old male with HIV-1 infection with CD4 count of 551 cells/mm³ and an undetectable viral load who presented with two skin coloured KS lesions on the prepuce of the penis. Diagnosis was confirmed by histopathology investigations showed no evidence of extra genital involvement. He had been commenced on ART three years earlier with a nadir CD4 count of 255 cells/mm³. He had achieved and maintained viral suppression since commencing ART. The patient was initially treated with cryotherapy and 5% imiquimod as the lesions were presumed to be warts. The lack of response to treatment prompted further investigation.

Discussion: We carried out a literature search of published cases of penile KS over the past ten years. The majority of articles regarding penile KS were published in the pre-ART era and involved patients with AIDS. Over the past ten years, published cases of penile KS have almost exclusively been in HIV negative men. We found ten published cases of penile KS in HIV negative men and only one other published case of penile KS in a HIV-positive man, who had severe immune suppression with CD4 count below 200 cells/mm³.

This is the first case report, to our knowledge, to describe a HIV-positive patient stable on ART with a CD4 count above 200 cells/mm³ and suppressed HIV-1 viral load, to develop two KS lesions on the penis.

Conclusion: Clinicians have to remain suspicious of penile lesions and appreciate the crucial role a biopsy with histopathological analysis plays in confirming a diagnosis. In addition this case illustrates that unusual presentations of KS can still occur in treated HIV-positive patients, with sustained immune recovery.

Children and Pregnancy

P58
Reduction in serum cholesterol in patients with perinatally acquired HIV-1 (PaHIV) switching from boosted lopinavir to an alternative once-daily boosted protease inhibitor
M James, A Bamford, A Walley, S Walters and C Foster
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Background: Boosted protease inhibitor (PI) based antiretroviral therapy (ART) in patients with PaHIV typically includes lopinavir due to availability of liquid and paediatric tablets coformulated with ritonavir (r) and is the preferred PI under European guidelines. PIs adversely affect lipid parameters and data in adults suggests alternative once daily boosted PIs may have more favourable lipid profiles. Whilst switching from PIs to NNRTIs has been shown to improve lipid profiles in paediatric cohorts, data is lacking regarding the optimal PI for children who have previously failed NNRTI based regimens. We describe effects of switching from boosted lopinavir (LPV/r) to either boosted atazanavir (ATZ/r) or once daily boosted darunavir (DRV/r) on lipid profile and body composition in a cohort of patients with PaHIV.

Methods: Retrospective case note audit of a single centre observational cohort of paediatric patients switching from suppressive LPV/r to ATZ/r or DRV/r based ART assessments changes in plasma triglycerides, cholesterol, HDL and BMI six months post switch.

Results: 21/60 patients suppressed on PI based ART had ever switched from LPV/r to ATZ/r or DRV/r. 13/21 were male, 20/21 black African, mean age at switch 15 years (SD 3.3), mean duration LPV/r treatment 4.1 years (SD 2.7), 14/21 and 7/21 switched to DRV/r and ATZ/r respectively. Total cholesterol significantly decreased 6 months post switch: 4.85 mmol/L (95% CI: 4.42–5.29) vs 4.61 mmol/L (95% CI: 4.25–5.00) (p = 0.02). Triglycerides, HDL cholesterol and BMI (BMI median 20.2 pre and 20.7 post switch) did not change significantly. Median CD4 count increased: 610 cells/µL (IQR 474–790) vs 700 cells/µL (IQR 570–850) p < 0.05. No side effects reported post switch resulted in discontinuation, however one patient stopped ART > 24 months after switching associated with a family bereavement.

Conclusion: This is the first report of reduction in total cholesterol associated with a switch from LPV/r to an alternative boosted PI in children with PaHIV. This has implications for long term treatment planning and additionally offers adolescents on PI based ART a once daily regimen. The cohort will be assessed at later time points to assess for additional/further improvements in lipid profile and BMI.
P59
Adolescents with HIV and neurodevelopmental impairment: transitioning towards adult care
T Chawatama, S Persand, A Coomer, D Melvin and C Foster
Imperial College Healthcare NHS Trust, London, UK

Background: Increasing numbers of perinatally infected children are transitioning towards adult services. This audit characterises adolescents with severe neurodevelopmental problems affecting schooling and/or mobility likely to impact on independent living in adulthood.

Methods: A single centre retrospective case note audit of adolescents aged 12–18 with severe neurodevelopmental problems defined as either a neurological/motor deficit affecting mobility, significant cognitive impairment (SCI) requiring long-term additional learning support or those diagnosed with a neurodisability (ND) e.g. Autism with impaired function. Data collected included demographics, CD4 count, viral load, antiretroviral therapy (ART), neurocognitive and motor function.

Results: 26/92 (28%) patients were identified with longstanding neurodevelopmental problems significantly interfering with daily functions. Detailed data was available for 24/26; median age 14 yr (IQR 13–16), 75% (18/24) male and 80% (19/24) Black African origin. Median age at diagnosis was 3 yr (IQR 1–4) with nadir CD4 count 14% (IQR 4–19). 92% (22/24) were on ART, 2 off therapy had CD4 counts of 479 and 656 cells/ul. 25% (6/24) had severe cognitive impairment (IQ < 70, > 2 s.d. below average), 50% (12/24) had a motor deficit; 9/12 diplegia and 8/12 also had SCI. 9/24 (38%) were diagnosed with a ND, 8 of whom had SCI. 1 patient had combined SCI, diplegia and ND. 88% (21/24) were in mainstream school. 80% (19/24) required extra long-term learning support with 33% (8/24) having a statement of educational need. 20% (5/24) had on-going input from audiology, ophthalmology and speech therapy. 3 required walking aids (2 wheelchair) and 26% (6/24) had on-going input from OT/Physiotherapy. 46% (11/24) had reported continence problems, most frequently nocturnal enuresis. 1 patient was under psychiatric care. 17% (4/24) had previously been on the child protection register, mainly for neglect. 63% (15/24) were in single-parent households, with 8% (2/24) in long-term foster care.

Conclusion: Despite suppressive ART, more than a quarter of HIV infected adolescents in this cohort have significant neurodevelopmental issues affecting learning and mobility that will persist following transition to adult care. These will affect their decision making and independence and require coordinated multidisciplinary healthcare and social services. Relationship and sexual health education is also particularly complex for this cohort.

P60
Preventing mother-to-child transmission of HIV: Paediatric audit cycles between 2004 and 2010
H Slee, J Hardman, K Scott, K Rowson, I Nixon and A Tan
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Background: Between 1986–March 2012 a total of 15979 children were reported to be born to HIV positive mothers to the National Study of HIV in Pregnancy and Childhood (NSHPC). Since 2000 Mother To Child Transmission (MTCT) of HIV among women on antiretroviral treatment has been as low as 0.7%.

Aim: This audit was undertaken firstly to look at the performance of a local regional Paediatric team over a 6 year period and secondly to estimate the impact of several service changes, such as introduction of training and a regional guideline or a separate nurse led baby clinic against the BHIVA Pregnancy Guideline from 2005 and 2008 respectively.

Methods: Three cycles of retrospective case note audit of all babies exposed to HIV and followed up in a large Regional Centre were performed using a near identical standard proforma.

Results:

<table>
<thead>
<tr>
<th></th>
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</thead>
<tbody>
<tr>
<td>Number included</td>
<td>57</td>
<td>30</td>
<td>24</td>
</tr>
<tr>
<td>New Diagnosis</td>
<td>54%</td>
<td>26.7%</td>
<td>30%</td>
</tr>
<tr>
<td>Maternal VL &lt; 40 copies/ml before delivery</td>
<td>75%</td>
<td>76.7%</td>
<td>89%</td>
</tr>
<tr>
<td>Baby’s sample documented</td>
<td>49%</td>
<td>75%</td>
<td>96%</td>
</tr>
<tr>
<td>Care Plan filed</td>
<td>26%</td>
<td>85%</td>
<td>100%</td>
</tr>
<tr>
<td>Transmission Rate *</td>
<td>1.7% (n = 1)</td>
<td>0%</td>
<td>0%</td>
</tr>
</tbody>
</table>

*pTwo confirmed detectable DNA PCR at the age of 6 weeks and 3 months

Discussion: In line with the data from NSHPC we have also seen a higher proportion of mothers diagnosed before conception and a decreasing delivery rate of babies exposed to HIV in 2010. It has been noted that most of the significant outcome measures have improved over the audit period. As the care of HIV in Pregnancy requires a multidisciplinary approach the improvements have to be attributed to the joint effort of the whole team involved. Some of the improved outcome measures are also related to the Paediatric service changes as shown in the selected outcome measures above.

P61
Place of diagnosis and CD4 count in pregnant HIV-positive women diagnosed before conception in the UK and Ireland (2007–2012)
L Byrne, C Townsend, C Thorne and P Tookey
UCL Institute of Child Health, London, UK

Background: In UK & Ireland antenatal screening for HIV is routinely offered to all women, with high uptake. HIV-positive pregnant women are increasingly aware of their diagnosis before conception; 41% of pregnancies in diagnosed women in 2009 were a second or subsequent pregnancy. We examine setting of diagnosis prior to pregnancy, and explore CD4 count as a potential marker of suboptimal care before pregnancy.

Methods: Comprehensive surveillance of HIV in pregnancy is carried out through the National Study of HIV in Pregnancy and Childhood. All pregnancies due to deliver from 2007 onwards and reported by June 2012 were included.

Results: In 2007–2012 there were 7988 pregnancies; 73.7% (5824) were in women who knew their diagnosis prior to conception: 79.3% livebirth, 8.1% not yet delivered, and 12.6% other outcomes. The proportion of pregnancies in previously diagnosed women increased each year: 64.8% in 2007 (997/1539) to 80.4% in 2011 (983/1233) (p < 0.001). In 2007 diagnosis was in a previous pregnancy in 36.6% of pregnancies (307/838), and in a GUM clinic in 43.4%, compared with 43.2% (347/804) and 40.4% in 2011. Overall 21.3% (1,153/5427) of pregnancies were in nulliparous women, and in 61.8% of these diagnosis occurred in a GUM clinic, 16.1% in other hospital departments, and 8.6% in a previous pregnancy; 45.0% of nulliparous women had previous termination or miscarriage reported. In pregnancies of parous women in 2007, 37.2% were diagnosed in GUM (247/664), 10.8% other hospital departments, and 44.6% previous pregnancy. In 2011 36.1% were diagnosed in GUM (242/671), 49.9% in a previous pregnancy, and 7.9% in other hospital departments. There were 2400 pregnancies in previously diagnosed women not on ART at conception; CD4 count during pregnancy was available in 85%; median CD4 count 450 cells/µl (IQR 320–610); > 500 in 41%, 350–499 in 29.7%, 200–349 in 22.7%, and < 200 cells/µl in 6.7%. Of these women, 25.9% of those diagnosed in a previous pregnancy had CD4 count < 350, versus 31.7% diagnosed in other settings (p < 0.01).

Conclusion: In women diagnosed with HIV before conception, a similar proportion were diagnosed in antenatal and GUM clinics, with relatively fewer diagnoses in other settings. It is of concern that in almost 30% of pregnancies to diagnosed women not on ART at conception, women had CD4 count < 350, including 7% < 200. Women diagnosed in a previous pregnancy were less likely to have a low CD4 count.
P63

'I just accept it, but in my heart it pains me because as a woman you have to breastfeed your baby.' The impact of infant feeding decisions on African women living with HIV in London

S Tarig1, PA Tookley2, J Elford1 and A Pillen3

Background: UK guidelines advise the avoidance of breastfeeding in HIV-positive women. Although this minimises the risk of mother-to-child transmission of HIV, the consequences of formula feeding (FF) on the mother are often overlooked. This may be important given that 75% of pregnant HIV-positive women in the UK are from African countries, where breastfeeding is socio-culturally normative.

Methods: We conducted semi-structured interviews with 23 pregnant African women diagnosed with HIV recruited from 3 clinics. We also interviewed healthcare professionals (3) and carers (2). All interviews were transcribed verbatim and analysed in NVivo 9.0 using grounded theory.

Results: Women spoke of the cultural importance of breastfeeding in African communities, describing great social pressure to breastfeed and fears that FF would signify their HIV status. They had significant concerns about the physical and psychological effects on their child, and felt that their identity as a ‘good mother’ was compromised by not breastfeeding. However almost all women chose FF, driven by the desire to secure an HIV-negative child. Their resilience was strengthened by financial assistance with FF; examples of formula-fed children who were healthy; and support from partners, family, peers and professionals. One woman chose to breastfeed her child. Poor knowledge of transmission risk, fears about HIV disclosure and a belief that breastfeeding was good for her child contributed to her decision. Healthcare professionals believed that some women were likely to breastfeed due to the complex social environment in which feeding decisions were embedded and that this was unlikely to be revealed to clinical teams.

Conclusions: The decision to avoid breastfeeding came at considerable personal cost to this group of women. Financial and psychological support increased women’s capacity to adhere to their decision. Professionals working with HIV-positive women should be aware of the difficulties encountered by women and provide appropriate support and education both antenatally and postnatally.

P64

Paediatric prescribing and outcomes in 2012: a single centre observational cohort

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1Imperial College London, London, UK and 2Imperial College Healthcare NHS Trust, London, UK

Background: Historically paediatric cohorts with perinatally acquired HIV have had lower rates of virological suppression compared to adults. However, response rates to first line therapy have improved over time in the UK CHIPS cohort. European guidelines recommend either non-nucleoside (NNRTI) or boosted protease inhibitor (PI) based first-line regimens, with efavirenz (EFV age 3 yrs +) and lopinavir (Lopinavir/ritonavir) respectively. We assessed current antiretroviral therapy (ART) prescribing and outcomes in a paediatric cohort.

Methods: Retrospective case note audit of all children and adolescents currently attending a single family clinic up to December 2012 collating data on; age, sex, ethnicity, ART, viral load (VL), CD4 count, HIV resistance and toxicity.

Results: 129 children, median age 13.5 yrs (IQR 11–16), 72 (56%) female and 100 (78%) black African. 117 (91%) currently on ART; 75 (64%) first line, 27 (23%) second and 15 (13%) on subsequent regimens. At last attendance 113/117 (97%) on ART had a VL < 50 c/ml with a median CD4 count 771 cells/ul (IQR 544–1043). 2/117 had CD4 < 200 cells/ul, one with VL < 50 c/ml, 9 had CD4 200–350 cells/ul; 7 with VL < 50 c/ml. Of those on treatment, 60 (51%) were on a boosted PI-based regimen: 30 (50%) darunavir (DRV), 16 (27%) atazanavir and 14 (23%) lopinavir. 57 (49%) on an NNRTI-based regimen: 39 (68%) nevirapine and 18 (32%) EFV. 11/30 (37%) on DRV-containing regimens included one or more of maraviroc (7), raltegravir (4) and etravirine (2). Cumulative HIV-1 associated resistance mutations for 42 patients on second/subsequent therapy: wild type (4), single (17), dual (18) and triple class (3). Of the 12 not currently on treatment, median CD4 count 573 cells/ul (IQR 494–695) with one CD4 of < 350 cells/ul (CD4 21 declines ART). 30/120 (25%) who had ever received ART had documented toxicity: lipid abnormalities (11), LFT dysfunction (7), lipodystrophy (6), ART allergy requiring discontinuation (5), TDF associated renal leak (4), discontinuation for EFV CNS toxicity (3), neutropenia (3) and gynaecomastia (2).

Conclusion: High rates of virological suppression (97%) are seen in this predominantly adolescent cohort despite one third having prior virological failure with resistance and a quarter having evidence of ART toxicity. Despite prescribing PI’s alternative to lopinavir facilitating once daily regimens for adolescents, a very small number have advanced immunosuppression and continue to struggle with adherence.

P65

Comparison of cardiovascular risk parameters in children and young adults with perinatally acquired HIV

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Background: Children with perinatally acquired HIV (PaHIV) with access to antiretroviral therapy (ART) are expected to live well into adulthood. Adverse cardiovascular (CVS) outcomes are recognised for adults with horizontally acquired HIV however CVS outcomes for the PaHIV cohort are unknown. Dyslipidaemia, raised inflammatory markers, thrombophilic abnormalities and carotid intimal thickening have been described in younger children with PaHIV however limited data is available for the aging PaHIV cohort of young adults.

Methods: Retrospective observational cohort data collected for all PaHIV attendees in 2012 including: weight, height, lipids, blood pressure, ART, CD4 count and viral load. BMI was calculated for the young adults and BMI centiles for children providing age appropriate data. Age appropriate trust guidelines were used for blood pressure classification. Proportions were compared using Chi squared.

Results: 122 children: median age 13.5 yrs (IQR 11–16), 78% black african, 56% female and 80 young adults attending a transition clinic; median age 20 yrs (IQR 19–23), 52% female, 20% known current smokers.

<table>
<thead>
<tr>
<th>Diagnosis</th>
<th>BMI definition</th>
<th>Children (%)</th>
<th>Young Adults (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Obese</td>
<td>BMI &gt; 98th % c or &gt; 30</td>
<td>16</td>
<td>4 p = 0.006</td>
</tr>
<tr>
<td>Overweight</td>
<td>BMI 91st–98th % or 25–30</td>
<td>16</td>
<td>16</td>
</tr>
<tr>
<td>Underweight</td>
<td>BMI &lt;2nd % c or &lt; 20</td>
<td>5</td>
<td>20 p = 0.001</td>
</tr>
</tbody>
</table>

Of those underweight; 2/6 children and 6/16 young adults had CD4 < 200 cells/ul. 24% of children and 14% of young adults had a total cholesterol > 5.0 mmol/l (p = 0.1). 19% of children and 9% of young adults had stage I hypertension (systolic > 140 mmHg) (p = 0.07). 11% of children were pre-hypertensive cf 40% of young adults. 21% children and 25% of young adults were under dietetic review.

Conclusion: Rates of obesity were significantly higher in children with PaHIV when compared to young adults and with age matched UK populations, although ethnically matched UK data is unavailable. Significantly more young adults were underweight despite the proportion of those with advanced disease being equal between the two age groups. Hypertension and hypercholestaemia were common across the age range, highlighting the need for screening and early referral for dietetic/cardiology assessment to optimise the long term cardiovascular health of this emerging cohort.
P66

Remembering the children: Implementation and success of a robust method for the identification and testing of children of HIV-positive parents

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Background: The HIV status of children of HIV positive patients is a historically poorly captured demographic. This may be due to poor data collection, a wish to maintain confidentiality and the parents’ apprehension of testing their children. However, HIV services should try to identify and test all untested children living in the UK (‘Don’t forget the children’, CHIVA report 2009). In order to meet this standard we embarked on a novel strategy.

Methods: Our strategy: 1) Establishment of a three monthly multi-disciplinary team meeting with paediatricians 2) Choices for HIV testing: HIV nurse, GP, paediatrician, TB services, provider referral 3) Visual aid: one-page yellow colour coded data collection proforma placed on top of all clinic notes. This reminded the clinician to collect children related data together with the patient. The patients saw that this was a novel and universal procedure. Data were collected on all patients attending HIV services in North-East Yorkshire. Procedure was audited 12 months later.

Results: Our proforma was completed in 192/203 (94.6%) patients. 45/116 (38.6%) of the total identified offspring had not been tested [median age: 19 years (1–48), White British: Black African = 12:33; 10/4S (22.2%) were under-aged children who required testing [median age: 13.5 years (1–18), White British: Black African = 1:9]. None of the children were clinically unwell. All (100%) identified children were successfully entered into the testing pathway. 7/10 (70%) children completed testing [100% HIV negative] and three are followed up; all within 6 months of identification. No social service referrals were required.

Conclusion: Our three-pronged approach allowed for easy, fast and methodical identification and testing of children of HIV positive patients prospectively and retrospectively. Previously clinicians identified these children during the consultation; follow-up of children in need of a test could be erratic and poorly documented, and follow up difficult to arrange without a clearly defined referral pathway. The proforma is a user-friendly data collection sheet. The multi-disciplinary approach empowered healthcare providers to approach the patient with an established plan and multiple testing choices, which allows the maintenance of confidentiality without compromising child safety. This audit cycle will be repeated yearly. We recommend the implementation of our strategy nationwide, which will aid the national audit of children HIV testing.

P67

Clinical service priorities for young people aged 13–19 living with HIV in London

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Body & Soul, London, UK

Background: Patient involvement is crucial for service improvement, and is a key NHS priority. The purpose of this needs assessment is to clarify what HIV positive young people aged 13–19 living in London prioritise from their clinical service.

Methods: A voluntary sector organisation and youth representative designed a 15-item survey containing closed and open-ended questions around service preferences. The survey was administered anonymously and on an opt-out basis to HIV positive young people aged 13–19 either in-person or by phone during the first week of December 2012.

Results: 59 young people responded. Respondents attended an average of 4–6 specialist HIV appointments annually. 91.5% reported seeing their consultant at each appointment, whilst 54.2% regularly saw a CNS. Whilst 67.8% reported going to a GP, only 10.1% talked to their GP about HIV.

Young people prioritised the following aspects of care: their clinic having a multidisciplinary team (91.5% ranked important), seeing the same doctor each time (89.6%), getting an appointment outside of school times (83%), and seeing the doctor each time (81.4%). The least important factors were: number of patients seen by the clinic (55.9% ranked important) and whether the clinic uses technology like BBM to contact them (61%).

Amongst the 64.4% who responded to the open ended question “What do you like most about your clinic?”, 38% said it was nice/friendly, 15.8% said it was safe/comfortable, and 15.8% said it was youth friendly. Young people also appreciated the consistency of provider, that the clinic provided straightforward information, the convenience, and that they felt comfortable and cared for going to clinic.

P68

Expanded CD56+ subset in HIV-1-positive mothers on HAART is associated with premature delivery

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Background: To date, studies on HIV positive women have demonstrated a correlation between spontaneous and iatrogenic preterm labour and the use of highly active antiretroviral therapy (HAART). However, the relationship is poorly understood. This study aims to relate the composition of peripheral maternal lymphocyte subsets at delivery to the outcome of the pregnancy.

Methods: A retrospective review of 112 HIV-1+ positive, pregnant women who delivered between 2002 and 2008 was undertaken. 29 women delivered preterm (<37 weeks gestation) and 83 women delivered at term. Maternal demographics, gestation and lymphocyte subsets (CD3, CD4, CD8, CD19, and CD66) at delivery were determined. Data was obtained from a pre-existing database. Preterm delivery (PTD) was classified as preterm spontaneous vaginal delivery (PSVD) or preterm caesarean section (PTCS). The data was analysed using a Mann–Whitney U test for independent samples. Correlation analysis was performed using linear regression. Statistical significance was defined as p < 0.05.

Results: The mean maternal age in the PTD and term groups was 34 and 32 years respectively. 94% (105/112) of the study cohort were of black African or Afro-Caribbean ethnicity. In the preterm group (mean gestation 33 + 4, range 25–36 + 6) 59% (17/29) delivered prior to 34 weeks gestation. 90% (26/29) of women delivering preterm and 99% (82/83) of women delivering at term (TD) were receiving HAART. There was one mother-to-child transmission. 24% of preterm deliveries (7/29) were spontaneous vaginal delivery (SVD) of whom 6 were on HAART with undetectable viral loads. Comparing mode of delivery, PSVD was associated with a greater number CD56+ cells (median 174 cells/μl blood, IQR 91–213) than both term SVD (median 78 cells/μl blood, IQR 34–110; p = 0.023) and term CS (median 42 cells/μl blood, IQR 33–73; p = 0.001) as well as PTCS (median 60 cells/μl blood, IQR 40–96; p = 0.004). This was not evident in term SVD versus term emergency or elective CS. Gestation at PTD positively correlated with increasing CD4 count (p = 0.019, r² = 0.176). The same relationship was not evident in term SVD (p = 0.986).

Conclusions: Spontaneous vaginal preterm delivery compared to term vaginal delivery in HIV-1+ mothers was associated with an expanded CD56+ population in the maternal circulation at delivery. Gestation positively correlated with increasing CD4 count.

P69

Testing of children of HIV-positive patients

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Background: In 2008 the document "Don’t Forget The Children" recommended that "the HIV status of all the children of known HIV-positive adults in the UK should be known as a matter of clinical urgency". Timely diagnosis of HIV in children is crucial to prevent avoidable morbidity and mortality, and prevent onward transmission during adolescence.
We aimed to establish whether our adult HIV service was recording the details of children of HIV positive patients and referring them for HIV testing as appropriate.

**Methods:** 220 sets of notes of HIV positive adult patients (110 male, 110 female) attending for care within the previous six months were selected at random. The following data were recorded: sexual orientation, number of children, geographic location of children, HIV testing status of children and the child’s mother’s HIV status (for male patients). In cases where children’s HIV test results were not recorded in the notes, an attempt was made to confirm them using hospital-based electronic systems.

**Results:** 30% of male patients were men who have sex with men (MSM). There was no documentation regarding children in the notes of 79% of MSM, compared to 23% of heterosexual males and 3% of females. Interestingly, of MSM where queries were made, 29% did have children.

In total we identified 231 children who were at risk of mother to child transmission (MTCT) of HIV, of whom 170 (74%) were resident in the UK. Of those children known to be in the UK, 10.4% had not been tested, 12.6% had a documented HIV result and 7% had unknown testing status. The remaining 70% had a verbal result from their parent recorded in the notes.

Table 1 illustrates the actual testing status of these children.

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Percentage</th>
</tr>
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<tbody>
<tr>
<td>Confirmed negative</td>
<td>47%</td>
</tr>
<tr>
<td>Confirmed positive</td>
<td>4%</td>
</tr>
<tr>
<td>Unable to confirm result</td>
<td>27%</td>
</tr>
<tr>
<td>Incomplete testing</td>
<td>22%</td>
</tr>
</tbody>
</table>

**Conclusion:** It is important to ask all HIV positive adults, including MSM, whether they have children, and to HIV test children identified as being at risk of MTCT.

We have shown that verbal results given by parents often cannot be corroborated; therefore it is important to obtain formal documentation of HIV results for each child.

Due to the mobile nature of our patient cohort, retaining patients may be difficult and robust systems are required in order to ensure that children at risk of HIV infection complete the 18-month HIV testing schedule.

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**P70**

Audit of MMR vaccine response in HIV-infected children in a region with a recent measles outbreak

A Singh1, K Rowson2, P McMaster2 and A Tan2

1North Manchester General Hospital, Manchester, UK and 2Regional Paediatric HIV Centre, North Manchester General Hospital, Manchester, UK

**Background:** The recent increase of confirmed cases of measles in our region (111 in 2012 versus 21 in 2011) has made it very relevant that all HIV-infected children attending our large regional centre have their measles immunity checked. Furthermore all non immune children should be offered the MMR vaccine.

**Aim:**
- To assess the uptake of measles serology testing and MMR vaccination
- To determine the immune response to the vaccine

**Methods:** A retrospective review of case notes and the trust’s laboratory database was performed. The outcome data were compared using the Mann–Whitney U Test (StatsDirect Version 2.3.3).

**Results:** Of 113 eligible patients, 19 were excluded as they were no longer under our care. 94 patients remained and 80 had their measles serology checked (69%). Of these 41.2% were measles immune and the remainder were equivocal or non-immune. 87% of the latter received the MMR vaccine with a response rate of 57%, when they were not on antiretroviral treatment (ART) and 76% when they were. (not significant NS)

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**Conclusion:** Children on ART responded better to MMR immunisation compared to those who are not on ART, though this was not significant. In comparison the VL and CD4 of these two groups were all significantly different with the exception of CD4 counts and this was also recorded in clinical notes. When an untested child was identified parents were encouraged to test either through the clinic or the child’s general practitioner. When parents refused testing the case was discussed in the weekly clinic multidisciplinary meeting to decide on the best course of action.

**Results:** All 240 patients currently (January 2012) registered for care in the clinic are recorded in the database; 225 of the 240 have been interviewed and included in this report. Of the 225 patients, 78 identified as heterosexual women, 77 men who have sex with men, 6 bisexual men and 64 heterosexual men. The ethnicities are shown in the table below:

<table>
<thead>
<tr>
<th>Ethnicity</th>
<th>Women</th>
<th>Men</th>
</tr>
</thead>
<tbody>
<tr>
<td>Black African</td>
<td>55 (71%)</td>
<td>26 (10%)</td>
</tr>
<tr>
<td>Asian</td>
<td>4 (5%)</td>
<td>4 (3%)</td>
</tr>
<tr>
<td>White British</td>
<td>15 (19%)</td>
<td>113 (76%)</td>
</tr>
<tr>
<td>Other</td>
<td>4 (5%)</td>
<td>4 (3%)</td>
</tr>
</tbody>
</table>

Of the 225 patients, 212 had children; 241 children were identified. The majority were tested, tested subsequent to the interview or older than 18 years and not at risk of HIV infection. Eight of the 241 children are still untested and aged 18 and under; 3 of these are resident in UK. All three are children of fathers living with HIV who are estranged from the mothers of the children.

**Conclusion:** We identified several men living with HIV whose female partners and children may be at risk of HIV. This highlights the importance of asking people living with HIV, including men regardless of sexual orientation about any children who could potentially be at risk of vertically acquired infection.
P72
HIV and breastfeeding: Let me Google that for you...  
D Raha, M Portman, H Parker and J Wilson  
Centre for Sexual Health, Leeds, West Yorkshire, UK

Introduction: The current BHIVA position statement on infant feeding advises complete avoidance of breastfeeding (BrF). However, "BHIVA-quoting" doctors are not people's only source of health information. On average "HIV breastfeeding" is Googled 2900 times a month with 320 of these searches originating from the UK. Not all medical information found on the web is accurate. A study looking at advice on infant sleeping positions found that only 43.5% of websites were in line with current best practice. Hence we investigated the messages people receive when Googling HIV and breastfeeding.

Methods: 10 phrases related to HIV and breastfeeding were Googled (search conducted 13/12/2012). Searches were carried out using both world-wide and UK-only pages. For each search the first page of links generated was scrutinized and the 10 most frequently occurring links throughout all the searches were followed. 1 website appeared in both the UK and worldwide 'top ten'. The content of each site was reviewed focusing on initial and overall message. This evaluation was limited to the one page each link led to (or the PDF it linked to) and not the website as a whole.

Results: 19 sites were reviewed. There were 7 news articles, 8 sites giving advice and 4 linked to policy documents. The initial 'headline' message of 5/19 web pages was 'pro' breastfeeding with no distinction between resource limited (RL) and resource rich (RR) areas. 3 sites had misleading and dangerous messages, e.g. "a mother's breast milk can stop a baby contracting HIV" and "this study provides significant insight into the amazing ability of breast milk to destroy HIV and prevent potential transmission". Only 7/19 had a clear distinction between RL and RR settings.

Conclusions: It is concerning that the initial 'headline' message of 5/19 web pages was 'pro' breastfeeding with no distinction between RL and RR areas. Women could therefore get the wrong message for their situation. Information on the web pages we studied varied from being high quality and well referenced, to misleading and dangerous. This highlights the importance of supplying easily accessible and accurate information to support women's decision making. As in other areas of medical care, women living with HIV should be advised to proceed with caution when using the internet to inform their decisions on breastfeeding.

P73
Contraceptive choices for women with HIV on antiretroviral treatment: What happens in practice?  
P Thayaparan, T Balachandran and M Kawsar  
Luton and Dunstable Hospital, Luton, Bedfordshire

Background: Data are limited on the most appropriate use of contraception in the presence of antiretroviral therapy (ART), possible drug interactions and significant differences exist between guidelines. We aimed to study the pattern of contraceptive use and unintended pregnancies in our HIV cohort.

Methodology: All HIV positive women attended over a six week period were included. 111 women enrolled; 11 excluded as they attained menopause. A validated questionnaire was used and analysed by SPSS program. Summary of product characteristics of ART, contraceptives and HIV drug interaction website used to determine the interactions.

Results: 89% were 31–50 yrs, 92% Black Africans, 54% in stable relationship, 68% diagnosed >5 yrs and 56% late diagnosis; nadir CD4 < 350. After HIV diagnosis, 14% had unintended pregnancies 10% didn't use contraception or used condoms; two women had contraceptive failures one Microgynon another Implant with Kaletra. 53% on NNRTIs, 36% on PIs. Potential interaction with contraception and ARTs was 24% in 2010, 14% in 2011 and 13% in 2012.

Condoms were 22%. Condoms 45%, coils 9%, Implants 7%, pill 6% and 7% were sterilized. Miscarriage (24%) and termination of pregnancies (TOP) (32%) commonest among 40–50 yrs. Of the women who didn't use condoms 77% (P < 0.05) > 40 yrs. Women required contraception 86% obtained from HIV clinic, 9% General practitioners and 5% contraceptive clinics.

Discussion: ARTs containing PIs and NNRTIs may decrease levels of hormonal contraceptives. However, DMPA and coils remain effective when used with ARTs. In our study, there were no failures in women using coils or DMPA.

In this study women >40 yrs had more miscarriages, TOPs and not using condoms. Although fertility decrease after 40 yrs, effective contraception, especially LARCs are advised. Even though potential interactions between ARTs and contraception exist only two contraceptive failures were observed. Concomitant condom use or some protection conferred by the hormonal methods.

Conclusion: Concomitant condom use on top of effective contraception among HIV positive women on ARTs should be advised. LARC should be promoted in women with HIV particularly women >40 yrs.

Further studies are warranted to explore potential interactions or dose adjustments between hormonal contraceptives and antiretrovirals to improve contraceptive efficacy and provide evidence-based guidelines.

P74
Ultra-rapid viral suppression in an HIV seroconversion diagnosed at 39 weeks pregnant  
C Saxon, M Phillips, O MacQuillan, M Kingston and KL Chan  
Manchester Centre for Sexual Health, Manchester, UK

Background: Raltegravir is an integrase inhibitor used in the treatment of HIV-1 infection that is known to produce a more rapid reduction in viral load than other antiretroviral (ARV) drugs. This, along with increasing data to support tolerability and placental transfer during pregnancy, has led to recommendations of its use in certain situations in pregnancy where there is a need for rapid viral load suppression. We report a case in which ultra-rapid viral suppression was achieved using raltegravir containing HAART.

Case: A 35 year old lady tested positive for HIV infection at 39 weeks gestation. She was otherwise well and not taking any regular medication. She had previously tested HIV negative at antenatal booking 5 months earlier. She was immediately (Day 0) given stat doses of tenofovir 600 mg, emtricitabine 200 mg, nevirapine 200 mg and raltegravir 400 mg. She was commenced on regular ARV therapy with Truvada o.d., nevirapine 200 m.o.d. and raltegravir 400 mg b.d. The nevirapine was switched to Kaletra 3 tablets b.d. once the CD4 count was available as it was >250 × 10^3/L. An elective caesarean section (CS) was planned for 14 days' time with IV zidovudine cover and the baby to commence on triple therapy post partum. The mother's results are displayed in the table:

<table>
<thead>
<tr>
<th></th>
<th>CD4 x10^3/L</th>
<th>Viral Load (copies/ml)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Day 0</td>
<td>560</td>
<td>3057</td>
</tr>
<tr>
<td>Day 6</td>
<td>620</td>
<td>72</td>
</tr>
<tr>
<td>Day 13</td>
<td>Not done</td>
<td>&lt;40</td>
</tr>
</tbody>
</table>

Thirteen days after commencing ARV therapy (10 days over due date) she spontaneously ruptured her membranes and delivered via emergency CS. She had a healthy baby boy weighing 4180 g. He was commenced on prophylaxis using triple therapy with oral nevirapine, zidovudine and lamivudine for 4 weeks. However, once the result of the viral load (taken at the time of CS – day 13) was available this regimen was simplified to monotherapy with zidovudine. The baby was formula fed and completed the 4 weeks of oral zidovudine. His HIV DNA and RNA blood tests were negative at birth, 6 weeks and 3 months. He remains well and awaits his 18 month antibody test which is due in 10 months' time. The mother discontinued ARVs post partum and remains well with a high CD4 count.

Discussion: This case demonstrates that even in the very last week of pregnancy it is possible to achieve viral suppression at delivery. Whilst the result was not available in time to allow vaginal delivery, it enabled us to simplify the prophylaxis regimen to monotherapy, reducing the risk of side effects for the baby and complexity of administration for the mother.

[Correction added on 16 April 2013, after print publication. KL Chan was added in the list of authors and author index.]
P75
Outcome of pregnancy in the era of highly active antiretroviral therapy: a 10 year experience in southern Ireland
MG Rizzo
Cork University Hospital, Cork, Ireland

Introduction: Since the introduction of HAART prophylaxis during pregnancy we have witnessed the dramatic reduction in mother-to-child-transmission of HIV infection. The aim of this study was to look retrospectively at the epidemiology, clinical characteristics and rate of vertical transmission in our cohort in the Munster region.

Methods: We retrospectively reviewed all pregnant women with HIV who attended the ID clinic from 1st January 2002 to 30th December 2012. Patients’ demographics, laboratory data, pharmacy records and outcome of pregnancies were reviewed and statistically analysed

Results: 104 HIV positive women, with a total of 171 pregnancies, were seen from January 2002 to December 2012 at Cork University Hospital: 55 patients were previously known to be HIV infected at their first pregnancy and 49 were diagnosed during antenatal screening (median of 32 week gestation at diagnosis). 25 women were from Europe/Asia while 79 were African. Of the patients diagnosed with HIV prior to pregnancy, 16 where on treatment all of whom had no detectable virus at the start and throughout pregnancy. The median week of gestation at the start of the antiretroviral prophylaxis was 28 weeks before 2006 and 20 weeks after 2006, in accordance with the National Guidelines. The HAART regime used as prophylaxis was in line with current National Guidelines. 15 pregnancies ended in mismanagement of gestation, 28 weeks before 2006 and 20 weeks after 2006. 12 of gestation and 2 pregnancies resulted in intrauterine death at 28 weeks. 155 pregnancies progressed to delivery at full term but 10 infants were born before the 37th week of gestation, with one baby girl born at 23 weeks of gestation: 93 had spontaneous vaginal delivery and 62 underwent C-Section. Two babies were HIV positive: in one case the mother was a late presenter at 38 of gestation with baby born at week 38 + 4; and in other case the mother had poor compliance with therapy and her viral load was detectable at the time of labour. The overall number of pregnancies per year has been stable over the ten years, with an average of 14 pregnancies per year.

Conclusion: Since the introduction of HAART the life expectancy in HIV-positive women has drastically improved and more HIV-positive women are likely to have a pregnancy. The use of HAART with high level of adherence and a close clinical management during pregnancy has shown to reduce the vertical transmission of HIV.

P76
Two HIV-positive breastfeeding mothers in the UK – their story
M Portman, H Parker, O Poole and J Wilson
Leeds Teaching Hospitals NHS Trust, West Yorkshire, UK

Background: Following publication of breastfeeding (BrF) studies carried out in resource limited countries, some pregnant women living with HIV in the UK enquire about BrF. The 2010 BHIVA Position Statement recommends complete in resource limited countries, some pregnant women living with HIV in the UK

Introduction: Since the introduction of HAART prophylaxis during pregnancy and the quality of life in patients with HIV infection has significantly improved. Women living with HIV who desire to become mothers can now do so much more safely than in previous years due to the dramatic reduction in vertical transmission after the introduction of HAART and HAART prophylaxis during pregnancy. The aim of this study was to look retrospectively at the efficacy and safety of a newer PI based regime with boosted darunavir in preventing the mother to child transmission of HIV infection.

Methods: We retrospectively reviewed data for all pregnant women with HIV who attended the ID clinic from 1st January 2002 to 30th December 2012 and who had tenofovir/emtricitabine and boosted darunavir as HAART regime during pregnancy. Patients’ demographics, pertinent laboratory data, outcome of pregnancy and pharmacy records were reviewed and statistically analysed

Results: In our cohort of HIV infected women 14 pregnancies received a HAART regime based on tenofovir/emtricitabine and boosted darunavir: 10 pregnancies progressed to delivery at full term and 4 women are currently still pregnant. One pregnancy ended in miscarriage (8 weeks of gestation), due to gynaecological reasons. 5 women were already on boosted darunavir regime at the start of the pregnancy, with an undetectable viral load at the start and throughout the pregnancy. 5 women started HAART before the 20th week of gestation, as per National Guidelines; in this group the median CD4+ count at the start of the pregnancy was 228 cells/μl and the median value of viral load was 22,500 copies/ml, with an undetectable viral load (<20 copies/ml) reached after 3 months of starting treatment and maintained throughout the pregnancy. The 10 new babies were all HIV negative. We observed no specific adverse reactions or side effects that could compromise adherence. Review of laboratory data showed no abnormal increase in liver or renal function. All the babies were born after the 37th week of gestation.

Conclusion: The use of HAART with high level of adherence and a close clinical management during pregnancy has shown to dramatically reduce the vertical transmission of HIV. New once-a-day regime combinations have proven to be effective and to improve adherence. In our small study we note the efficacy and safety of a regime with boosted darunavir in preventing mother-to-child transmission. More data are needed to support these results.

Complications of HIV Disease or Treatment

P78
Neurocognitive impairment (NCI) in HIV-1-infected adults in sub-Saharan Africa: a systematic review and meta-analysis
A Habib1, A Yakasai2, L Owolabi1, A Ibrahim3, Z Habib1, M Gudaji1, K Karaye1, D Ibrahim1 and I Nashabaru
1Bayero University Kano, Kano, Nigeria, 2Aminu Kano Teaching Hospital, Kano, Nigeria and 3Federal NeuroPsychiatry Hospital, Kware, Sokoto, Nigeria

Background: In Sub-Saharan Africa (SSA) estimates of HIV related neurocognitive impairment (NCI) and the effect of antiretroviral-therapy was keen to do everything possible to help bonding and felt BrF was an important part of this. Her HIV VL had been undetectable on treatment since diagnosis. She BrF for 5/52 when her viral load was 52 copies/ml. She also had concerns she was not producing enough milk so switched to formula feed. The baby remains under paediatric review. Her 6/52 post-delivery PCR was negative and she awaits her 6/52 and 3/12 HIV PCR post stopping BrF

Conclusion: More women are likely to enquire about BrF as they become aware of current research. Women require accurate detailed information to be able to make informed decisions, so we have produced a checklist for use in our HIV clinic. If choosing to BrF they need professional support before, during & after BrF. We found that stopping BrF was an emotional event for our mums.

At present data regarding mode of feeding is not collected as part of the UK National Study of HIV in pregnancy & childhood. As BrF is likely to increase we suggest it should be.

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(ART) on it have varied. A systematic-review and meta-analysis was conducted to obtain the prevalence, burden and impact of ART on NCI.

Methods: We searched Medline and other databases for relevant English language publications up to June 2012. Prospective studies in adults from SSA reporting HIV status, utilization of ART and presence of NCI determined using International HIV Dementia Scale (IHDS) were selected. Study quality was assessed using standard criteria. Meta-analysis used Random-effects model (REM) to derive estimates and meta-regression was done to assess the effects of age, gender, education and CD4 cell counts on NCI. Publication bias was assessed with 2 statistical methods and sensitivity/scenario analyses were conducted.

Results: Eighteen (18) studies with quality data from 7 countries in SSA were included. Among adult HIV patients in SSA the frequency of NCI pre-ART was 42.37% (95% confidence interval (CI) = 32.18–52.56%) and 30.39% (95% CI = 13.17–47.61%) among those on ART for > 6 months. In restricted analyses, respective NCI estimates in studies from Uganda were 46.49% (95% CI = 30.62–62.37%) and 28.50% (13.58–50.30%). HIV positive patients compared to negative controls were predisposed to NCI (Odds Ratio (OR) (95% CI) = 6.49 (1.68–25.08) or an attributable risk for NCI of 85%. Meta-regression showed no statistically significant associations between age, gender, CD4 cell counts and years of education with NCI. Patients on ART were less likely to have NCI compared to HIV infected pre-ART patients with OR of 0.36 (95% CI = 0.19–0.69). In longitudinal studies with same patients followed before and ≥6 months after ART the OR of NCI after ART compared to pre-ART was 0.22 (95% CI = 0.14–0.37). The combined burden of NCI among pre-ART and on-ART patients in SSA was estimated at 8,121,910 (95% CI = 5,772,140–10,471,680). No publication bias was observed and scenario analyses yielded similar estimates. Analysis was limited by differing stages of HIV infection, viral clades and environmental factors.

Conclusions: HIV strongly predisposes to NCI leading to a huge burden in SSA. Scale-up of ART can substantially reduce NCI in the region.

P79
Modelling the neuropathological consequences of HIV vaccines that confer partial protection
D Ferguson1, S Clarke1, C Ham1, A Das2, B Berkout1, A Meiser3, S Patterson3, N Berry4 and N Almond1
1NIBSC, South Mimms, UK, 2University of Amsterdam, Amsterdam, Holland and 3Imperial College London, London, UK

Background: Neurocognitive impairment (NCI) remains a significant complication of chronic HIV infection despite combination anti-retroviral therapies (cART) providing continued suppression of peripheral viral loads. The cause of these impairments remains poorly understood. Obtaining relevant clinical samples is difficult. We have used a non-accelerated SIV/macaque model to examine the effects of suppressed viral loads on development of NCI associated neuropathology. Previously, we have shown that loss of viral control is not required for inflammatory neuropathology to develop. Low level viral replication, astrogliosis and microgliosis were detected even when viral set point loads were below detection. More recently, we have demonstrated that neuroinflammation is initiated rapidly following infection and continues to develop when set-point viral loads remain undetectable. We have now extended our studies further, to investigate whether blunting of the primary viremia alone alters the kinetics of the development of chronic neuroinflammation.

Methods: We obtained brain sections from a non-accelerated macaque study in which SIV Gag based vaccines comprising three primes with rDNA boost resulted in significant delay in acquisition of acute viremia alone altered the kinetics of the development of chronic neuropathology. Associated with reduced neuropathology when compared to unvaccinated controls. It is unlikely that many individuals would be identified and treated with cART sufficiently quickly to exert a benefit on neuropathology. Therefore, new drug approaches may be required that targets neuropathology rather than relying solely on anti-viral approaches may prove more successful preventing neurological complications of HIV

P80
Vanishing bile duct syndrome in HIV-infected patients: a case series
E Mabonga1, K Childs1, R Brun1, S Jekabkumar2, S Aryianayagam2, M Nelson3, K Agarwal1, M Tenant-Flowers1 and C Taylor1
1King’s College Hospital, London, UK, 2Peterborough and Stamford Hospitals, Peterborough, UK and 3Chelsea and Westminster Hospital, London, UK

Background: Vanishing bile duct syndrome (VBDS) is a rare acquired disorder in adults associated with progressive destruction and disappearance of the intrahepatic bile ducts and ultimately cholestasis. The diagnosis is confirmed by histopathology. Multiple aetiologies have been identified including infections, neoplastic disorders, autoimmune conditions and drugs. In HIV negative patients the commonest causes of VBDS in published case reports are drugs and Hodgkin’s lymphoma (HL). This condition is even rarer in HIV with only 4 published case reports attributing VBDS to: drugs, in 3 cases there was a temporal relation to starting cART and other antibiotics to symptoms; and viral infection, 1 case the patient had advanced HIV with cytomegalovirus infection. We report the first case series of VBDS in HIV-1-infected patients.

Method: Case notes and electronic patient records review of patients known to have a histological diagnosis of VBDS.

Results: Five patients were identified, all male. All presented with symptoms of cholestasis. There was no evidence of cholangiopathy on magnetic resonance imaging. Biopsy of their livers demonstrated cholestasis with severe ductopenia. Characteristics of the patients are shown in the table below.

<table>
<thead>
<tr>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>45</td>
<td>49</td>
<td>28</td>
<td>51</td>
</tr>
<tr>
<td>Ethnicity</td>
<td>White</td>
<td>Black</td>
<td>B</td>
<td>B</td>
</tr>
<tr>
<td>Nadir CD4</td>
<td>Unknown</td>
<td>75</td>
<td>7</td>
<td>171</td>
</tr>
<tr>
<td>CD4 at presentation</td>
<td>106</td>
<td>210</td>
<td>13</td>
<td>366</td>
</tr>
<tr>
<td>VL at presentation</td>
<td>&lt;40</td>
<td>&lt;40</td>
<td>67169</td>
<td>&lt;40</td>
</tr>
<tr>
<td>HAART prior to years presentation</td>
<td>Atripla/3</td>
<td>Atripla/4</td>
<td>Atripla/4</td>
<td>Darunavir (DRV)&lt;1</td>
</tr>
<tr>
<td>Aetiology</td>
<td>HL</td>
<td>HL</td>
<td>Epstein-Barr virus</td>
<td>Interuption and change cART</td>
</tr>
<tr>
<td>Management</td>
<td>Chemotherapy, liver transplant</td>
<td>Interuption and change cART, Chemotherapy</td>
<td>Interuption and change cART, Chemotherapy</td>
<td>Started cART</td>
</tr>
<tr>
<td>Outcome</td>
<td>Alive, normal liver biochemistry (LFTs)</td>
<td>Alive, abnormal liver failure and death from HL</td>
<td>Alive, clinical improvement, abnormal LFTs</td>
<td>Alive, clinical improvement, abnormal LFTs</td>
</tr>
</tbody>
</table>

The initial liver biopsy in patient B demonstrated features of VBDS; a second biopsy was done 15 months later as symptoms did not improve which revealed HL. All patients, with the exception of patient E (< 1 year) had chronic HIV infection (2–7 years) with features of immune suppression with or without detectable HIV viremia. Compared to the literature more of our cases were unrelated to drug exposure.

Conclusion: In HIV-infected patients who present with cholestasis and normal intrahepatic bile ducts on imaging, a diagnosis of VBDS should be considered. A thorough drug history needs to be ascertained and early biopsy of their livers demonstrated cholestasis with severe ductopenia. Characteristics of the patients are shown in the table below.
P81 HIV encephalitis following interruption of antiretroviral therapy: a case series
S Singh1, S Shaw2, D Churchill3, P Holmes1, R Kulasangaram1 and O Dosekun1
1Guy’s and St Thomas’ Hospitals NHS Foundation Trust, London, UK and 3Imperial College London, London, UK

Background: HIV encephalitis (HIVE) is well described in primary HIV infection. There are also reported cases of neurological impairment associated with HIV replication in cerebrospinal fluid (CSF) despite good immune status and suppressed viraemia. We present 5 cases of chronically infected patients presenting with acute encephalitis following antiretroviral therapy (ART) interruption.

Methods: We retrospectively identified patients infected with HIV for more than 6 months and on ART attending 2 large HIV centres, who presented with neurological symptoms and signs consistent with acute encephalitis between 2010 and 2012 for which no alternative cause was found.

Results: 5 cases were identified. Mean CD4 count was 625 cells/μl (144–1353), and all had discontinued ART 2 to 4 weeks prior. Presenting clinical features included headache (n = 1353), and all had discontinued ART 2 to 4 weeks prior. Presenting clinical features included headache (n = 3), confusion (n = 3) and ataxia (n = 3). All had extensive high signal white matter changes on magnetic resonance imaging (MRI). MRI in 1 case additionally showed cerebral oedema with tonsillar herniation. In 4 cases where lumbar puncture was not repeated in 4 cases and showed improvement of CSF parameters (day 4–20 after recommencing ART). 4 patients had repeat MRI 6–14 days following treatment. 3 showed progression of previously described changes, whilst 1 showed improvement (day 14).

Conclusions: Withdrawal of ART can lead to an acute encephalitis associated with rebound plasma viraemia, regardless of immune status. The diagnosis of HIVE is one of exclusion, and assessment includes neuroradiological examination and paired plasma and CSF HIV viral loads. There is a paucity of literature regarding the optimal management of HIVE although there is some evidence that ART tailored to increase CNS penetration might be beneficial. In our cases, standard ART regimens were sufficient to produce clinical resolution. Clinicians should be vigilant about the risk of HIVE in intermittently adherent individuals, and include this in their discussions about adherence.

P82 The impact of age on associations between HIV–disease markers (immunological and virological) and systemic markers of metabolic function in therapy-naïve HIV-infected subjects in the UK Collaborative HIV Cohort (CHIC) M Samuel1, S Jose2, A Winston1 and C Sabin1
1Guy’s and St Thomas’ Hospitals NHS Foundation Trust, London, UK, 2University College London, London, UK and 3Imperial College London, London, UK

Background: HIV influences many metabolic pathways but the impact of ageing on such processes remains elusive. We investigated associations between HIV viral load (VL), CD4 cell count and markers of metabolic function in antiretroviral (ART)-naïve subjects and assessed whether associations differed by age group.

Methods: ART-naïve subjects from the UK CHIC study were included. Multilevel linear regression models assessed associations between CD4/VL and: haemoglobin (Hb, n = 23230 observations), low density lipoprotein cholesterol (LDL, n = 4124), high density lipoprotein cholesterol (HDL, n = 5296), total cholesterol (TC, n = 8382), triglycerides (TG, n = 7836) and albumin (Alb, n = 19390). Tests for interaction were used to assess whether associations between CD4/VL and each marker differed in the following age strata: <30, 30–50 and >50 years (yrs).

Results: Data were collected on 15088 subjects between 1996 and 2011, 76% male, 57% white, 24% black African. Subjects were aged < 30 (21.8%), 30–50 (69.4%) and >50 (9.8%) years. Median (Interquartile Range): CD4 was 257 (96–428) cells/mm²; VL was 4.86 (4.25–5.38) log₁₀ copies/ml. Results from multivariable analyses showed that greater VL and lower CD4 were correlated with lower TC, LDL, Hb and Alb but increased TG levels (Table 1). Lower CD4 was correlated with lower HDL but there was no evidence of association between HDL and VL. There was evidence that age modified the CD4 association with Hb (interaction p < 0.001) and Alb (interaction p < 0.001), but not its association with any other markers.

Table 1 Associations between CD4, VL and metabolic markers in the multivariable analysis

<table>
<thead>
<tr>
<th>CD4</th>
<th>β*</th>
<th>95% CI</th>
<th>VL</th>
<th>β*</th>
<th>95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>TC</td>
<td>0.025</td>
<td>0.017</td>
<td>0.033</td>
<td>-0.214</td>
<td>-0.255</td>
</tr>
<tr>
<td>LDL</td>
<td>0.019</td>
<td>0.009</td>
<td>0.028</td>
<td>-0.121</td>
<td>-0.170</td>
</tr>
<tr>
<td>HDL</td>
<td>0.034</td>
<td>0.022</td>
<td>0.046</td>
<td>-0.039</td>
<td>-0.022</td>
</tr>
<tr>
<td>TG</td>
<td>-0.011</td>
<td>-0.021</td>
<td>-0.002</td>
<td>0.057</td>
<td>0.009</td>
</tr>
<tr>
<td>Hb</td>
<td>0.115</td>
<td>0.106</td>
<td>0.125</td>
<td>-0.289</td>
<td>-0.338</td>
</tr>
<tr>
<td>Alb</td>
<td>0.343</td>
<td>0.310</td>
<td>0.376</td>
<td>-1.039</td>
<td>-1.204</td>
</tr>
</tbody>
</table>

Age strata specific results

Hb < 30 yrs | 0.093 | 0.074 | 0.111 | * represents the impact of a 50 cell/mm² increase in CD4,
> 5 yrs | 0.157 | 0.128 | 0.187 | or 1 log₁₀ copies/ml increase

Alb < 30 yrs | 0.236 | 0.171 | 0.300 | in VL on the value of
> 50 yrs | 0.357 | 0.319 | 0.395 | marker adjusted for age, sex,

Conclusion: Age modified associations between CD4 count and Hb/Alb, but did not modify the association between VL and any metabolic marker. The impact of CD4 count on Hb/Alb levels increased with increasing age.

P83 Glomerular capillary congestion in HIV: a novel histological finding
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Royal Liverpool University Hospital, Liverpool, UK

Background: Chronic kidney disease has been described in up to 20% of HIV positive patients and associated with lower CD4 count. Gomorulonephropathies as well as tubulopathies caused by HIV, co-infection, co-morbidity and antiretroviral therapies are well described. As part of lifestyle assessment of a large North-West cohort, renal function is assessed using eGFR, and urinary dipstick. Along side other functional parameters, if haematuria is present patients are jointly assessed by renal standard care with patient consent. CT and/or MR renogram was performed afterwards. Biopsy material was processed routinely with immediate transfer into formaldehyde, fixation, staining and immunohistochemistry.

Results: Between June 2011 and November 2012,13 HIV infected patients with persistent microscopic haematuria underwent renal biopsy. The median eGFR was 76 ml/min (range 48–90 ml/min including 4 patients with CKD stage 1, 7 CKD stage 2 and 2 CKD stage 3). All patients had CD4 counts greater than 200 (range 246–781). The 9 that were taking antiretroviral treatment all had fully suppressed viral loads. 6 of these drug regimes contained tenofovir.

Histo-pathological examination showed mild to severe glomerular and peritubular capillary dilatation and congestion in all cases. 9 patients showed additional tubular changes (red cells in tubular lumen or acute tubular necrosis) and 2 patients interstitial change (oedema, chronic inflammation or fibrosis). For 2 patients with eGFR < 60 ml/min at the time of renal biopsy, HIVAN was evident in one and ATN in the other. (Fixation artefact is unlikely as these findings were not seen in renal biopsies of viral hepatitis patients processed in the same manner). CT and MR renogram showed no abnormalities in the renal arteries, renal veins or IVC to account for the capillary dilatation and congestion.

Conclusion: This appears to be a novel histopathological finding, not previously described in HIV disease and independent of anti-retroviral drugs, advancing CD4 count and renal dysfunction. Its significance and dynamic mechanism is not established and will require further evaluation.
P84
Neurological burden in HIV-positive inpatients: a prospective audit of consecutive admissions over a 3-month period
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Chelsea and Westminster Hospital, London, UK

Background: Neurological complications of HIV infection may result from opportunistic infection, tumour, direct effects of the virus, or drug toxicity. The changing demographics of HIV infection, particularly the ageing population, is likely to alter the spectrum of neurological disease. We audited acute inpatients with HIV infection to demonstrate the prevalence of neurological symptoms and signs in our cohort.

Methods: Over a 3-month period, consecutive patients admitted to an acute HIV ward underwent detailed neurological assessment, including history, screening examination and cognitive assessment.

Results: Of 84 patients admitted, 73 were assessed, 6 were excluded as too unwell to consent or participate, and 5 were missed. Of those assessed, 63 were male. Median age was 44 years (range 25–70). Median nadir CD4 count was 100 cells/µl (range 0–604, n = 61) and median CD4 count at admission was 366 cells/µl (1–1396, n = 72). There were 65 patients anti-retroviral drug-treated with a median duration of treatment of 4 years (range 5 days–26 years).

Incidence of pre-existing neurological disorders was high: 41% had previously diagnosed neurological or ophthalmic disorders and 27% reported previous assessment by a neurologist.

Neurological symptoms were the reason for admission in 10% patients, and the 4th most common reason for admission by organ system. Six patients had CNS infections. CNS infection as cause for admission was significantly associated with current CD4 < 100 cells/µl (p = 0.009).

Neurological symptoms were frequently reported (73% patients) and 60% patients had abnormal neurological signs on clinical examination. Asymptomatic neurological signs were frequently found. Inpatient referral to neurology was made for 8 (11%) patients.

Conclusions: There is a high incidence of neurological symptoms and signs in the acute HIV setting. Physicians treating HIV-infected inpatients should be vigilant for neurological disease. Service development for HIV inpatient care needs to incorporate access to neurological expertise and investigations.

P85
Prevalence and causes of low plasma phosphate in an outpatient HIV cohort
K Manavi
University Hospitals Birmingham, Birmingham, UK

Background: Low serum phosphate is a common findings amongst certain groups of hospitalised patients; up to 80% of patients with sepsis, alcoholism, or diabetic ketoacidosis may experience hypophosphatemia. Because of the risk of renal tubulopathy with tenofovir, low serum phosphate level may be used as a marker of tenofovir induced tubulopathy in HIV infected patients. Previous studies however have shown little difference between the rate of low serum phosphate and use of tenofovir. Low serum phosphate may be secondary to a number of clinically significant conditions; hyperparathyroidism, low serum vitamin D, and GI malabsorption. The aim of the present study was to investigate the medical causes of low serum phosphate in a group of HIV infected patients.

Methods: This was a retrospective study on HIV infected patients who attended an HIV centre over a 12 month period (1st January to 31st December 2012). Measurement of serum phosphate is part of the routine investigations in the department. Information on patients’ most recent serum phosphate (SP), calcium, their demography, antiretroviral (ARV) regimes, duration of ARV treatment, plasma CD4 and HIV viral load counts were recorded. Where available, data on serum vitamin D and parathyroid hormone (PTH) were also saved.

Results: Serum phosphate levels of 1274 patients were measured during the study period, 213 (17%) had plasma phosphate level less than 0.8 mmol/L. This included 152 (18%) of patients on tenofovir containing ARV regimes, and 29 (23%) of patients on abacavir containing ARV regimes. Low SP was associated with high serum calcium (more than 2.6 mmol/L) in two patients; both with elevated serum PTH (above 65 ng/L). Eight patients had low calcium (less than 2.1 mmol/L) with low SP; 2/8 had low serum vitamin D. Low SP was associated with normal serum calcium (between 2.1 and 2.6 mmol/L) in 203 patients; 8/66 of those patients had PTH levels above 65 ng/L. Two patients had low SP and normal serum calcium had albuminuria; one for IgA nephropathy and one with hypertensive nephropathy.

Conclusion: Low SP was common in the study cohort. Low vitamin D level (n = 38, 37%), and primary hyperparathyroidism (n = 4) were the most important causes of hypophosphatameia in the study. No association between low SP and ARV regime was found. HIV infected patients with low SP should be investigated for relevant medical disorders.

P86
Does dietetic input improve symptomatic outcome of chronic diarrhoea due to pancreatic exocrine dysfunction?
K Marshall, K Percy, R Walters and M Nelson
Chelsea and Westminster Hospital, London, UK

Background: Chronic diarrhoea is a significant cause of morbidity in patients with HIV. Pancreatic exocrine dysfunction is a known cause and pancreatic enzyme replacement therapy (PERT) is the mainstay of treatment. The efficacy of dietary manipulation alongside PERT is unknown. We therefore investigated symptom improvement of individuals prescribed PERT alone or those who received dietetic input alongside PERT.

Method: All HIV positive patients who were prescribed PERT over a 2 year period were assessed. Primary outcome data included dietetic input, faecal elastase or total faecal fat measurement, PERT dose, and symptomatic changes after therapy.

Results: Of the 71 patients, 65 (91.5%) were receiving ART at the point of PERT prescription, 81% had a regime containing an NRTI (Nucleoside Reverse Transcriptase Inhibitors) of the 81% just over half (51%) had a PI (Protease Inhibitor) and NRTI in the regime with only 12.5% containing a PI and NNRTI (Non-Nucleoside Reverse Transcriptase Inhibitors).

PERT doses given per meal ranged from 10,000–160,000 units dependent upon fat content and symptomatic improvement. The dietetic intervention consisted of practical advice on estimating dietary fat content, matching PERT doses to total fat consumed, changing dosing based on symptoms experienced and recommending appropriate capsule size.

Of the 71 patients prescribed PERT, 43 (60.5%) had evidence of symptomatic improvement, 11 (15.5%) had no improvement and 17 (24.0%) unknown. Of the 43 with symptom improvement, 33 (77%) had seen a Dietitian and 10 (23%) had not. Of the 11 with no symptom improvement, 6 (54.5%) saw the dietitian and 5 (45.5%) did not.

Conclusion: Faecal elastase sampling should form part of the routine work-up for HIV positive patients with chronic diarrhoea. It is also important to consider the ART combination to highlight any perceived risk of pancreatic exocrine dysfunction. The findings indicate a positive trend on symptomatic outcome with dietetic input. If PERT is commenced the patient should be assessed by a specialist dietitian at baseline to record full gastroenterological symptoms, recommend dietary changes and PERT dosing.
Comparison of the prevalence of nutritional issues referred for dietetic management in an HIV centre in 2007 and 2012 – a retrospective analysis

R Walters, K Percy, K Marshall and M Nelson
Chelsea and Westminster Hospital, London, UK

Background: Despite the availability of HAART there remains a high incidence of associated co-morbidities and increased chronic health complications associated with ageing and HIV. We have evaluated the changes in outpatient referrals analysed in 2007 and 2012 to identify possible improvements in the provision of specialised dietetic care.

Method: We analyzed the referrals to the specialist HIV dietitian team over a 12 month period and compared this to pre-existing analysis of the dietetic referrals in 2007.

Results: A total of 504 individuals were seen in an outpatient setting between January and November 2007 compared with a total of 806 individuals seen between January and November 2012. The table below represents an increase in referrals for weight gain advice, weight reduction advice and diabetes. There has been an increase in the reasons for referral including pancreatic exocrine deficiency and bone health.

<table>
<thead>
<tr>
<th>Reason for referral</th>
<th>% Referrals 2012</th>
<th>% Referrals 2007</th>
</tr>
</thead>
<tbody>
<tr>
<td>Other</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>Weight gain advice</td>
<td>40</td>
<td>27</td>
</tr>
<tr>
<td>Diabetes / IGT</td>
<td>4</td>
<td>0</td>
</tr>
<tr>
<td>Non specific diet advice</td>
<td>1</td>
<td>15</td>
</tr>
<tr>
<td>Lipid lowering advice</td>
<td>23</td>
<td>29</td>
</tr>
<tr>
<td>Pancreatic exocrine deficit</td>
<td>5</td>
<td>0</td>
</tr>
<tr>
<td>Symptom control</td>
<td>3</td>
<td>12</td>
</tr>
<tr>
<td>Bone health</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>Weight reduction</td>
<td>15</td>
<td>11</td>
</tr>
<tr>
<td>Newly diagnosed</td>
<td>3</td>
<td>5</td>
</tr>
</tbody>
</table>

Conclusion: Outpatient referrals has increased by 60% since 2007 in line with an increasing cohort. This data suggests there is a significant increase in referral for weight gain advice and weight reduction advice. However there is also an increase in specialised dietary advice for conditions associated with HIV. The specialised dietitian needs to be competent not only in specialised HIV care but also the specific issues associated with long term HIV.

Perinatally infected HIV-positive young adults have low levels of cardioprotective natural antibodies to phosphorylcholine, an epitope of oxidised LDL

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1Imperial College School of Medicine, London, UK and 2Imperial College NHS Trust, London, UK

Background: In the modern era of highly active antiretroviral therapy (HAART) perinatally infected children are graduating into adult services. In an on-going study of risk of cardiovascular disease (CVD) and its aetiology in young adults perinatally infected with HIV, we have explored the levels of natural antibodies (NA) against phosphorylcholine (PC). NA are part of the innate immune system and are active in clearing up cellular debris. They are antibodies found in the complete absence of exogenous antigenic stimulation and are polyreactive, recognising oxidised cellular debris. Oxidised LDL(ox-LDL) is a potent driver of atherosclerosis; recent evidence suggests that NA play an active role in clearing ox-LDL and some have been found to be cardioprotective.

Methods: Perinatally infected HIV positive individuals were recruited from the transition clinic and negative controls from the genitourinary walk-in service at Imperial College NHS Trust, London, UK. Participants were 18–24 years old and matched by sex, race and smoking status. Serum NA levels of IgM and IgG anti-PC were determined by ELISA. The ELISA results were validated to less than 5% variability and assays were performed in triplicate. Differences were assessed by ANOVA in SPSS version 19.

Results: Twenty perinatally HIV positive and 16 matched controls enrolled.

<table>
<thead>
<tr>
<th>Feature</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean change in T Score</td>
<td></td>
</tr>
<tr>
<td>before and after treatment</td>
<td></td>
</tr>
<tr>
<td>Overall</td>
<td></td>
</tr>
<tr>
<td>Alendronate</td>
<td></td>
</tr>
<tr>
<td>Ibandronate</td>
<td></td>
</tr>
<tr>
<td>Lumbar spine</td>
<td>0.116</td>
</tr>
<tr>
<td>(0.2 (33.0%))</td>
<td>(0.4 (26.5%))</td>
</tr>
<tr>
<td>Femoral neck</td>
<td>0.514</td>
</tr>
<tr>
<td>(0.5 (18.8%))</td>
<td>(0.6 (20.7%))</td>
</tr>
</tbody>
</table>

Conclusion: HIV positive, perinatally infected, young adults have lower levels of natural antibodies to phosphorylcholine. Low levels of these cardioprotective NA may represent a cardiovascular risk factor for these individuals.

Effect of bisphosphonates on the treatment of BMD abnormalities in an HIV–1–infected cohort

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1Imperial College School of Medicine, London, UK and 2Chelsea and Westminster Hospital, London, UK

Background: Osteoporosis and osteopenia have been independently associated with HIV–1 infection, the incidence and pathogenesis of which remains unclear. We evaluated the effect of different bisphosphonates on BMD evolution in HIV–1 infected individuals requiring therapy for deficient BMD.

Methods: All HIV–1–infected individuals who received bisphosphonates between May 2007 and August 2011 were identified from a departmental database and crosschecked with a pharmacy database to ensure full case ascertainment. Inclusion criteria were receipt of either alendronate or ibandronate, and availability of paired DEXA scans.

Results: Of 142 HIV–1 infected individuals, 51 were included for analysis. Forty four were male (86.3%) and the median age was 55 years (range: 33–81). Median CD4 count was 401 cells/μL and viral load was < 50 copies/ml in 92.5% of individuals. The prevalence of osteoporosis as defined by the WHO Scientific Group criteria was 45%. Twenty six (51%) received alendronate and 25(49%) ibandronate. Mean time between pre- and post-treatment DEXA scans was 30.7 months (range: 11–61). Changes in mean T-scores are described in Table 1. Table 2 outlines the rates of osteoporosis pre- and post-treatment.

Conclusion: Less than half the patients were followed up with a repeat DEXA scan within 2 years. Despite an overall improvement in femoral neck T-scores after 2 years of bisphosphonate treatment, this did not translate into a clinical benefit in the majority of patients.

Table 1

<table>
<thead>
<tr>
<th>Group</th>
<th>Mean change in T Score before and after treatment</th>
<th>Mean change in T score between alendronate and ibandronate p value (paired t test)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overall</td>
<td>Mean change in T score</td>
<td>p value</td>
</tr>
<tr>
<td>Alendronate</td>
<td>Overall</td>
<td>Mean change in T score between alendronate and ibandronate p value (paired t test)</td>
</tr>
<tr>
<td>Ibandronate</td>
<td>Mean change in T score</td>
<td></td>
</tr>
<tr>
<td>Lumbar spine</td>
<td>0.2 (33.0%)</td>
<td>0.039</td>
</tr>
<tr>
<td>(p = 0.170)</td>
<td>(p = 0.087)</td>
<td></td>
</tr>
<tr>
<td>Femoral neck</td>
<td>0.5 (18.8%)</td>
<td>0.514</td>
</tr>
<tr>
<td>(p = 0.025)</td>
<td>(p = 0.117)</td>
<td></td>
</tr>
</tbody>
</table>

Table 2

<table>
<thead>
<tr>
<th>Group</th>
<th>Proportion with osteoporosis (%)</th>
<th>Before treatment</th>
<th>After treatment</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overall</td>
<td>45.1</td>
<td>29.4</td>
<td>0.151</td>
<td></td>
</tr>
<tr>
<td>Alendronate</td>
<td>42.3</td>
<td>26.9</td>
<td>0.382</td>
<td></td>
</tr>
<tr>
<td>Ibandronate</td>
<td>48.0</td>
<td>32.0</td>
<td>0.387</td>
<td></td>
</tr>
</tbody>
</table>
P90
Hyperparathyroidism: a silent epidemic amongst HIV-infected patients

K Manavi
University Hospitals Birmingham, Birmingham, UK

Background: Parathyroid hormone (PTH) has a significant role in calcium homeostasis. The level of serum PTH is directly controlled with the level of serum ionised calcium. PTH increases ionised calcium by increase in the release of calcium and phosphate from the bone tissues, increased intestinal absorption of calcium and increased calcium re-absorption in the kidneys. PTH increases urinary excretion of phosphate (phosphaturia). Elevated serum PTH can lead to a wide range of clinical complaints and long term complications if undiagnosed. Some of the laboratory manifestations of raised PTH may resemble those of renal tubulopathy that have been reported with tenofovir. High prevalence of low vitamin D amongst HIV patients can lead to secondary hyperparathyroidism in a proportion of patients. Emerging reports also highlight the challenges of early diagnosis of primary hyperparathyroidism in a small proportion of patients.

The aim of the present study was to investigate the prevalence of hyperparathyroidism in a group of HIV infected patients, and to establish their types of hyperparathyroidism.

Methods: Retrospective cross sectional analysis of HIV infected patients with measurements of serum PTH because of their abnormal serum calcium and phosphate between 2007 and 2012. The clinical protocol indicates that patients with persistent low serum vitamin D or raised serum calcium should have their serum PTH measured. Clinicians can measure PTH when there are clinical suspicions of hyperparathyroidism.

Results: Serum PTH of 323 HIV patients were measured during the study period. Raised serum PTH (greater than 65 ng/L) was recorded for 77 (24%) patients. This included 72 patients of non-White ethnicity; 56 women and 22 men. 59 patients were on antiretroviral combinations for over 48 weeks; 52 (88%) had viral load count of less than 50 copies/mL. Hyperparathyroidism in this group was classified as primary (elevated serum calcium, low serum phosphate) in three patients. Seven patients had low serum calcium and low serum phosphate. Amongst 55 patients with normocalcaemic hyperparathyroidism 33 had low serum vitamin D levels. Further investigations on the causes of raised PTH of the 22 patients with normal serum vitamin D levels is required; GI disorders, renal insufficiency, low dietary calcium intake, and primary hyperparathyroidism.

Conclusion: The high rate of raised serum PTH in the study groups patients is alarming. Prospective studies will help in better understanding of scope of this condition in HIV infected patients.

P91
Low vitamin D levels in people taking antiretrovirals: is blanket supplementation justified?

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1Cardiff Medical School, Cardiff, UK and 2Cardiff and Vale University Health Board, Cardiff, UK

Background: Low vitamin D levels are common in HIV positive individuals. However, UK and European guidelines differ on their advice regarding their investigation and management. Our local organisational guidance suggests that all patients taking antiretrovirals should be offered replacement and maintenance, without the need to assess vitamin D status beforehand. We aimed to identify the prevalence of vitamin D deficiency in our clinic population and the impact of applying our local guidance.

Method: Data were collected retrospectively from the notes of all patients attending an urban HIV clinic over a 2 week time period in March 2012, with the most recent vitamin D level recorded. Vitamin D levels were considered to be low if they were deficient (< 10 ng/L) or insufficient (10–20 ng/L).

Results: Data were collected on 110 HIV positive patients. 54 patients were already on vitamin D supplementation, in the form of cholecalciferol (n = 10), Forceral (n = 43) or Calci chew D3 forte (n = 7) either alone or in combination. Pre-treatment vitamin D levels were available on 55 patients; 9 who had a documented level prior to commencing supplementation, and 46 patients who were not yet taking supplements. 9/55 (16%) of these patients were vitamin D deficient and 19/55 (35%) had insufficient levels. Low vitamin D levels prior to supplementation was significantly associated with being non-European origin (10/12, 83% cf 18/43, 42%; p = 0.01) and being on antiretrovirals (20/32, 63% cf 8/23, 35%; p = 0.04). Following commencing vitamin D supplements, no patients had deficient vitamin D levels but 15/54 (28%) had insufficient levels, making these patients significantly less likely to have low vitamin D levels 15/54, 28% cf 28/55, 51%; p = 0.01). 5/28 (18%) patients with low vitamin D levels had a raised ALP, compared to 1/26 (4%) with sufficient levels (p = 0.10).

Conclusion: Although low vitamin D was significantly associated with taking antiretrovirals, if local guidance was applied and all these patients given supplementation without proven low levels, over one third would be treated unnecessarily. As previously reported, we found increased rates of low vitamin D in patients of non-European origin and providing blanket supplementation to this group may be justified, though the clinical outcomes of this are unclear. Of note, although significantly fewer patients taking supplements were found to have low vitamin D, a quarter still had insufficient levels.

P92
Role of IL18 in HIV lipodystrophy

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University of Liverpool, Liverpool, UK

Background: Lipodystrophy caused by highly active antiretroviral therapy (HIVLD) is associated with an increased risk of metabolic disturbances and ischaemic heart disease. Antiretroviral (ARV) induced adipose toxicity is central to HIVLD pathogenesis; ARVs impair adipogenesis and cause dysregulation of adipokines and secretion of adipokines from the adipose tissue. Plasma levels of IL18, an adipokine associated with insulin resistance, are elevated in HIVLD patients; variants in IL18 gene also predispose to the development of HIVLD. We utilised in vitro (adipocytes) and in vivo (gene association) studies to characterise the role of IL18 in HIVLD.

Methods: Differentiating 3T3-F442A adipocytes were incubated with ARVs (Lopinavir [LPV], ritonavir [RTV], atazanavir [ATV] and efavirenz [EFV]) in the presence or absence of telmisartan (TEL; 1–5 μM). Secreted IL18 protein levels were assessed by ELISA. Real-Time PCR was used to study gene expression of IL18 and NFATC4. Data are presented as mean ± SD for 20 μM incubation of ARVs and 5μM for TEL DNA samples were obtained from ARV-treated patients with HIVLD; n = 115) or without LD (HIVLD−; n = 51). Sequenom MALDI-TOF was used for genotyping 14 single nucleotide polymorphisms (SNPs) in the IL18 gene. In vitro studies were analysed by paired t-test; SNP analysis was done using Haploview software.

Results: All ARVs resulted in a dose dependant increase in secreted IL18 protein levels (LPV, 330 pg/ml ± 2.1 [p = 0.008]; ATV, 267.3 ± 5.1 [p = 0.0001]; RTV, 265.7 ± 2.2 [p = 0.0005] and EFV, 98.6 ± 2.4 [p = 0.0004]) as compared to the vehicle control; this also correlated with its gene expression. ARV treatment also resulted in the upregulation of NFATC4 gene expression (LPV, 1.9 ± 0.05 [p = 0.0015]; ATV, 2.1 ± 0.1 [p = 0.0007]; RTV, 1.4 ± 0.05 [p = 0.0002] and EFV, 1.8 ± 0.05 [p = 0.0001]) as compared to the vehicle. Co-incubation with TEL partially attenuated ARV-mediated upregulation of IL18 (1.6 ± 0.2 [p = 0.01]) and NFATC4 (1.2 ± 0.1 [p = 0.0001]). No association was observed between IL18 SNPs and HIVLD in our cohort.

Conclusion: ARV-mediated upregulation in IL18 could play a role in the development of HIVLD; ARV-induced upregulation of NFATC4, a transcription factor through which IL18 causes inhibition of adiponectin (a marker of insulin sensitivity), could be mechanistically important in the development of insulin resistance. IL18 gene variants do not predispose to HIVLD; however further studies in well-phenoyped patients with adequate sample size are required to confirm this.

P93
White coat hypertension is common in HIV-positive individuals and not associated with markers of increased vascular aging

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1Brighton and Sussex University Hospitals NHS Trust, Brighton, UK, 2Monash Cardiovascular Research Centre, Melbourne, Australia and 3Brighton and Sussex Medical School, Brighton, UK

Background: HIV may be associated with increased cardiovascular disease but the mechanism is not understood. It is postulated this might be due to...
premature vascular aging or chronic inflammation. White coat hypertension (WCHT) is common in the general population and current NICE guidelines suggest using ambulatory blood pressure (ABP) monitoring to diagnose true hypertension and exclude WCHT. However, it is controversial whether WCHT is associated with increased cardiovascular morbidity. Very few studies have looked at WCHT in HIV patients. We determined the prevalence of WCHT in a cohort of HIV patients and assessed whether WCHT was associated with increased aortic pulse wave velocity (APQV) which is a marker of vascular aging and an independent risk factor for cardiovascular disease mortality.

Methods: Seventy four male patients on antiretroviral treatment with undetectable viral load were recruited from an HIV clinic. Office blood pressure (OBP), central BP (CBP), ABP, and 24 h ambulatory BP (ABP) were measured. Participants were classified as normotensive (office BP <140/90 and day-time ABP <135/85) or WCHT (OBP >140/90, day-time ABP <135/85). Thirty eight patients had complete recordings. Five patients were on anti-hypertensives. Three patients with untreated hypertension were excluded.

Results: Twenty-six (74%) normotensive and nine (26%) WCHT patients were identified (mean age 50 ± 1.7 years, mean CD4 count at testing 712 ± 57 cells/µl). Groups were similar for cardiovascular risk factors (age, cholesterol and smoking history) and HIV risk factors (HIV and anti-retroviral duration, nadir and current CD4 counts).

APQV was higher in WCHT (carotid-femoral PWV 10.2 ± 0.4 vs 8.7 ± 0.4 m/s, p < 0.01; carotid-radial PWV 10.8 ± 0.5 vs 9.6 ± 0.3 m/s, p < 0.04) but after correction for mean BP these differences were not significant. CBP was not significantly different between the two groups (119 ± 3 vs 111 ± 2 mmHg, p ns). After 30 minutes rest, OBP dropped by 22 ± 4 mmHg in the WCHT group versus 8 ± 2 mmHg in the normotensive group (p < 0.01).

Re-analysis excluding patients on anti-hypertensives (n = 5) did not alter the results.

Conclusion: These results suggest that WCHT is common in HIV patients but is not associated with increased vascular stiffness and therefore is unlikely to account for the high cardiovascular morbidity in HIV. This underlines the importance of using ABPM to confirm a diagnosis of true hypertension and exclude WCHT, in line with NICE guidance.

P94
Changes in kidney function in patients with suppressed HIV RNA who substitute their protease inhibitor with atazanavir/ritonavir
L Hamzah1, B Engler1, L Campbell1, E Wandelos1, C Naftalin2, C Chesterman2, C Taylor2 and F Post1
1King’s College London, London, UK and 2King’s College Hospital, London, UK

Background: Atazanavir/ritonavir (ATV/r) has been associated with an increased risk of reductions in eGFR, chronic kidney disease (CKD) progression and kidney stone formation in some observational cohort studies. To better understand the effects of ATV/r on the kidney, we studied kidney function in virologically suppressed patients who switched their current boosted protease inhibitor (PI/r) to ATV/r.

Methods: Patients on PI/r with HIV RNA < 400 copies/ml were offered to switch to ATV/r as per local guidelines. Estimated glomerular filtration rate (eGFR [MDRD]-ml/min/1.73 m²), urinary protein/creatinine ratio (PCR-mg/g) and albumin/creatinine ratio (ACR-mg/g) were evaluated at 2–4 and 24–48 weeks post-switch and compared to baseline (pre-switch) values using the paired t-test or Wilcoxon signed rank sum test.

Results: 52 patients (mean age 44 [SD 8] years, 46% male, 69% black ethnicity, median CD4 count 589 [IQR 402, 792] cells/mm³) on PI/r [19 TDF/FTC, 17 NVP/3TC, 16 other] + PI/r [36 lopinavir/r, 7 fosamprenavir/r, 5 saquinavir/r, 4 darunavir/r] were studied. At baseline, the mean (SD) eGFR was 108.7 (27.7), and the median (IQR) PCR and ACR 80.4 (58.3, 120) and 6.14 (4.95, 17.7). No change in eGFR was observed at 2–4 weeks (mean difference -2.54 [SD 18.6], p = 0.30) or 24 – 48 weeks post-switch (0.32 [SD 17.5], p = 0.91). Median PCR and ACR on ATV/r were unchanged from baseline (Table). No incident nephrolithiasis, CKD (eGFR < 60), haematuria or normo-glycaemic glycosuria was observed. All patients remained virologically suppressed.

Conclusion: In patients with preserved kidney function, substitution of PI/r with ATV/r was not associated with a significant deterioration in biomarkers of kidney function.

P95
Prevalence of chronic obstructive pulmonary disease in an HIV-infected population
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Background: Since the era of combination antiretroviral therapy (cART), life expectancy in HIV infection has dramatically increased. Consequently, an increased incidence in chronic diseases is well recognised. Chronic obstructive pulmonary disease (COPD) is common, yet two-thirds of those living with COPD in the UK are undiagnosed. It is recognised that earlier diagnosis may lead to an improved outcome. The combination of an ageing HIV population with high smoking rates means COPD will be an important cause of morbidity and mortality. To date there has been no UK based study investigating the prevalence of COPD among HIV-positive patients in the cART era. Our objective was to describe the prevalence of COPD in a stable HIV outpatient population.

Methods: In this ongoing cross-sectional study, we recruited HIV positive patients over the age of 30 attending for routine outpatient appointments between February 2012 and January 2013. The study was approved by the Local Research Ethics Committee. All participants completed a survey including the St George’s Respiratory Questionnaire, a validated tool in COPD. In accordance with BTS guidelines, each subject performed spirometry 20 minutes post bronchodilator administration. In addition, clinical notes were reviewed to collect information on demographics, HIV and medical history. Results: 84 HIV infected individuals have been recruited to date and data analysed for the first 61: 56 (92%) males, 51 (91%) white Caucasian, mean age 51 years (range 30–81). 59 (96%) patients were on cART with 55 (90%) having undetectable HIV-RNA. The median CD4 count was 613 cells/mm³. Of these patients, 24 (40%) were current smokers and 30 (32%) former smokers. Spirometry results demonstrated obstructive lung function in 10 (16%) participants. Of these, 4 (40%) had evidence of mild airflow obstruction, 5 (50%) moderate and 1 (10%) severe. Multivariate analysis showed age (p = 0.008) and duration of HIV infection (p = 0.028) to be the most important factors in determining risk of airflow obstruction.

Conclusions: Our data shows the prevalence of COPD among HIV-positive individuals of 16%, but data collection is ongoing. All cases of COPD identified were previously undiagnosed. In accordance with existing data, this suggests an increased prevalence compared to the general population (7%). Our findings demonstrate a need for screening for COPD in an HIV infected population, to facilitate earlier diagnosis and effective management.

P96
The safety of flucloxacillin in HIV-infected subjects with positive HLA-B*5701 genotype
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Background: Positive HLA-B*5701 genotype has recently been identified as the main genetic risk factor for flucloxacillin drug induced liver injury (DILI). Testing for HLA-B*5701 is routine in many HIV clinics to identify those at risk of hypersensitivity reaction (HSR) to abacavir. Considering the high prevalence...
of soft tissue infections in HIV patients, we conducted a retrospective study to investigate whether flucloxacillin use was associated with adverse events in HIV-1 patients known to be HLA-B*5701 positive.

Methods: We identified 79 individuals from a single London based clinic who had tested positive for the HLA-B*5701 allele since 2008. Using our prospective clinical and pharmacy databases we assessed clinical and laboratory parameters in subjects receiving flucloxacillin between January 2008 and July 2012.

Results: In total 10/79 (12.7%) had received flucloxacillin during this period (median age 51 years [range 47 to 56 years] and 9/10 [90%] were male. In all cases, flucloxacillin was prescribed for uncomplicated soft tissue infections. The median total dose and duration of treatment were 20 g (range 10 to 20 g) and 10 days (range 5 to 14 days) respectively. During this period of study, all subjects had liver function tests including alanine aminotransferase (ALT), bilirubin and alkaline phosphatase (Alk Phos) assessed. After reviewing all available clinical and laboratory information, no cases of suspected or confirmed clinical or biochemical toxicities within 1 to 90 days after prescription of flucloxacillin were identified. The interval of 1–90 days after prescription was chosen because of the characteristic clinical picture of flucloxacillin-DILI described in clinical reports of liver disease associated with flucloxacillin.

Discussion: The strength of the association between HLA-B*5701 and flucloxacillin induced DILI suggests that genetic screening might be able to prevent adverse events in those HIV-1 positive patients carrying this allele. However, in our study we found no evidence of toxicity in a small sample of patients treated with flucloxacillin and carrying both the HLA-B*5701 allele and receiving flucloxacillin. Whilst these data suggest that there may not be a major risk to HIV-1 patients in routine practice, it remains crucial for clinicians to be aware of the association of HLA-B*5701 with DILI particularly in elderly patients, those with underlying liver disease and those requiring prolonged antibiotic therapy.

P98
Practical implications of tenofovir toxicity monitoring
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Introduction: The 2011 BHIVA HIV Monitoring Guidelines recommend regular renal function assessment in patients prescribed tenofovir (TDF) with eGFR and urinary protein creatinine ratio (uPCR). We have a high uptake of ART home delivery in our unit and want to ensure this has not adversely impacted on TDF toxicity monitoring.

Methods: A retrospective case note review of all 309 patients within the genitourinary medicine cohort prescribed TDF on 1st January 2012 was performed. For each patient eGFR, uPCR and urinary albumin creatinine ratio (uACR) results were reviewed from the onset of TDF therapy. Our local laboratory reports uACR in addition to uPCR for all patients.

Results: Patients were 86% male with a mean age of 42 years and had been prescribed TDF for an average of 39 months. Viral load was undetectable in 99%. The median CD4 count was 364 cells/cmm (104–1884 cells/cmm). All patients had at least one eGFR measurement, 99% in the last year. Two patients (0.6%) had eGFR < 60 mL/min. Urinary investigations were performed in 83%, with 99% in the last year. Of these 269 patients, 35 (13%) had abnormal results; 9% with albuminuria (> 30 mg/L) and/or raised uACR (> 2.5 mg/mmol), 0.5% with proteinuria and/or raised uPCR (> 30 mg/mmol) and 3.5% had raised uACR and uPCR. Patients with abnormal results had been taking TDF therapy for 5.2 months longer, although this was not statistically significant (p = 0.088). TDF was discontinued in four patients of which two had a decline in eGFR in addition to raised uPCR and uACR, one patient had raised uPCR and uACR and a further patient had raised uACR alone. The mean time from the first abnormal result to TDF discontinuation was 1.25 months with an improvement in eGFR, uACR and uPCR in all patients.

Conclusions: Our audit shows good adherence to BHIVA guidelines, despite ART home delivery and TDF appears well tolerated. However, a significant proportion of patients had albuminuria, increasing workload for repeat testing although not frequently resulting in TDF discontinuation. These findings highlight the need to assess renal function prior to commencing TDF. Further studies to evaluate the significance of albuminuria in monitoring TDF toxicity are required.

P99
A review of referrals and interventions within a specialist HIV outpatient physiotherapy service
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Background: As people live longer with HIV with increasing comorbidities and above average risk for cardiovascular, metabolic, bone and neurological problems, chronic long-term condition management is increasingly relevant. Attention to physical dimensions of patient care is suggested to optimise well-being. Poor physical function in HIV outpatients, including mobility problems, pain and reduced self-care are associated with worse self-reported health status. Physiotherapy aims to optimise function, well-being and promote self-management. This review aims to identify sources of referral into a specialist HIV outpatient physiotherapy service, the reason for referral and interventions received.
Methods: Data was collected for all HIV patients referred to HIV outpatient physiotherapy between February and December 2012.

Results: 72 patients were referred for HIV outpatient physiotherapy. 90% (n = 65) were male, median age 52 yrs (range 32–79 yrs), 50% aged 50 and over. 26% (n = 19) had a dual HIV and Haemato-Oncological diagnosis. HIV clinicians referred 10% of patients (n = 7) and other referrals were via Physiotherapists and Occupational Therapists (n = 13, 18%), Dieticians (n = 9, 12.5%), Nurse specialists (n = 9, 12.5%), Oncology/Palliative care Clinicians (n = 8, 11.1%) and Psychologists (n = 2, 2.7%).

The most frequent reasons for referral were musculoskeletal (n = 26, 36.1%), neurological (n = 11, 15.3%), reduced exercise tolerance (n = 8, 11.1%) and pain management (n = 7, 9.7%). 22% (n = 16) were not HIV related conditions.

The most frequent physiotherapy interventions (n = 63) consisted of 1:1 treatment (n = 29, 46%) or 1:1 followed by a twice weekly, 10-week HIV rehabilitation class (n = 17, 27%). 29% (n = 21) of patients were referred to the rehabilitation class. 63% (n = 4) did not attend 1:1 and were discharged. 7.9% (n = 5) received an onward referral to external services. Hydrotherapy and/or were provided to 1.6% (n = 1) of patients.

Conclusion: Referrals to a specialist HIV outpatient physiotherapy service come from a range of multidisciplinary professionals. Less than a quarter were non-HIV related conditions within an ageing population, referred for diverse reasons, reflecting increased presence of comorbidities. The majority of patients require 1:1 physiotherapy intervention however many also attended a twice weekly, 10 week HIV rehabilitation programme.

P100

A >10-fold increase in abnormal lactate dehydrogenase results amongst an HIV-positive cohort: how to react?

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Background: Lactate dehydrogenase (LDH) is a non-specific indicator of cell turnover. BHIVA guidance states LDH should be measured if new clinical disease is present or suspected, usually HIV-associated malignancy. Automated enzymatic LDH assays do differ, with sometimes widely different reference ranges. Change in analytical instrumentation at UHSM resulted in a change in the upper limit for LDH to 220 IU/L. However, in the 12 month periods before and after changeover, 12 and 157 HIV-infected patients respectively had raised serum LDH. This prompted review of the LDH reference range.

Methods: 194 anonymised GP samples with normal full blood count, creatine kinase (CK), renal and liver function (LFT) were used to determine the reference range. LDH was normally distributed with a reference range of 125–264 IU/L. With this revised upper limit, the number of patients with an abnormally high serum LDH fell from 157 to 48. Data collected on all 157 patients included: pertinent biochemistry, lymphocyte and CD4 counts, BMI, antiretroviral therapy (ART), co-morbidity, hepatitis co-infection, and alcohol use (AUDIT-C score). Factors known to affect LDH and their clinical relevance were considered.

Results: Patients with elevated LDH as categorised by the original and revised reference ranges were compared.

Table 1: Median values

<table>
<thead>
<tr>
<th>LDH I/U L</th>
<th>Nadir CD4 cells/mm³</th>
<th>Age years</th>
<th>CD4 cells/mm³</th>
<th>AUDIT-C</th>
<th>Lymph CK</th>
<th>AST eGFR</th>
<th>10x17/L IU/L</th>
<th>IU/L</th>
<th>mI/min</th>
</tr>
</thead>
<tbody>
<tr>
<td>220–264</td>
<td>109 258</td>
<td>41 515</td>
<td>25.2 5</td>
<td>2.22</td>
<td>120 28 80</td>
<td>2.30</td>
<td>137 83</td>
<td></td>
<td></td>
</tr>
<tr>
<td>&gt; 264</td>
<td>248 288</td>
<td>41 528</td>
<td>25.6 4</td>
<td>2.30</td>
<td>137 83</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

None of these results were statistically significant. In addition, no significant difference was seen with gender, ethnicity, hepatitis, co-infection or ART.

Sporadic LDH elevation, when noted, was associated with LFT or CK elevation, and attributable to lifestyle factors (exercise/alcohol). Persistent elevation of LDH > 264 IU/L was associated with one new diagnoses each of Burkitt’s lymphoma, hepatitis C, steatohepatitis, and ulcerative colitis. No diagnoses would have been missed with the new reference range.

Conclusion: We noticed that a change in analytical method and reference range for LDH resulted in a large increase in the number of patients having an elevated LDH, and with a potential to increase inappropriate investigation. We
steroid completion, the CSF was acellular, with HIV-VL < 20 c/ml in paired CSF and plasma.

Discussion: The case describes a steroid-responsive encephalitis developing in the presence of CSF HIV RNA and absence of OI. CSF analysis demonstrated a predominance of perforin positive CD8+ T cells of Th1 phenotype. This further characterises the immunopathological process.

P103
Atazanavir and arrhythmias: a described but unusual side effect
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Background: Atazanavir is one of the preferred first line drugs for the treatment of HIV infection in the UK. Common side effects include gastrointestinal disturbance and sceral icterus. Chest pain and cardiac arrhythmias (including torsades de pointes) have also been reported with atazanavir, however these are only described rarely in the literature. Here we describe a case of a patient symptomatic with intermittent chest pain and atrial fibrillation whilst taking atazanavir.

Case: A 45 year old white Caucasian man was diagnosed with asymptomatic HIV infection in 2007. He had a family history of angina and diabetes, and smoked 20–30 cigarettes a day. Otherwise he was well and took no regular medications. In 2008 he was diagnosed with impaired glucose tolerance which responded well to dietary control. In 2010 he was diagnosed with hypertension and started on amiodipine which elicited a moderate response. He commenced antiretroviral therapy (ART) in 2009 and was started on atazanavir in September 2010. By the time of his presentation he had been on the same therapy for 18 months.

In September 2012 he restarted the same ARV regimen. Cardiology referral was made due to the multiple risk factors and ongoing cardiac symptoms. Three weeks after restarting ARV, he returned to A&E with chest pain and was found to be in atrial fibrillation. He was chemically cardioverted. He discontinued his ARV therapy again during this admission. He subsequently restarted on Truvada and raltegravir. Since this time he has had no further chest pain or arrhythmia.

Discussion: Managing HIV-infected patients with comorbidities is complex. Although this patient had strong risk factors for cardiovascular disease, he attributed his chest pain to atazanavir and the temporal relationship of the symptoms to its use support this. This rare side effect should be considered in patients taking atazanavir when other cardiac causes have been excluded.

P104
An unusual cause of hoarseness of voice in an AIDS patient
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Background: Hoarseness of voice due to vocal cord paralysis caused by recurrent laryngeal nerve (RLN) palsy is widely recognized. There are several causes of RLN palsy. Thyroid and parathyroid surgery, malignant neoplasm of the lung and pulmonary tuberculosis are the most frequent causes. The vinca alkaloids are neurotoxic and usually cause peripheral neuropathy. However, cranial mononeuropathies due to vinca alkaloids are rarely recognized. We report a man with AIDS who developed hoarseness of voice due to RLN palsy during treatment with vinblastine for Hodgkin’s lymphoma.

Case report: A 48-year-old HIV positive man presented with hoarseness of voice. HIV infection had been diagnosed in 2008. The patient started receiving antiretroviral therapy in the form of tenofovir, emtricitabine and nevirapine. He had remained healthy with undetectable HIV RNA level and CD4 count of 445 cells/mm³.

In May 2012, he presented with weight loss. CT scan chest showed hilar lymphadenopathy and left sided pleural effusion. Further investigations confirmed Hodgkin’s lymphoma, stage IVB.

This patient received four weekly doxorubicin, bleomycin, vinblastine, dacarbazine. Two weeks after commencing chemotherapy, he complained of hoarseness of voice. He denied pain, history of trauma, symptoms of peripheral neuropathy, or recent infectious symptoms. Clinical examination revealed no neck swelling, lymphadenopathy, or peripheral neuropathy. PET scan showed no evidence of residual tumour. A flexible nasendoscopy confirmed paralysis of the left vocal cord in the lateral position.

Discussion: Our patient developed RLN palsy whilst on vinblastine. The CT chest did not show any local cause such as enlarged mediastinal lymph nodes. Although the neurotoxicity of the vinca alkaloids is widely known, cranial nerve neuropathy is not widely recognized. The degree of toxicity is related to the dose, and if other drugs such as alluporinol, erythromycin, isoniazid, phenytoin, and itraconazole are concomitantly used. The co-administration of potential neurotoxic antiretroviral drugs such as emtricitabine in his combination may have exacerbated neurotoxicity. The left vocal cord is predominantly involved as in our case.

Conclusion: HIV physicians need to be aware of this potentially reversible side effect of vinblastine causing RLN palsy to prevent progression to bilateral vocal cord paralysis, with the danger of respiratory distress and should not assume that the patient’s lymphoma is progressing.

P105
Cardiac AL amyloidosis in an HIV-positive patient
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Background: Systemic Amyloidosis is a rare disease which can affect any organ. AL Amyloidosis is the most common form and nearly half the cases develop cardiac involvement. Cardiac Amyloidosis is the leading cause of morbidity and mortality, especially in AL Amyloidosis. We describe a case of cardiac AL Amyloidosis in a newly diagnosed HIV positive patient and discuss investigations of AL Amyloidosis.

Case: A 55 year old male with schizoaffective disorder was admitted with extra pyramidal side effects, hypotension and tachycardia. Admission blood tests showed pancytopenia and during investigation of this, he was found to be HIV positive. Extrapyramidal side effects improved after initiation of anticholinergics and withholding antipsychotic medication. He was discharged with outpatient follow up including an echocardiogram as a pansystolic murmur was identified. Baseline investigations revealed a CD4 count of 33 cells/mm³(4%) with a viral load of 6835 copies/ml. He was started on truvada, boosted darunavir and co-trimoxazole as PCP prophylaxis. A week later he presented with a 4 day history of vomiting and constipation, he was admitted for intravenous fluids and antiemetics. The vomiting settled after 72 hours, however, he remained hypotensive and tachycardic. Electrocardiogram showed T wave inversion in chest leads and echocardiogram there were features consistent with amyloidosis. Cardiac magnetic resonance imaging was suggested and this demonstrated widespread late gadolinium enhancement involving ventricles, atrial septum and right atrial wall, which is also in keeping with amyloidosis. A bone marrow biopsy showed HIV inflammatory myelopathy, approximately 10% plasma cell neoplasia and vascular amyloid tissue deposition in accompanying connective tissue. To aid diagnosis, a rectal biopsy was performed, which reported amyloid deposition.

Discussion: As far as we are aware, there are no case reports on cardiac AL Amyloidosis in HIV positive patients. There are, however, cases on AA Amyloidosis and HIV. In one article, they speculate that chronic HIV-infection, as well as, the associated immunosuppression might promote development of renal AA-amyloidosis by increasing frequency and duration of infections acquired by intravenous drug users. There are no links reported between AL Amyloidosis and HIV. In itself, it is usually secondary to plasma cell dyscrasia. This case highlights that Amyloidosis is a multisystem disorder and can present in any specialty.
Diagnosis and Testing

P106
Evaluation of third- and fourth-generation point-of-care tests for the detection of HIV
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Background: Point of care tests (POCT) are increasingly used for the rapid diagnosis of HIV outside the laboratory set-up. One critical question is whether results from different rapid test devices (RTD) are of sufficient validity for routine clinical use. In addition, RTDs vary in both the time to perform and price.

Methods: We compared three POCT assays: (i) Alere Determine™ HIV 1/2 (3rd generation RTD); (ii) Alere Determine™ HIV 1/2 Ag/Ab Combo (4th generation RTD), and; (iii) BioLytical INSTI™ HIV-1/HIV-2 (3rd generation RTD). A panel of stored serum samples were used to compare the RTDs and we used the ARCHITECT (HIV Ag/Ab Combo chemiluminescent microparticle immunoassay, Abbott) as the “gold standard”. Positive results were confirmed and type (HIV 1/2) was determined using ImmunoComb II HIV 1&2 Biospot assay (Oxiris). We initially compared the two Determine RTDs and then compared the 3rd generation Determine test head to head with the INSTI RTD. The serum panel included HIV positives from different HIV subtypes, patients with long-term HIV and patients with opportunistic infections. Negative samples included sera that had IgM reactivity for other viruses (EBV and CMV) and patients with hepatitis B and C.

Results: The first analysis involved 102 serum samples (72 HIV antibody positive by ARCHITECT, all HIV-1 by ImmunoComb). The results comparing 3rd and 4th generation Determine™ RTDs are displayed in Table 1.

Table 1 Comparison of two Determine RTDs using 102 serum samples

<table>
<thead>
<tr>
<th>RTD</th>
<th>Sensitivity,% (95% CI)</th>
<th>Specificity, % (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Determine 3rd Gen</td>
<td>93 (82, 98)</td>
<td>100 (90, 100)</td>
</tr>
<tr>
<td>Determine 4th Gen</td>
<td>89 (78, 96)</td>
<td>98 (87, 100)</td>
</tr>
</tbody>
</table>

The second analysis used 164 serum samples (92 HIV-1 antibody positive, one HIV-2 positive and 71 HIV negative) to compare the two 3rd generation RTDs (INSTI and Determine, Table 2).

Table 2 Comparison of INSTI to Determine RTDs using 164 serum samples

<table>
<thead>
<tr>
<th>RTD</th>
<th>Sensitivity, % (95% CI)</th>
<th>Specificity, % (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>INSTI 3rd Gen</td>
<td>100 (95, 100)</td>
<td>96 (87, 99)</td>
</tr>
<tr>
<td>Determine 3rd Gen</td>
<td>100 (95, 100)</td>
<td>86 (75, 93)</td>
</tr>
</tbody>
</table>

Conclusion: The three RTDs provided comparable results for sensitivity and specificity. The 3rd generation Determine remained the RTD of choice in the clinic after our first analysis. The comparable validity of the INSTI RTD (in the second analysis), together with the more favourable cost and time profiles (assay durations: INSTI = 1 minute, Determine = 15 minutes), means the INSTI will replace the Determine 3rd generation in our clinic.

P107
HIV testing in clinical indicator diseases in outpatient settings: offer and uptake rates and impact of educational and active interventions
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Background: Approximately 50% of patients with late HIV diagnosis have accessed healthcare in the prior 2–3 years. HIV associated clinical indicator diseases (CID) seen in outpatient clinics (OPD) are proposed as an opportunity for earlier diagnosis in multiple testing guidelines. Expanded testing pilots show that whilst testing is acceptable to patients, offer rate by clinicians is low. Strategies to increase offer rate are needed. This study assessed the impact of a targeted OPD educational programme with and without additional individual case note prompts for patients with a CID as a strategy to increase HIV testing.

Methods: A 2 stage prospective study over a 12 week period during 2012 in Dermatology (D), Gastroenterology (G) and Haematology (H) OPD at 2 University hospitals. Clinicians received an education programme about significance of late HIV diagnosis, highlighting CID relevant to their field (as per national testing guidelines). For D OPD, stage 1 (6 weeks) consisted of pre-identification of CID and insertion of a prompt to offer HIV testing. Stage 2 (6 weeks) relied on clinician identification of a CID only (no prompt). For G and H OPD, stages were reversed. The option of testing using serum or oral sampling was given. Test offer and uptake rate was compared with/without prompts and across age, gender and ethnic groups.

Results: 4191 patients were eligible. 608 (14.5%) were identified with a CID (D 8.9%, G 18.3%, H 22.7%) of whom 25 (4.1%) were known to be HIV positive, and 115 did not attend. 496 evaluable subjects were male (251, 54%), of white UK ethnicity (302, 65%) and with median age 51 years. Overall test offer rate was 82/468 (17.5%) and was significantly higher during the prompt stage (74/216, 34%) vs education alone (8/252, 3.1%); p < 0.001 for total population and for each of D, G and H. There was no difference in offer rate by age, gender or ethnic group. Uptake was 61/60 (76.3%) and similar across OPD, demographic group, and prompt usage. Of those testing, 26/61 (42%) used oral sampling. No new cases of HIV infection were identified.

Conclusion: Test offer rates by OPD clinicians is low despite the high rate of HIV infection in OPD attendees with CID, national recommendation for testing in this setting and targeted educational intervention. Novel strategies to prevent missed diagnosis are urgently needed. Individual case note prompts significantly increase test offer rates, and this effect is lost if the strategy is withdrawn.
Opt-out HIV testing within intensive care in a large urban hospital: an innovative testing initiative

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Background: UK guidelines recommend increasing opt-out HIV testing in a range of medical settings in areas of high prevalence. Routine testing in acute medical settings is commonly practised; however it remains rare within Intensive Care (IC) with evidence of missed opportunities for HIV diagnosis in IC patients. In this setting the consequences of a missed HIV diagnosis may be particularly critical as it may prevent appropriate immediate life-saving treatment.

Methods: An opt-out HIV testing initiative within IC began 3 months ago, in a hospital with an existing opt-out testing scheme in the Acute Medical Admissions Unit and a high local HIV prevalence of 5.95 per 1000. All patients admitted to IC or the High Dependency Unit (HDU) non-electively are informed that they will be tested for HIV unless they opt out. Those lacking capacity to consent are tested in their best interests based on high local prevalence. Our HIV testing team, comprising an HIV Consultant, Registrar and Nurse Facilitator worked with IC staff to develop guidelines and strategy. The testing team also provided training, support and patient information material to IC staff to facilitate implementation of the intervention. We provide preliminary data from the first 3 months of the project.

Results: Of the 461 patients admitted to IC/HDU in October–December 2012, 59.7% (n = 275) were tested for HIV. In the 3 months prior to opt-out testing the testing rate was (28/432; 6.9%; p < 0.001). To date, one patient has been found to be HIV positive. This patient had been diagnosed with HIV in 2006 but did not return for follow-up. On admission he did not disclose his HIV status. HIV testing revealed his underlying diagnosis (CD4 = 115 cells/mm³) and was instrumental in guiding investigation and treatment. He was successfully discharged from hospital having commenced treatment for HIV and B-cell lymphoma. One further patient had an equivocal HIV test result, but was negative on repeat testing.

Conclusions: We believe this service development to be the first of its kind in the UK to deliver routine opt-out HIV testing within an IC setting. The model is sustainable with HIV staff providing training and support to IC staff, who deliver the testing. This strategy has resulted in a significant increase in HIV testing rates within an IC unit serving a high prevalence local population, and will guide life-saving management in patients who test positive.

Attitudes toward universal human immunodeficiency virus (HIV) testing amongst healthcare professionals in NHS Lothian

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Western General Hospital, Edinburgh, UK

Background: National surveillance data shows that around one quarter of adults infected with HIV in the UK are unaware of their diagnosis. HIV testing is cost-effective and acceptable amongst patients in a number of healthcare settings. The population prevalence of HIV in Lothian exceeds 2 per 1000 and current guidelines recommend the routine offer of an HIV test to all general medical admissions. We explored the attitudes of staff working in NHS Lothian hospitals towards universal HIV testing.

Methods: All healthcare professionals working at NHS Lothian hospitals were deemed eligible for inclusion. An online survey was developed using the SurveyMonkey® tool and was disseminated to healthcare workers during National HIV Testing week. Responses were collected over a one month period and participants were provided with a link to an online training module for further education in HIV testing.

Results: One hundred and sixty-nine recipients completed the survey, of whom 76% were female. Of the recipients who had offered patients an HIV test, 62% found that all had accepted and 36% found that some had accepted. Over 90% of participants believed it was important to know one’s HIV status and 97% agreed that HIV testing should be available in services other than antenatal and sexual health clinics. 68% of recipients agreed that HIV testing should be offered routinely, although 22% of recipients strongly disagreed.
with this statement. A quarter of recipients felt that a brief pre-test discussion was insufficient before offering an HIV test although 51% believed the routine offer of HIV testing would be acceptable to patients. Only 48% and 47% of recipients felt that emergency departments (EDs) and hospital wards respectively were appropriate places to offer HIV testing compared with sexual health clinics (92%). When restricted to clinicians, perceived barriers to HIV testing included time constraints (23% of recipients), privacy (19%) and concern that the patient would have questions that the staff were unable to answer (23%). Finally, a third of clinicians felt they would require further training before routinely offering HIV tests to patients.

Conclusions:
1) Routine HIV testing is acceptable to both staff and patients.
2) Interestingly, less than half of the survey participants believed that hospital wards and EDs were appropriate venues to offer HIV testing. Further education is required on pre-test counselling and HIV testing amongst staff in NHS Lothian.

P112
Comparison of western blot and avidity testing for determination of recent HIV-1 infection
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Background: Knowledge of recent HIV infection is important for epidemiologic surveillance and individual diagnosis. It is becoming increasingly common to determine this by testing HIV-seropositive specimens with assays that discriminate the lower concentration and avidity of HIV antibodies in early infection. In the past recent infection was determined using clinical information and/or laboratory information including the number and intensity of bands on a western blot (WB). This study aims to compare the utility of avidity testing in determination of recent HIV-1 infection in comparison to western blotting.

Methods: Specimens were defined as recent if they met any of the following categories: signs of primary HIV infection (PHI) at the time of diagnosis; a documented negative result of a HIV screening test within 12 months before infection new to Edinburgh during 2012 were classified as recent (n = 10) or not (n = 103) as described in Methods. Of the 10 recent infections half were positive by WB and 5 classed as indeterminate, whereas avidity testing was able to classify 6 of the infections as recent, and 3 as low antibody requiring follow-up specimens. This gives a sensitivity and specificity of 66% (85% CI: 42–98%) and 99% (95% CI: 95–99%) respectively for avidity testing compared to 50% (95% CI: 19–81%) and 99% (95% CI: 95–99%) respectively for WB in determination of recent infection.

Conclusion: Initial analysis showed the AI to be more sensitive than WB in determination of recent infection. Sensitivity of WB may be increased by analysis of band intensity data, however, avidity testing offers the advantage of objectivity, simplicity and higher throughput compared to WB analysis.

P113
Project ‘Test the Hospital’
E. Williams, R. Bath, N. Vaidh, S. Tillet, G. Mandersloot, N. Poole, J. Saunders, S. Tariq, T. Oliver, S. Pereira, A. Nori and C. Orkin
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Background: In areas where HIV prevalence exceeds 2 per 1000, BHIVA guidelines recommend opt-out testing for all general medical admissions in order to prevent late diagnosis and allow for optimal management. In response, opt-out testing is being introduced in Medical Admissions Units (MAU) and Emergency Departments (ED). Opt-out testing also occurs nationally in Antenatal Clinics (ANC) and Tuberculosis clinics (TB). These programmes are often initiated and managed vertically. Joining up the different initiatives within the hospital as part of a ‘test the hospital’ strategy may be helpful to improve coherence and implementation. In our inner London teaching hospital we combine Opt-out testing initiation with programme monitoring, to ensure efficient testing within relevant area.

Methods: Staggered introduction of routine opt-out testing has occurred in nine clinical areas within our hospital, which has a local HIV prevalence of 5.9/1000. We present the results of a series of snapshot audits on HIV testing from seven areas namely: MAU, ITU/HDU, Lymphoma, TB, Viral Hepatitis, Elderly Care Psychiatry (ECP) and ANC. Within MAU and ITU/HDU staff have been educated to incorporate opt-out testing as part of admission. Staff in ECP have been supported to test those with a clinical indicator of dementia. Here we report preliminary data from the first 3–12 months.

Results: Rates pre and post-intervention:

<table>
<thead>
<tr>
<th></th>
<th>HIV Tests Pre intervention</th>
<th>HIV Tests post intervention</th>
<th>Positive results post intervention</th>
</tr>
</thead>
<tbody>
<tr>
<td>MAU</td>
<td>50/4009 (1%)</td>
<td>848/6279 (12%)</td>
<td>8/12</td>
</tr>
<tr>
<td>ITU/HDU</td>
<td>28/432 (6.1%)</td>
<td>275/461 (59.7%)</td>
<td>10</td>
</tr>
<tr>
<td>ECP</td>
<td>0/15 (0%)</td>
<td>39/48 (82.9%)</td>
<td>3/12</td>
</tr>
</tbody>
</table>

P114
Diagnose the undiagnosed – are we doing enough to reduce the prevalence of HIV?
J. Leighton, D. Tiong and V. Lee
Central Manchester University Hospitals NHS Foundation Trust, Manchester, UK

Background: 24% of people living with HIV are unaware of their diagnosis. A number of policies and guidelines have been produced which recommend routine testing for HIV in primary, secondary and emergency care settings in high prevalence areas. In our hospital, we have started offering HIV testing to patients admitted to the medical assessment unit. Outreach services, GP led sexual health clinics and other initiatives have been set up in order to improve the uptake of HIV testing. We reviewed our cohort of patients diagnosed with HIV between 1st January 2010 and 31st December 2011 to assess their testing practices, previous engagement in health care services and stage of HIV at diagnosis.

Methods: A retrospective case note analysis was conducted and data collected.

Results: 247 patients were identified. 202 (82%) were male, of which 150 (61%) were MSM. The median age was 34 years (range: 16–76). 65% were Caucasian and 27% Black African. 102 patients (41%) had no previous HIV test, of these 39 (38%) were MSM and 44 (43%) were Black African. In the majority of cases (70%) the diagnosis was made by GUM clinic, followed by the GP (12%), other medical specialities (7%), medical admissions (5%) and antenatal clinic (2%). We confirmed that 97 patients (39%) had accessed health care at least once within 12 months prior to a positive test, of these 51 patients had attended their GP, 41 attended A&E, 44 were in outpatient clinic and 12 had attended GUM. Of the 12 who attended GUM, 10 tested positive during seroconversion. Overall 66 patients (27%) were classified as seroconverters. At diagnosis 121 (49%) had a CD4 count of <350, 47 (19%) had a CD4 count of <200 and 16 (7%) had an AIDS defining condition within 3 months of diagnosis. 16 (7%) had primary drug resistance and 91 (37%) had a concomitant sexually transmitted infection. Of the 121 who required antiretroviral therapy within 6 months of diagnosis, 109 (90%) achieved undetectable viral levels at 12 months.

Conclusion: A large proportion of patients are diagnosed in the late stages of HIV. 49% of patients in our practice vs 47% nationally were diagnosed with a CD4 within treatment threshold. More than one third of patients accessed health care services within 12 months prior to diagnosis suggesting there is an opportunity for earlier testing. Education for safer sex, wider (or universal) testing and prevention strategies may be essential to reduce the burden of the HIV endemic.
Too little, too late: Late diagnosis of HIV and the role of improved testing strategies
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Regional Infectious Disease Unit, Western General Hospital, Edinburgh, UK

Background: Late diagnosis of HIV as defined by CD4 count of <350 cells/mm³ at diagnosis results in tenfold one year mortality, increases the risk of onward transmission and increases lifetime costs of HIV care by around 50%. Current guidelines advise universal testing in primary care and for medical admissions where the prevalence of HIV exceeds 2/1000. Our local estimated prevalence is 2.22/1000 yet our local policy is for restrictive testing of high risk groups and people with indicator diseases.

Methods: This study aimed to benchmark the performance of local HIV testing policies by examining rates of late diagnosis and missed indicator diseases in patients referred to our tertiary Infectious Diseases unit.

All new diagnoses of HIV referred from 1st August 2007 to 31st July 2012 were identified. Records of contact with secondary care in our health board in the preceding 10 years were reviewed as were HIV clinical records. Clinical correlates with late diagnosis were tested using Fisher’s exact test, Mann-Whitney-U test, or Independent samples T test, as appropriate.

Results: Late diagnosis occurred in 100/142 (70.4%) of patients. This compares to a rate of 2952/6280 (47%) for the UK for 2011, (P = 0.0001 for comparison). Our median CD4 count at diagnosis was 188 cells/mm³ (IQR 71–381).

Intravenous drug users were less likely to have a late diagnosis (CD4 count at diagnosis 496 cells/mm³ (IQR 245–595) vs 182 (63–362) compared to other groups, P = 0.007).

Of 109 patients who were diagnosed in our region for the first time, 27 (24.8%) had had presented to secondary care with an indicator disease without receiving an HIV test leading to a median delay of 24 months to diagnosis (IQR 11–48).

A testing strategy that screened all patients with indicator diseases, all high risk groups (men who have sex with men, black Africans and intravenous drug users) and both strategies combined would have a sensitivity of 64%, 63% and 89% respectively.

Conclusions: Late diagnosis is very common in our cohort and indicator diseases are frequently missed. Evidence of the inadequacy of our selective testing policy is compelling and universal opt-out testing should be introduced in line with BHIVA guidance.

Poster Abstracts
P118
National HIV Testing Week: An intervention for raising awareness and encouraging HIV testing
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Terrence Higgins Trust, London, UK

Background: Late diagnosed HIV is a significant problem across the UK, with approximately 1 in 4 of all people with HIV currently untested. HIV testing remains stigmatised and underutilised. As part of HIV Prevention England (HPE), Terrence Higgins Trust coordinated the first National HIV Testing Week (NHTW) to encourage awareness, provision and uptake of HIV testing among gay men and African people.

Method: NHTW was delivered through partnership working with HPE local delivery partners, clinics and other services who were encouraged to participate. A wide range of events including increased testing hours and venues were supported. A "flash logo" for the week was made available for use by all on existing materials and posters distributed to HIV clinics.

Additional clinic hours were promoted on an online clinic finder and in local media, and an online risk assessment tool promoted which directed users to the clinic finder if the result indicated testing. A full risk assessment report was offered via email to users who provided their email address.

Regional testing opportunities and awareness raising events were advertised through a dedicated NHTW Facebook page and a Twitter hashtag. Press releases about the week were sent to appropriate media. Over 800 additional hours of HIV testing were advertised across the country. An average of 575 people per day used the online clinic finder with a peak of 2,766 on the first day of NHTW. A total of 118 news items were placed in digital, print and broadcast media, with an audience reach of nearly 10 million. The NHTW Facebook page attracted 2,582 likes and reached 151,590 at its peak.

More than 55 organisations working in HIV and sexual health provided support, HIV testing and related events. BHIVA supported NHTW extensively. NHS Medical Director Sir Bruce Keogh included NHTW and the importance of reducing late diagnosis of HIV in a circular for doctors in England.

The Health Protection Agency will analyse testing numbers and diagnoses to evaluate further impact. In feedback, the most common concern was a desire for more time to plan for 2013.

Conclusion: NHTW was a highly acceptable and popular intervention which energised testing initiatives and awareness across England and the target groups. It achieved good coverage across social and traditional media and amongst key health influencers. Dependent on final evaluation, it is likely to be repeated in 2013 with better notice.

P119
Audit of the impact of an HIV testing protocol for acute neurology admissions to a tertiary centre
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Sheffield Teaching Hospitals NHS Foundation Trust, Sheffield, UK

Background: HIV can present with acute neurological symptoms; for example, 10% of sero-converting cases develop acute neurology. A pure neurological presentation of HIV is an opportunity to diagnose HIV at an early stage. We hypothesised that the development and distribution of a local "HIV testing in Neurology" protocol (formulated by Genito-Urinary Medicine and Clinical Neurology departments at our tertiary centre, using the British HIV Association testing guidelines) would increase the HIV testing in appropriate patients. We audited the uptake of opportunistic HIV testing in patients admitted to the tertiary acute neurology centre before ("pre-protocol") and after ("post-protocol") dissemination of the protocol to clinical staff.

Method: Data was collected from case notes for acute (non-stroke) neurology admissions over two three-week periods: "pre-protocol" and "post-protocol". For each patient, clinical presentation and differential diagnoses were compared to the protocol to identify whether HIV testing was appropriate ("protocol-eligible"). We also recorded whether the test was taken, what the result was, and, in addition for "post-protocol" cases, whether verbal consent was documented in the notes.

Results:

<table>
<thead>
<tr>
<th></th>
<th>&quot;Pre-protocol&quot;</th>
<th>&quot;Post-protocol&quot;</th>
</tr>
</thead>
<tbody>
<tr>
<td>Patients admitted</td>
<td>75</td>
<td>61</td>
</tr>
<tr>
<td>HIV test indicated</td>
<td>41</td>
<td>30</td>
</tr>
<tr>
<td>HIV test performed *</td>
<td>7</td>
<td>11 **</td>
</tr>
<tr>
<td>Percentage tested</td>
<td>17%</td>
<td>37%</td>
</tr>
</tbody>
</table>

*There were no positive results
**Only 5 patients had consent documented in case notes

Conclusion:
We have found that:
1. Distribution of the protocol was effective in increasing uptake of HIV testing by 20%, but a third of protocol-eligible patients were still not tested.
2. Approximately 50% of all acute (non-stroke) neurology admissions during the two periods met the protocol criteria to be tested for HIV, which can be explained by the nature of acute neurological referrals to the tertiary centre.
3. Documentation in the notes of consent for HIV testing was poor.

The outcomes are:
1. Untested but protocol-eligible patients have been referred back to respective consultants.
2. The departmental "acute neurology clerking proforma" has been amended to alert admitting doctors to consider HIV testing when clinically indicated as per protocol, and to prompt documentation of verbal consent.
3. We will re-audit HIV testing in acute neurology admissions after the revised clerking proforma has been in use, against a standard of testing all protocol-eligible patients.

P120
Sexual history documentation and universal opt-out HIV testing in a regional infectious diseases unit
F Wallace and J Webster
Regional Infectious Diseases Unit, Edinburgh, UK

Background: In 2007 it was estimated that one third of people living with HIV in the UK do not know their status. To increase HIV testing in accordance with the 2008 BHIVA guidelines, this Regional Infectious Disease Unit introduced a policy in favour of universal opt-out HIV testing and elicitation of a sexual history in all admitted patients.

Adherence to this policy was unknown; therefore we designed this audit to review HIV testing and sexual history documentation. We designed educational and clinical interventions, and re-audited to evaluate their effectiveness.

Methods: Data were collected from all admissions during three weeks in November 2011 and August 2012. Documentation of sexual history and HIV testing was collected from the clinical notes.

After the first audit cycle, the results were discussed at a departmental meeting. An educational handout was distributed to attendees and a ward round sticker was introduced as a HIV test reminder.

The results were analysed for significance using the chi-squared test.

Results: 81 patients' notes were reviewed in the first cycle and 92 in the second. The results from patients unable to give a history were excluded from sexual history documentation analysis. HIV positive patients were excluded from HIV testing analysis.
Table 1: Sexual history documentation and HIV testing pre- and post-interventions

<table>
<thead>
<tr>
<th>Patient age</th>
<th>1st audit cycle</th>
<th>2nd audit cycle</th>
<th>% change in sexual history documentation</th>
<th>1st audit cycle</th>
<th>2nd audit cycle</th>
<th>% change in HIV testing</th>
</tr>
</thead>
<tbody>
<tr>
<td>≤ 40</td>
<td>42 (8/19)</td>
<td>70 (14/20)</td>
<td>+28 (p = 0.08)</td>
<td>63 (12/19)</td>
<td>78 (14/18)</td>
<td>+15 (p = 0.33)</td>
</tr>
<tr>
<td>41–60</td>
<td>26 (7/27)</td>
<td>48 (11/23)</td>
<td>+12 (p = 0.11)</td>
<td>22 (4/18)</td>
<td>56 (10/18)</td>
<td>+24 (p = 0.01)</td>
</tr>
<tr>
<td>61–80</td>
<td>31 (5/16)</td>
<td>33 (8/24)</td>
<td>+2 (p = 0.89)</td>
<td>44 (7/16)</td>
<td>42 (11/26)</td>
<td>−2 (p = 0.93)</td>
</tr>
<tr>
<td>&gt;80</td>
<td>17 (2/12)</td>
<td>0 (0/14)</td>
<td>−17 (p = 0.23)</td>
<td>7 (1/14)</td>
<td>21 (4/19)</td>
<td>+14 (p = 0.27)</td>
</tr>
<tr>
<td>≤ 80</td>
<td>32 (20/62)</td>
<td>43 (33/77)</td>
<td>+11 (p = 0.05)</td>
<td>44 (23/53)</td>
<td>56 (35/62)</td>
<td>+12 (p = 0.16)</td>
</tr>
</tbody>
</table>

Conclusion: This retrospective audit demonstrated that education and clinical prompts can increase sexual history documentation and HIV testing. The interventions significantly improved sexual history documentation in patients aged 80 and under. They also significantly increased the rate of testing in patients aged 41–60, a potentially high-risk and under-tested cohort. The introduction of these measures should be considered in other departments to increase HIV testing in accordance with the BHIVA HIV testing guidelines.

P121

A six-year (2007–2012) audit of newly diagnosed HIV late presenters in Newcastle

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1University of Newcastle Medical School, Newcastle upon Tyne, UK, 2Department of Genitourinary Medicine, Newcastle upon Tyne, UK and 3Department of Infection & Tropical Medicine, Newcastle upon Tyne, UK

Background: The diagnosed prevalence of HIV in Newcastle is 1.75/1000 in 2011 and the audit data from 2007–2012 showed that 34–63% of newly diagnosed patients presented with a CD4 < 200, suggesting that the 2008 HIV National Testing Guide has had minimal impact on the proportion of late presenters.

Methods: A retrospective case note audit of patients whose HIV care was initially managed by the ID unit and GUM in 2012 was undertaken to determine the number newly diagnosed with HIV. Patients with CD4 < 200 or AIDS at diagnosis were classed as having advanced disease. Clinical indicator diseases for adult HIV infection stated in the 2008 testing guidelines were documented. Data collected using the same methods during 2007 were also included.

Results: In 2012, 18 patients were diagnosed with HIV in the ID department and 34 in GUM. Of the 18 patients diagnosed in ID, 7 (39%) were late presenters. Their median CD4 count was 102 cells/μl (range 11–169 cells/μl). Of the 24 newly diagnosed patients in GUM, 5 (15%) were late presenters. Their median CD4 count was 87 cells/μl (range 39–163 cells/μl). Overall in 2012, 12 (23%) were late presenters, as compared to 20 (34%) in 2011.

Conclusions: It is encouraging that there is a reduction of late presenters in 2012. This may be due partly to BHIVA 2008 testing guidelines. However, 36% of these patients have previously been seen or treated for an indicator disease when HIV testing should have been offered.

P122

Training resource designed to increase frequency of HIV testing in non-GUM settings displays promising outcomes

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1Bristol-Myers Squibb Pharmaceuticals Ltd, Uxbridge, UK and 2St George’s Healthcare NHS Trust, London, UK

Background: Late diagnosis of human immunodeficiency virus (HIV) remains a challenge in the UK. National guidelines set out criteria for testing outside the genitourinary (GUM) setting. Despite this, testing in non-GUM specialties remains low. A training resource was developed to increase testing in both non-GUM secondary care and primary care settings. Following a successful pilot scheme, the resource was made available across the UK.

Methods: A collaborative project between the GUM and respiratory departments at a major NHS Trust (with the support of a sponsor) was developed. This hospital-level plan comprised a training slide deck, posters suitable for patient areas and physician offices, and a survey assessing the impact of the training. The resource was developed to enable HIV specialists and non-GUM colleagues to jointly deliver HIV testing training to non-HIV specialists. Training can be delivered in 45–60 minutes and is designed to integrate into departmental training time. The content is applicable to all centres, but key slides allow tailoring of the training deck to specific localities.

A similar resource has now been developed for the primary care setting.

Results: The training resource supports doctors in offering HIV testing to patients, and alerts them to their centre’s care pathway. To date, 85 healthcare centres have requested the resource and the training pack has received positive feedback from several departments. There has been a 60% increase in routine HIV testing by junior doctors and a 13% shift in earlier diagnosis in a centre in Milton Keynes. On completion of training for a team in York, two seroconverters were identified in the first month alone. At the Royal London Hospital over 600 nurses and physicians (all grades) have been trained using the resource.

Conclusion: Results show that delivery and rollout of the training resource has been well received. Outcomes from the training may include an increase in testing for HIV and earlier diagnosis for patients.
P123
HIV testing in medical patients: why are we failing to meet guidelines?
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1Surrey and Sussex NHS Trust, Redhill, UK and 2Sexual and Reproductive, Crawley, UK

Aim: The 2008 National Guidelines on HIV testing state that all acute medical patients with clinical indicator conditions and/or from high risk areas should be screened for HIV. We aimed:

1) To assess compliance with these guidelines within our Trust
2) To establish the attitudes towards and knowledge of HIV amongst doctors on the acute medical admissions team.

Methodology: We conducted a case-note review of 200 acute medical patients admitted in 2011 to determine if national guidelines for HIV testing had been followed.

We also devised a questionnaire based on the guidelines1 to assess experience and knowledge of HIV medicine. The questionnaire was completed by 50 doctors across all grades working in acute medicine at a district general hospital in Surrey.

Results: Of 100 patients from high-risk areas, 1% were tested for HIV. Of 100 patients from non-high risk areas; only 3% underwent HIV testing even though it was indicated in 17%.

The survey showed that, on average, doctors could name 3.48 clinical indicator conditions out of 38. 50% of doctors across all grades reported sufficient knowledge of HIV. 68% were confident asking about HIV risk factors and 74% were confident consenting for HIV testing. However 88% felt that they needed further training in HIV medicine.

Conclusion: We are failing to meet national guidelines for HIV testing. Although doctors report confidence in some areas of HIV investigation, knowledge of clinical indicator conditions is poor. We suggest there is an opportunity to improve clinical practice with regards to HIV testing by providing further training.

P124
Assessing HIV testing in the acute medical unit: a survey of practice and doctors’ awareness of HIV testing guidelines in an area of low HIV prevalence
R Rachman and J Ehmann
Royal Cornwall Hospital, Truro, UK

Background: Recent data released by the HPA shows that the prevalence of HIV infection continues to rise in the UK with an estimated 96,000 people living with HIV. 25% of those with HIV are thought to be unaware of their condition.

Late diagnosis is the most important predictor of morbidity and short term mortality; it is critical to identify and test patients who are at risk of having undiagnosed HIV infection.

Despite the publication of the BHIVA HIV testing Guidelines in 2008 testing is still underperformed. There are limited data regarding doctors’ awareness of both these guidelines and HIV testing in hospitals in areas of low HIV prevalence.

Methods: A study of HIV testing on the acute medical unit was performed over a 2 month period. Medical notes were randomly selected by the authors after consultant review to determine whether patients had presented with specific indicator conditions for HIV testing and if testing was offered.

Following the audit a questionnaire was sent to medical doctors at the hospital to assess their knowledge of HIV testing and indicator conditions.

Results: Of 500 patients admitted to AMU, 27 (5.4%) were under 70 and presented with indicator conditions for HIV testing as outlined by 2008 BHIVA guidelines. Of these only 4 (15%) patients were offered HIV testing. Pneumonia was the most frequent indicator condition, affecting 12 (44%) patients.

50 doctors ranging from F1 to Consultant level were approached. Only 33% of respondents were aware of BHIVA guidelines. Indications for HIV testing were correctly identified 52% of the time. However there was poor recognition for pneumonia (28%) and dementia (22%). 34% listed stigma as a barrier to testing whereas 32% listed insufficient knowledge of testing.

Conclusion: In accordance with previous national audits HIV testing continues to be underperformed, despite frequent presentation of indicator conditions. In particular there is poor recognition of pneumonia as an indicator condition to HIV despite its frequent presentation.

In spite of previous research highlighting low testing rates and the publication of HIV testing guidelines 5 years previously, HIV testing remains a major issue. Critically the patients had been reviewed by a consultant yet HIV testing had not been offered.

Lack of awareness of these clinical guidelines and insufficient knowledge of indicator conditions are important factors. Furthermore stigma remains a significant barrier to testing.

P125
Factors associated with uptake of key interventions in the PopART/HPTN 071 trial – a description of trial design and nested research
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1London School of Hygiene and Tropical Medicine, London, UK and 2Imperial College London, London, UK

Background: With on-going HIV transmission in the UK despite successful treatment of those in care, the need for more effective HIV prevention strategies is urgent. The PopART/HPTN 071 trial will test the hypothesis that a combination prevention package including immediate antiretroviral treatment (ART) for all HIV-positive individuals will substantially reduce HIV-incidence at a population level.

Methods: PopART is a 3-arm community randomised trial conducted in 21 communities in Zambia and South Africa commencing in 2013. HIV incidence will be measured at 36 months in a randomly selected Population Cohort (n = 52,500). The intervention consists of 3 main components. First, universal home based voluntary HIV testing (HBT) provided by community health-workers. Second, community level promotion of proven HIV prevention methods and active linkage to care for HIV related services. Finally, ART irrespective of immune-status in the main intervention arm.

Nested case-control studies will examine factors associated with uptake of HBT and treatment irrespective of immune-status. These studies will examine socio-demographic factors, health seeking behaviour, clinical status, peer influences, knowledge/attitudes to HIV/ART, sexual behaviour, experience of stigma/discrimination, etc among randomly selected acceptors and non-acceptors of the interventions to identify facilitators and barriers of uptake. Factors associated with linkage to care will be examined using routinely collected data, in further research into the cascade of HIV care.

Results so far: A systematic review and meta-analysis of the uptake of HBT conducted to inform the PopART testing intervention, assessed the proportion of individuals accepting HBT and receiving their test result in 21 studies (n = 524,867 offered HBT) from Sub-Saharan Africa. The pooled proportion of people who accepted HBT (n = 474,377) was 83.3% (95% CI: 80.4–86.1%). Seventy-seven percent (of all those offered testing) received their results. HIV prevalence ranged from 2.9%–36.5%. New diagnosis of HIV following HBT ranged from 40–79% of those testing positive.

Conclusion: PopART will comprehensively examine a potentially transformative public health approach to reduce HIV incidence. The nested research will help explain trial findings and inform future policy. If successful, this treatment as prevention strategy may be pivotal in bringing the global HIV epidemic under effective control, with potential implications for UK practice.

P126
Community viral load and HIV new diagnoses in a UK regional centre
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Royal Liverpool University Hospital, Liverpool, UK

Background: Community viral load (CVL) is defined as the viral load of all HIV-infected persons diagnosed with HIV infection in a given population. It may be a useful tool for tracking HIV trends: evaluating the effectiveness of HIV treatment and HIV prevention. Recent studies in the USA have shown an
association between decreasing community viral loads and a reduction in new diagnoses of HIV. The aim of this study was to look at CVL in a UK regional cohort and the corresponding new HIV diagnoses to identify a correlation. Method: HIV-positive patients who had a viral load performed at the regional centre were identified. Viral loads from each patient for each year from 2002 to 2011 were entered and those below the detection limit of the assay were considered 0. Both the sum of all viral loads (total CVL) and the mean CVL for each year were calculated. Annual numbers of newly diagnosed HIV cases for the region were provided by the HPA. Results: The CVL and the mean CVL both fluctuate from 2001 to 2011. The mean CVL seems to follow the trend of new HIV diagnoses better than the total CVL. The peak in HIV diagnoses seem to be associated with a corresponding peak in mean CVL one year on.

Conclusion: This study shows that mean CVL follows a closer trend with new HIV diagnoses than total CVL. Provisional statistics do not show an association with CVL and new HIV diagnoses in our population. The ‘year lag’ delay in CVL from HIV diagnoses may reflect time taken to start patients on HIV treatment.

P128
Predictors for high viraemia among a treatment-naive national HIV cohort in the United Kingdom
A Brown, A Aghaizu, G Murphy and V Delpech
Health Protection Agency, London, UK

Background: Viral load is the key predictor for HIV transmission; patients adherent to treatment have negligible risk of transmission. In the UK, 82% of HIV-diagnosed adults receive treatment. We describe the predictors for high viraemia among a treatment-naive cohort.

Methods: Data are from HIV positive adults accessing care in the UK in 2010. Patients diagnosed during 2010 were categorised as "recently-infected" (through linkage to avidity test results), "late diagnosed" (CD4 count < 350 at diagnosis) and "other". High viraemia was defined as >40,000 copies/mL. Patients with missing viraemia data and those receiving treatment before 2010 were excluded. Multivariate analysis was conducted separately for patients diagnosed before and during 2010.

Results: Overall, 8,486 patients were treatment naïve and had a median viral load of 10,494 copies/mL (IQR: 1,600–42,223) compared to 39 (IQR: 39–49) among the treated population. Twenty-two per cent (1,329/6,039) of patients diagnosed before 2010 had viraemia >40,000 copies/mL, compared to 36% (881/2,447) among those diagnosed in 2010 (p < 0.05). Among the 6,039 patients diagnosed before 2010, predictors for high viraemia included: sex between men, and men with heterosexual exposure (for both groups, Adjusted Odds Ratio (AOR) 1.8 95% CI 1.5–2.3, reference: [ref: women], and CD4 < 200 cells/mm³ (AOR 3.0, 95% CI 2.1–4.3, ref: CD4 350–500 cells/mm³).

Among newly diagnosed patients, age over 50 years (AOR 1.9, 95% CI 1.3–2.7; ref: aged 15–24 years), sex between men (AOR 1.5, 95% CI 1.2–2.0; ref: women), men with heterosexual exposure (AOR 1.4 95% CI 1.1–1.8), and late infection at diagnosis (AOR 1.8, 95% CI 1.4–2.3; ref: CD4 350–500 cells/mm³) were predictors of high viraemia. For both groups, non-white ethnicity and CD4 counts ≥ 500 cells/mm³ were protective for high viraemia.

Conclusions: Predictors of high viraemia are a useful prevention tool; newly diagnosed patients and particularly those diagnosed at older ages, as well as patients with a low CD4 count after diagnosis are more likely to have elevated viraemia. Our analysis indicates that tackling late diagnosis through the Public Health Outcomes Framework will not only reduce morbidity and mortality associated with HIV but is likely to substantially reduce community viral load and onward transmission. The role of gender and ethnicity merits further exploration.

P129
HIV and risk behaviours among people who inject drugs in the UK: 30 years on
S Croxford, V Hope, Z Yin, K Cullen, F Ncube and V Delpech
Health Protection Agency, London, UK

Background: People who inject drugs (PWID) are known to be at high-risk of HIV. We report on the epidemiology of HIV among PWID in the UK over the past 30 years.

Methods: Data on PWID (aged ≥ 15) diagnosed with HIV in the UK to the end of 2011 were analysed to examine demographics, late diagnosis (CD4 count <350 cells/mm³ within 3 months of diagnosis) and mortality. Quality of HIV care of PWID in 2011 was assessed, alongside HIV prevalence and risk behaviours of PWID participating in the 2011 Unlinked Anonymous (UA) Survey.

Results: Over the past three decades, 5600 PWID were diagnosed with HIV; new diagnoses peaked at 417 in 1986, decreasing to 132 in 2011. The male to female ratio has remained relatively consistent at 2:1, while median age at
HIV-2 in the United Kingdom – the North-East London cohort
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Background: HIV-2 infection presents considerable difficulties in clinical management but remains poorly understood. Cohort studies in West Africa suggest that only a minority of HIV-2 infected individuals will experience disease progression and require antiretroviral therapy. However, genetic differences from HIV-1 mean that and HIV-2 is intrinsically resistant to several antiretrovirals and has a low genetic barrier to resistance. To date, there are no randomised controlled treatment trials for HIV-2 so observational cohort data remain crucial in enhancing understanding. North-East London has relatively high and increasing numbers of HIV-2 infected patients and the local virology department can quantify HIV-2 load. We therefore characterised the local population in order to establish a prospective cohort.

Methods: HIV-2 infected individuals were identified from the Virology database. Clinical details were collected from laboratory records and clinical notes.

Results: To date, 48 HIV-2 infected individuals have been identified. The cohort is predominantly female (30 patients, 63%) with age range 18 to 76 years, median 49 years. Most patients are African; Guinea-Bissau the most common country of origin with Ghana, Cote d’Ivoire, Nigeria and Portugal also represented. Most patients are on antiretroviral therapy with some requiring second or third-line regimens following the development of resistance. 470 HIV-2 loads were measured, of which 300 (64%) were undetectable.

Conclusions: This is the largest cohort of HIV-2 infected individuals reported in the UK. There is a much larger proportion of patients requiring antiretroviral therapy than would be expected. This may reflect under-diagnosis of HIV-2 whereby asymptomatic individuals with non-progressive disease remain unidentified. It is not clear why females are over-represented in the cohort but it may be due to higher rates of screening in ante-natal and fertility services. The age range, with a predominance of individuals over 40 years, corresponds with the apparent peak in HIV-2 prevalence in 1970–1980 with its epicentre in Guinea-Bissau. Although it is thought that the overall incidence and prevalence of HIV-2 is declining, our cohort continues to increase. This, and the observation of infection in younger individuals, concurs with the recent demonstration of ongoing transmission of HIV-2 from new cases in Africa. Recruitment to this cohort will continue and it is hoped that this will facilitate further studies.

Inpatient admissions at a tertiary London centre: a recent update
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Background: This study reviews patient demographics and disease pattern for inpatient admissions in 2005, 2010 and 2012.

Method: HIV inpatient admissions between 1 January 2012 and 30 June 2012 were identified using electronic codes. Case files were reviewed retrospectively using electronic patient medical records, discharge summaries, pathology results and pharmacy notes. These data were compared with data from inpatient admissions in 2005 and 2010. AIDS-defining conditions were re-classified according to Stage 4 of the WHO Clinical Classification to standardise the data.

Results: In 2012, the average CD4 in AIDS-defining admissions was 246.4 cells/µl compared to 426.3 cells/µl for patients with a non AIDS-defining illness. On review of AIDS-defining conditions, these made up of 11.5% (n = 28) admissions in 2005, 10.2% (n = 24) in 2010 and 12.5% (n = 28). Non AIDS-defining infections have risen from 29.1% (n = 71) to 39.7% (n = 89) from 2005 to 2012.

Conclusion: The number of admissions has decreased. The average age of inpatients has increased. The number of patients on cART admitted has increased with more having an undetectable VL and higher CD4. However, despite improvements in CD4 counts and VL, there are still prominent numbers of AIDS-defining admissions. This demonstrates the need for future general physicians to be equipped with the skills and knowledge of HIV management and for HIV physicians to be fully trained in common general medical presentations.
Table

<table>
<thead>
<tr>
<th></th>
<th>2005</th>
<th>2010</th>
<th>2012</th>
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<tbody>
<tr>
<td>No. of admissions</td>
<td>244</td>
<td>235</td>
<td>224</td>
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<tr>
<td>Age (years)</td>
<td>42</td>
<td>44</td>
<td>48</td>
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<tr>
<td>Male: female</td>
<td>85%</td>
<td>15%</td>
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<tr>
<td>Average CD4 (cells/µl)</td>
<td>270</td>
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<td>Patients with undetectable VL (%)</td>
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<td>Patients on cART (%)</td>
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<td>Inpatient duration (days)</td>
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<table>
<thead>
<tr>
<th>Non AIDS-defining admissions</th>
<th>2005 (%)</th>
<th>2010 (%)</th>
<th>2012 (%)</th>
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<tbody>
<tr>
<td>Cardiology</td>
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<td>1.3</td>
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<tr>
<td>Dermatology</td>
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<td>0</td>
<td>0.5</td>
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<tr>
<td>Died cause unclear</td>
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<td>2.6</td>
<td>0.9</td>
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<td>3</td>
<td>5.8</td>
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<td>Non AIDS-defining infections</td>
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<tr>
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<tr>
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<td>8.5</td>
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<tr>
<td>ARV-related admissions</td>
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<td>2.7</td>
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Conclusions: This study identifies number of sexual partners, number of unprotected sexual acts and the presence of an STI as key predictors of HIV status. This data is routinely collected within sexual health services and could therefore guide targeting of novel prevention strategies such as PrEP.

**P134**

High AIDS-related mortality rates in a low HIV prevalence area of the UK

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Background: HIV late presentation (CD4 count <350 cells/µl and/or AIDS-defining illness) is associated with a significant risk of morbidity and mortality. BHIVA testing guidelines recommend routine HIV testing at GP surgeries and in acute hospital admissions only in HIV high prevalence areas of the UK (> ≥ 2 HIV positives/1000). We conducted a HIV mortality audit over a 10 year period in North-East Yorkshire (NEY, low prevalence) and compared the fatality rate with London area (high prevalence) during the same time period.

Methods: Clinical notes review of all HIV patients who died. Data collected: demographics, time from diagnosis to death, CD4 + T cell count and HIV RNA load at time of death, cause of death. Review of national data on HIV new diagnosis and deaths. Comparison of observed deaths with calculated expected deaths assuming the same fatality rate in HIV patients living in NEY and London areas. Statistical analysis was performed using Chi squared and a test of significance.

Results: 104 patients were newly diagnosed and 16 died: 12(75%) were male, 12(75%) Caucasian, 8(50%) patients were heterosexual. Median time from diagnosis-death was 4.2 years (<1 months–18 years): 6(38%) patients died <1 year. Median CD4 count at time of death: 48 cells/µl (3–475); 11 (69%) patients had a CD4 < 200 cells/µl, 9(56%) patients died of AIDS, lymphoma or opportunistic infections. Most common cause of death was pneumocystis jiroveci pneumonia (38%). A quarter of patients had attended hospital departments or GPs a year before HIV diagnosis. Once diagnosed patients had immediate access to HIV specialists. 12(75%) patients were on antiretroviral therapy and mean serum HIV-1 RNA was 68 700 (0–1.9 x 10^7 copies/L) at time of death. The observed case-fatality rate was 2.3 fold (95% CI 1.4 to 3.9) higher for HIV positive patients in NEY area than in the London area (p < 0.001).

Conclusions: Late diagnosis of HIV/AIDS and death is not limited to high prevalence areas but might be alarmingly high in low prevalence areas. Patients are not perceived at risk potentially because their area is labelled as low prevalence. A routine HIV testing in all UK based GP surgeries and hospital admission units might prevent avoidable AIDS deaths. Presented data show a potential signal which needs to be tested in other HIV low prevalence settings. A national audit comparing fatality rates in low compared to high HIV prevalence areas could be informative.

**P133**

Strategies to guide HIV prevention approaches: Correlation of sexually transmitted infections and sexual behaviour with risk of HIV infection

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Background: HIV incidence amongst risk groups in the UK has remained relatively stable despite prevention programmes. It is hoped that new biomedical interventions will decrease transmission however these must be targeted at those at highest risk. The aim of this study was to examine associations between sexual behaviour, STI diagnoses and HIV status in order to identify individuals at highest risk at risk individuals.

Methods: Between October 2010 and May 2011 individuals requesting screening for HIV and STIs were prospectively recruited into a cross-sectional study at a London sexual health service. Participants self-completed a paper based, sexual behaviour questionnaire. Responses were linked to HIV and STI results. Statistical associations were assessed using exact logistic regression.

Results: 985 participants had HIV serology; (88.7%) were male and the majority men who have sex with men (MSM). In total 22/985 (2.2%) tested HIV positive. Participants diagnosed with rectal gonorrhoea (OR = 8.02, 95% CI = 1.33–34.00) or rectal chlamydia (OR = 7.69, 95% CI = 1.69–27.93) had increased odds of testing HIV positive. Number of sexual partners in the three months prior to participation was also associated with HIV status; for each additional partner there was a 1.13 fold increase in the odds of testing HIV positive (95% CI = 1.03–1.26, p = 0.002).

**P135**

HIV Treatment and Pharmacokinetics

SPIRIT: Switching to rilpivirine/emtricitabine/tenofovir DF single-tablet regimen from boosted protease inhibitor maintains HIV suppression at week 48 regardless of viral load or CD4 + count prior to initiation of ARV therapy


1North Manchester General Hospital, Manchester, UK, 2Brighton and Sussex University Hospital, Brighton, UK, 3Northwestern University, Chicago, USA, 4University of Pennsylvania, Philadelphia, USA, 5Chelsea and Westminster Hospital, London, UK, 6Peter J Ruane MD Inc, Los Angeles, USA, 7ID Unit University Medical Centre, Hamburg, Germany, 8La Playa Medical Group, San Diego, USA, 9Kaiser Permanente, Sacramento, USA, 10Gilead Sciences, Foster City, USA and 11Gilead Sciences, Cambridge, UK

Background: ARV regimen simplification improves QoL and medication adherence while reducing risk of HIV virologic failure (VF) and long-term...
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StAR Study: Single tablet regimen rilpivirine/emtricitabine/tenofovir DF is non-inferior to efavirenz/emtricitabine/tenofovir DF in ART-naive adults regardless of baseline viral load and CD4 + count


1North Manchester General Hospital, Manchester, UK, 2Community Research Initiative of New England, Boston, USA, 3University of North Carolina at Chapel Hill, North Carolina, USA, 4Hospital La Paz, Madrid, Spain, 5HIV Program Hennepin County Medical Center, Minneapolis, USA, 6Infectious Disease Unit, University Medical Center Hamburg-Eppendorf, Hamburg, Germany, 7Holdsworth House Medical Practice, Sydney, Australia, 8Kaiser Los Angeles Medical Center, Los Angeles, USA, 9Gilead Sciences, Foster City, USA and 10Gilead Sciences, Cambridge, UK

Background: Simplified antiretroviral treatment (ART) regimens improve quality of life and long-term medication adherence.

Methods: StAR, an open-label, international, 96-week study, is the first to directly compare the safety and efficacy of the two single tablet regimens (STRs), Rilpivirine/Etricitabine/Tenofovir DF (RPV/FTC/TFD) and Efavirenz/Emtricitabine/Tenofovir DF (EFV/FTC/TFD) in treatment-naive adults. Eligibility criteria included screening HIV-1 RNA > 2,500 copies/mL, genotypic sensitivity to EFV, FTC, and TDF, and no prior ARV therapy. The primary endpoint was the proportion of subjects with HIV-1 RNA <50 copies/mL at Week 48 by the FDA snapshot algorithm (12% non-inferiority margin). Additional outcome analyses were evaluated stratified by baseline HIV-1 RNA and CD4 + cell count.

Results: A total of 786 subjects were randomized and received at least one dose of study drug (394 RPV/FTC/TFD; 392 EFV/FTC/TFD). Baseline characteristics were similar in both treatment arms, with a baseline mean CD4 + cell count of 391 cells/mm3 and HIV-1 RNA of 4.8 log10 copies/mL. In the overall study population, RPV/FTC/TFD was non-inferior to EFV/FTC/TFD (86% vs 82%) at Week 48 for HIV RNA <50 copies/mL (difference 4.1%, 95% CI [-1.1% to 9.2%]). A statistically significant difference in efficacy was demonstrated for baseline HIV-1 RNA <100,000 copies/mL (n = 510), 89% RPV/FTC/TFD vs 82% EFV/FTC/TFD (difference 7.2%, 95% CI [1.1%–13.4%]), and non-inferiority for >100,000 copies/mL (n = 276), 80% RPV/FTC/TFD vs 82% EFV/FTC/TFD (difference -1.8%, 95% CI [-11.1%–7.5%]). Non-inferiority was also demonstrated for baseline CD4 + <350 cells/mm3 (n = 340), 81% RPV/FTC/TFD vs 83% EFV/FTC/TFD (difference -2.2%, 95% CI [-10.6%–6.1%]), and superiority for >350 cells/mm3 (n = 446), 89% RPV/FTC/TFD vs 81% EFV/FTC/TFD (difference 8.6%, 95% CI [1.8%–15.3%]). Overall, virologic failure (VF) was 8% for RPV/FTC/TFD vs 6% for EFV/FTC/TFD (difference 2.7%, 95% CI [-0.9%, 6.2%]), and similar trends in VF were seen regardless of baseline HIV-1 viral load or CD4 + count. There were fewer study drug discontinuations due to AEs with RPV/FTC/TFD (3%) compared to EFV/FTC/TFD (9%).

Conclusions: The STR RPV/FTC/TFD demonstrated overall non-inferior efficacy and improved tolerability compared to the STR EFV/FTC/TFD as well as superior efficacy for subjects with a baseline viral load <100,000 copies/mL and baseline CD4 + cell count >350 cells/mm3 in treatment-naive HIV-1-infected subjects.

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Efficacy and Safety of elvitegravir/cobicistat/emtricitabine/tenofovir DF from an integrated analysis of Phase 2 and 3 clinical trials

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Background: Elvitegravir/cobicistat/emtricitabine/tenofovir DF ("QUAD") demonstrated noninferior efficacy (margin: -12%) to EFV/FTC/TFD ("ATR") (study 102 and 104) and to ritonavir-boosted atazanavir in combination with TDF/FTC/ATV/r ("TVD") (study 103) by snapshot analysis at Week (Wk) 48 in randomized, controlled trials of HIV-infected treatment-naïve subjects.

Methods: A pre-specified pooled analysis of Wk 48 data for efficacy and safety was performed for one phase 2 and two phase 3 QUAD studies. The primary efficacy end point was HIV-1 RNA <50 copies/mL at Wk 48 using FDA snapshot analysis (ITT).

Results: Subjects had similar baseline characteristics (QUAD n = 749; ATR n = 375; ATV/r + TVD n = 355). The rates of virologic suppression (HIV-1 RNA <50 copies/mL) at Wk 48 in QUAD, ATR, and ATV/r + TVD were 88.8, 84.0, and 86.8%; the difference was 5.1% (95% CI: 0.7–9.4) between QUAD and ATR, and 1.9% (2.3–6.1) between QUAD and ATV/r + TVD. QUAD efficacy was consistent across subgroups based on demographics, baseline HIV-1 RNA, and CD4 cells. The rates of adverse events (AEs) leading to study drug discontinuation were similar in the 3 groups (QUAD vs ATV/r + TVD (3.5 vs 5.1 vs 5.1%), as were those of serious AEs (9.2 vs 6.7 vs 8.7%), and deaths (0.1 vs 0.5 vs 0.8%). Fewer QUAD subjects, compared to ATR, reported neuropsychiatric AEs (QUAD vs ATV: 42.9 vs 62.1%; p < 0.001) and rash AEs (17.5 vs 27.7%; p < 0.001). At Wk 48, a small increase in creatinine (median, micromol/L) was seen in QUAD (+11.5) and ATV/r + TVD (+7.1), but not in ATR (+0.9). These changes were seen as early as Wk 2, and stabilized through Wk 48. QUAD had less increase (median, mmol/L) in total cholesterol (+0.26 vs +0.49; p < 0.001), LDL (+0.26 vs +0.44; p < 0.001), and HDL (+0.13 vs +0.21; p = 0.002), compared to ATR; QUAD also had less increase in triglyceride (+0.09 vs +0.26; p = 0.006), compared to ATV/r + TVD. Conclusions: QUAD demonstrated high rates of virologic suppression comparable to ATV/r + TVD with potential to overcome toxicities, such as neuropsychiatric symptoms, rash, and hyperlipidemia. Early small increase in creatinine that stabilizes is expected with QUAD due to cobicistat’s inhibition of renal creatinine tubular secretion.
Patient and physician preferences regarding medications for HIV treatment

A Lloyd\textsuperscript{1}, D Collomb\textsuperscript{2}, S Hearn\textsuperscript{1}, S Ali\textsuperscript{1} and F Mughal\textsuperscript{3}

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Background: The range of antiretroviral drugs available has increased considerably over the past 10 years. NICE guidelines (2009) state the importance of understanding patient preferences regarding treatment to optimize adherence. The present study was designed to elicit patient and physician preferences for HIV treatment options using stated preference survey.

Methods: Two stated preference surveys were developed from published literature and from interviews with patients (n = 5) and physicians (n = 2). Eight key attributes were identified: Treatment benefit, Risk of rash, Risk of kidney stones, Risk of jaundice, Risk of diarrhoea, Risk of psychological effect, Risk of heart attack, and Long term safety profile. Two hundred HIV patients and 125 NHS based physicians completed on-line surveys and data were analysed using the conditional logit model whereby the odds ratios (ORs) indicated the likelihood of choosing a treatment. Utility values were calculated using a mapping function of the EQ-5D-5L.

Results: Patients placed most importance on treatment effectiveness (OR = 1.030 95% CI = 1.023–1.037) and long term safety profile (OR = 1.061 95% CI = 1.042–1.080). The avoidance of all side effects was valued, particularly risk of psychological consequences (OR = 0.978 95% CI = 0.964–0.992) and heart attack (OR = 0.977 95% CI = 0.973–0.986). Patients valued the avoidance of diarrhoea (OR = 0.991 95% CI = 0.985–0.996) to the same extent as the avoidance of jaundice (OR = 0.990 95% CI = 0.982–0.989). Physician results were similar, although they were more influenced by treatment effectiveness than patients (OR = 1.110 95% CI = 1.093–1.126) and risk of serious side effects (OR = 0.971–0.988, p < 0.05). Like patients, they preferred treatments which had a long established safety profile (OR = 1.061 95% CI = 1.040–1.082). Patients with detectable viral load had lower utility values (mean = 0.483) than patients with non-detectable viral load (mean = 0.641) (p < 0.01).

Conclusions: Treatment effectiveness and long-term safety profile were the most important drivers of treatment choice for both patients and physicians. Patients valued the avoidance of certain side-effects including rash, diarrhoea and jaundice which were of equal importance. Physicians placed more value on avoiding some side effects (e.g. diarrhoea, rash). Considering the perspective of patients when making treatment decisions may result in improved adherence and better treatment outcomes in HIV.

Week 96 efficacy and safety data: Elvitegravir/cobicistat/ emtricitabine/tenofovir DF (Quad) compared to atazanavir boosted by ritonavir plus emtricitabine/tenofovir DF in treatment-naive HIV-1-infected patients

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Background: The primary Week 48 analysis of this ongoing, randomized, double-blind, double-dummy, active-controlled Phase 3 international trial of elvitegravir/cobicistat/emtricitabine/tenofovir DF (Quad) in treatment-naive patients demonstrated that Quad was non-inferior to atazanavir boosted by ritonavir (ATV/r) + FTC/TDF with a differentiated safety profile. We report the Week 96 data.

Methods: Key eligibility criteria included HIV-1 RNA $\geq$ 5,000 c/mL and eGFR $\geq$ 70 mL/min. Virologic success (HIV-1 RNA <50 c/mL) at Week 96 was assessed per FDA snapshot algorithm. Adverse events and laboratory data were collected prospectively. Bone mineral density (BMD) was assessed by DEXA scan in a subgroup of patients.

Results: 708 patients (90% male, 74% white, 41% with HIV-1 RNA $> 100,000$ c/mL) were randomized and treated. At Week 48, Quad was non-inferior to ATV/r + FTC/TDF (90% vs 87%, difference 3.0%, 95% CI -1.9% to 7.8%). High rates of virologic success were maintained at Week 96 (83% vs 62%, difference 1.1%, 95% CI -4.5% to 6.7%). Subgroup analysis revealed similar rates of virologic success in patients with baseline HIV-1 RNA $> 100,000$ c/mL (82% vs 80%). Mean CD4 cell increases (cells/mm$^3$) were 256 vs 261 at Week 96. Emergent resistance was infrequent (2% vs <1%). In the second year only 1 subject (in the Quad arm) developed emergent resistance. Rates of discontinuation due to adverse events (AEs) were low and comparable (4% vs 6%). Rates of renally related discontinuation remained low and similar through Week 96 (2 [0.8%] vs 2 [0.6%]); since Week 48, 1 patient in each arm discontinued study drug due to serum creatinine (Cr) increase neither had features of proximal renal tubulopathy. Median increases from baseline Cr $(\mu$mol/L) in Quad vs ATV/r + FTC/TDF at Week 96 (10.6 vs 7.1) were similar to those at Week 48. Quad continued to have smaller increases (mmol/L) in triglycerides (0.06 vs 0.18, p = 0.012); Quad had greater increases in total cholesterol (0.36 vs 0.21, p = 0.046) at Week 96 only; changes in LDL and HDL cholesterol were similar. Quad had smaller mean decreases (%) in BMD (hip: -3.16 vs -4.19, p = 0.089, spine: -1.96 vs -3.54, p = 0.049).

Conclusions: At Week 96, Quad demonstrated high rates of virologic suppression with low rates of resistance and a differentiated safety and tolerability profile relative to ATV/r + FTC/TDF. These results support the durable efficacy and long-term safety of Quad in HIV-1 infected patients.
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Switching to rilpivirine in clinical practice: experience of two London HIV units
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Background: Although the non-nucleoside reverse transcriptase inhibitor (NNRTI) rilpivirine (RPV) is licensed for antiretroviral (ART) naïve patients, in clinical practice its common use is likely to be as a switch strategy. Switch studies albeit in carefully selected populations demonstrate favourable outcomes. We aimed to describe the characteristics, indications and outcomes of those switching to RPV with two nucleoside reverse transcriptase inhibitors (NRTIs)

Methods: All patients on ART switching to RPV with two NRTIs attending two large London HIV services in 2012 were identified using local databases. Information regarding ART history, demographics, switch indication and short term outcomes were recorded using Excel 2003. Comparisons made using χ² or Mann–Whitney U test as appropriate.

Results: 169 switched to RPV, 151 (89.3%) with Truvada (141 (83.4%) as Efavirenz), 18 (10.7%) with Kivexa. Pre-switch regimens included two NRTIs with NNRTI (92, 54.4%), boosted protease inhibitor (PI/r) (57, 33.7%), raltegravir or maraviroc (7, 4.1%). 7 (4.1%) switched from PI/r monotherapy. 73 (43.2%) switched due to CNS side effects (71 from efavirenz), 29 (17%) to simplify their regimen (6 adherence related). PI/r switch indications included gastrointestinal disturbances (15, 23.4%), hyperbilirubinaemia (10, 15.6%), hyperlipidaemia (7, 10.9%), patient choice (6, 9.3%) and weight gain (5, 7.2%).

Compared to PI/r, those switching from a NNRTI were more likely to be male (87% on NNRTI were male vs 74% on PI/r, p = 0.04), and men who have sex with men (73% vs 56%, p = 0.08) with longer history on suppressive ART (median 3.0 vs 2.1 years, p = 0.11). White ethnicity (63% vs 54, p = 0.30) and median number of prior regimens (2 vs 2) were similar across groups. 162 (96%) had VL < 50 c/ml at switch, with 52/54 (96%) and 16/17 (94%) of those with follow up (FU) remaining on RPV with VL < 50 c/ml after 12 and 24 weeks.

Of those with any FU, 22/157 (14%) discontinued RPV after a median of 4.1 (1–25) weeks, 12/89 (13.4%) from prior NNRTI, 5/56 (9%) from PI/r, 3/12 (25%) other regimens (p = 0.51). Indications for stopping were toxicity/intolerance (14), drug interactions (4), or other (4). One had viral failure on stopping (no emergent resistance), 15 (68.2%) switched back to their prior regimen

Conclusion: In this diverse cohort, switching to RPV with two NRTI maintained virolological suppression in the majority however a relatively high rate of short term discontinuation was observed

P142
Use of antacid preparations with HAART
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Background: Concurrent therapy with antacid or ulcer healing medication decreases the bioavailability of some antiretroviral agents. The aim of this study was to describe the frequency of antacid use in HIV-1 infected individuals treated with HAART and to explore patient awareness of potential drug interactions.

Methods: Patients receiving antiretroviral therapy, HAART, consisting of atazanavir (TAZ), darunavir (DRV) or efavirenz (EFV) for greater than a year were included. Information on patient awareness of potential interactions with antacid/ulcer healing medication and the use of such preparations over the last year were collated using a patient questionnaire. Data on HIV viral loads was then subsequently collected for each patient over the last year and viral load blips were recorded.

Results: Two hundred and seventy five patients completed the questionnaire, 228 (82.9%) of whom were male and the median age was 44 years (range: 26–72). Eighty two (29.8%) were receiving a TAZ containing regimen, 83 (30.2%) were on DRV and 110 (40.0%) were receiving EFV. Ninety six (34.9%) patients were aware of interactions between HAART and antacids/ulcer healing medication. Of these, 38 (13.8%), 28 (10.2%) and 31 (11.3%) were receiving TAZ, DRV and EFV respectively. Of the patients receiving TAZ, 30 (36.6%) had taken antacids within the preceding 1 year period, 5 (6.1%) prescribed by their HIV doctor, 2 (2.4%) by another doctor and 27 (32.9%) bought the medication over the counter. Three (3.7%) patients received a proton pump inhibitor. Of the patients receiving DRV and EFV, 36 (43.6%) and 38 (34.6%), respectively had also received antacids over the last year. Viral blips occurred in 5/30 patients (16.7%) receiving TAZ with concomitant antacid use whilst of the 52 who denied concomitant antacid use with TAZ, 7 (13%) had viral blips (2 sided Fisher’s exact test, p = 0.7511). Of the patients taking DRV or EFV, 10(77%) and 3(23%) were observed to have viral blips respectively.

Conclusion: The majority of patients treated with HAART combinations, including those on TAZ containing regimens, were unaware of the potential interactions between antiretroviral and antacids/ulcer healing medication whilst a significant proportion of patients were prescribed or bought these products.

P143
Abstract withdrawn

P144
HLA B*5701 positivity, disease status and response to combination antiretroviral therapy (cART) in the UK Collaborative HIV Cohort (CHIC) study
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Background: HLA B*5701 may be associated with non-progression of HIV. We investigated this in untreated patients in the UK CHIC study and examined responses to cART according to HLA B*5701 status.

Methods: T-tests and linear regression assessed if the association between CD4 and viral load (VL) differed according to HLA B*5701 status in untreated patients. In ART-naive patients starting a non-abacavir (ABC) regimen, Cox Proportional Hazards models compared time to undetectable VL, viral rebound (VR) and treatment switch in HLA B*5701 positive and negative patients and those not tested who started cART after 2005. ANOVA and linear regression compared CD4 changes at 6 and 12 months from start of cART in these groups.

Results: Of 3258 untreated HLA B*5701 tested patients (74% male, 55% white, 56% MSM, 2% and 3% hepatitis B and C co-infection), 5.1% were HLA B*5701 positive and 94.9% were negative (Hazard ratio (HR) = 1.12, 95% CI (1.04, 1.19)). Despite small numbers of positive patients, we saw that whilst those not tested did not differ from negative patients VR or treatment switch, but were more likely to attain an undetectable VL than negative patients (HR = 1.62, 95% CI (1.16, 1.81)), and seemed less likely to rebound or switch treatment (HR = 0.56 and HR = 0.88 respectively), although these results were not significant (95% CI (0.23, 1.37) and (0.61, 1.25)). Mean (SD) CD4 change in those positive, negative and not tested respectively was 51 (356–663) and 395 (282–540) respectively (p < 0.0001). The association between CD4 and VL did not significantly differ by HLA B*5701 status (interaction p-value = 0.09), 6497 patients started a non-ABC regimen (1.4% positive, 21.4% negative, 77.2% not tested). HLA B*5701 positive patients were more likely to attain an undetectable VL than negative patients (Hazard ratio (HR) = 1.62, 95% CI (1.16, 1.81)), and seemed less likely to rebound or switch treatment (HR = 0.56 and HR = 0.88 respectively), although these results were not significant (95% CI (0.23, 1.37) and (0.61, 1.25)). Mean (SD) CD4 change in those positive, negative and not tested respectively was 165 (104), 151 (133) and 147 (132) at 6 months (p = 0.57) and 173 (123), 198 (153) and 193 (158) at 12 months (p = 0.58). No significant difference in CD4 change was seen at 6 or 12 months in positive patients compared to negative (6 month mean difference = 8.5, 12 month = -28.1). Patients not tested did not differ from negative patients with regards to CD4 change, risk of VR or treatment switch, but were more likely to attain undetectable VL (HR = 1.12, 95% CI (1.04, 1.19)).

Conclusion: Despite small numbers of positive patients, we saw that whilst HLA B*5701 status did not affect CD4 response to cART, it may impact on virological response. Untreated positive patients had higher CD4 and lower VL than negative patients at entry but this interaction was not significant when tested.
P145
Long-term therapeutic success of etravirine in switch and naïve patients
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Background: Etravirine is a second-generation non-nucleoside reverse transcriptase inhibitor (NNRTI) that is effective in those naive to therapy, those requiring salvage therapy and those experiencing toxicity to efavirenz.

Methods: We identified HIV infected individuals who commenced etravirine and two nucleoside reverse transcriptase inhibitors (NRTIs), and undertook a retrospective case review of the success of this therapeutic approach to 1 December 2012.

Results: 389 individuals commenced a regimen of 2 NRTIs (TDF + FTC 87%, ABC + 3TC 11%, other 2%) and etravirine. 345 had an undetectable viral load, <50 copies/ml, at commencement of therapy and 44 a detectable viral load (median 44296 copies/ml, range 508–1819837). Of the 345 with an undetectable viral load; 210 switched from Atripla. An additional 38 individuals were switched from other efavirenz containing regimens. 67 switched from protease inhibitors (PI’s). 246 switched to etravirine due to central nervous system side effects predominantly mood changes, sleep disturbance, dream disturbance and fatigue. The reasons for switch from PI’s were predominantly for adverse drug reactions (ADR’s) including diaphoresis (14), weight gain (11), and drug interactions (8). In those individuals who were switched with an undetectable viral load at 3 months 281 (88%) on therapy continued with an undetectable viral load. At six months 99% maintained an undetectable viral load and 96%, 97%, 97%, 100% and 100% at 1, 2, 3, 4 and 5 years. 86 individuals stopped etravirine. 63 of these had been on efavirenz previously and 31 (50%) of these stopped etravirine due to continuation of the same symptoms perceived to be due to efavirenz. The others developed new ADR’s including diaphoresis (2), transaminisits (3) and nephrotoxicity (2). Three stopped etravirine with vireaemia with one developing resistance to etravirine (181C). In individuals who commenced etravirine containing regimens with a detectable viral load; 24/44 had possible efavirenz ADR’s. 27/44 fully suppressed their viral load on etravirine and remained suppressed for a median of 1 year (range three months to 3 years). 4 stopped due to an ADR and 5 for drug interactions. 8 switched due to continued viraemia, all were non-compliant with their medications with 3 developing resistance to the NRTI component of the regimen but none to etravirine.

Conclusions: Our cohort demonstrates that etravirine is a well tolerated and effective NNRTI in individuals requiring a switch in therapy. Developing etravirine resistance is rare in individuals developing viraemia.

P146
Real-life clinical experience with Eviplera™
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Background: Rilpivirine/tenofovir/emtricitabine (Eviplera™) is a once daily single tablet regimen (STR) option and is licensed for naïve patients. Emerging data supports its use in Protease Inhibitors (PI) and efavirenz switch where it is an attractive option because of the STR formulation. This is a descriptive analysis of Eviplera™ use in a large cohort.

Methods: Pharmacy and laboratory databases were interrogated and clinical records reviewed: trial patients were excluded.

Results: 78 patients in total received Eviplera™ with 25.5 patient–years (PYS) of experience; median age 44 years (IQR 37, 50), male 75%. 16% were naïve to ART. For those who were Antiretroviral Therapy (ART) experienced switching occurred for regimen simplification in 39%, CNS side effects of Efavirenz in 29%, and gastrointestinal toxicity with existing ART in 12%: 20% had other reasons for switching including lipid elevation and abnormal Liver Function Tests (LFTs). 52% were switched from PI-based regimens and 41% from Non–Nucleoside Reverse Transcriptase Inhibitors (NNRTI)–based regimens. Of the 37 patients who were switched whilst undetectable and had follow up viral load, 97% remained undetectable over a median follow-up of 4 months; the 1 patient who became detectable had a viral load of 59. Of the 17 patients who were not undetectable at switch (median viral load of 292 copies/ml (range 44, 70321 copies/ml), all remained undetectable at the end of follow up (median 4 months).

68 patients had baseline and follow up renal monitoring data. All had baseline estimated Glomerular Filtration Rate eGFR of >60 ml/min. 2 patients had a reduction in eGFR to below 60 ml/min (From 60 to 56 ml/min at 3 months and from 69 to 58 ml/min at 4 months). 63% had an increase in serum creatinine-median 7 µmol/L (range 1, 22 µmol/L) after median 3 months follow-up.

Conclusions: Although cohort analyses have inherent limitations, our patient series supports that Eviplera is an effective regimen for patients wishing to switch therapy. The small increase in serum creatinine reinforces the importance of regular renal monitoring.

P147
Rilpivirine in clinical practice
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Background: This study examines the use of rilpivirine (RPV) in two large HIV centres.

Methods: A retrospective case review was done for all patients receiving RPV. Results: Between 1/11 and 10/12 104 patients initiated RPV; 84% were male (87/104), mean age 40. 98 patients switched to a RPV containing regimen and 6 were restarting or naïve to therapy.

Of those that switched, 58% switched from an Efavirenz (EFV) and 31% a PI based regimen. The main reasons for switching were CNS side effects (59%) and pill burden (26%). None switched because of virological failure. All but 5 patients switched to Eviplera. 8 patients (7.7%) discontinued RPV; 1 because of deteriorating renal function, 1 because of abnormal LFTs, 3 because there was no improvement (in mood, fatigue and diaphoresis) and 3 because of new CNS side effects. Of the 51 patients on EFV based regimens switching because of CNS SEs who continued with RPV 44(86%) reported a complete or partial improvement. In 28 patients this was examined more closely. Where the primary reason for switching was sleep disturbance there was almost complete resolution (15/16); where it was mood disturbance 4/6 improved; where it was both 2 noticed an improvement, 2 did not and 2 reported an improvement in sleep but not mood.

Laboratory parameters were compared prior to and after switching. Overall no statistically significant differences were found in ALT, HDL, LDL and triglyceride. A statistically significant difference was observed in mean creatinine (79.5, 83.8 p < 0.001) and total cholesterol (5.06, 4.71 p < 0.005) overall and in the 45 people switching from Atripla (the most common regimen prior to switch) to Eviplera (mean creatinine 79.8, 84 p < 0.001, mean total cholesterol 5.1, 4.1 p < 0.005). This was not observed in patients switching from Truvada/PI regimens. At switch 89% had VL < 50 copies/ml, 96% VL < 400 copies/ml and in those who continued 90% had VL < 50 copies/ml and 99% VL < 400 copies/ml at most recent bloods. There was one virological failure in a patient with poor adherence. Of the naïves/restarts there were no discontinuations.

Conclusion: In these 2 centres 94% RPV use was in patients switching therapy. It was well tolerated with low rates of discontinuation due to toxicity. In those switching from an EFZ based regimen a high proportion reported an improvement in CNS SEs, particularly when sleep disturbance was the main issue. In those switching from Atripla the increase in creatinine warrants further study.

P148
Safety and efficacy of rilpivirine–tenofovir–emtricitabine in treatment–experienced patients infected with HIV–1
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Introduction: Rilpivirine (RPV) is a recently approved second generation NNRTI, launched in combination with Tenofovir (TDF) and Emtricitabine (FTC) as a once–daily fixed dose regimen. RPV has shown similar efficacy to Efavirenz in clinical trials in treatment naïve patients. Preliminary data from ongoing studies have demonstrated efficacy and improved tolerability by switching to RPV/TDF/FTC. We sought to explore the safety and efficacy of RPV/TDF/FTC in treatment experienced patients.
**P149**

Five years of experience with raltegravir in a large HIV centre

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**Background:** Raltegravir (RAL), the first integrase inhibitor, was licensed by the European Medicines Agency in December 2007 as a component of antiretroviral therapy (ART). Real-life antiretroviral experience is informative and complements trial data, so we evaluated our RAL use in naive and experienced patients, including those with hepatitis and mycobacterial co-infection, and off-licence use.

**Methods:** Pharmacy and HIV database records were used to identify all adults who had taken at least one RAL dose outside of clinical trials. Demographic, clinical and laboratory data were collected from patient records using a standardised form.

**Results:** 

Data from 215 individuals provided 502 patient-years (PYs) of RAL use. Median duration of use was 2.6 years (interquartile range [IQR] 0.8, 3.5). 186/215 (77%) were male; median age 43 (IQR 37, 49); 155 (72%) Caucasian and 54 (25%) African/Caribbean. 189 (88%) were ART-experienced with 166/215 (77%) being on background ART; 114 patients (43.5%) switched to an alternative regimen (of these 30 patients were RAL switchers). 134 (51.2%) remained on the same treatment regimen at 12 months; 14 patients (5.3%) discontinued treatment; and 114 patients (43.5%) switched to an alternative regimen (of these 30 patients (26.3%) switched more than once within the 12 months). In total 134 patients (51.2%) remained on the same treatment regimen at 12 months; 14 patients (5.3%) discontinued treatment; and 114 patients (43.5%) switched to an alternative regimen (of these 30 patients (26.3%) switched more than once within the 12 months).

**Conclusion:** This study highlights the use of RVP/TDF/FTC as a safe and efficacious switch option in treatment experienced HIV-infected individuals. However, more robust clinical data are needed to establish the longer-term efficacy, safety and tolerability of RVP/TDF/FTC.

**P150**

Treatment change within 12 months of starting highly active antiretroviral therapy (HAART) in HIV-positive therapy-naïve patients

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**Background:** The choice of HAART available to patients and clinicians continues to increase. National guidance, largely based on efficacy and tolerability outlines suggested HAART regimens for naïve HIV-positive individuals. We aimed to determine how many patients switched regimen over their first year of therapy, the reasons and whether this depended on the specific HAART components.

**Methods:** 289 HIV positive naïve patients who commenced HAART outside of clinical trials between 1 st January 2004 and 31 st December 2010 were identified using a departmental database. 262 case records were obtained and analysed.

**Results:**

Of the 262 cases, 134 patients (51.2%) remained on the same treatment regimen at 12 months; 14 patients (5.3%) discontinued treatment; and 114 patients (43.5%) switched to an alternative regimen (of these 30 patients (26.3%) switched more than once within the 12 months). In total 134 patients (51.2%) remained on the same treatment regimen at 12 months; 14 patients (5.3%) discontinued treatment; and 114 patients (43.5%) switched to an alternative regimen (of these 30 patients (26.3%) switched more than once within the 12 months).

**Conclusion:**

Cohort analyses have inherent biases however our data suggest adverse treatment effects are a common reason to switch regimen within the first year of treatment in naïve patients, with some differences related to drug regimen chosen. Overall nearly half of patients started on HAART were not on the same regimen at 1 year.
Seven individuals stopped MVC and DRV/r. Four had virological failure, 1 adverse drug reaction and 2 unknown. Two (of those who virologically failed remained CCRS tropic on repeat testing, (12.5%) switched to X4 tropic virus and one had no re-test performed.

Conclusion: This study suggests that MVC plus DRV/r represents a successful approach for a nucleoside sparing strategy, deserving further investigation in randomized studies.

P152
Newly licensed darunavir suspension: clinical experiences
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Background: Darunavir (DRV) is an antiretroviral (ARV) of the protease inhibitor (PI) class. DRV, co-administered with low dose ritonavir (RTV), is indicated in combination with other ARVs for the treatment of HIV-1 infection in treatment naive and experienced adult patients. DRV is also licensed in treatment experienced paediatric patients above 3 years and 15 kg. DRV is available as 800 mg, 600 mg, 400 mg 150 mg, 75 mg film coated tablets and is licensed at adult doses of 600 mg twice daily or 800 mg once daily. DRV (100 mg/ml oral suspension (DRV/susp) has recently been licensed for use in adults and children. Bioavailability studies have shown that DRV/susp at steady state is comparable to the tablets when taken with food. We have been using DRV/susp for the last 18 months when DRV was indicated but patients were unable to swallow tablets. DRV/susp was initiated to promote adherence for these patients and for ease in administration via Percutaneous Endoscopic Gastrostomy (PEG) and Naso-gastic (NG) tubes. DRV/susp was unlicensed at the time these treatments were given and administration via NG and PEG tubes is still unlicensed. The aim of this study was to determine the clinical reasons for using DRV/susp and to review the outcome for the patients.

Method: A retrospective case note review of patients prescribed DRV/susp in the past 18 months. Patient parameters where recorded, including reasons for initiation, HIV Viral Loads (VL), CD4 counts and treatment outcomes.

Results: 20 patients were identified, 12 female and 8 male. DRV/susp was started in 4 patients with NG tubes and 4 patients with PEG tubes. The remainder had difficulty swallowing tablets. 18 patients started as in-patients, 7 of whom presented with AIDS related illnesses. 3 patients were ARV-naive and none of the treatment experienced patients had PI associated mutations. Median CD4 count and VL at the start of ARVs was 105 cells/mm³ (0–700) and 6,045 copies/ml (20–394,066) respectively. Median CD4 and VL at the end of therapy were 235 cells/mm³ (20–1,120) and 78 copies/ml (20–939). Median duration of therapy was 73 days (13–505). Outcomes: 10 patients switched back to DRV tablets, 6 patients died (deaths were not thought to be drug related) and 4 patients are on long-term DRV/susp (2 of whom have PEG tubes). No discontinuations of DRV/susp were due to adverse events.

Conclusion: Darunavir suspension is a safe and effective alternative ARV formulation for patients that have difficulty swallowing tablets.

P153
Salvage therapy with protease inhibitor-sparing regimens containing etravirine
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Background: Protease inhibitors (PIs) form the backbone of the majority of salvage regimens. However some individuals are intolerant of, or resistant to, PIs and require a PI sparing approach to therapy.

Methods: We identified all HIV infected individuals who commenced an etravirine containing salvage regimen without a PI. A case note review was then undertaken.

Results: 38 individuals commenced a PI sparing etravirine containing regimen, all had documented resistance to at least 2 classes of therapy. 24 of these had an undetectable viral load (<50 copies/ml) at commencement and 14 a detectable viral load with a median of 13794 copies/ml (range 505–412104). In those with an undetectable viral load at initiation, 17 were previously receiving a PI containing regimen. The reasons for switching were due to drug interactions (3) and adverse drug reactions (ADR); diarrhoea (2), lipodystrophy (3) nephro/hepato-toxicity (5) nausea (2) and cardiovascular risk (1). 18 commenced NRTI’s, with etravirine and raltegravir, 4 started NRTI’s with etravirine, one tenofovir, etravirine and maraviroc and one tenofovir, etravirine and enfuvirtide. At six months, 2 individuals had stopped etravirine because of ADR (diarrhoea), 90% continued with a viral load of <50 copies/ml. At 1, 2, 3, 4 and 5 yrs; 90%, 95%, 100%, 100%, 100% were undetectable. 3 further individuals ceased etravirine due to regimen simplification (1) need for a liquid preparation (1) poor compliance. (1) of the 14 who had a detectable viral load on commencement of their PI sparing etravirine regimen, mean ETR resistance score was 0.13 (range 0–1). Regimens commenced were: NRTI’s, etravirine and raltegravir (6) NRTI’s, etravirine, maraviroc (3) + raltegravir (2), NRTI’s and etravirine (2), maraviroc, raltegravir and etravirine (1). At 6 months, 1 individual had stopped due to ADR, 77% had achieved an undetectable viral load. At 1, 2, 3, 4 and 5 years 85%, 90%, 100%, 100%, 100% were undetectable. 5 patients stopped etravirine, 3 due to ADR–mood, rash and decreased libido and 2 for non-compliance.

Conclusions: Successful PI sparing salvage therapy is achievable using an etravirine based regimen in combination with integrase and CCRS receptor antagonists.

P154
Re-audit: Late presentation of HIV-positive patients in a small city in the UK
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Introduction: Despite measures to improve HIV testing by British HIV Association (BHIVA) we still continue to see late presenters. The BHIVA published new guidance for the treatment of HIV in 2012. These guidelines recommend anyone presenting with: an AIDS defining illness; or CD4 count < 350 should be started on anti-retroviral therapy. Late presentation of HIV infection was audited in our Health Board between 2006/7. We decided to re-audit the above between January 2011 and December 2012 in order to determine whether diagnostic delay has improved over the last 5 years.

Method: We undertook a retrospective study analyzing case notes of those diagnosed with HIV between January 2011 and December 2012. Using the BHIVA guidance we defined ‘late presenters’ as those presenting with an AIDS defining illness or a CD4 count < 350. The previous audit classified late presenters as those presenting with an AIDS defining illness or a CD4 count < 350. The previous audit classified late presenters as those presenting with an AIDS defining illness or a CD4 count < 350. The previous audit classified late presenters as those presenting with an AIDS defining illness or a CD4 count < 350. The previous audit classified late presenters as those presenting with an AIDS defining illness or a CD4 count < 350. The previous audit classified late presenters as those presenting with an AIDS defining illness or a CD4 count < 350. The previous audit classified late presenters as those presenting with an AIDS defining illness or a CD4 count < 350.

Results: We identified 94 newly registered patients between January 2011 and December 2012. This included patients diagnosed within this Health Board as well as those whose care was transferred following diagnosis elsewhere. 24 transfer-of-care cases were excluded as their diagnoses preceded this period. 39 (55.7%) patients out of a remaining total of 70 were late presenters. 30 (42.9%) patients of 70 had a CD4 count < 200. Of those presenting with a CD4 count < 200 15 (50%) had an AIDS defining illness. On commencement of their PI sparing therapy, mean ETR resistance score was 0.13 (range 0–1). Regimens commenced were: NRTI’s, etravirine and raltegravir (6) NRTI’s, etravirine, maraviroc (3) + raltegravir (2), NRTI’s and etravirine (2), maraviroc, raltegravir and etravirine (1). At 6 months, 1 individual had stopped due to ADR, 77% had achieved an undetectable viral load. At 1, 2, 3, 4 and 5 years 85%, 90%, 100%, 100%, 100% were undetectable. 5 patients stopped etravirine, 3 due to ADR–mood, rash and decreased libido and 2 for non-compliance.

Conclusions: Successful PI sparing salvage therapy is achievable using an etravirine based regimen in combination with integrase and CCRS receptor antagonists.

P155
Dual antiretroviral therapy in a treatment–experienced HIV cohort
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Background: Dual boosted protease (PI/r) based therapy (DT) is not a recommended treatment strategy. However, small studies have shown good virological efficacy and it is sometimes used in clinical practice where
treatment options are limited due to resistance or toxicity. We aimed to describe the characteristics, indications and outcomes of those prescribed DT.

Methods: Patients prescribed DT at any time between 1999 and 2012 were identified from an electronic database. Information regarding antiretroviral history, demographics, indication for switch and short term outcomes including virological response (VR) and cumulative resistance were collated.

Results: 134 patients were identified. To date, 64 have been analysed, 61 were treatment experienced (median n = 2, range 0–9 prior regimens). Prior to switching to DT, 52 patients were on triple antiretroviral therapy (ART), five on monotherapy, and four on quadruple ART. The PI/r used was either Darunavir (55%), Atazanavir (27%), or other (19%). Additional agents included nucleoside reverse transcriptase inhibitors (NRTIs) (n = 50), Raltegravir (n = 6), non-NRTIs (n = 4) and a change in PI/r (n = 3). The majority switched to DT due to viral resistance (n = 18), side effects (n = 6) or both (n = 6). Other reasons included adherence, simplification, drug interactions and co-morbidities (n = 31). Median duration of DT was 30 months (range 12–169). Nine patients on DT were switched to other regimens due to VR (n = 4), side effects (n = 3), neurocognitive concerns (n = 2) and adherence (n = 1). Of those with VR on DT three had pre-existing dual (n = 1) or triple (n = 1) or five class (n = 1) resistance. New resistance occurred in one patient (new NRTI and major PI mutations). At last measured viral load (VL) 89% (51/57) maintained a VL < 50 copies/mL. Of those with VL < 50 prior to DT, 96% maintained VL < 50 at 48 weeks. 83% of those with VL > 50 achieved VL < 50 at 48 weeks. Of those with VL > 50 at week 48 (n = 3), one had poor documented adherence and two had resistance. The median increase in CD4 count was 50 cells/mm³ (range -600–720) at 48 weeks.

Conclusion: We demonstrate that DT is efficacious, well tolerated and is a useful alternative strategy in those for whom standard ART is not an option due to resistance or toxicity. Careful monitoring is required particularly with those with prior resistance to avoid the risk of accumulating further mutations.

P156 Eviplera® 1 year on: experience of a large teaching hospital
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Background: Eviplera® is a fixed dose combination of tenofovir, emtricitabine and rilpivirine licensed for use in the UK since December 2012 in HIV infected treatment-naive patients whose baseline viral load (VL) is less than 100,000 copies/mL. Here we describe the experience of this new drug within our HIV cohort in a large teaching hospital.

Methods: Pharmacy based databases were analysed to identify all patients currently being dispensed Eviplera®. Information relating to the demographics, HIV parameters prior to initiation and at first follow up (usually 4 weeks), and tolerability were entered into an excel spreadsheet.

Results: 37 patients were identified, of whom 35 had full datasets available (95%). 28 (80%) were male and 7 (20%) female. 20 (57%) were White British and 9 (26%) were Black African. 23 (66%) were switched onto Eviplera® from another regimen. The mean CD4 was 452 (CD4% 27%) prior to starting Eviplera® and 487 (CD4% 29%) at first check after initiation. Analysis of VL was divided into 3 groups: 12 (34%) started at VL < 50 at week 48. Of those with VL > 50 at week 48 (n = 3), one had poor documented adherence and two had resistance. The median increase in CD4 count was 50 cells/mm³ (range -600–720) at 48 weeks.

Conclusion: We demonstrate that Eviplera® is efficacious, well tolerated and is an economic and clinical alternative strategy in those for whom standard ART is not an option due to resistance or toxicity. Careful monitoring is required particularly with those with prior resistance to avoid the risk of accumulating further mutations.

P157 Indications for changing to raltegravir therapy in patients with a pre-existing undetectable viral load
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Introduction: Raltegravir, the first in its class of integrase inhibitors, has been shown to reduce HIV-1 RNA viral load below detection at a faster rate compared to potent non-nucleoside reverse transcriptase inhibitors and protease inhibitors. Furthermore, it exhibits similar antiretroviral activity to Efavirenz (EFV) and Lopinavir/ritonavir (LPV/r). However, its use in patients with high viral load with background therapy is well established. What is less certain is its role in patients with an undetectable viral load. We examine the reasons that patients currently on an antiretroviral regime with a pre-existing undetectable viral load are changed to Raltegravir (RAL) as part of their therapeutic regime.

Methods: Retrospective chart review of HIV-1 infected patients with an undetectable viral load (VL < 40) who had their antiretroviral regime altered to include RAL. Patients were identified from a pharmacy database from April 2011 to April 2012. Data parameters collected were pre-existing antiretroviral regime, patient demographics and reason for treatment change.

Results: 87 patients were identified that met the inclusion criteria. Mean age was 47.3 years (range: 26–72). The commonest reason for regime alteration to include RAL in this patient cohort was EFV related CNS toxicity (52.9%), followed by co-infection with viral hepatitis (17.2%) and deranged liver function (6.0%). 81% of patients were changed prior to starting chemotherapy for haematological malignancy. The remainder of patients were switched for a variety of reasons including organ transplantation, patient choice and drug-induced rash.

Conclusion: In our cohort CNS toxicity was the commonest reason for change in therapy. CNS toxicity is a well documented side effect of treatment with EFV. Co-infection with Hepatitis C (14/87) was the next most common reason for drug change, a change made as co-infection may lead to increased risk of liver toxicity in patients on reverse transcriptase inhibitors or protease inhibitors. Patients were also moved to RAL prior to initiating chemotherapy for haematological malignancy to reduce the risk of drug interactions. In patients where the viral load is undetectable, RAL offers an alternative treatment where other clinical needs dictate a change in therapeutic regime. We identify common clinical scenarios that require therapy change to include RAL in patients with an undetectable viral load.
informal care and productivity losses. There was variation in study designs, time periods, discount rates, intervention types, sensitivity analyses, as well as the clinical outcomes measured.

Conclusion: Methodological heterogeneity, conflicting results of reviewed studies, and variability in interventions hinders the interpretation of results.

P159
Antiretroviral absorption after biliopancreatic diversion–duodenal switch: a case report
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Background: The prevalence of obesity in England has tripled in the last 25 years to 26%. An increasing prevalence has also been observed in people on antiretroviral therapy. Bariatric surgery has been recognised as a superior treatment to conventional treatment in achieving weight reduction and has been marked increase in uptake of surgery in the past decade. HIV clinicians are likely to increasingly encounter patients who have either had bariatric surgery or wish to have it. There are little data on oral bioavailability of antiretroviral drugs after bariatric surgery.

Case: We report the case of a 38-year-old man who presented for post-exposure prophylaxis for HIV after sexual exposure (PEPSE). He had had bariatric surgery four years previously and reduced his BMI from 49 to 27 kg/m². The surgical procedure was open partial gastrectomy with biliopancreatic diversion, duodenal switch and cholecystectomy – a restrictive and malabsorptive surgery not commonly done in the UK. He has no medical problems and was taking calcium, vitamin and zinc supplements and esomeprazole 20 mg daily. PEPSE was initiated with Truvada 1 tablet daily and Kaletra tablets 400/100 mg twice a day. Lopinavir levels 10 days later was 1018 ng/ml 4.5 hours post dose, which is <10 centile based on population data and indicates that the trough is likely to be sub-therapeutic. He tested negative for HIV 6 months later.

Conclusion: It is concerning although based on single drug level, that the lopinavir exposure may be low. It is possible that liquid formulation and increasing the gastric phase of dissolution and disintegration of tablets. Further studies in this patient on drug absorption would be useful if this patient was to require antiretroviral therapy.

A national database with information on drug absorption in patients who have undergone bariatric surgery would aid sharing experience between clinicians to guide therapy for patients in the future.

P160
Zidovudine: going, going, gone?
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Background: Zidovudine (ZDV) is no longer a recommended first-line ARV because of issues with tolerability, long term toxicity, twice daily dosing and availability of newer agents. However it has remained an important option in pregnancy and where viral resistance, past ARV toxicity, or co-morbidity preclude the use of first-line NRTIs. This analysis re-examines a cohort of patients taking ZDV in 2010 to determine whether the drug remains integral to their current ART regimen and the reasons why.

Methods: Data was gathered from pharmacy records, databases, computer records and notes. Patients were included if they had been on ZDV in 2010 and were reviewed to ascertain if they remained on ZDV in 2013. Demographics, ARV history, virological, lipid, CD4 and toxicity data was collected as well as reason for continuing or switching off ZDV.

Results: 2000 (need exact number) HIV-infected patients attended the unit in 2013, 85% of whom were on ARVs. Of 70 patients who were on ZDV in 2010, 21 (30%) continued the drug in 2013. Those on ZDV in 2010 had the following demographics: median age was 39, male 52.7% and Black African 39%. Those on ZDV in 2010 had the following demographics: median age was 39, male 52.7% and Black African 39%. In 2010 the median nadir, years on ARVs and ZDV were CD4 232 cells/mm³, 5.7 years (IGR 3.5-7.6) and 5 years respectively. The median length of times (months) on ZDV in 2010 and 2013 were 82 and 88 months respectively. Specified reasons for remaining on ZDV in 2013 included: patient preference (38%), no side effects (28%), pregnancy (5%), tried other drugs and switched back to ZDV (19%) and not stated (10%). Lipodystrophy was documented in 20% of the 70 patients who had had ZDV at any point, and 14% of those who remained on the drug in 2013. Sites of lipodystrophy included limbs, face, buttocks, abdomen and multiple sites in 14%, 36%, 3%, 21% and 7% respectively. Hypercholesterolaemia was documented in 31% of those who ever received ZDV and 29% of those still on it. Median current CD4 was 645 cells/mm³ and 528 cells/mm³ in patients remaining on ZDV and those switched off it respectively. Latest recorded viral load was undetectable in 90% of those remaining on ZDV and 85% of those who switched off.

Conclusion: With the availability of safer and more convenient options, ZDV use has declined even further to a small number of patients, usually when there is an absence of AE and it is the patient’s preference.

P161
Clinical audit: Initiation of antiretroviral treatment regimen in a small city HIV clinic during 2011 and 2012
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Aim: To audit the initiation of antiretroviral treatment (ART) regimen against the British HIV Association (BHIVA) guidelines.

Methods: A list of all naive patients who commenced on combination ART for the period of two years from 2011 to 2012 was obtained from the data base. Demography of patients, viral load, CD4, hepatitis serology, HLA-B5701 and genotype test were recorded. The type of combination of ART and reasons for switch were also noted. We also included ART during pregnancies and number of patients who achieved undetectable viral load (VL).

Results: A total of sixty-three naive patients were commenced ART during 2011 and 2012. Median age 39 years old, nine patients (14%) over 50 years old, forty- one males (65%), forty six (73%) white, twelve black (19%), thirty-five (55%) heterosexual, twenty-six (41%) MSM, two bisexual (3%), one vertically infected. Forty-two (65.6%) had CD4 count less than 350 x 10⁹/l. All seven (11%) pregnant patients had CD4 count above 350 x 10⁹/l. All patients had genotype test done (52% subtype B, 8% primary resistance). Fifty-two (81.2%) had HLA B5701 test done (1.9% positive). All patients who were commenced on abacavir had a negative HLA- B5701. All had hepatitis B and C serology (2% Hep B carrier, 0% Hep C). Thirty-four (53%) patients had a combination of Truvada and boosted darunavir and twenty-two (34%) patients received Truvada and efavirenz. 40 out of 50 patients (80%) achieved viral suppression in six months increasing to 48 patients (96%) in 12 months, remaining fifteen patients were on ART for <6 months. ART switched in 18 (28%) patients (50% treatment simplification), eight patients (4%) tolerability. Of the two patients who did not achieve undetectable VL in the first twelve months, one had a VL of 87 copies/ml and the other one failed to attend. Conclusion: This audit revealed that the commencement of ART in HIV naive patients were in accordance with BHIVA national guidelines. Nearly two thirds of patients had CD4 count of less than 350 at the initiation of ART. Three quarters of patients were white. Hepatitis B and C co-infection were rare in our cohort. A combination of tenofovir, emtricitabine and boosted darunavir was the popular choice. A high proportion (96%) of our cohort achieved undetectableVL level. The zero prevalence of intravenous drug users in our cohort may have contributed to a high proportion of patients achieving complete viral suppression.

P162
Clinical outcomes after switching HIV-positive patients with HIV viral load less than 100 copies from a PI-based regimen to a tenofovir, emtricitabine and efavirenz regimen
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Background: Patients switching from Protease inhibitor regimen to Tenofovir, Emtricitabine and Efavirenz single-tablet regimen (Atripla) should be carefully
monitored for rises in viral load and side effects. (AI266073 study). Study on clinical outcomes in terms of CD4 count, viral load and CNS side effects after switching patients with viral load less than 100 copies from PI based regimen to Atripla, will help in monitoring these patients better.

Methodology: We present a retrospective observational study. Data were collected from clinic records of patients who were switched from PI based regimen to Atripla when viral load <100 copies, for age, sex, ethnicity, PI regime, CD4 count & viral load during and after switching, CNS side effects and adherence on follow up visits. Data was analysed for outcomes of CD4 count, viral load and tolerance after the switch using Microsoft Excel software.

Results: A total of 11 patients were reviewed. Median age 39 years; range 28–60 years; 7 Black African female, 1 Asian female and 3 Caucasian male. 8 patients were on Lamivudine, 2 were on Saquinavir and 1 patient was on Nelfinavir regimen prior to switch to Atripla. Mean CD4 count at switch of regimen was 398 cells and mean CD4 count at 6 months, 12 months, 18 months and 2 years follow up were 432 (n = 11), 470 (n = 10), 524 (n = 6) and 565 (n = 5) respectively. Viral load remained <50 for 10/11 patients at 6 months, 9/10 patients at 12 months, 7/7 patients at 18 months and 5/5 patients at 24 months follow up after the switch. Median duration of follow up was 18 months (range 6–24 months), 1 patient developed Efavirenz resistance due to poor adherence at 12 months follow up. 5 patients developed CNS side effects due to Efavirenz. Of these 3 female patients who switched after pregnancy developed depression and discontinued Atripla after a median duration of 12 months (range 6–18 months). 8 out of 11 patients maintained/oral adherence while on Atripla. Conclusion: Switching patients with HIV viral load less than 100 copies from Protease inhibitor regimen to Tenofovir, Emtricitabine and Efavirenz regimen is associated with increase in CD4 count and continued viral load suppression when optimal adherence is maintained at 12 months follow up. Black African patients should be closely monitored for CNS side effects of Efavirenz especially individuals who switch following pregnancy.

P163 Early experience of rilpivirine use in a medium-sized HIV cohort

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Background: Rilpivirine (RPV) was launched in the UK in December 2011 for use in adult, ART-naive, HIV infected individuals with VL < 100000 and is available as a fixed dose combination (Eviplera) with Emtricitabine and Tenofovir. BHIVA HIV Treatment Guidelines (2012) recommend RPV as an alternative third agent in ART-naive patients.

Aims: We reviewed RPV use in our cohort of 950 patients, including reasons for choice, clinical and virological outcomes and use as per the product licence.

Methods: We identified all patients using RPV/Eviplera from pharmacy records, and identified by case note review demographics, biological markers and clinical outcomes.

Results: We identified 20 patients on RPV, 40% (8) women, mean age 37 yrs, 65% (13) Black African. 25% (5) were ART naive, 4 of whom had a viral load < 100 000 at initiation. The most common indications for RPV use in naive patients were low pill burden and psychiatric co-morbidity. 15 patients were ARV experienced, all of whom switched due to tolerability – most commonly (66%) CNS side effects (S/E), GI S/E (20%) and reduction in pill burden (13%). 11 patients were on an Efavirenz (EFV) containing regimen at switch. 6 patients (30%) reported S/E on RPV, namely upper GI symptoms (4) and self limiting rash (2). There were no discontinuations due to toxicity. Of the 15 switch patients, 13 reported better tolerance of the new combination. 4/5 naive patients had >2log drop in VL at 2–4 wks. 4/5 have had >12 wks of follow up – all of whom have current VL <400 copies/ml. Of the 15 switch patients, 12 had a baseline VL of <40 copies/ml – all of these have remained undetectable to at least 12 wks of follow up. 3 patients had a detectable VL at switch – two are now undetectable, the other has a VL of 54 copies/ml. 90% (18) of patients are still using a RPV regime – one switched as needed to use a proton pump inhibitor, the other returned to Atripla after GI symptoms which had prompted the switch failed to improve. The mean CD4 count in the cohort at initiation/switch was 381, and after a mean follow up of 21 weeks (range 4–44) the mean CD4 count is 449.

Conclusion: The majority of our use of RPV has been out with product license, with the most common indication in patients suffering S/E from EFV.

In all switch patients, no significant AEs were noted, and there have been no episodes of virological failure. The majority of patients who switched to RPV reported improvement in general wellbeing, particularly in sleep and CNS S/E.

Management Issues in HIV

P164 What are the barriers to antiretroviral adherence in people from UK Black African and Black Caribbean communities? A qualitative study

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Background: Adherence to antiretroviral therapy (ART) among people living with HIV (PLWH) is critical for treatment success, yet in the UK nearly one third of those initiating ART report suboptimal adherence within 6 months. In the UK substantial numbers of people of black African (UKBA) and black Caribbean (UKBC) heritage are accessing HIV care, and identifying barriers to their adherence is a priority. This study’s objective was to explore barriers to ART adherence among people with HIV of UKBA and UKBC heritage.

Methods: A cross-sectional qualitative study involving in depth interviews with 50 PLWH (43 UKBA, 7 UKBC) with a documented history of incomplete ART adherence. Purposive sampling was used to ensure appropriate representation of men/women and ASYMPTOMATIC HIV. Interviews were recorded, transcribed and subjected to thematic analysis.

Results: From the poorly adherent patient’s perspective, ART acts as a barrier to achieving and maintaining a good quality of life in its various domains. Physical health. PLWH associated treatment, rather than HIV itself, with poorer physical health including the experience of side effects, pain and fatigue. Psychological wellbeing. ART was a constant reminder of HIV status which had negative connotations on how PLWH saw themselves and how they thought others would see them. Feelings of shame triggered by ART added to difficulty in accepting the diagnosis and committing to taking ART. Social relationships & environment. The meaning of being on ART and its consequences including stigma, rejection, ostracism, and loss of lodging impacted on adherence over and above the consideration of the specific benefits (e.g lower viral load) and costs (e.g side effects). Level of independence. Taking ART was associated with the loss of autonomy, forcing PLWH to rely on ART and health providers. Spirituality. For PLWH with miraculous healing beliefs, dependence on tablets was seen a personal failure with ART attesting to not being sufficiently deserving of being healed. Conclusion: This data indicates that, along with some culturally unique issues, some of the factors common to other populations with HIV can act in complex ways within these particular cultural settings. Representations of ART, which from a clinical perspective appeared to be misplaced, had, for these people, a common-sense rationale. Interventions to improve ART uptake and adherence are likely to be more effective if they take into account these representations.

P165 Should we stop testing CD4 counts in HIV-infected individuals with viral suppression and CD4 ≥ 350?

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Background: The utility of monitoring CD4 in HIV-positive individuals with CD4 count ≥ 350 and ongoing undetectable viral load (VL) is debatable with no consensus on frequency of testing and, given the current economic situation, recent calls for stopping CD4 monitoring in these individuals. In 2008, we introduced a policy of annual CD4 monitoring for such patients.

Methods: We followed the first 300 patients consecutively attending a HIV clinic in October 2009 for routine follow-up in order to identify those with HIV VL <50 copies/mL in the preceding 12 months and latest CD4 ≥ 350 cells/mm³. Follow-up was from October 2009 appointment (baseline) until December 2012 or first VL ≥ 50 copies/mL.
Results: We identified 141 patients with baseline CD4 > 350 and undetectable VL in the preceding 12 months. 82% were male with a median age 44 y [IQR 39–49]. Median baseline CD4 was 620 [IQR 480–770]. During a median follow-up of 2.5 y [IQR 2.1–2.8], a median 4 CD4 counts were measured with median frequency of one every 8.4 months [IQR 6.4–9.7]. CD4 dropped below 350 in 13 patients (9%), accounting for 3.2% of the total 318 person-years follow-up. Eight of these 13 individuals had a transient downward CD4 ‘dip’ below 350 and the remaining 5 had sustained CD4 below 350. Sustained CD4 drops were predictable: those whose baseline CD4 lay close to 350 and fluctuated around that level during follow-up (n=2) or those receiving CD4-lowering treatment (n = 3): interferon for Hepatitis C, chemotherapy or repeated courses of prednisolone for exacerbations of COPD; these 3 patients had CD4 falls below 200.

Conclusion: Our annual policy of testing has reduced the cost of CD4 testing 54% compared to a strategy of testing three times yearly as per monitoring guidelines. Significant CD4 falls below 200 are predictable by clinical scenarios recognised to lower CD4 counts. Our findings suggest that, despite a policy of annual CD4 testing, monitoring occurs more frequently, does not add clinical benefit and may in fact be unnecessary.

P166
Dental health-seeking behaviour and HIV disclosure status of HIV-positive patients attending an HIV outpatient clinic
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Background: People living with HIV and AIDS (PLWHA) are more likely to experience oral health problems compared with non-HIV-infected people. Recent studies have suggested that PLWHA have limited access to oral health care. Our aim was to explore the dental health seeking behaviour and HIV disclosure status of patients attending our HIV outpatient clinic.

Methods: We undertook a questionnaire-based survey of 156 HIV-infected patients attending an HIV outpatient clinic between January 2012 and July 2012, who gave informed consent to participate in the survey. Data were anonymised and analysed using the SPSS version 20.0.

Results: The study involved 129 male and 27 females. The largest age group was 35–55 years (58%). 97 patients (62%) were diagnosed with HIV infection more than 5 years ago. 139 patients (90%) were on current HIV therapy and 8 patients (5%) had recent CD4 count less than 200 cell/µL.

Of 106 patients currently registered with a dentist, 67 patients (63%) said their dentist were aware of their HIV status. The following reasons were given by the patients who had not disclosed their HIV status to their dentist: concern about confidentiality (43%); concern about handling of personal information in dental practice (43%); not being asked about HIV status by the dentist (40%); concern about discrimination in care (37%) or being rejected (37%) or not being asked about HIV status by the dentist were aware of their HIV status. The following reasons were given by the patients who had not disclosed their HIV status to their dentist: concern about confidentiality (20%).

Conclusion: Approximately one third of patients were not currently registered with a dentist. Concerns about confidentiality and information handling were the main issues preventing HIV disclosure among those patients with current dental registration whereas difficulty finding a suitable NHS dentist was identified as main reason for non-dental registration of the rest. Better access to dental care by PLWHA could be ensured by availability of more HIV-friendly NHS dentists and dental surgeries which are able to provide higher level of confidential services. Better patient education could lead to increased public awareness of the importance of HIV in dental health.

P167
Safety and efficacy of vitamin D supplementation
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Background: Low vitamin D levels are common in HIV-infected patients in the UK. The clinical significance of vitamin D deficiency and benefits of treatment remains unclear. Local guidelines recommend supplementation for those who are symptomatic or at risk of developing fractures. There is little data on monitoring patients on supplementation and testing vitamin D levels has significant cost implications. This study was done to monitor the efficacy of high dose vitamin D supplementation and determine the optimum time to re-prescribe patients who are asymptomatic.

Methods: Retrospective case note review of patients supplemented with calcitriol 60,000 IU (Dekristol 20,000 U capsule) once a week for 12 weeks from February 2011 to October 2012. Data on age, ethnicity, gender, CD4 levels, medication and vitamin D level before and after supplementation were collected. The data was collated and analysed on Microsoft Excel.

Results: Fifty three case notes were reviewed, two patients did not take the prescribed vitamin D replacement and 51 were included in the analysis; 22 (43%) were women and 29 (57%) men. All patients were on antiretroviral therapy with CD4 > 150 c/mm ³ and 49 (96%) had CD4 > 250 c/mm ³. Nearly half (24, 47%) were black African, 19 (37%) were white British and 8 (15%) other ethnicities. The median age was 40 years, range 24–72 years. The median baseline Vitamin D was 20; range 10–37 nmol/L. Vitamin D levels were retested 3–12 months post-supplementation in 40/51, 79% and at 3–6 months in 25 (50%) of patients. All 25 patients tested at 3–6 months had levels > 25 nmol/L. Of the 15 patients who were only tested 6–12 months after supplementation, 9 had levels > 25 nmol/L and 6 needed further courses of Vitamin D.

Conclusion: The majority of patients had their vitamin D deficiency adequately corrected by this dose of calcitriol supplement. There was no evidence of hyper-vitaminosis. It is possible that the few patients who continued to have deficiency had initially responded to treatment but relapsed by the time of retesting. We did not collect data on adherence and seasonal variation of vitamin D levels both of which impact levels. This small study suggests that retesting for vitamin D at 9–12 months rather than at 3 months may be a cost effective strategy to identify need for further supplementation.

P168
Renal transplantation in HIV-positive patients in Greater Manchester
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Background: End stage renal failure (ESRF) is an important condition in the setting of HIV and incidence is increasing. Causes include HIVAN, HIV immune complex kidney disease (HIVICK), drug toxicity from ARV’s and other drugs used in management of HIV-related disease, and occasionally opportunistic infections. Kidney transplantation (KT) is now well established in the UK with available national and international guidelines. This report examines our experience of KT between June 2007 and July 2012.

Methods: Retrospective case note review was conducted. Clinical, laboratory and pharmacy data were collected and analysed.

Results: 8 HIV positive patients underwent renal transplant: 5 were male with a median age of 53 years (range: 32–58). HIVAN was the cause of ESRF in 4 patients (50%). All had been taking ART for a minimum of 6 years (range: 6–17.5) at the time of KT with a median CD4 count of 328 (range 271–720); all were on haemodialysis pre-KT. 7 (87.5%) patients had an undetectable viral load; poor adherence with HAART was the reason for detectable viral load in 1 patient. Post KT, patients were commenced on a combination of immunosuppressive therapy with mycophenolate, tacrolimus and prednisolone. In view of this 6 (75%) patients required a planned change in ART regimen to avoid complications from drug-drug interactions (DDI). Delay in switch in 2-cases resulted in tacrolimus toxicity due to DDI with ritonavir. Other complications observed included; reactivation of CMV (n = 1), development of Type 2 Diabetes secondary to prednisolone (n = 1), HIV viral load rebound (n = 1) and PCP infection (n = 1). One patient developed acute mixed T cell and antibody mediated rejection of the KT. All 8 patients are currently alive and well with functioning grafts at a median 20 months (range: 7–67) post-transplant.

Conclusion: Our experience of KT has so far been successful and highlights complexities of management and importance of close liaison between the HIV and transplant teams to adequately prepare HIV-positive patients for KT and foresee potential drug interactions. With increased life expectancy of HIV-1 infected patients, KT will become more common in managing ESRF and it is important that national data is collected and experience between centres is shared.
High rates of vitamin D deficiency in a London adolescent HIV clinic
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Background: High rates of Vitamin D deficiency (VDD) have been observed amongst HIV-infected adult patients however VDD amongst HIV-infected adolescents has been less well documented. Several antiretrovirals, including Tenofovir (TDF) and Efavirenz (EFV), have been linked to low Vitamin D levels. Traditional risk factors for VDD include obesity, malabsorption, darkly pigmented skin and a lack of exposure to sunlight. Our aims were to assess the prevalence of VDD, patient characteristics and the use of VDD treatment amongst a UK HIV-1 vertically infected adolescent cohort.

Methods: A retrospective study of individuals attending the adolescent HIV clinic from 1/1/07 to 31/12/12. Data from patient notes and electronic patient records, including demographics, mode of transmission, date of HIV diagnosis, antiretroviral treatment, Vitamin D and parathyroid hormone (PTH) levels and details of VDD testing and treatment, was collated on a standardised electronic platform.

Results: 49 patients were identified. 36/49 (73%) were Black African, 28/49 (57%) female; median age 21 (range 12–27 yrs). 37/49 (76%) had Vitamin D levels tested at least once. 34/37 (92%) were Vitamin D deficient (<50 nmol/L), including 19/37 (49%) who were severely deficient (<25 nmol/L). 2/49 had optimum levels (75–125 nmol/L) and 1/49 was borderline (50–75 nmol/L). 76% patients were currently on TDF (15 patients for >50 months and 22 for <50 months); 22% were currently on TDF and EFV. No correlation was found between time on TDF or EFV and level of Vitamin D deficiency. 24/35 (69%) patients with VDD were offered treatment. This consisted of oral calcium and Vitamin D supplements, intramuscular (IM) ergocalciferol or IM cholecalciferol. PTH measurements were carried out in 9/24 (36%) patients prior to treatment commencing. 5/9 (56%) showed elevated levels (>6.9 pmol/L). 20/24 (83%) patients were treated within 6 months of their first Vitamin D test. 15/24 patients had vitamin D levels rechecked after treatment. Adequate treatment response (shown in 10/15 patients) was defined as rise in Vitamin D levels to >50 nmol/L and was most marked following IM cholecalciferol treatment.

Conclusion: The adolescent HIV-positive patients at this clinic have a high prevalence of VDD. This may be particularly important in this age group as peak bone mass is likely achieved at the end of adolescence. There is an urgent need to study causality and patient outcomes to inform the most effective treatment approach.

Managing the HIV transmission risks in HIV-positive people not on ART
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Introduction: Most incidental cases of HIV infection involve transmission from an individual who is not taking ART. Given the increased risks of HIV transmission we sought to determine how we are currently assessing and managing these risks in our cohort.

Methods: A notes review of all individuals under our care on the 2012 Survey of Prevalent HIV Infections Diagnosed (SOPHID).

Results: 881 individuals access our service for their HIV care, and 53 (6%) are not on ART. 41 (77%) are black-African, 7 (13%) are MSM and 42 (79%) are female. Their median CD4 count is 482 (range 25–1245) and median VL 13296 (range 43–1041941). Of these, 7 (100%) of MSM and 38 (83%) of heterosexual people had a documented sexual health history in the last two years. Of the MSM (n = 7), 29% reported being in a relationship (of which 100% had an untested or HIV negative partner), 43% reported no sexual activity, and 29% reported casual partners. 71% of MSM had been screened for STIs in the previous 12 months. Of the heterosexual individuals (n = 46), 63% reported being in a relationship (of which 59% had a negative or untested partner), 7% reported no sexual activity and 7% reported casual partners. 54% had been screened for STIs in the previous year. 25 (54%) of female patients had previously taken short-course ART to reduce the risk of MTCT.

A documented discussion around transmission risks was noted in 75%. A single case of HIV transmission occurred (male to female).

Conclusion: Despite the higher risks of HIV transmission in those not taking ART, these risks are possibly not well-assessed or specifically managed. In a small number of patients, discussion around earlier initiation of ART may be appropriate.

The use of azathioprine in HIV-infected individuals
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Background: Azathioprine is an antiproliferative agent highly effective in the treatment of certain autoimmune diseases and as part of an immunosuppressive regimen following solid-organ transplantation. It targets rapidly dividing cells, particularly T and B cells, and as a consequence has multiple side effects ranging from nausea and vomiting to life-threatening myelosuppression. The safety of Azathioprine in HIV-infected individuals has not been established.

Methods: All HIV-infected individuals who were prescribed Azathioprine whilst receiving highly active antiretroviral therapy (HAART) at a London teaching hospital between January 2008 and August 2012 were included. Immune parameters and haemoglobin were recorded at baseline before Azathioprine commencement; after 1 month of therapy and every 3 months until treatment ceased. Measurements occurred every 3 months for a maximum of 1 year after treatment cessation. Adverse events including...
opportunistic infections and HIV associated malignancies were also retrospectively recorded.

Results: All 7 individuals (mean age = 38.5 years) were receiving HAART at commencement of Azathioprine with a mean treatment duration of 16.59 months. WBC count fell by 40.89% in all individuals from baseline level to the end of treatment. Mean CD4 count decreased by 29.74% whilst mean CD4% rose by 25.19% in the same time period. Mean CD8 count decreased 31.76% from baseline to the end of treatment whilst mean CD8% only fell by 2.12%. Neutrophil counts decreased by 44.33% over the duration of treatment from baseline but no individual had documented counts below 0.6 x 10^3/ml. Haemoglobin fell by 7.80% during treatment but none of the individuals required a blood transfusion during or after Azathioprine treatment and only two individuals had a haemoglobin of <10 g/dl following treatment. There were no serious opportunistic infections reported during or following cessation of treatment but two individuals developed a significant infection on Azathioprine [chest infection requiring admission treated with antibiotics; Uti treated with antibiotics and recurrence of C difficile colitis requiring admission for treatment]. None of the individuals had malignancies diagnosed either during or following cessation of Azathioprine treatment.

Conclusions: Azathioprine is safe in the context of HIV so long as individuals are commenced on HAART prior to treatment and that regular monitoring of immune parameters takes place.

P173

Low levels of the sunshine vitamin found in HIV-infected patients living in an English seaside town

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Background: Vitamin D insufficiency is common in the UK and has been associated with cardiovascular disease, type 2 diabetes, cancer and autoimmune conditions. The importance of optimal vitamin D levels in HIV-infected patients is increasingly recognized. Low levels have been associated with increased inflammation, lower CD4 counts and an increased risk of disease progression in HIV-infected patients.

Methods: Three years ago our clinic began routine screening for vitamin D deficiency in our HIV-infected patients. Subsequently we performed a cross-sectional study looking at serum 25-hydroxyvitamin D (25-OHD) levels in 100 randomly selected patients from our HIV cohort. For patients with more than one level recorded we used the lowest earliest reading reflecting a pre-treatment level. Patients were classified as having vitamin D deficiency (25-OHD <25 nmol/l, <10 µg/L), insufficiency (25-50 nmol/l, 10-20 µg/L) or optimal vitamin D levels (≥50 nmol/l, ≥20 µg/L). We reviewed the case notes to look for trends in associated markers and risk factors.

Results: Of the 100 patients there were 88 males, 12 females and the median age was 45 (23–73). The results are given in the table below:

<table>
<thead>
<tr>
<th></th>
<th>Deficiency</th>
<th>Insufficiency</th>
<th>Optimal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total %</td>
<td>10</td>
<td>36</td>
<td>54</td>
</tr>
<tr>
<td>Males %</td>
<td>70</td>
<td>92</td>
<td>88</td>
</tr>
<tr>
<td>Median Age (range)</td>
<td>37.5 (23-73)</td>
<td>44 (22-73)</td>
<td>46.5 (23-65)</td>
</tr>
<tr>
<td>White British %</td>
<td>60</td>
<td>90</td>
<td>98</td>
</tr>
<tr>
<td>Prior AIDS diagnosis %</td>
<td>30</td>
<td>25</td>
<td>17</td>
</tr>
<tr>
<td>Median CD4 (range)</td>
<td>460 (162-970)</td>
<td>570 (136-1308)</td>
<td>557 (164-1336)</td>
</tr>
<tr>
<td>On treatment %</td>
<td>80</td>
<td>81</td>
<td>76</td>
</tr>
<tr>
<td>On efavirenz %</td>
<td>80</td>
<td>44</td>
<td>44</td>
</tr>
<tr>
<td>Winter/spring sample %</td>
<td>30</td>
<td>25</td>
<td>15</td>
</tr>
<tr>
<td>EGFR &lt; 60 m/min/1.73 m² %</td>
<td>0</td>
<td>3</td>
<td>7</td>
</tr>
<tr>
<td>Raised lipids %</td>
<td>40</td>
<td>28</td>
<td>30</td>
</tr>
<tr>
<td>Hypertension %</td>
<td>20</td>
<td>6</td>
<td>11</td>
</tr>
<tr>
<td>Smoker %</td>
<td>30</td>
<td>44</td>
<td>26</td>
</tr>
</tbody>
</table>

Conclusion: Almost half of our HIV-infected patients were found to have vitamin D deficiency or insufficiency. Female sex, younger age, non-white ethnicity and efavirenz use were observed more frequently in vitamin D deficient patients. This group also had poorer lipids, blood pressure, median CD4 counts and more previous AIDS diagnoses. Winter/spring samples and smoking were more prevalent, and renal impairment less prevalent, in the deficient and insufficient groups combined.

The high prevalence of vitamin D deficiency found in our cohort supports ongoing screening, with consideration of the season, in HIV-infected patients. Whilst we currently advise our patients to seek treatment and supplementation via their GP the intended benefits of this remain unclear and require further assessment.

P174

Health-related quality of life of HIV-infected drug users: the role of anxiety and depression

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Background: There is a dearth of information on the health-related quality of life (HRQOL) of HIV Infected intravenous drug users (IDUs). The aim of this project was to investigate and describe HRQOL in HIV infected IDUs registered but not engaged in structured HIV outpatient care.

Methods: Baseline HRQOL was analysed from a prospective interventional cohort study of non-engaging adult HIV infected IDUs registered for care at an inner city HIV unit (non-engagement defined as missing ≥2 outpatient appointments over one year or not attending outpatients for ≥ six months). EQ-5D, SF-36, SF-6D, Hospital Anxiety Depression scale (HADs), clinical (CD4, HIV VL, ART status, HIV antibody & PCR status, liver cirrhosis) and substance misuse data were collected. Mean scores and preference derived utility scores were calculated from the HRQOL questionnaires. The relationship between measures was assessed using Spearman’s correlation for non-parametric data.

Results: 55 patients were included; 64% were male with a mean age of 37 years. Mean anxiety value was 11.44 (anxiety), and mean depression score was 9.3 (borderline depressed). Mean EQ5D utility score was 0.45 (95% CI 0.35, 0.55). 6 patients (11%) had an EQ5D utility worse than death, of whom 5 (83%) were anxious, and 4 (7%) were depressed. Mean SF-6D utility was 0.52 (95% CI 0.48, 0.55). Mean SF-36 Physical component score (PCS) was 37.72, and mental component score (MCS) was 35.23. Role limitations, both physical and emotional had the lowest mean scores. To investigate the impact of clinical indices, HCV co-infection, cirrhosis, mood disorder and substance misuse significantly impacted upon both EQ-5D, and SF-6D (results are shown in the table below).

<table>
<thead>
<tr>
<th>EQ-5D utility</th>
<th>SF-6D utility</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anxiety (spearman’s correlation, p value)</td>
<td>-0.455, p = 0.001</td>
</tr>
<tr>
<td>Depression (spearman’s correlation, p value)</td>
<td>-0.424, p = 0.001</td>
</tr>
</tbody>
</table>

Conclusion: HRQOL was reduced in this non-engaging HIV infected IDU population. Whilst HCV co-infection and substance misuse did not affect HRQOL, anxiety and depression had a significant impact upon it.

P175

Genotypic tropism testing utilisation in a UK centre

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Background: Maraviroc (MVC) is approved in Europe for ART-experienced adults with CCR5-tropic (R5) HIV-1. BHIVA recommends its use in switch therapy (e.g. for toxicity) or after virological failure. Genotypic Tropism Testing (GTT) is recommended prior to starting MVC based upon either plasma HIV-1 RNA or cellular HIV-1 DNA in patients with plasma HIV-1 RNA < 1000 copies/ml. The study aim was to review GTT use and associated MVC initiation, audit

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adherence to BHIVA guidelines and determine outcomes of MVC-containing ART.

Methods: GTT results obtained between March 2010 and November 2012 were identified and matched to the clinical dataset. The Genotypic Susceptibility Score (GSS) of the background regimen was calculated from the Stanford HIV Resistance Algorithm according to three merged categories: susceptible/potential low-level resistance = 1; low-level/intermediate resistance = 0.5; high-level resistance = 0.

Results: 177 tests were performed, including 91 (51%) from plasma HIV-1 RNA and 86 (49%) from cellular HIV-1 RNA. Overall 71/91 (78%) plasma samples and 48/86 (55.8%) cellular samples showed RS virus. Of the patients with RS virus, 17/119 (14.5%) started MVC. The reported reasons for starting MVC included viraemia (n = 8), toxicity switch (n = 4), intensification for poor CD4 count (n = 2, 12%), co-morbidities (n = 2), and drug-interactions (n = 1). Among MVC-treated patients, median nadir CD4 count was 42 cells/mm$^3$ (6–309), median number of previous ART regimens was 3 (range 0–12) and median duration of previous ART was 4 years (0–16). At the start of MVC, patients showed median CD4 count 313 cells/mm$^3$ (40–754) and median plasma HIV-1 RNA load (VL) 2.0log$_{10}$ copies/ml (1.7–5.1). The median GSS of the background regimen was 3 (1–3); 14/17 (82%) patients started MVC with a ritonavir-boosted PI (Darunavir or Atazanavir), Etravirine and Raltegravir. After median 6 months (3–9) of follow-up, median VL decline was −1.7 log$_{10}$ copies/ml (1.7–2.1) and median CD4 count increase was 120 cells/mm$^3$; 12/17 (70.5%) patients had a VL <50 copies/ml. Laboratory toxicities were uncommon with 2/17 (11.7%) experiencing mild thrombocytopenia (100–200) and anaemia (9–11).

Conclusion: There was significant utilization of the GTT service between March 2010 and November 2012. However, only a small proportion of RS results were followed by MVC initiation. Virological responses were overall good and no significant emerging toxicity was observed. Efforts are required to improve cost-effective utilisation of GTT in routine practice.

P176 Primamaquine-induced methaemoglobinaemia in an HIV-positive patient on treatment for Pneumocystis jiroveci pneumonia (PCP)

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Background: Development of methaemoglobinaemia in HIV infected patients on primaquine has been reported. The rate of clinically significant methaemoglobinaemia in this population is small. Methaemoglobinaemia has also been reported with dapsone, cotrimoxazole and atovaquone which are used for treatment and as prophylaxis for Pneumocystis jiroveci pneumonia (PCP). We describe a case of clinically significant primaquine induced methaemoglobinaemia in a newly diagnosed patient and discuss investigations and management of methaemoglobinaemia.

Case: A 36 year old Caucasian male was admitted with a 2–3 month history of weight loss, lethargy and night sweats. He also had a one week history of productive cough and pyrexia. He was an ex-intravenous drug user and on examination he was noted to have cervical and groin lymphadenopathy as well as splenomegaly. In view of this, a HIV test was performed as part of investigations and the result was positive. He had a CD4 count of 143 cells/mm$^3$ (19%) and Viral load of 285 848 copies/ml. He was treated for community acquired pneumonia and also empirically treated for PCP with cotrimoxazole while awaiting bronchoscopy results. He was not G6PD deficient. In relation to his antiretroviral regime, he was started on truvada and boosted darunavir. On day eight of PCP treatment, he developed pyrexia and a rash. A full septic screen was carried out and an arterial blood gas showed a methaemoglobin of 1.1% which is within normal limits (0.4%–1.5%). It was thought that this may be related to co-trimoxazole which was stopped. He was then started on clindamycin and primaquine. Nine days after starting clindamycin and primaquine, he developed dyspnoea and desaturated after having a lymph node biopsy. An arterial blood gas was performed and methaemoglobin level was 11.2%. Clindamycin and Primaquine were stopped and Primaquine PCR was negative. He was discussed with the intensivist who felt methylene blue was not indicated and he was managed with supplementary oxygen (28%). During this period pulse oximetry remained above 92% and four days later methaemoglobin level was 6.2%.

Discussion: Methaemoglobinaemia should be considered in cyanosis that remains despite 100% oxygen therapy. It is important to note that pulse oximetry may give falsely reassuring saturation levels therefore it is important to do a blood gas to measure methaemoglobin levels. This case highlights the need for prompt recognition and consideration of iatrogenic causes of dyspnoea.

Opportunistic and Co-infections

P177 Cross-sectional analysis of invasive pneumococcal disease in a London HIV-positive cohort

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Background: Streptococcus pneumoniae (SP) is the leading bacterial opportunistic infection (OI) in HIV+ individuals. Anti-retroviral treatment (ART) reduces the risk of invasive pneumococcal disease (IPD), but it remains 20- to 40-fold higher compared with the general population. BHIVA guidelines recommend vaccination in HIV+ adults with CD4 count > 200. In those of unknown HIV status, a HIV test should be offered to those presenting with bacterial pneumonia. We looked at HIV testing in IPD and the burden of IPD in a HIV + cohort.

Methods: We included all cases of IPD at 3 London hospitals from 2009 to 2012. IPD was defined by a positive pneumococcal culture. HIV + cases were identified by cross-referencing hospital identifiers with positive HIV test or HIV viral load (VL) test on the virology database. HIV testing status was determined by the same method. For HIV + cases CD4 count, HIV VL, ART, other OIs, and outcome were recorded, as were risk factors for severe disease including low CD4 count, and previous AIDS-defining illness. The serotype and antibiotic resistance of each SP was obtained from the microbiology database and the Health Protection Agency (HPA)

Results: There were 189 cases of IPD in the cohort over the 3 years. Nine of these cases (4.7%) were known to be HIV + at the time of their IPD. 37 tested negative for HIV. 146 cases (79.8%) were not tested for HIV. The serotypes of SP in the HIV + cases included 3, 7F, 10F, 19A (X 2), 19F and 31. 6/9 serotypes were vaccine strains.

The incidence of IPD in our HIV + cohort was 85.7 per 100,000 (based on an overall cohort size of 3500)

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean age</td>
<td>42</td>
</tr>
<tr>
<td>Average CD4</td>
<td>287</td>
</tr>
<tr>
<td>CD4 &gt;200</td>
<td>2/9</td>
</tr>
<tr>
<td>On ART</td>
<td>4/9</td>
</tr>
<tr>
<td>VL&lt;40</td>
<td>3/9</td>
</tr>
</tbody>
</table>

Conclusion: Our data suggests there is a higher incidence of IPD in the HIV + compared to the general population in London (HPA data reported the incidence rate for IPD at 7.5 per 100,000 in London). Risk factors for severe disease were identified in 22.2–33.3%; however outcomes were good with no deaths. In the HIV + cohort all SP cultured was fully sensitive. 66% of serotypes were vaccine sensitive, highlighting the importance of vaccination in this at risk group.

In those presenting with IPD with unknown HIV status the testing rates were low at 21.2%. The data was collected after publication of the BHIVA testing guidelines in 2008. This enforces the need for strategies to improve HIV testing rates in acute medical settings in those presenting with bacterial pneumonia.
P178
The emergence of new viral strains following treatment failure in an HIV-positive cohort infected with acute HCV
T Abdelrahman1, J Hughes1, J Main2, J McJulatyn3 and E Thomson4
1MRC Centre for Virus Research, University of Glasgow, Glasgow, UK and 2Imperial College NHS Trust, London, UK

Background: In hepatitis C virus (HCV)-infected patients, the virus circulates as a mixture of closely related but distinct genomes called quasispecies. The hypervariable region-1 (HVR-1) is the most heterogeneous region of the HCV genome and is an excellent target for sequence analysis to distinguish between different variants. We studied the dynamics of quasispecies in pretreatment and post-treatment samples taken from patients who failed standard of care therapy in a rare HIV/HCV cohort of 160 patients.

Methods: A group of 16 patients failed to respond to treatment. A 220 bp region of the E2 envelope gene including (HVR-1) was amplified using nested RT-PCR using a combination of genotype-specific primers. PCR products were sequenced by direct sequencing (DS), clonal analysis (CA) and next generation sequencing using a pyrosequencing approach (NGS). Phylogenetic trees were constructed using the maximum likelihood (ML) method.

Results: Using DS, in the 16 patients that failed treatment (6 relapsers, 6 null responders and 4 partial responders), 60% of patients had evidence of a "new variant" post-treatment. However, CA and NGS results revealed that 66% of such "new variants" were present in pre-treatment samples, representing new dominance of a pre-existing minority strain that was not detected by DS. Only 3 patients had completely new strains, which were presumed to represent re-infection.

NGS was superior to CA in detecting the dominance of pre-existing minority strains in 25% of patients. Both techniques detected multiple strains in 50% of patients that were missed by routine diagnostic methods (DS).

Conclusion: In HCV treatment failure, the emergence of new viral strains may most commonly be attributed to new dominance of pre-existing minority variants rather than re-infection. NGS could become an important screening tool at baseline for decision making when treating HCV-infected patients to identify mixed infection, particularly in the context of treatment decisions involving genotype-specific direct-acting antiviral agents.

P179
Frequency and efficacy of EngerixB booster and Fendrix in HIV-positive patients with inadequate anti-HB s-antibody response
E Pool1, G Morris2, C Lacey3 and F Martin4
1Hull and East Yorkshire Hospitals Trusts, Hull, UK, 2York Teaching Hospital NHS Foundation Trust, York, UK and 3University of York, York, UK

Background: All HBV negative HIV positive patients should be offered HBV vaccination (B/HIVA immunisation guidelines). HB s-antibody (s-A) response rates range from 7–88%. EngerixB (GSK) boosters are used to achieve immunity; no results were available for one patient. Fendrix was given to eight patients who had not achieved immunity: five completed the course and 100% had achieved HB sAb > 100 IU/mL.

Results: Of 69 patients: 51(74%) male, 38 (55%) White British, 25 (36%) Black African. HBV vaccination was not indicated in 36/69 (52%) patients: 20 (56%) were HB eAb positive and 16 (44%) had HB sAb > 100 IU/mL. HBV vaccination was indicated in 33 patients: 23 (69%) completed a standard course of EngerixB, one patient completed a course of HB Vax Pro and eight (24%) had not completed a course. In those patients who completed one EngerixB course just 3/23 (13%) achieved HB sAb > 100IU/mL. The remaining HB sAb results were <10 IU/mL in 12 (52%); 1199 IU/mL in six (26%) and two unrecorded. Median baseline CD4 was 489 cells/μL (range 309–668) and median baseline viral load was 8500 x 10^6 copies/L and <5 x 10^6 copies/L (0–280,000) in responders and non-responders. 50% of each group were on antiretroviral therapy at baseline. 17 patients received one to two EngerixB boosters: eight (47%) did not achieve immunity; no results were available for one patient. Fendrix was given to eight patients who had not achieved immunity: five completed the course and 100% had achieved HB sAb > 100 IU/mL.

Conclusion: In our cohort a substantial proportion (87%) of HIV+ patients, despite high CD4 counts, did not achieve adequate HBV immunity after one course of Fendrix, whereas boosting with EngerixB (47%). In contrast Fendrix was 100% effective in the small number of observed patients. A course of Fendrix is more expensive than EngerixB (£152.40 vs £38.97); still Fendrix may be more efficacious and less time consuming in people with HIV. We propose a randomised control trial of Engerix vs Fendrix to compare their efficacy in HIV positive subjects and that cost effectiveness analyses be considered.

P180
Diagnosis of Pneumocystis jirovecii pneumonia by detection of DNA in blood and oropharyngeal wash, compared with sputum
C van Halsema1, L Johnson1, J Baxter1, S Douthwaite1, Y Clowes1, M Guiver2 and A Ustianowski3
1North Manchester General Hospital, Manchester, UK and 2Health Protection Agency, Manchester, UK

Background: Pneumocystis jirovecii pneumonia (PCP) remains one of the commonest opportunistic infections in the UK. Diagnosis is generally by immunofluorescence or polymerase chain reaction (PCR) on respiratory specimens. However many patients do not expectorate. This study was designed to compare sensitivity and specificity of PCR on alternative samples to evaluate less invasive, simpler methods of diagnosing PCP.

Methods: A prospective study of individuals being investigated for PCP as part of clinical care. Consenting individuals provided sputum (induced if necessary); oropharyngeal wash (OPW) and blood specimens for PCP testing, using an in-house real-time Taqman® PCR assay, targeting a mitochondrial large subunit rRNA gene. Clinical and laboratory data were collected using a standardised case report form. OPW and blood PCR results were compared with sputum results.

Results: 45 participants provided 45 sputa; 32 OPW and 41 blood samples. 41 (91%) were male; median age 39 (interquartile range [IQR] 34, 47). One participant was an HIV-negative renal transplant recipient. 44/45 were HIV-positive with median CD4 count 64 [IQR 15, 160 [n = 43]]. 9/44 (20%) were on antiretroviral therapy (ART) at the time of recruitment; 4 of whom had undetectable HIV RNA. Of those not on ART, median HIV RNA was 164550 copies/mL. 8/45 had prior history of PCP; 9/45 were taking PEP prophylaxis. In those treated for PCP, samples were taken median 2 days after treatment initiation (range –2, 11). Sputum PCR was positive in 27 (60%). Compared with sputum, sensitivity of OPW was 53% (95% confidence interval [CI] 29, 77) and blood 50% (95% CI 29, 71). Specificity of both was 100%. Negative predictive value of OPW was 57% (95% CI 35, 78) and of blood 59% (95% CI 40, 77) and positive predictive values for both was 100%. Including only samples obtained no later than 2 days after treatment start, sensitivity of OPW was 80% [8/10] (95% CI 51, 100) and blood 57% [6/11] (95% CI 29, 86).

Table: Results of PCR on OPW and blood vs. sputum

<table>
<thead>
<tr>
<th></th>
<th>OPW positive</th>
<th>OPW negative</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>OPW PCR+</td>
<td>9</td>
<td>0</td>
<td>9</td>
</tr>
<tr>
<td>OPW PCR-</td>
<td>10</td>
<td>13</td>
<td>23</td>
</tr>
<tr>
<td>Total</td>
<td>19</td>
<td>13</td>
<td>32</td>
</tr>
<tr>
<td>Blood PCR+</td>
<td>12</td>
<td>0</td>
<td>12</td>
</tr>
<tr>
<td>Blood PCR-</td>
<td>12</td>
<td>17</td>
<td>29</td>
</tr>
<tr>
<td>Total</td>
<td>24</td>
<td>17</td>
<td>41</td>
</tr>
</tbody>
</table>

Conclusions: These results suggest that PCP PCR using OPW and blood is relatively insensitive, particularly if taken after PCP treatment has commenced. Respiratory samples should be obtained where possible to diagnose PCP, although results for OPW prior to or early in treatment were promising and OPW could be useful if sputum is not obtainable.
P181
Injecting drug use is associated with treatment failure in HIV-positive men infected with acute hepatitis C
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Background: Acute hepatitis C virus (HCV) infection in HIV-positive men who have sex with men (MSM) is associated with treatment success rates of 59–73%. We aimed to assess the impact of injecting drug use on treatment success rates in a single centre of HIV-positive patients with acute HCV infection.

Methods: Patients were recruited prospectively and injecting drug use risk information collected following retrospective case note review. Sequence analysis was carried out by PCR amplification, cloning and sequencing of the HCV envelope hypervariable region 1 (HVR-1).

Results: 128 male patients were recruited into the study and 81 patients were treated with 48 weeks of pegylated interferon alpha and ribavirin. Treatment was discontinued if there was a >2log drop in viral load 12 weeks into treatment. The median age was 39 years in both IDU and non-IDU patients and the proportion of patients referred for treatment was not significantly different between groups. No patients withdrew from therapy. The median CD4 count was 520 cells/mm³ and this did not significantly differ between groups. More IDU patients were on treatment with highly active antiretroviral therapy than non-IDU patients (75% vs 53%; p = 0.07).

The overall sustained virological response rate (SVR) was 73% (n = 7/18) versus non-IDU patients (81% n = 38/47), p = 0.002, OR 0.15. Recreational drug use was reported in 65% of the cohort but intranasal and oral drug use were not associated with a significant difference in outcome. Intravenous drug use was associated with a significantly higher level of genetic diversity (0.15 in IDU versus 0.01 in non-IDU p=0.02).

Conclusions: Injecting drug use is associated with a significantly lower likelihood of SVR in HIV-positive MSM with acute HCV infection and this is associated with higher genetic diversity within the HVR-1.

P182
Trends in the use of liver biopsy in HIV-infected patients
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Background: Liver biopsy remains the gold standard investigation for diagnosis and assessment of severity of hepatic disease. It has previously been the method of choice to determine the degree of fibrosis or cirrhosis guiding therapy for viral hepatitis; however with the advent of non-invasive methods for detecting changes in liver architecture such as transient elastography (e.g. FibroscanTM) and novel serum biomarkers of hepatic damage we hypothesised that uptake of liver biopsy in HIV infected patients over the last decade would have declined.

Methods: We performed a retrospective descriptive analysis of liver biopsies performed in HIV positive patients treated at a teaching hospital between January 2002 and July 2012. Investigation was restricted to diagnostic biopsies and those performed for staging and grading of fibrotic liver disease. Primary data were collected regarding biopsy use over this period, indication for biopsy and hepatitis co-infection status.

Results: During the study period 259 patients of a cohort of 4245 HIV positive patients underwent liver biopsy. A total of 313 biopsy specimens were received of which 4 were discounted as not meeting inclusion criteria leaving 309 biopsies for analysis. 40% of patients who underwent biopsy were co-infected with hepatitis C virus and 13% with hepatitis B as indicated by biopsy details. 38% of biopsies were performed for staging of known fibrosis/cirrhosis; 42% were performed for deranged liver function tests; and 7% for investigation of a mass or neoplastic lesion. Other less common indications included assessment of non-alcoholic steatohepatitis and diagnosis of suspected underlying cirrhosis without biochemical derangement. Biopsy rates ranged between 10 per year and 53 per year with no clear trend in annual usage. Subgroup analysis failed to suggest a fall in those performed for staging of known fibrosis.

Conclusion: In summary despite the introduction and availability of non-invasive methods for staging fibrosis we could find no evidence of a decrease in the use of liver biopsy as a strategy for measurement of fibrosis or as a diagnostic tool.
P185
Clinical experience of boceprevir for the treatment of chronic hepatitis C in HIV co-infection
A Ahmed, S Pepper, E Page, M Anderson and M Nelson
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Background: Co-infection of hepatitis C virus (HCV) and HIV is associated with excess morbidity and mortality. Recently new treatments have been licensed for HCV. Prior to licensing boceprevir was available to HIV infected individuals co-infected with HCV as part of an expanded access programme (EAP).

Methods: We have reviewed the outcomes of individuals who received boceprevir within a designated EAP. To gain access to the EAP individuals had to have failed previous therapy and have bridging fibrosis or cirrhosis. All individuals received a lead in of 4 weeks pegylated interferon and weight based ribavirin. At week 5 boceprevir was added for a total of 44 weeks triple therapy treatment.

Results: 5 patients (4 male and 1 female) were recruited into the EAP. All were on stable antiretroviral (ARV) therapy for treatment of HIV. 4/5 was receiving a protease inhibitor as part of their ARV treatment and 1 was on raltegravir/truvada. All had an undetectable HIV viral load at entry and median CD4 count was 368 (range 222–742). 1 patient had a viral load blip during treatment and 1 patient switched their ARV from atazanavir/ritonavir/truvada to darunavir/ritonavir due to a decline in renal function and raised bilirubin. 2 patients were classified as null responders, 2 partial responders and 1 relapsed to previous therapy. 4/5 achieved a greater than 1 log drop in HCV PCR after the lead in phase. At week 12 all had an undetectable HCV PCR and remained undetectable throughout rest of treatment (week 48). 1 patient stopped boceprevir at week 8 because of infection related neutropenia and continued on pegylated interferon and ribavirin alone. 1 patient died 4 weeks after completing treatment due to decompensated liver disease. The 4 remaining individuals had an undetectable HCV PCR at 4 and 12 weeks after end of treatment.

All 5 patients had a haemoglobin drop below 10 g/dl of which 4 required treatments with epoetin and 3 needed dose reduction of ribavirin. 4 patients had a neutrophil count below 1 (10^9/l) with 2 requiring treatment with G-CSF. Commonly reported side effects were depression, dysgeusia, fatigue, mouth ulcers and anaemia.

Conclusion: In this small cohort of co-infected patients who had previously failed treatment for HIV, treatment with boceprevir was associated with treatment success although serious toxicities were seen. It is essential to continue the collection of data on the use of boceprevir for treatment of HCV in HIV co-infected patients.

P186
Hepatic safety profile of antiretrovirals in individuals infected with HIV and chronic hepatitis C
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Introduction: The risk of liver injury and liver enzyme elevations are higher in HIV/HCV coinfected individuals. The impact of antiretroviral therapy (ART) on progression of liver disease in HIV/HCV coinfection remains unclear. We evaluated the hepatic safety profile of different classes of ARVs in HIV/HCV coinfected individuals who were ARV and HCV treatment naive.

Methods: All ART-naïve HIV-infected individuals with chronic HCV who were identified from our clinic database. Patients who started ART were evaluated retrospectively at baseline, weeks 4, 12, 36 and 48 after the initiation of treatment. Ninety three individuals were identified, but 60 were excluded from retrospectively at baseline, weeks 4, 12, 36 and 48 after the initiation of identified from our clinic database. Patients who started ART were evaluated.

Results: Thirty-three individuals (2 female) were identified with a median age of 38 years (range 26–69). Fifteen individuals commenced an NNRTI-based regimen all on Efavirenz, 11 individuals commenced a PI-based regimen and seven individuals commenced a RAL-containing regimen. The most common PIs used were Atazanavir (64%), Darunavir (27%) and Lopinavir (9%). All individuals had HIV VL of <40 copies/mL at week 48. Median CD4 count at baseline was 202 cells/mm³ in NNRTI arm, 295 cells/mm³ in PI arm and 263 cells/mm³ in RAL arm, which increased significantly to 514 cells/mm³, 437 cells/mm³ and 515 cells/mm³ respectively at Week 48. Median ALT levels increased significantly from baseline through to Week 48 in both NNRTI and PI-based arms. In the NNRTI arm median ALT level at baseline was 57 IU/L, which increased to 96 IU/L at Week 24 and to 82 at Week 48. In the PI-based arm the median ALT level at baseline was 108 IU/L, which increased to 169 IU/L at Week 24 and 179 IU/L at Week 48. Whereas in the RAL arm median ALT level was 123 IU/L, which remained stable at 117 IU/L at Week 24 and decreased significantly to 54 IU/L at Week 48.

In those individuals with Grade 2 or less liver enzyme abnormalities (LEA) at baseline Grade 3 or 4 LEA after the initiation of treatment were significantly higher on the PI-based regimen (37%) (p < 0.05) and NNRTI-based regimen (31%) (p < 0.05) compared to RAL-containing regimen (19%).

Conclusion: In individuals with HIV/HCV coinfection initiation of ART led to a high degree of antiviral success in individuals treated with NNRTI, PI and Raltegravir based regimens, but LEA were less common in those treated with Raltegravir.

P187
Hepatitis E IgG seroprevalence amongst HIV-infected patients at a London teaching hospital
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1Guy’s and St Thomas’ NHS Foundation Trust, London, UK and 2Royal Free London NHS Foundation Trust, London, UK

Background: Hepatitis E (HEV) is a RNA virus transmitted by the faecal-oral route common in Asia, Africa and Central America. In Europe the prevalence of HEV infection amongst HIV infected patients is variable – In France a study examining HEV seropositivity in 245 HIV infected showed an overall rate of anti-HEV immunoglobulin (IgG) positivity of 6%. Swiss Cohort study data estimates a seroreprevalence of 2.6%. Prevalence of HEV infection in HIV infected patients in the UK has not yet been fully established. HEV usually produces a mild, self limiting illness but in rare cases it can prove fatal, particularly in pregnant women. We attempted to establish the seroprevalence of anti HEV IgG amongst patients presenting to routine HIV and hepatitis co-infection outpatient clinic with non specific symptoms or elevated transaminases.

Method: HEV serology was performed on HIV infected patients with non specific symptoms or elevated transaminases referred to a HIV hepatitis co-infection clinic during a 10 month period between August 2010–May 2011. Plasma was screened for anti-HEV IgG. Reverse Transcriptase Polymerase Chain Reaction (PCR) for HEV RNA and anti-HEV IgM were performed on all samples testing positive for anti-HEV IgG.

Results: 74 patients in total were tested for anti-HEV IgG. 11/74 (15%) were anti-HEV IgG positive. 1/74 (1.3%) was positive for both IgG and IgM. All had negative PCRs.

10/12 (83%) of patients were men of whom 8/10 (80%) were MSM, 2/12 (17%) were women. Of the anti-HEV IgG negative group 54/62 (87%) were men of whom 43/54 (80%) were MSM and 8/54 (15%) were women. In the anti-HEV group 7/12 (58%) were White British, 1/12 (8%) was Black African, 2/12 (17%) were Southeast Asian, 2/12 (17%) were White Other. Average age was 47 years. Average alanine transaminase enzyme (ALT) when HEV testing was performed was 150 IU/L (4–59 IU/L). 2/12 (17%) had chronic Hepatitis C co-infection. Mean CD4 was 573 cells/mm³.

Discussion: This group of patients had a higher prevalence of HEV infection when compared to non-selected groups elsewhere in Europe, with 16% showing serology consistent with past or acute infection. All but one of the infections were non acute suggesting that HEV was unlikely to be the cause of the elevated liver enzymes. Chronic co infection with HEV was absent which mirrors the findings of other European studies. Further anti-HIV seroprevalence testing in people with unexplained liver enzyme elevations or non specific symptoms at this hospital is ongoing.
P188
Reviewing BHIVA guidelines on screening for latent TB infection in HIV-positive patients in a high TB and HIV prevalence area in the UK
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Background: HIV-positive individuals with latent TB infection (LTBI) are more likely to develop rapidly progressive active TB with reactivation rates of ~10% per annum or ~50% cumulative lifetime risk. BHIVA recommends the use of interferon release gamma assay (IGRA) for screening LTBI according to: TB risk in the country of origin ARV duration and CD4 count. The aims of this project were i) to audit new BHIVA LTBI screening guidelines in a busy clinic; ii) to investigate retention in HIV care prior to a TB diagnosis.

Method: We performed a review of patients using paper and electronic records. i) All new HIV diagnoses attending during 10/2011–10/2012 were reviewed according to BHIVA guidance. ii) All TB diagnoses in the same period were reviewed for prior HIV care.

Results: 63 new diagnoses of which 38 (60%) were females; 60% Black Africans, 17% British/Caribbean/Black other, 8% Indian subcontinent, 6% East European, 3% South Americans and 3% UK Caucasians.

<table>
<thead>
<tr>
<th>Risk category</th>
<th>Applicable for screening</th>
<th>Positive T spot</th>
<th>Negative T spot</th>
<th>Active TB</th>
</tr>
</thead>
<tbody>
<tr>
<td>High *</td>
<td>34/38</td>
<td>16/34</td>
<td>9/16</td>
<td>4/38</td>
</tr>
<tr>
<td>Medium**</td>
<td>15/23</td>
<td>9/15</td>
<td>3/9</td>
<td>4/9</td>
</tr>
<tr>
<td>Low</td>
<td>1/2</td>
<td>0/1</td>
<td>0/0</td>
<td>1/23</td>
</tr>
</tbody>
</table>

Reviewing our entire patient cohort during the study period eight patients had active TB; 5/8 (62%) patients were diagnosed with active TB and HIV simultaneously; 3/8 (38%) patients were lost to follow up and presented with advanced HIV disease and active TB (all extra-pulmonary TB).

Conclusion: BHIVA’s stratified approach to screening for LTBI means targeting high-risk groups to avoid unnecessary tests and cost. Testing can be improved in our clinic. We found it is essential to ensure adequate infrastructure is in place to best perform the tests. In addition to screening, to prevent TB in our clinic, consideration for retention in care services are important.

P189
The use of antiepileptics for seizure treatment and prophylaxis in patients diagnosed with cerebral toxoplasmosis: What should be started, when should they be started and how long should they be continued?
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Background: Patients with cerebral toxoplasmosis (CT) are at high risk of seizures. National guidelines recommend antiepileptic medication if a patient presents with or develops seizures, but not for primary prophylaxis. The guidance does not extend to which medication to use or duration of therapy. We reviewed the provision of antiepileptics in patients diagnosed with CT at our institution and evaluated adherence with national guidelines.

Method: In our HIV patient cohort, all CT cases diagnosed from January 1997 to August 2012 were identified through our electronic coding portal. A case note review was performed to identify the occurrence of seizures and the use, type and duration of antiepileptics.

Results: 49 patients with CT were identified. Median age 41 (range 25–54) years; 41% female, 59% male; median CD4 cell count 33 (range 0–219). 60% had seizures as part of their initial presentation and all were commenced on antiepileptics upon admission or CT diagnosis. However, antiepileptics were given as primary prophylaxis in 40% of cases when a patient had not had a seizure. Antiepileptic therapy included Sodium Valproate (89%), Phenytion (6%) and Levetiracetam (6%). After a median follow up of 77 months, 94% were alive and in care, 4% had died and 2% were lost to follow up. Of those patients alive at the last visit 31% remained on antiepileptics and 31% had discontinued them with a median duration of 17.5 months and a range of 5–84 months. Data was inconclusive for the remainder.

Conclusion: We observed 100% compliance with national guidelines in prescribing secondary seizure prophylaxis for CT cases. Discordant with national guidance primary prophylaxis was provided in a proportion of cases. However, national guidelines do not consider other relevant factors such as size of CT lesions and/or mass affect which may account for this in part.

P190
Raltegravir (RAL) switch improves hepatitis C transaminitis in HIV-1 and hepatitis C (HCV)-co-infected individuals
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Introduction: In chronic HCV/HIV co-infected individuals, it is reported that RAL-containing HAART regimens were safe and it is found that this cohort treated with RAL experienced more liver enzyme elevations than HCV mono-infected individuals. We sought to explore the impact of RAL on aminotransferase (ALT) in chronic HCV/HIV co-infected individuals.

Methods: Data was retrospectively collated on individuals switching to a RAL containing HAART regimen. ALT, HCV-RNA, CD4 count and HIV viral load levels were examined at 6 and 1 month pre-switch, 1 and 6 months post-switch and were compared using the Kruskal-Wallis test. Mann-Whitney U test was used to compare switch from PI based vs NNRTI based regimen to RAL-containing regimen.

Results: Twenty HIV-HCV co-infected individuals were identified between January 2007 and January 2012 of who switched to RAL containing regimen. Demographics and baseline characteristic of patients are shown in Table 1. In chronic HCV infected individuals, median ALT levels were 67 IU/L 6 months prior to switch, 342 IU/L 1 month prior to switch and at the time of switch it was 465 IU/L, which decreased significantly to 179 IU/L 1 month following switch (p = 0.0261) and to 140 IU/L 6 months later (p = 0.0225). There was no significant difference in improvement when switching between two treatment groups: PI versus NNRTI-based regimes (Mann-Whitney U test p < 0.005). The median Hepatitis C viral load level during switch was 661095 copies/mL which decreased significantly to 31476 copies/mL 24 weeks after switch (p = 0.0009). Four patients with detectable HCV plasma viral load levels became undetectable 1 month after switch and remained undetectable up to 24 weeks. The median CD4 count at the time of switch was 474.5 cells/mm³ (100–724), which increased to 533 cells/mm³ (105–533) 1 month following switch (p = 0.4153) and increased significantly to 614 cells/mm³ (248–853) 24 weeks after switch (p = 0.0445).

Conclusion: In our study, the use of RAL for 24 weeks in HIV/HCV co-infected individuals experiencing liver toxicity to HAART resulted in significant reduction in HCV viral loads, sustained undetectable HCV viral loads and immune recovery. Favourable improvement in liver enzyme elevations on RAL was also observed in this cohort.
P191

Experience of hepatitis C and HIV co-infection in a large inner city clinic
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Background: HIV and Hepatitis C (HCV) co-infection is increasing, especially in men who have sex with men (MSM). There is significant morbidity and mortality associated with HIV/HCV co-infection and so successful treatment is key. Outcomes of HCV treatment depend upon HCV genotype with sustained virological response rates (SVR) varying from 49-90%. With the advent of direct-acting antiviral agents (DAAs) it is paramount we continue to collect data on all patients undergoing HCV therapy.

Methods: We performed a retrospective case note review of HIV/HCV co-infected patients in our unit between 2002 and 2012. Data including baseline characteristics and treatment outcomes were collated.

Results: 96 patients were found to have HIV/HCV co-infection and of these 49 patients were included in the review as these patients had either completed or been started on anti-HCV treatment.

41/49 patients were male of whom 80% (33) were MSM. 36/49 patients were British Caucasian, and 6 Black African. Median age at start of HCV treatment was 44 yrs (range 37–61). Route of HCV acquisition was sexual in 33/49 (68%) patients, 10 (20%) was through blood products and 6 (12%) were through intravenous drug use.

23/49 patients were defined as having acute HCV infection and of these patients the median time to HCV treatment was 9 months (range 2–44). 21/49 patients were defined as having chronic HCV infection. The majority patients, 35/49 (71%), had genotype 1. Only 5 patients had been previously treated of whom 3 had received treatment without PEG interferon.

Median CD4 count at start of HCV treatment was 468 cells/mm³ (range 206–1147) and 44 patients were on HAART of whom 35 had an undetectable viral load. 3 did not complete treatment due to sepsis (1) or suicide attempts (2). 6 stopped treatment due to lack of response. 1 lost to follow up. 33 patients have finished their treatment to date. 23 of them (70%) have achieved SVR. 11 patients stopped treatment due to lack of response. 1 lost to follow up. 3 patients have finished their treatment to date. 12 (40%) of patients have achieved SVR.

Conclusion: The response to dual HCV antiviral treatment in our cohort is comparable to the APRICOT study. With the rise in co-infection and the advent of DAAs an increasing number of our patients will be eligible for treatment and re-treatment. It is paramount that prompt diagnosis and referral pathways are in place as the treatment of acute HCV has favourable outcomes. We need to also concentrate our efforts on maximising preventative strategies to reduce the ongoing outbreak of HCV amongst MSM.

P192

Hepatitis C/HIV co-infection in the era of new hepatitis C treatment
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Queen Elizabeth Hospital, Birmingham, UK

Background: The prevalence of Hepatitis C infection in HIV positive individuals is higher than in the general population. The NICE guidelines recommend using Telaprevir and Boceprevir for genotype 1 hepatitis C mono-infection. Once these drugs become available for co-infected groups, clinicians should be aware of possible undesirable drug interactions.

Aim: To evaluate the characteristics of HIV/HCV co-infected patients who attend a large urban HIV centre and to assess possible interactions between ARVs and new hepatitis C drugs.

Method: Patients who attended HIV clinics at the Queen Elizabeth Hospital (Birmingham) and diagnosed with chronic Hepatitis C were included. Relevant Data were extracted and used to determine if patients had follow-up assessments according to BHIVA guidelines. ARV regimens of patients who had Hepatitis C genotype 1 and treatment naive or failed HCV treatment were evaluated separately to determine possible drug interactions.

Results: Twenty-nine patients with chronic Hepatitis C/HIV co-infection were identified; 28 males and 1 female. Of the 28 patients, 26 had ARV treatment and 24 had fully suppressed HIV viral loads. Of the 29 co-infected patients, 20 had HCV genotype 1, 5 had HCV genotype 2 and 1 patient had HCV genotype 4. Eleven patients had treatment (all had genotype 1) of which 7 failed treatment. Three patients completed treatment and achieved sustained virologic responses and 1 patient is undergoing treatment.

There were 17 patients who had genotype 1 and had either failed treatment or were treatment naive. This group would be suitable for either Telaprevir or Boceprevir treatment (Table 1). Any patients starting Telaprevir, 10 of the 17 patients would require an ARV treatment change. For Boceprevir, 16 out of 17 would require a change in ARV treatment.

Table 1.

<table>
<thead>
<tr>
<th>ARV regimen</th>
<th>Number</th>
<th>CD4 count (if more than 1 patient)</th>
<th>Median</th>
</tr>
</thead>
<tbody>
<tr>
<td>TDF, ATV/r, RAL</td>
<td>1</td>
<td>1011</td>
<td></td>
</tr>
<tr>
<td>Atripla</td>
<td>4</td>
<td>526</td>
<td></td>
</tr>
<tr>
<td>Truvada, DRV/r</td>
<td>5</td>
<td>465</td>
<td></td>
</tr>
<tr>
<td>Truvada, DRV/r</td>
<td>1</td>
<td>327</td>
<td></td>
</tr>
<tr>
<td>Combivir, DRV/r</td>
<td>1</td>
<td>329</td>
<td></td>
</tr>
<tr>
<td>Truvada, RAL</td>
<td>1</td>
<td>479</td>
<td></td>
</tr>
<tr>
<td>TDF, ABC, DRV/r</td>
<td>1</td>
<td>540</td>
<td></td>
</tr>
<tr>
<td>TDF, RAL, Kaletra</td>
<td>1</td>
<td>540</td>
<td></td>
</tr>
<tr>
<td>TDF, AZT, Kaletra</td>
<td>1</td>
<td>591</td>
<td></td>
</tr>
<tr>
<td>ABC, 3TC, Kaletra</td>
<td>1</td>
<td>748</td>
<td></td>
</tr>
</tbody>
</table>

| (ABC- Abacavir, 3TC – Lamivudine, TDF – Tenofovir, ATV- Atazanavir, DRV - Darunavir, RAL – Raltegravir) |

Conclusion: All co-infected patients had follow-ups according to the BHIVA guidelines. Seventeen patients would be eligible for new HCV treatment and more than 58% would require a change in ARV treatment if they were to receive new HCV treatment. Incorporating the HCV treatment in to the co-infection group could pose a new challenge.

P193

Audit of testing for cytomegalovirus on admission to a tertiary HIV facility
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Background: Cytomegalovirus (CMV) infection can cause a wide range of serious and life-threatening gastrointestinal, retinal, central nervous system and endocrine pathologies in immunocompromised patients. Disease is exacerbated by high HIV viral load, previous opportunistic infections and failure to respond to antiretroviral therapy. The guidelines to monitoring CMV levels in seriously at-risk patients with low CD4 counts are unclear, although it is generally agreed that patients with CD4 levels below 50 cells/l and concurrent cytomegalovirus infection are most at risk of end organ disease. The current hospital policy in the facility audited requires that all patients with CD4 levels <200 have CMV DNA levels tested on admission.

Methods: A retrospective audit of all HIV patients admitted to the tertiary unit between July and September 2012. Data on admission dates, CD4 levels, CMV DNA levels and the dates on which they were taken using the care record system were recorded.

Results: There were 31 admission during this period, 19 (61%) patients with CD4 <200 cells/l. Of these, nine (47%) patients had CMV DNA levels taken within seven days of admission. Eight (42%) patients had no CMV DNA test during the admission, two (11%) levels were taken at day 18 and day 50 following admission. Of eight patients with CD4 < 50 cells/l, five (63%) were tested within a week of admission, one was never tested, and two were tested greater than a week following admission, one of whom had CMV DNA levels ~400,000 cells/l with evidence of end-organ disease.

Conclusion: CMV DNA levels were taken in half (53%) of patients admitted who had a CD4 count of less than 200 cells/l. The majority of delays occurred in August after the new ward doctors started, suggesting that a lack of training and no safeguarding system may be responsible. A new patient checklist has been introduced, completed for every admission to prompt testing for CMV and other opportunistic infections, but also incorporating prompts for offering of social and psychological services. A review of local and national guidelines, including cost benefit analysis of CMV level testing, is recommended.
Prior to TB diagnosis, 9 (56%) had CD4 count < 200 at time of TB diagnosis. In this case, PORN has caused a profound and permanent loss of vision in the context of very late diagnosis of HIV (CD4 count < 50 cells/μl). Earlier diagnosis might have been possible and so feedback on missed opportunities for HIV testing has been attempted with the clinicians involved. The new BHIVA care standards recommend that all HIV clinical services conduct a review of previous contact with healthcare services for all patients presenting with advanced immunosuppression.

**Pathogenesis, Transmission and Prevention**

**P197**

**Characterisation of mucosally transmitted HIV-1 founder viruses**

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**Background:** Transmitted founder viruses arising from mucosal transmission have been identified by CHAVI investigators (Salazaar-Gonzalez et al, 2009). We present the case of a 37-year old Lithuanian man with extensively drug-resistant tuberculosis (XDR-TB) and co-infection with HIV and hepatitis C. We received a week of parenteral nutrition, which should be considered.

**Conclusion:** Patients with HIV/TB co-infection are a heterogeneous group. The majority have advanced HIV at the time of TB diagnosis and 50% of our patients had extrapulmonary TB. The majority of patients attending this clinic completed their TB treatment; the main barrier to successful completion of treatment was drug toxicities. We suggest that all patients with HIV/TB co-infection be managed in a dedicated co-infection clinic where possible, and where such clinics are not available, referral to a tertiary treatment centre should be considered.

**Table 1: Time until samples became TB culture +ve as antituberculous therapy (ATT) progressed**

<table>
<thead>
<tr>
<th>Day of ATT</th>
<th>Specimen</th>
<th>Z/N stain</th>
<th>Days to culture positivity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Day 10</td>
<td>Sputum</td>
<td>Scanty +ve</td>
<td>23</td>
</tr>
<tr>
<td>Day 41</td>
<td>Sputum</td>
<td>–ve</td>
<td>25</td>
</tr>
<tr>
<td>Day 47</td>
<td>Sputum</td>
<td>–ve</td>
<td>28</td>
</tr>
<tr>
<td>Day 61 (&gt;8 weeks)</td>
<td>BAL</td>
<td>–ve</td>
<td>26</td>
</tr>
</tbody>
</table>

By the 9th week, his abdominal distension had progressed and he was unable to keep medication down. He received a week of parenteral nutrition, which gave an initial improvement but his intestinal symptoms recurred. He received a trial of corticosteroids, which also only gave transient benefit. Levels of amikacin, cycloserine and ethambutol all came back in the therapeutic range and his HIV viral load remained undetectable. Stool was negative for bacterial pathogens, C. difficile plus ova, cysts and parasites. Barium follow-through showed no strictureting and CT scanning no lymphadenopathy.

At 3 months, he developed markedly worsening abdominal pain. Out-of-hours CT scanning revealed free intraperitoneal fluid and air likely secondary to a gastro-oesophageal junction perforation. The diffuse small bowel dilatation and thickening had progressed since previous imaging.

**Conclusion:** Owing to the extent of the bowel disease in the context of its unknown aetiology, it was deemed that there was no surgical option likely to be of benefit. He died shortly after these events and his body was reapatrated to Lithuania.
and found paradoxically to replicate poorly in macrophages. To date, almost all HIV research in macrophages has utilized laboratory strains or gene products from clinical isolates. This new panel of whole genome HIV-1 provides an unprecedented opportunity to systematically study macrophage replication capacity (MRC) by clinically relevant viruses.

Methods: Infectivity experiments were performed on primary cells and in cells expressing varying levels of CD4 and CCR5. Quantitative real time PCR was used to assess cell entry and reverse transcription and Vpx complementation to assess restriction of transmitted/founder viruses by the dNTP hydrolase SAMHD1.

Results: Macrophage infection by these viruses was at least ten fold less efficient as compared to the prototypic macrophage tropic strain YU-2, and explained by inefficient use of low surface CD4 levels. We observed a similar infection defect in cell lines manipulated to express low CD4 levels and were able to overcome this block with transposition of Env V1–V5 from YU-2. The entry defect was measured as 2.5–3 fold, with a further significant block to the early stage of reverse transcription as compared to YU-2. Although Vpx complementation augmented macrophage infection by an order of magnitude in all viruses tested (similar to that measured for laboratory strains), SAMHD1 did not fully account for the post entry replication defect between YU-2 and the clinical strains.

Conclusion: We conclude that transmitted viruses generally exhibit low MRC and are limited predominantly at the earliest points in the life cycle: entry and early reverse transcription. In addition, replication of these viruses can be enhanced after entry by Vpx, suggesting that macrophages may represent reservoirs of inducible virus production in vivo under certain conditions despite low levels of infection in vitro.

[ BHIVA Research Awards winner 2010: Ravindra Gupta]

P198

HIV partner notification – are we doing enough?

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Background: Late diagnosis of HIV (CD4 count less than 350 cells/mm³) is associated with high rates of morbidity and mortality. HIV partner notification (PN) has been shown to be an effective method of diagnosing further cases of HIV.A recent report from the National Aids Trust has highlighted the importance of HIV PN as a public health intervention to reduce late diagnosis. Evidence of behaviour change following diagnosis and also for HIV treatment is crucial. It is important to understand how PN can be used as an intervention in classroom settings.

Methods: A retrospective case note audit of PN of newly diagnosed HIV patients seen in our clinic from 1st January 2009 to 31st October 2012. Basic descriptive demographic data was also collected.

Results: There were a total of 22 cases of newly diagnosed HIV within the audit time period. 15 were males and 7 females, all were of White British Ethnicity. 9 of the male patients were reported to be Men who have sex with Men (MSM). Median age was 42 years (range 25–74). PN data recorded were as follows: 1 index case reported more than 5 relevant contacts, 1 reported 2 to 5 contacts, 9 reported less than 2 contacts. PN discussion was documented by 4 weeks in 64% of our newly diagnosed patients and completion documented by 3 months in 41% of patients. In 6 patients it was unclear whether partner notification had been attempted, whilst 1 patient was lost to follow-up. In total, there were 62 contacts disclosed as relevant by the 22 newly diagnosed index patients. 20 of these contacts were believed to have been traced and tested, (15 verified), 6 were HIV positive and 14 negative. Patient referral was the sole method of PN contact in 21 index cases, provider referral being the sole method for 1.

Conclusion: Currently there is no nationally agreed outcome standard for HIV partner notification. In this audit, verified PN outcome was an average of 0.7 contacts per newly diagnosed index patient (0.9 for reported PN). 30% of the contacts were found to be HIV positive. The new BHIVA care standards outline process targets for documentation of PN discussion and completion. Documentation of PN needs to improve in our HIV unit and interventions to achieve this are planned. This is particularly important in the light of the national audit of HIV PN planned in 2013 by the British Association for Sexual Health and HIV, which has 0.6 as a proposed outcome standard.

P199

The effectiveness of a single intervention short film on adolescent perception of people living with HIV – a pilot study

A Barnes

Body & Soul, London, UK

Background: Adolescent HIV knowledge is not protective against HIV related stigma; adolescents with high levels of HIV knowledge report stigmatising behaviours and attitudes towards people living with HIV. The purpose of this study is to show the effectiveness of a single-intervention short film (UNDEFEATED) on creating self-reported change in adolescent perception of people living with HIV and HIV-related stigma.

Methods: Approximately 150 young people participated in a Year 10 assembly that screened UNDEFEATED. After the film, young people answered a short questionnaire that combined closed and open-ended questions. Survey administrators collaborated with the Year 10 Head to ensure the survey and surveying methods were in-line with institutional procedures. Students were advised that this questionnaire would help determine the utility of UNDEFEATED in a classroom setting, and that there would be no negative repercussions from providing feedback.

Results: 153 students completed feedback surveys. On the closed-ended questions, 65% felt that they learned more about stigma and discrimination from watching the film. 67% agreed that the film made them think differently about people living with HIV. Open-ended questions reinforced the aforementioned data. Open answers to the question, "How do you think this film impacts on the way you feel about people living with HIV?" yielded desirable feedback in 142 out of the 153 respondents. Qualitative feedback included, "It made me realise that just because the person has HIV you should never hate them or treat them horribly", "It made me understand that they suffer much more prejudice than I thought", "It makes me think that they're not treated equally and it's not fair", and "I don't find them disgusting anymore".

Conclusion and Recommendations: This pilot showed positive evidence from both open and closed questions that this intervention was effective in adolescent participants in achieving short-term self-reported improvements in perception of people living with HIV. Given the intervention’s short length and ease of administration, this data is encouraging. To better demonstrate intervention effectiveness, it will be tested amongst a larger, more diverse sample. Additionally, more rigorous evaluation including pre and post testing and measurement of long-term change could help justify use of the intervention in classroom settings.

P200

Post-exposure prophylaxis following sexual exposure to HIV: Experience at a large GU centre and a retrospective audit against current BASHH guidance

S Mapara, L Macpherson, R Sacks, L Garvey and O Dosekun

Imperial College Healthcare NHS Trust, London, UK

Background: The British Association of Sexual Health and HIV published guidelines in 2011 for post-exposure prophylaxis following sexual exposure to HIV (PEPSE). These recommend commencement of PEPSE within 72 hours of unprotected receptive or insertive anal or vaginal intercourse (UPRAI,UPIAI or UPVI respectively) with a viraemic HIV infected individual; or following UPRAI with an HIV infected individual or an individual from a high prevalence group or area. In all other situations, additional risk factors will determine the need for PEPSE. Provision of PEPSE requires pathways of care between genitourinary (GU) services and those providing emergency care to ensure appropriate and timely administration.

Methods: A retrospective case note review of patients attending a dedicated PEPSE clinic over two time periods: between June and July 2012, and between November 2012 and January 2013. Data collected included patient demographic information, indication and time to commencement of PEPSE, setting in which PEPSE was commenced and subsequent follow up, and individual outcomes following completion of PEPSE.

Results: Data was available for 84 patients (June–July n = 35; Nov–Jan n = 49). Patients were predominantly male (79, 94%), and MSM (67, 80%), 51 (61%) were commenced in a GU clinic and 27 (32%) in the emergency department, whilst 3 (4%) commenced PEPSE without medical advice either
Conclusions: The main limitation in the PMTCT process is that of women registering for care after their baby is born. Other weaknesses are: the numbers defaulting from care, missed appointments (and therefore replacement ART), poor ART prescribing, late CD4 testing and home births.

All these improved as interventions targeting health professionals, systems and communities were implemented.

Reasons for poor attendance at any stage include: stigma, lack of PMTCT awareness, women moving frequently (married to soldiers), lack of money for transport.

MTCT rate data is based on discharge and there will be a lag. Data from November 2011–April 2012 shows an HIV transmission rate of 3.2% (30/131).

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**P201**

**Investigating high mother-to-child HIV transmission despite antiretroviral availability**

N Astilli, M Aritha, E Ninsime and P Williams

**Background:** In a remote Ugandan hospital, mother-to-child HIV transmission rates remain over 13%, despite comprehensive in-hospital and outreach HIV clinics, offering free testing, ART and an integrated PMTCT clinic.

**Aim:** To consider reasons for poor PMTCT outcomes and methods for improvement.

**Methods:** Indices affecting PMTCT outcomes from 3 audits between 01/10/07 to 01/05/10 were reviewed. Changes in practice that may have affected outcomes over time were considered.

**Results:**

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**Conclusions:** The main limitation in the PMTCT process is that of women registering for care after their baby is born. Other weaknesses are: the numbers defaulting from care, missed appointments (and therefore replacement ART), poor ART prescribing, late CD4 testing and home births.

All these improved as interventions targeting health professionals, systems and communities were implemented.

Reasons for poor attendance at any stage include: stigma, lack of PMTCT awareness, women moving frequently (married to soldiers), lack of money for transport.

MTCT rate data is based on discharge and there will be a lag. Data from November 2011–April 2012 shows an HIV transmission rate of 3.2% (30/131).
Sexually Transmitted Infections

P204

First evidence of prevalence of human papillomavirus infection in men who have sex with men in Ireland: a stimulus for vaccine review

C Sadlier1, D Rowley1, D Morley1, S Surah1, S Delamere1, S Smyth2, S Clarke1, N Halpin1, D Olofsson1, O Sheils2 and C Bergin1

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Background: HPV-associated anal cancer is one of the most common non-AIDS-defining tumours. MSM are disproportionately affected. 80% of anal cancer is associated with high risk (HR) HPV types 16 and 18. In Ireland, no data exists on prevalence of HPV infection in men. Emerging patterns of HPV related disease; particularly in at risk groups such as MSM strengthen the call for universal or targeted vaccination. Documenting the molecular epidemiology of HPV is essential to formulating national vaccine guidelines. Methods: A prospective cohort study was conducted looking at the prevalence of anal HPV infection. HIV+ and HIV- MSM >18 yrs were recruited. Basic demographic data and information on sexual behaviour was recorded. Anal swabs were collected. HPV was detected using consensus primer solution phase PCR followed by type specific PCR. Between-group differences were analyzed by Chi² tests. Univariate variables with P < 0.2 were entered into multivariate logistic regression.

Results: 194 MSM (mean [SD] age 36 [10] yrs, 51% HIV+) were recruited. Median number of sexual contacts in the preceding 12 months was 4 [IQR 2–10]. HIV+ subjects had a mean CD4 count 557 [SD 217] cells/mm³, 84% were on HAART. Following PCR analysis, 31 samples were HPV positive. When HPV and HIV data were stratified by age those >30 years had a higher prevalence (77% vs 50% p = 0.001 and 45% vs 18% p = 0.001). Number of sexual contacts, type of intercourse, condom use and smoking status were not significantly associated with anal HPV infection.HIV+ subjects were more likely to have any detectable HPV (77% vs 60% p = 0.03), to have HR HPV types 16 or 18 (44% vs 27% p = 0.011) or to be infected by ≥1 HR HPV (10% vs 0%, p < 0.001).Within the HIV+ group prevalence of HPV was higher in those not on HAART (p = 0.041) and in those with a HIV viral load >40logcopies (p = 0.025) although it did not differ when stratified by CD4 count.

Conclusion: A high prevalence of anal HPV was found in our cohort. Clarifying baseline prevalence of HPV infection is important in guiding prevention strategies in relation to HPV vaccination. In the HIV+ group HAART was negatively associated with anal HPV infection. This may further support earlier initiation of HAART but does not argue against the additive role of vaccination in HIV+ individuals.

P205

Retrospective study of the effect of enhanced systematic STI screening, facilitated by the use of electronic patient records (EPR), in an HIV cohort

J McSorley, G Brook and A Shaw

North West London Hospitals NHS Trust, London, UK

Background: Giving HIV patients access to STI screening is a key recommendation in many guidelines. Audits indicate services find this difficult to achieve. Diagnosing STIs in HIV patients is important to both reduce transmission risk of HIV and STIs but also to reduce potential complications of the STI. We incorporated STI testing and risk assessment for HIV patients within an electronic annual checklist for care within the electronic patient record (EPR) by 2010. This ensured annual screening for most patients and additional, enhanced, more frequent screening for patients at higher risk of STIs.

Methods: New bacterial STIs were recorded for three consecutive twelve months periods between 2009 and 2012 in a cohort of 882 HIV + patients attending for care in a district general hospital setting. These three years coincided with the phased introduction of enhanced STI screening based on prompts within the EPR system.

Results: At least one STI screen per year was performed on 90% of patients in 2009 and this rose to 97% in 2012. The number of diagnoses and incidence of STIs more than doubled between 2010–11 and 2011–12 in both men who have sex with men (MSM) (from 18/115[15%] to 42/132[32%], a rise in STI incidence from 15.6 to 31.8/100 person years, P < 0.001) and heterosexual patients (from 6/716[0.8%] to 19/749[2.5%]), a rise in STI incidence from 0.8 to 2.5/100 person years P < 0.005). The rise was significant in MSM for infections with chlamydia (from 7/115[6%] to 14/132[11%]), a rise in incidence from 6.0 to 10.6/100 person years P < 0.05), gonorrhoea (from 5/115[4%] to 12/132[9%]), a rise in STI incidence from 4.3 to 9.1/100 person years P < 0.05) and early syphilis (from 41/115[3%] to 13/132[10%]), a rise in incidence from 3.5 to 9.8/100 person years P < 0.001), but not for HCV and LGV. The rise was significant in heterosexual patients for infection with chlamydia (from 4716[0.6%] to 13749[1.7%]), a rise in incidence from 0.6 to 1.7/100 person years P < 0.0001 but not for gonorrhoea, syphilis or TV.

Conclusions: These data show that implementing systematic, frequent and routine STI screening led to a large increase in detected STIs in this HIV cohort. This process is greatly enhanced by the use of EPR.
P207
Syphilis presenting as colorectal cancer
D Lebari1, A Komolafe2, V Charan3, SP Higgins3 and K Ajdukiewicz2
1Blackpool Sexual Health Services, Blackpool, UK and 2Pennine Acute NHS Hospitals Trust, Manchester, UK

Background: Syphilis has long been known as ‘The Great Imitator’ for its ability to mimic other diseases. Although there has been a resurgence of infectious syphilis in the UK since 2000, reports of syphilitic proctitis (SP) are rare. SP has no pathognomonic clinical characteristics and misdiagnosis can lead to costly interventions and delayed treatment. We present the cases of two men with syphilitic colo-rectal lesions which were initially thought to be cancer.

Case 1: A 40 year old HIV-positive man who has sex with men (MSM) man presented with diarrhoea, rectal discomfort and frank rectal bleeding. Colonoscopy revealed an ulcerating mass in the proximal sigmoid and three other rectal lesions. Biopsy demonstrated inflammatory tissue only with no evidence of malignancy. At an HIV clinic review treponemal serology indicated active syphilis.

Case 2: A 50 year old HIV-negative MSM presented with a short history of rectal bleeding, change in bowel habit and tenesmus. There was a family history of colorectal cancer. Colonoscopy revealed multiple polyoid lesions with central ulceration. Biopsy demonstrated severe inflammatory cell infiltrates with no evidence of malignancy. By chance the patient presented himself for a sexual health check at which positive syphilis serology was found.

As part of cancer staging, both patients underwent imaging which revealed local lymphadenopathy only, with no evidence of metastases.

The chance identification of positive syphilis serology prompted repeat analysis of histological specimens which proved their treponemal origin. Syphilis treatment resulted in resolution of all bowel lesions in both patients at follow-up endoscopy.

Conclusion: Syphilis should be considered in all patients, particularly MSM, who present with symptoms suggesting colorectal cancer. Physicians and surgeons must have a high index of suspicion with regard to diagnosing syphilis. Specific staining techniques or PCR are required to confirm the diagnosis; this may be missed if syphilis is not considered in the differential diagnosis. Sexual history with rigorous attention to the time course of symptoms should help to guide investigations and staging of syphilis.

P208
A cross-sectional survey looking at uptake rates of sexually transmitted infection screening in an HIV-positive cohort in an inner city London cohort
J Bayley, F Macdonald, R Brookes, C Adams and M Poulton
King’s College Hospital, London, UK

Background: BHIVA guidelines for the routine investigation and monitoring of adult HIV-1 infected adults (2011) recommend a baseline sexual health screen at diagnosis of HIV-infection and then yearly screening. Other recommendations include regular discussion around safer sex practices and annual testing of syphilis, hepatitis B and C serology. We performed a retrospective case notes analysis to determine whether this standard was being adhered to.

Methods: Consecutive case notes in a HIV centre were reviewed and data captured for demographics, sexual health screening at initial HIV diagnosis, documentation of discussion regarding safer sex and evidence of a sexual health screen in the preceding year. Data was also collected regarding hepatitis B and C and syphilis serology in the preceding 12 months, plus uptake of cervical screening and results. Results were then entered into STATA and standard statistical tests performed.

Results: 104 notes were reviewed, 65/104 (62%) male with a median age of 40.7 years. 65/104 (63%) were heterosexual transmission, 38/104 (36%) homosexual and only 1 case via injecting drug use. 51/104 (49%) had evidence of a sexual health screen at HIV diagnosis. 57/104 (55%) had a documented discussion around safer sex in the preceding year. A sexual health screen in the last 12 months was performed for 35/104 (33%), with 28/35 (80%) being routine screens. Men were more likely to have had an STI screen; 27/65 versus females 8/39 (p = 0.03). Syphilis serology was available for 96/104 (92%). Hepatitis B serology was performed for 92/104 (88%), with 38/92 needing vaccination, of which 34/38 (89%) were appropriately vaccinated. Hepatitis C serology was seen in 82/104 (79%) with only 1 case being antibody positive. Cervical smear results were available for 14/39 (36%) with only 1 smear showing an abnormality (CIN1).

Discussion: We found low uptake rates of sexual health screening at baseline and annually thereafter in our cohort, with men much more likely to be offered and accept screening. We demonstrated good uptake rates of syphilis and hepatitis B and C serology, probably as these form part of the annual health screen. Cervical smear testing and result entry is low and this may be due to these investigations being performed by general practitioners. We should be extra vigilant and offer all HIV-positive adults annual sexual health screens, especially female patients, as part of the routine clinic visits.

P209
Audit of STI screening at a standalone HIV unit
E Chung, S Mgumi, J Jinsworth and WC Loke
North Middlesex University Hospital, London, UK

Background: HIV positive individuals are at risk of sexually transmitted infections (STIs). Patients with concurrent STIs are more likely to have detectable HIV in their genital secretions, and therefore prompt identification and treatment of STIs reduces onward HIV transmission, and should be a routine part of HIV care. BHIVA guidance states that all patients should have STI screening at presentation and at least annually (depending on risk). We decided to audit STI screening at a standalone HIV unit without integrated sexual health services.

Method: We reviewed notes of 10% of patients attending for regular follow-up Consultant appointments over a 12 month period (1st January 2011–31st December 2011) to see if STI screening was done at baseline (syphilis serology and Chlamydia/Gonorrhoea [CT/GC] screening for new patients from 2009) and in the last 12 months.

Results: 92 patients’ notes were reviewed. 46 were male and 46 were female with median ages of 47 years and 40 years respectively. 31 (34%) were men who have sex with men, 62 (67%) were Black African, 16 (17%) White British, 3 (3%) Black Caribbean. Syphilis serology was done at baseline in 44 (95%) of men and 45 (98%) of women and in 14 (30%) patients in the last 12 months; 9 (10%) tested positive at baseline and none in the last 12 months. CT/SC nucleic acid amplification tests were sent in 95% of eligible patients at baseline and in 8 (17%) of patients in the last 12 months; results were all negative. A limitation of the audit was that ascertainment of data was from documentation of STI screening which may underestimate the number of tests offered. Recommendations were made for the upgrade in electronic patient record to include a reminder to offer STI screening if not done in the last 12 months. Nursing staff were also encouraged to offer STI screening when patients attend. A re-audit is scheduled after these implementations.

Conclusion: HIV clinics without integrated sexual health services may find it difficult to fulfil sexual health screening standards for HIV patients. Pathways for referral are key to providing routine sexual health care to all HIV patients.
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