HIV MEDICINE

Volume 13, Supplement 1, April 2012
Abstracts of the 18th Annual Conference of the British HIV Association (BHIVA)
Birmingham, UK
18–20 April 2012

EDITORS
Brian Gazzard
Jens Lundgren

British HIV Association BHIVA
EACS European AIDS Clinical Society
DAIG Deutsche AIDS-Gesellschaft e.V.
WILEY-BLACKWELL

HIV MEDICINE

Volume 13, Supplement 1, April 2012, Pages 1–92

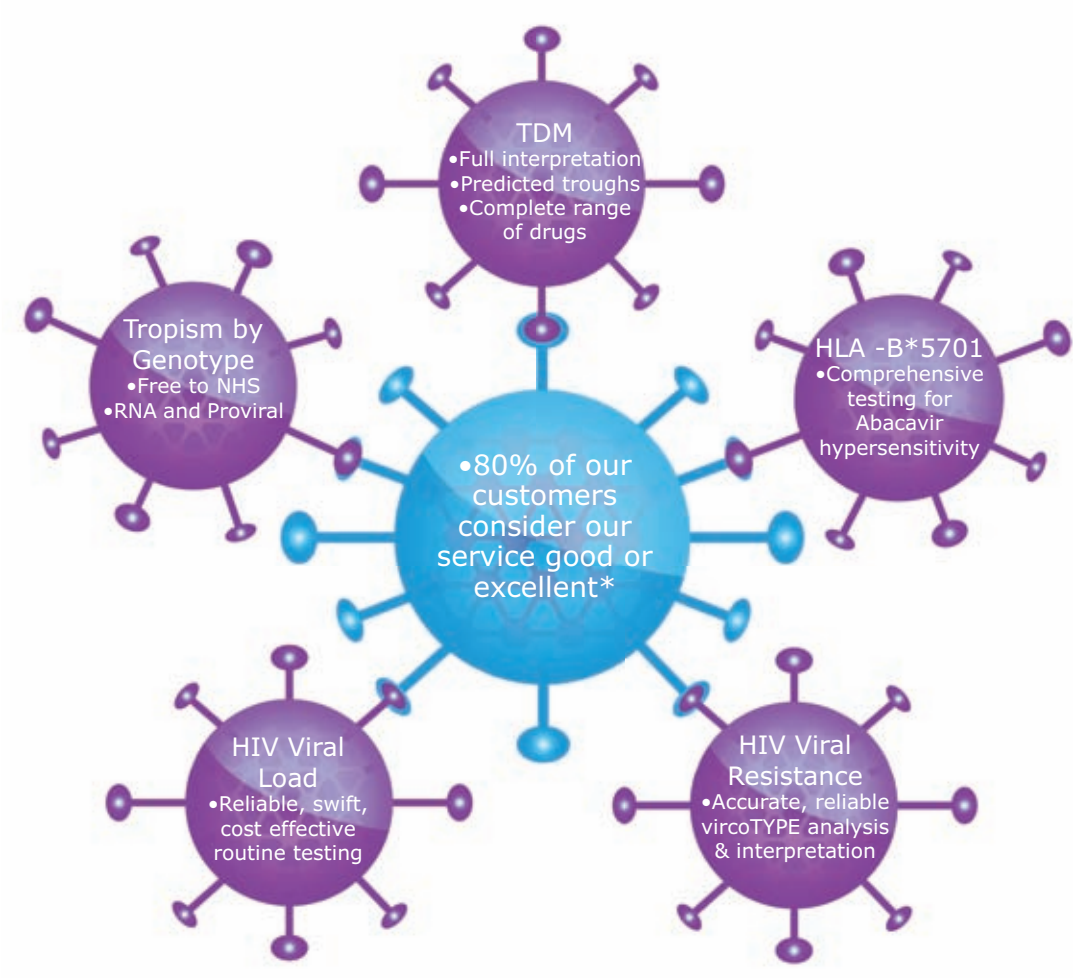
WILEY-BLACKWELL

Lab 21

clinical laboratory

Your Partner for Personalised Medicine in HIV

Lab21 is a 'one-stop-shop' for specialist diagnostics in HIV, offering CPA accredited services for Drug Management and Personalised Medicine.



Contact Lab21 by
Phone: 01223 395 450 or Email: info@lab21.com
www.lab21.com
Come and visit us in Hall 3 of The International Conference Centre

*in a recent customer satisfaction survey 80% of 120 respondents rated Lab21's service as good or excellent.

HIV MEDICINE

Volume 13, Supplement 1, April 2012

Abstracts of the 18th Annual Conference of the British HIV Association (BHIVA)
Birmingham, UK
18-20 April 2012

Contents

HIV MEDICINE

Published on behalf of the British HIV Association and the European AIDS Clinical Society

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

Information for Subscribers
HIV Medicine is published in 10 issues per year. Institutional subscription prices for 2012 are: Print & Online: US$1753 (US), US$2045 (Rest of World), €1206 (Europe), £950 (UK). Prices are exclusive of tax. Asia-Pacific GST, Canadian GST and European VAT will be applied at the appropriate rates. For more information on current tax rates, please go to www.wileyonlinelibrary.com/tax-vat. The price includes online access to the current and all online back files to January 1st 2007, where available. For other pricing options, including access information and terms and conditions, please visit www.wileyonlinelibrary.com/access.

Delivery Terms and Legal Title
Prices include delivery of print journals to the recipient's address. Delivery terms are Delivered Duty Unpaid (DDU); the recipient is responsible for paying any import duty or taxes. Legal title passes to the customer on despatch by our distributors.
Back issues: Single issues from current and recent volumes are available at the current single issue price from cs-journals@wiley.com. Earlier issues may be obtained from Periodicals Service Company, 11 Main Street, Germantown, NY 12526, USA.
Tel: +1 518 537 4700, Fax: +1 518 537 5899,
E-mail: psc@periodicals.com

HINARI: Access to this journal is available free online within institutions in the developing world through the HINARI initiative with the WHO. For information, visit www. healthinternetwork.org

Publisher and Business Correspondence
HIV Medicine is published by Blackwell Publishing Ltd: 9600 Garsington Road, Oxford OX4 2DQ, UK. Tel: +44 (0)1865 776868, Fax: +44 (0)1865 714591. Blackwell Publishing was acquired by John Wiley & Sons in February 2007. Blackwell's programme has been merged with Wiley's global Scientific, Technical, and Medical business to form Wiley-Blackwell.
Wiley's Corporate Citizenship initiative seeks to address the environmental, social, economic, and ethical challenges faced in our business and which are important to our diverse stakeholder groups. We have made a long-term commitment to standardize and improve our efforts around the world to reduce our carbon footprint. Follow our progress at www.wiley.com/go/citizenship.
Journal Customer Services: For ordering information, claims and any enquiry concerning your journal subscription please visit www.wileycustomerhelp.com/ask or contact your nearest office:
Americas: E-mail: cs-journals@wiley.com; Tel: +1 781 388 8598 or 1 800 835 6770 (Toll free in the USA and Canada).
Europe, Middle East and Africa: E-mail: cs-journals@wiley.com; Tel: +44 (0) 1865 778315.
Asia Pacific: E-mail: cs-journals@wiley.com; Tel: +65 6511 8000.
Japan: For Japanese speaking support, Email: cs-japan@wiley.com; Tel: +65 6511 8010 or Tel (toll-free): 005 316 50 480.
Visit our Online Customer Get-Help available in 7 languages at www.wileycustomerhelp.com.
Advertising: Sarah Young, HIV Medicine advertising (email: syoung@wiley.com)
Commercial reprints: Claire Porter (email: ccporter@wiley.com)

ISSN 1464-2662 (Print)
ISSN 1468-1293 (Online)

For submission instructions, subscription and all other information visit: www.hivmedicinejournal.com

Note to NIH Grantees
Pursuant to NIH mandate, Wiley-Blackwell will post the accepted version of contributions authored by NIH grant-holders to PubMed Central upon acceptance. This accepted version will be made publicly available 12 months after publication. For further information, see www.wiley.com/go/nihmandate.

HIV MEDICINE (1464-2662) is published monthly except June and December. US mailing agent: Mercury Airfreight International Inc., 365 Blair Road, Avenel, NJ 07001, USA. Periodical postage paid at Rahway, NJ. POSTMASTER: Send all address changes to *HIV MEDICINE*, Journal Customer Services, John Wiley & Sons Inc., 350 Main St., Malden, MA 02148-5020.

Typeset by Toppan Best-set Premedia Limited and Scientific Publishing Services (P) Ltd, Chennai, India,
and printed in the UK by the Charlesworth Group.

Oral Abstracts

Pregnancy and Young Adults

O1

Managing the pregnancies of HIV elite controllers: what are we doing?

L Byrne[1], O de Alwis[2], M Toby[3], R Shah[4], A Hartley[5], A Umaipalan[6], C-E Short[7], S Murphy[7], S Oomer[7], A de Ruiter[3], H Noble[5], J Anderson[6], M Kapembwa[7], G Taylor[2] and L Sarner[1]

[1]Barts and The London NHS Trust, London, UK, [2]Imperial College Healthcare NHS Trust, London, UK, [3]Guy's and St Thomas' NHS Trust, London, UK, [4]Royal Free Hampstead NHS Trust & Barnet and Chase Farm NHS Trust, London, UK, [5]Newham University Hospital NHS Trust, London, UK, [6]Homerton University Hospital NHS Trust, London, UK, and [7]North West London Hospitals NHS Trust, London, UK

Background: Elite controllers (EC), defined as maintaining HIV viral load <50 copies/ml in the absence of therapy, account for <1% of the HIV-1 population. Guidelines for managing HIV in pregnancy do not specifically address managing pregnancy in ECs, with a paucity of published data available. We describe the management of pregnancy & neonatal outcomes in ECs across 9 UK HIV treatment centres.

Methods: Cases were identified by treating clinician & case notes retrospectively audited, with anonymised data analysed centrally. Pregnant women with HIV (HIV-2 negative) with viral load <50 copies/ml & no current/preceding antiretroviral therapy (ART) within 6 months (unless for prevention of mother-to-child transmission) were included.

Results: 25 singleton pregnancies were identified in 20 women from 9 treatment centres over 12 years (1999-2011). Mean CD4 count at diagnosis was 609 cells/μL. 11/20 women were diagnosed antenatally. Median age at estimated delivery date (EDD) was 30 years. 55% of women were from sub-Saharan Africa. ART was restricted to zidovudine monotherapy (ZDVm) in 72% (18/25) of pregnancies, for whom pre-labour Caesarean section (PLCS) was planned in 13, & spontaneous vaginal delivery (SVD) planned in 5. 7/25 received combination ART**:** 3 triple nucleoside analogue (NRTI), 4 a protease inhibitor + 2NRTIs; and SVD was planned for 6, PLCS for 1. Mean gestation at start for ZDVm + PLCS was 30 weeks (range 24–34); 28.2 weeks for ZDVm + SVD (range 26–30); 27 weeks for cART (range 24–33). 60% deliveries were by PLCS, 24% were SVD & 16% emergency LSCS. Intravenous ZDV was used in 46.6% (7/15) of ZDVm pregnancies, 1/7 cART pregnancies, where data available. All pregnancies resulted in live births; 23/25 delivered after 37 weeks gestation. In 23/25 pregnancies viral load was <50 copies/ml at delivery, 1/25 had viral load 205 copies/ml at delivery, 1/25 data unavailable. 23/25 infants were given 4 weeks ZDVm, 2/25 no data available. 12/25 infants were HIV antibody negative at 18 months, 2/25 12-week HIV proviral DNA negative (18-month antibody unavailable), 3/25 infant status not yet known (recent delivery), 8/25 no data.

Conclusions: Although the majority ECs are managed with ZDVm (72% compared to 9% in UK), considerable differences in practice were observed. No transmissions were reported but larger numbers are needed to confirm the optimal approach for efficacy & safety.

O2

A multicentre case series of Raltegravir use in pregnancy

M Rosenvinge[1], O Dosekun[2], M Rodgers[3], S Ramsay[4], K Perez[5], R Foster[6], R Shah[7], A Hughes[8], J Whetham[9], S Sundaram[10], S Lowe[11], A Umaipalan[12], S Roedling[13], K Schroeder[14], J Russell[4], S Kegg[4], O Mcquillain[5], M Kingston[5], G Taylor[6], D Hawkins[8], Y Gilleece[9], R Mani[10], L Sarner[11], J Anderson[12], S Estreich[15], D McKeown[16], A de Ruiter[2] and P Hay[16]

[1]St George's Hospital NHS Trust, London, UK, [2]Guy's and St Thomas' NHS Trust, London, UK, [3]Croydon University NHS Trust, London, UK, [4]South London Healthcare NHS Trust, London, UK, [5]Central Manchester NHS University Hospital Trust, Manchester, UK, [6]Imperial College Healthcare NHS Trust, London, UK, [7]Barnet and Chase Farm Hospitals NHS Trust, London, UK, [8]Chelsea and Westminster NHS Trust, London, UK, [9]Brighton and Sussex University Hospitals NHS Trust, Brighton, UK, [10]Portsmouth Hospitals NHS Trust, Portsmouth, UK, [11]Barts and The London NHS Trust, London, UK, [12]Homerton University Hospital NHS Trust, London, UK, [13]Mortimer Market Centre, Central and North West London NHS Foundation Trust, London, UK, [14]The Royal Bournemouth and Christchurch Hospitals NHS Foundation Trust, Bournemouth, UK, [15]Epsom and St Helier University Hospitals NHS Trust, Sutton, UK, and [16]St George's, University of London, London, UK

Background: There are few published data on the use of Raltegravir (RAL) in pregnancy despite increasing use in this context.

Aim: To describe the current use, efficacy and tolerability of RAL in pregnant women in UK.

Methods: A multicentre retrospective case notes review of RAL-exposed pregnancies.

Results: 59 pregnancies identified in 56 women across 16 sites. 48/59 (81%) Black African. Mean age 31 years. 21/59 (36%) diagnosed during current pregnancy. 13/59 (22%) on antiretroviral therapy (ART) at conception. 2 Hepatitis B/C co-infected. At RAL initiation, the median CD4 count was 320, viral load (VL) 957 copies/ml (range <20–17400000 copies/ml) and gestational age 31 weeks. Patients were exposed to a median of 2 ART classes, with 23/59 (39%) having confirmed ART resistance and 5/59 (8%) ART naive. Reasons for starting RAL were high VL**:** 35/59 (59%) including 2 cases HIV seroconversion; intolerance/toxicity on previous regimen: 17/59 (29%) including 6 cases hepatotoxicity (5/6 resolved); history of resistance: 12/59 (20%); late presentation: 11/59 (19%); to preload neonate/reduce VL in threatened pre-term birth: 4/59 (7%); and planned amniocentesis: 2/59 (3%). 4/59 (7%) conceived on RAL. Toxicities reported on RAL included nausea: 7/59 (12%); grade 1–4 hepatotoxicity: 5/59 (8%) which improved in 4/5 women. 6/59 cases stopped RAL during pregnancy: confirmed RAL resistance 1; possible hepatotoxicity 1 (later diagnosed as obstetric cholestasis); no longer needed 3; unknown 1. 11 women had therapeutic drug monitoring (TDM) in 3rd trimester/at delivery which all showed therapeutic RAL levels (>15ng/ml), range 22–2318ng/ml. There were 57 live births (2 pregnancies ongoing). 37/57 (65%) achieved VL <50 copies/ml and 53/57 (93%) <400 copies/ml at delivery. Median gestation at delivery was 39 weeks. Mode of delivery: 25/57 (44%) elective caesarean section (CS) and 19/57 (33%) emergency CS. Mean birth weight was 3.1kg (range 0.92–4.86kg). 7 neonates experienced adverse events; none thought secondary to RAL. 36/57 (63%) received AZT monotherapy. 7 had RAL TDM at birth; showing levels 1.6–7.4 times greater than paired maternal samples (range 120–3781ng/ml). To date 1 vertical transmission has been reported; detected by HIV DNA PCR at 9 weeks.

Conclusion: RAL is used in the management of pregnant women where a rapid reduction in HIV VL and a favourable toxicity profile is required. TDM of RAL in neonates demonstrates effective placental transfer.

O3

HIV positive pregnant women who receive less than two weeks of antiretroviral therapy before delivery: why does it occur?

C Modestini[1], S Roedling[2], C French[3], N Martin[2], P Tookey[3] and F Burns[1]

[1]Research Department of Infectious and Population Health, University College London, London, UK, [2]Mortimer Market Centre, Central and North West London Foundation Trust, London, UK and [3]MRC Centre of Epidemiology for Child Health, Institute of Child Health, University College London, London, UK

Background: Receiving at least two weeks of antiretroviral therapy (ART) prior to delivery greatly decreases the risk of mother to child transmission of HIV. The aim of this study was to explore the circumstances of women who received <14 days ART.

Methods: A descriptive analysis of pregnancies extending beyond 34 weeks in which women received <14 days ART prior to delivery between January 2005 and May 2010. Eligible pregnancies were identified from the National Study of HIV in Pregnancy and Childhood (NSHPC), the confidential comprehensive national reporting scheme for pregnancies in HIV positive women. Questionnaires were sent to units with eligible women. Data on key characteristics were collected and compared with those of women reported to the NSHPC who received ≥14 days ART in the same period.

Results: There were 103 eligible pregnancies. 76 (74%) completed questionnaires were returned. In keeping with the overall NSHPC population the majority of women (86%) were of African origin and median age was 31 years. Compared with women who received ≥14 days ART, women who received <14 days were more likely to be diagnosed during their pregnancy (76% v 40%, p<0.001) and gestational age at delivery was slightly longer (39 v 38 weeks). Where reported the main reasons for short duration ART in women diagnosed during pregnancy was late booking (26/56, 46%), HIV denial (6/56, 11%) and treatment refusal (11/56, 20%); whilst for those diagnosed prior to conception it was treatment refusal (6/16, 28%). Eleven women had no ART at all. Six women were diagnosed at term. Twelve women had a vaginal delivery; of these, 2 had a viral load <50 at delivery documented. 93% of infants were documented as receiving ART; of these, 92% started within 4 hours of birth, and 73% were treated according to BHIVA guidelines. Mother to child transmission in women who received <14 days ART was 13% (11/88 infants, 15 indeterminate infection status at last report).

Conclusions: Targeted interventions are needed to reduce the number of women receiving insufficient or declining ART prior to delivery as unacceptably high rates of vertical transmission are evident in this patient group. In particular, interventions to improve access to antenatal care for migrant women could reduce late booking and the use of rapid testing techniques could facilitate prompt diagnosis and expedite treatment initiation. Research to establish effective management strategies in women who refuse ART is required.

O4

The impact of HIV infection and antiretroviral therapy on the predicted risk of Down's syndrome

TG Charlton[1], JM Franklin[1], M Douglas[1], CE Short[1], I Mills[2], R Smith[2], A Clarke[3], PA Tookey[4], M Cortina-Borja[4], J Smith[1] and G Taylor[1]

[1]Imperial College London, London, UK, [2]Birmingham Women's Hospital, Birmingham, UK, [3]St Thomas' Hospital, London, UK and [4]University College London, London, UK

Background: An effect of HIV infection and of antiretroviral therapy (ART) on maternal levels of α-fetoprotein (αFP), total human chorionic gonadotrophin (hCG) and unconjugated estriol (UE3) has been reported. Objectives**:**
To explore whether the results of the 'triple test' are altered in HIV infected women, and/or by antiretroviral therapy and whether this leads to increased numbers of predicted 'high risk' Down's syndrome reports in a case-control study.

Methods: Down's syndrome screening results in 72 HIV positive-women were compared with results from age and ethnicity matched HIV-negative controls. Concentrations of each analyte were compared by serostatus and ART by student's T-test, categorical variations by Chi-square and multivariate regression linear to determine independent risk factors for a high risk Down's syndrome result. The observed Down's syndrome incidence in the offspring of HIV-positive women was obtained from national HIV surveillance data.

Results: Cases were twice as likely to receive a 'high-risk' result as uninfected controls (OR 2.14, CI 1.79 -2.57). Compared with controls, women with untreated HIV had an elevated mean hCG (1.64 v 1.07, p=0.016) and a higher overall predicted risk of their infant having Down's syndrome (1/909 versus 1/33333, p=0.03). Among HIV infected, ART treated women analyte concentrations and the final predicted risk of Down's syndrome were similar to uninfected controls. Review of national surveillance data did not suggest a higher than expected incidence of Down's syndrome in the offspring of HIV-positive women.

Conclusion: Using the triple test (αFP, hCG, UE3), HIV-positive women are twice as likely to receive a high-risk screening result as uninfected women. Since there is no epidemiological association between maternal HIV infection and Down's syndrome this represents a falsely elevated risk. Where untreated HIV positive women present too late for the integrated test (which includes nuchal translucency and has not been associated with such risk) care should be taken interpreting high-risk screening results to avoid unnecessary invasive diagnostics with the attendant risks of foetal loss and HIV transmission.

O5

Intimate partner violence in women living with HIV attending an inner city clinic in the United Kingdom: prevalence and associated factors

R Dhairyawan[1], S Tariq[2], R Scourse[1] and K Coyne[1]

[1]Homerton University Hospital, London, UK, and [2]City University, London, UK

Background: Intimate partner violence (IPV) is defined as physical, sexual or psychological harm by a current or former partner. Previous studies in non-UK settings have shown that women living with HIV are more likely to experience IPV than uninfected women. There is a paucity of data on IPV in women living with HIV in the UK and how it may affect access to healthcare. We present results from a study exploring IPV in an inner city, outpatient HIV clinic.

Methods: We conducted a cross-sectional study of women aged ≥ 18 years attending our outpatient HIV service in May-December 2011. Participants completed a standardised questionnaire. Exposure to IPV was ascertained using a validated tool. Clinical data were collected from patient records. Lifetime experience of IPV was defined as having ever experienced humiliation, fear, sexual or physical violence due to a partner. Ethnicity was categorised as African-born black, other black, white and other. Logistic regression models were fitted to estimate adjusted odds ratios (AOR).

Results: Of the 314 women invited to participate, 198 (63%) women consented to be in the study. This analysis is based on 191 women with available data on IPV. The median age of the sample was 38 years (range 21–71 years); 74.1% were African-born black. Over half of all women (52%, 99/191) reported experiencing IPV ever, with 14.1% (27/191) experiencing IPV within the last year. Nearly 1 in 7 women (27/191) had experienced IPV during pregnancy. Lifetime experience of IPV was associated with self-reported mental health problems (AOR 3.44; 95% Confidence Interval [CI] 1.24, 9.57; p<0.05) and other black ethnicity (AOR?4.63; 95% CI 1.06, 20.11; p<0.05). Each additional year in age was associated with a decreased likelihood of reporting lifetime IPV (AOR 0.92; 95% CI 0.86, 0.97; p<0.05). IPV was not associated with immigration or socioeconomic status, educational background or substance misuse (all p>0.1).

Conclusion: In the first study to explore IPV in women living with HIV in the UK, over half reported lifetime experience of IPV. This is higher than the local prevalence in women in primary care. We found associations between IPV and mental health problems, younger age and other black ethnicity. In view of the high prevalence of lifetime IPV, we suggest universal screening for IPV in women attending HIV clinics including in antenatal care, and advocate greater awareness of IPV among HIV healthcare professionals.
[BHIVA Research Awards winner 2010: Rageshri Dhairyawan]

O6

Mortality amongst HIV-infected young people following transition to adult care: an HIV Young Persons Network (HYPNet) audit

R Fish[1], E Jungmann[1], A Judd[2] and C Foster[3]
[1]Mortimer Market Centre, London, UK, [2]MRC Clinical Trials Centre, London, UK, and [3]Imperial College Healthcare NHS Trust, London, UK

Background: Mortality in young adults following transition from paediatric to adult care is currently unreported in the UK. We conducted a multicentre survey to establish the number of deaths in this group and factors associated with mortality, including adherence to antiretroviral therapy (ART), co-morbidity and mental health issues.
Methods: A proforma was disseminated via HYPNet to 15 participating adult HIV services caring for infected young people, requesting reports of deaths up to 30/09/11. Deaths were matched to the Collaborative HIV Paediatric Study (CHIPS), a clinical database of infected children receiving paediatric care in the UK/Ireland.
Results: 305 children transitioned to adult care, of whom 11 died from Sept-03 to Mar-11. Median age at transfer was 17 yrs (range 15–21), median age at death 21 yrs (range 17–24). Causes of death; suicide (2), end stage AIDS (2), progressive multifocal leucoencephalopathy (1), cerebral lymphoma (1), intracerebral bleed, prior cerebral toxoplasmosis (1), respiratory infections (2), sepsis with renal failure/HIVAN (1) and missing (1). At time of death, median CD4 count 27 cells/ul (range 0–630), 5/11 were on ART, 2 had a VL<50, (suicide (CD4 630), respiratory infection with bronchiectasis (CD4 270)). For those who died, median CD4 at transfer to adult services was 120 cells/ul (range 0–651) and 2 had VL<50. 9/11 had a history of poor adherence in paediatrics, only 4 ever had at least one VL<50 in adult care. 8/11 had ART resistance, 3 with triple class, although all had potentially suppressive regimens available. All those with poor adherence were offered multiple modes of support including**:** specialist and community nurses, health advisors, psychology and 3 had gastrostomies to aid adherence. 9/11 attended peer support. At the time of death, 6 were in education, 1 employed and 4 unemployed. 4 were fostered/adopted, 3 lived alone and 4 with parents. 6 had ever been involved with social services, 2 with youth offending. Further analyses will compare the mortality rate in adult to paediatric care.
Conclusions: These cases highlight the complex medical and psychosocial issues faced by some young adults with growing up with HIV infection. Unlike the general adult population where increasing proportion of deaths are non-AIDS related, 8/11 deaths were associated with poor adherence and advanced HIV. Novel adherence interventions and further support for mental health are required in this vulnerable cohort.

Complications of HIV Disease or Treatment

O7

Comprehensive Cardiac Magnetic Resonance Reveals HIV is Associated with High Burden of Myocardial Disease

C Holloway, N Ntusi, J Suttie, M Mahmod, G Clutton, G Hancock, E Wainwright, B Angus, M Asaad, P Beak, K Clarke, S Neubauer and L Dorrell
University of Oxford, Oxford, UK

Background: It remains controversial whether patients receiving optimal therapy for HIV have structural, functional orbiochemical cardiac abnormalities, and how combined anti-retroviral therapy (cART) influences these parameters.
Methods: In an observational study, we enrolled 104 patients with HIV (13 naive to anti-retroviral therapy) from 4 HIV centres in the UK, and 39 age matched controlswho did not have a history of cardiovascular disease. Data were collected on cardiovascular risk factors, markers of HIV infection and exposure to anti-retroviral therapy. Anthropomorphic data and plasma metabolites were obtained from each subject. Comprehensive cardiac magnetic resonance(CMR) imaging and spectroscopy were used to assess myocardial fibrosis, cardiac systolic and diastolic function, cardiac torsion, and intramyocardial lipids. Transthoracic echocardiography was used to measure cardiac diastolic function.
Results: Of patients with HIV,88% had a characteristic pattern of midwall and epicardial myocardial fibrosis in the basal infero-lateral wall of the left ventricle, irrespective of known length of disease or cART exposure, versus 16% in patients without HIV ($p < 0.001$). Compared to controls, patients taking cART had 43% higher myocardial lipids, in addition to a two-fold elevation in plasma triglycerides (both $p < 0.01$).Compared to control subjects, patients with HIV had 15% lower peak myocardial systolic strain, 24% lower peak diastolic strain (both $p< 0.01$), reduced left ventricular ejection fraction (68 +/− 1% versus 72 +/− 1%, $p<0.05$) and lower E/A ratios (1.1 versus 1.3, $p < 0.01$), which were all independent of cardiovascular risk factors. On multi-regression analysis, patients who were cART naive had an even greater reduction in cardiac systolic and diastolic function, but normal cardiac lipids.
Conclusions: For the first time, comprehensive CMR imaging and spectroscopy have been performed in patients with HIV, to demonstrate that nearly all patients with HIV, have a very high burden of myocardial fibrosis and reduced cardiac function,despite adequate therapy. Whilst cART may reverse some of the functional cardiac abnormalities, it is associated with cardiac steatosis. Further studies are required to determine if cardiac steatosis is contributing to functional alterations in patients with HIV.

O8

Coronary heart disease is associated with renal impairment in HIV positive patients

M Desai[1], A Hegazi[2], L Campbell[3], F Ibrahim[3], P Hay[2], J Fox[1] and F Post[3]
[1]Guy's & St Thomas' Hospitals NHS Foundation Trust, London, UK, [2]St George's Healthcare NHS Trust, London, UK, and [3]King's College Hospital NHS Foundation Trust, London, UK

Background: Increased rates of subclinical atherosclerosis, myocardial infarction and other coronary heart disease (CHD) events have been reported for HIV positive patients, and specific antiretrovirals have been associated with incident CHD events. Chronic kidney disease (CKD), defined by an estimated glomerular filtration rate (eGFR) <60 mL/min or proteinuria, is a major CHD risk factor in the general population. Recent data suggest that CKD is associated with an increased incidence of CHD in HIV positive patients, although the relationship between eGFR and incident CHD remains poorly defined. The objective of our study was to describe CHD incidence in an ethnically diverse HIV population and to examine the relationship between CHD and eGFR.
Methods: CHD events [MI, PTCA, CABG] were identified from HIV and cardiac databases and through elevated troponin levels in HIV positive patients followed up at 3 South London clinics between 1/2004 and 12/2009. CHD incidence rates were calculated for patients stratified by gender and ethnicity. Multivariate Poisson regression analysis was used to identify factors associated with incident CHD.
Results: 7833 patients (mean age 35 years, 64% male, 53% black ethnicity) were followed for a median of 3.77 (1.17, 7.09) years. 28 patients (0.36%) experienced 33 CHD events (MI**:** 28, PTCA/CABG: 5). Patients with CHD were older (43 years), mostly male (97%) and of white ethnicity (81%), diagnosed with HIV and treated with ART for longer, and they had lower estimated glomerular filtration rates (eGFR) (all $p<0.001$). The observed CHD incidence rate (per 1000 PYFU) was 1.69 (95% CI 1.15, 2.48) for white men, 0.80 (0.36, 1.79) for black men, and 0.50 (0.07, 3.56) for black women. Factors associated with CHD in HIV positive men were older age, undetectable HIV RNA level and reduced eGFR. In adjusted analysis, older age (IRR 1.78 [95% CI 1.18, 2.70]) and eGFR <75 mL/min (IRR 3.83 [1.09, 13.4]) remained significantly associated with CHD. No association between CHD and abacavir exposure was observed (IRR 1.00 [0.31, 3.19]).
Conclusions: We observed a low incidence of symptomatic CHD in our cohort. The association between CHD and reduced eGFR is likely to reflect the effects of cardiovascular disease on the kidney as well as the effects of kidney disease on CHD risk. Impaired renal function identifies patients at increased risk of CHD events.

O9

Polymorphisms at genes involved in the purine metabolic pathway influence the risk of non-cirrhotic portal hypertension in HIV-infected patients

M Cevik[1], J Morello[2], E Vispo[2], J Rockstroh[3], A Scourfield[1], E Alvarez[2], C Boesecke[3], S Rodriguez-Novoa[1], J-C Wasmuth[3], V Soriano[2] and M Nelson[1]
[1]*Chelsea and Westminster Hospital, London, UK,* [2]*Infectious Diseases Department, Hospital Carlos III, Madrid, Spain, and* [3]*University of Bonn, Bonn, Germany*

Background: Non-cirrhotic portal hypertension (NCPH) is a rare but potentially life-threatening complication in HIV-infected patients. Prior exposure to didanosine (ddI) has been recognised as an important predisposing factor. However, it is unclear why NCPH only develops in a subset of ddI exposed patients. Herein, we investigated whether polymorphisms at genes coding for enzymes involved in the purine metabolic pathway could influence the risk of NCPH in HIV-infected patients.
Methods: A prospective, multicenter, case-control study was funded by NEAT to investigate the role of pharmacogenomics in the development of NCPH in HIV-infected patients. Demographics, laboratory data and PBMC were recorded from all individuals who fit the diagnosis of NCPH defined by Vispo et al. (Curr Opin Infect Dis 2011;24:12–18). Patients with HCV/HBV coinfection, alcohol abuse and/or evidence of cirrhosis were excluded. Three controls were chosen for each case, adjusted for gender, age, CD4 counts, plasma HIV-RNA level and site. Tagging SNPs at 4 enzymes involved in the purine metabolic pathway (inosine triphosphatase, 5′-nucleotidase cytosolic II, purine nucleoside phosphorylase and xanthine oxidase) was performed using SNPlex microarray technology.
Results: A total of 80 individuals were finally examined; 22 with NCPH and 58 matched controls. Overall, 67% were male, median age 47 years (IQR 44–53), and median ddI exposure 66 months (IQR 48–86). There were no significant differences comparing NCPH and controls. A total of 36 tagging SNPs were analysed. Two SNPs located at the 5′-nucleotidase cytosolic II gene were associated with NCPH: 48% of patients carrying genotype rs11191561CG/GG vs 17% with CC (p=0.003) and 40% of patients with genotype rs11598702CC/CT vs 9% with TT (p=0.003). Another two alleles located at the xanthine oxidase gene were also associated with NCPH: 71% of patients carrying rs1429376AA vs 23% with CC/AC (p=0.015) and again 71% of patients with rs1594160AA compared to 23% with CC/AC had NCPH (p=0.015). Interestingly, there was a cumulative risk of NCPH for these four SNPs: 7%, 26%, 42%, 50% and 100%, respectively, for none, 1, 2, 3 or all SNPs (p=0.001).
Conclusion: SNPs at the 5′-nucleotidase and xanthine oxidase genes influence the risk of NCPH in HIV-infected patients with prior exposure to ddI. Hypothetically, endothelial damage at portal vessels caused by increased levels of harmful purine metabolites of ddI taken orally might explain this finding.

O10

Depression and virological status among UK HIV outpatients: results from a multicentre study

F Lampe[1], A Speakman[1], A Phillips[1], L Sherr[1], R Gilson[1], M Johnson[2], M Fisher[3], J Anderson[4], E Wilkins[5], C Broussard[1], J McDonnell[1], N Perry[3], R Scourse[4], V George[5], G Hart[1], A Johnson[1], S Collins[6], A Miners[7], J Elford[8], A-M Geretti[9], W Burman[10] and A Rodger[1]
[1]*University College London, London, UK,* [2]*Royal Free Hampstead NHS Trust, London, UK,* [3]*Brighton and Sussex University Hospitals NHS Trust, Brighton, UK,* [4]*Homerton University Hospital NHS Trust, London, UK,* [5]*Pennine Acute Hospitals NHS Trust, Manchester, UK,* [6]*HIV i-Base, London, UK,* [7]*London School of Hygiene and Tropical Medicine, London, UK,* [8]*City University, London, UK,* [9]*University of Liverpool, Liverpool, UK, and* [10]*University of Colorado, Colorado, USA*

Background: Mental health has been highlighted as a current priority area in HIV care, but there have been few large studies of mental health issues among UK HIV patients.
Methods: We used a validated diagnostic questionnaire to assess the prevalence of depression, and its association with virological status, in ASTRA (Antiretrovirals, Sexual Transmission Risk and Attitudes), a multicentre UK study of over 3000 HIV outpatients in 2011/12. The 'PHQ-9' symptom questions classified participants according to (i)presence/absence of 'depressive disorder' and (ii)'depression symptom score' (none; minimal; mild; moderate; severe). Participants also reported any current (medical or other) treatment for depression. ART non-adherence was defined as ≥1 missed dose in the past 2 weeks. Latest viral load (VL) at questionnaire completion was recorded from clinic databases. Associations were assessed using Chi-squared tests and logistic regression.
Results: Data are presented for the first 1227 participants [18% women; 73% MSM; 9% heterosexual men]. Mean age was 45.3 years. Ethnic classification was:70% white; 17% Black African; 13% other ethnicity. 925 patients (75.4%) were currently on ART for ≥3 months, of whom 9.5% had latest VL>50c/mL. Overall, the prevalence of depressive disorder was 22.2% (273/1227) and did not vary by risk group, age, ethnicity, or ART use(p>0.2). Among the 925 patients on ART, the prevalence of VL>50c/mL was much higher among those with depressive disorder compared to those without [16.3% (34/209) vs 7.5% (54/716), p<0.001]. Prevalence of VL>50c/mL rose with increasing depression symptom score [5.7%; 6.0%; 11.7%; 12.0%; 21.7% for 5 categories from none to severe, p<0.001 for trend]. The association of depressive disorder with VL>50c/mL persisted after adjustment for non-adherence [odds ratios(95% CI):2.4(1.5, 3.8) and 2.3(1.4, 3.6) for unadjusted and adjusted respectively]. Of all 273 patients with depressive disorder, 120 (44.0%) were receiving treatment for depression. A further 140 patients were being treated for depression with no depressive disorder symptoms [total treated or symptoms:413/1227 (33.7%)].
Conclusions: One in three UK HIV outpatients were either receiving treatment for depression or had symptoms of depressive disorder. Among ART-treated patients, depressive symptoms were strongly and consistently associated with non-suppression of VL, emphasising the importance of identification and management of depression in HIV clinical care.

O11

Microglial cell activation is visualised with [11C]-PK11195 Positron Emission Tomography (PET) in neuro-asymptomatic HIV infected subjects on effective antiretroviral therapy

L Garvey[1], N Pavese[2], M Politis[2], A Ramlackhansingh[2], S Taylor-Robinson[2], D Brooks[2] and A Winston[2]
[1]*Imperial College Healthcare NHS Trust, London, UK, and* [2]*Imperial College London, London, UK*

Background: Increased microglial cell activation has been reported in HIV infected subjects with HIV-encephalopathy but to date, has not been demonstrated in neurologically-asymptomatic individuals. The aim of this study was to investigate for evidence of microglial cell activation in neurologically-asymptomatic HIV infected subjects on effective combination antiretroviral therapy (cART) and correlate findings with cognitive performance.
Methods: A case-control study compared neurologically-asymptomatic adults with chronic HIV infection (cases) and healthy volunteers (controls). Positron emission tomography (PET) was performed using [11C]-PK11195 (PK11195), highly specific for translocator protein 18kDA receptors on activated microglial cells. Cluster analysis was used to extract and identify voxels that mirrored distribution within a normal population. Cognitive speed, accuracy and executive function were assessed using a validated, computerised tool. Between-group comparisons of PK11195 binding were performed throughout the brain. Statistical maps were visualized at a threshold of $p<0.01$ (Z-score=2.33) and clusters with significant differences $p<0.05$ are reported. Correlations between areas of increased PK11195 binding with cognitive performance were assessed using linear regression.
Results: 7 Caucasian cases were compared with 9 age and ethnicity matched controls. All cases were receiving cART with plasma HIV RNA<50 copies/mL and mean [SD] current and nadir CD4+ counts were 490 [152] and 269 [180] cells/uL. Time since HIV diagnosis and of virological suppression were mean [range] 8.8 [3–22] and 3.6 [0.5–11] years respectively. Cases showed significantly greater PK11195 binding in the corpus callosum (p<0.001), anterior cingulate (p<0.001), posterior cingulate (p=0.008), temporal (p=0.026) and frontal (p=0.038) anatomical locations. Significant correlation between poorer executive function performance and greater PK11195 binding was observed in the anterior cingulate (p=0.031), corpus callosum and posterior cingulate (p=0.001), whereas no correlation between PK11195 and cognitive speed, accuracy, nadir CD4+ count or time since HIV diagnosis were observed (p>0.1 all measures).

Conclusions: Despite effective cART, microglial cell activation is evident in neurologically-asymptomatic HIV infected subjects with the degree of microglial cell activation associated with cognitive performance. We postulate ongoing neuroinflammation may be one of the pathogenic mechanisms associated with neurocognitive impairment in the cART era.

O12

Factors associated with cerebrospinal fluid HIV RNA in HIV infected subjects undergoing lumbar puncture examination in a clinical setting

T Rawson[1], D Muir[2], N Mackie[2], L Garvey[2], A Everitt[2] and A Winston[2]

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

Background: Cerebrospinal fluid (CSF) HIV RNA load may be associated with central nervous system (CNS) disease in HIV infected subjects. We investigated parameters associated with CSF HIV RNA within a large clinical cohort.
Methods: All HIV infected subjects undergoing CSF examination including assessment of CSF HIV RNA at St. Mary's Hospital, London, UK between January 2008 and October 2010 were included. Parameters associated with a detectable CSF HIV RNA load were assessed using linear regression modelling. CSF viral escape was defined as CSF RNA >0.5log10 copies/mL greater than plasma HIV RNA and >200 copies/mL where plasma HIV RNA <50 copies/mL.
Results: Of 142 subjects, 99 were receiving combination antiretroviral therapy (cART). Plasma HIV RNA was <50 copies/mL in 69 subjects. CSF examination was performed for investigation of presumed HIV encephalopathy (IxHE, n=57), other CNS diseases considered HIV related (n=39), syphilis (n=20) and CNS presentations not considered HIV related (n=26). CSF viral escape was present in 30/142 (21%) subjects overall and in 9/69 (13%) of those on cART with undetectable plasma HIV RNA. Overall, plasma HIV RNA load was significantly associated with detectable CSF HIV RNA (p=<0.001). In subjects with plasma HIV RNA <50 copies/mL, only CNS penetration effectiveness (CPE, 2008) score of <2 was significantly associated with detectable CSF HIV RNA (p=0.044). In patients undergoing LP for IxHE both plasma HIV RNA and CPE scores were independently associated with detectable CSF HIV RNA (p= 0.019 & 0.003 respectively) which was not observed in subjects undergoing CSF examination for other medical reasons.

Table 2: Description of cerebrospinal fluid HIV RNA

Group	Total number of patients	Number (%) with CSF HIV RNA greater than plasma HIV RNA	Number (%) with CSF viral escape *
Overall	142	37 (26%)	30 (21%)
On cART	99	27 (27%)	21 (21%)
On cART and plasma HIV RNA undetectable**	69	16 (23%)	9 (13%)
Investigation of HIV Encephalopathy	41	8 (20%)	3 (7%)

Conclusions: In a clinical setting, CSF viral escape is observed frequently in 21% of subjects and is associated with different parameters depending on the clinical scenario.

O13

HIV Status does not Impact on Outcome in Patients with Hodgkin Lymphoma Treated with ABVD Chemotherapy in the HAART Era

C Orkin[1], S Montoto[2], K Shaw[3], J Okosun[4], S Gandhi[5], P Fields[6], A Wilson[2], M Shanyinde[7], K Cwynarski[4], R Marcus[5], J De Vos[1], AM Young[3], M Tenant-Flowers[5], M Johnson[4], D Chilton[6], J Gribben[2] and M Bower[3]

[1]Barts and The London NHS Trust, London, UK, [2]Barts Cancer Institute, Queen Mary University London, London, UK, [3]Chelsea and Westminster Hospital, London, UK, [4]Royal Free Hospital, London, UK, [5]King's College Hospital, London, UK, [6]Guy's and St Thomas' Hospital, London, UK, and [7]Centre for Statistics in Medicine, University of Oxford, Oxford, UK

Background: The prognosis of patients with HIV and non-Hodgkin lymphoma (NHL) has improved considerably since the advent of HAART, approaching that of patients with NHL in the general population when treated with the same chemotherapy regimens. However, it is not clear whether the same holds true for patients with Hodgkin lymphoma (HL).

Aim: To analyze the outcome of patients diagnosed with HL treated with ABVD in the HAART era according to HIV status.
Patients: From 1997 to 2010, 237 patients (92 with HIV infection) were newly diagnosed with HL at 5 university hospitals in London and consecutively treated with ABVD chemotherapy. Patients with HIV were older (median age: 41 years *vs* 31, p<0.001) and more were men (88% *vs* 59%, p<0.001). The histology subtype was more frequently mixed cellularity in HIV patients (54%) than in non-HIV (19%, p<0.001). In addition, HIV positive patients had more advanced stage at diagnosis (stage III-IV: 80% *vs* 33%, p<0.001), B-symptoms (81% *vs* 36%, p<0.001), lower Hb level (<10.5g/dL: 46% *vs* 20%, p<0.001) and lower albumin level (<4g/dL: 76% *vs* 35%, p<0.001). Patients with HIV infection had more frequently high risk disease according to the International Prognostic Score than HIV negative patients (IPS≥3: 71% *vs* 22%, p<0.001). Amongst HIV patients, the HIV viral load (VL) was undetectable at the time of HL diagnosis in 52 of 86 patients with available data. The median VL for the remainder was 4,563 (range: 3,060–6,066). Forty-seven patients (53%) had a CD4 count <200/mL. All patients were treated with 4–6 cycles of ABVD chemotherapy with or without radiotherapy to residual/bulky areas according to local policies. Ninety patients with HIV infection received HAART concomitantly during chemotherapy.
Results: The complete response (CR) rate in HIV positive and negative patients was 74% and 81%, respectively (p=NS). Fifty-one patients (21%) received consolidation radiotherapy. After a median follow-up of 59 months (range: 8–172 months), 40 patients relapsed at a median time of 7 months (range: 1–106). The median duration of response for HIV positive and negative patients was 33 months and 48 months, respectively (p=NS). Thirty-three patients have died: in 25 cases of HL; 2 patients due to toxicity and 5 patients due to other causes. Five-year event-free survival (EFS) was 59% (95%CI: 46–69) for HIV patients and 65% (95%CI: 56–72) for the remainder (p=NS). Five-year overall survival (OS) was 79% (95%CI: 67–87) and 88% (95%CI: 80–92) for HIV positive and negative patients respectively (p=0.06). HIV status did not predict OS or EFS on multivariate analysis including all variables comprising the IPS and HIV status.
Conclusions: This long follow-up study demonstrates that patients diagnosed with HL in the setting of HIV infection have a more extensive disease with adverse prognostic factors. However, when treated with ABVD chemotherapy HIV positive status does not adversely affect OS or EFS.

O14

Immunological manifestations of increasing age, ART duration and time since diagnosis within the ageing HIV-1+ cohort

S Westrop[1], S Mandalia[1], G Moyle[2], M Bower[2], M Nelson[2] and N Imami[1]

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

Background: HIV-1 infection in older adults is associated with faster disease progression. Average patient age has risen since the introduction of combination antiretroviral therapy (cART), and so delineating the hypothesized compounded effects of age and HIV-1 is relevant for future therapeutics. HIV-1$^+$ individuals on cART were recruited to the study. Functional and phenotypic data was collected to analyse the impact of age (median 48 years; range 29–71), duration of ART (median 11 years; range 0–21) and time since HIV-1$^+$ diagnosis (median 14; range 1–26) on the T-cell immune profile of the ageing HIV-1$^+$ cohort.
Methods: T cell responses to HIV-1-Gag peptides (Gag_{MHCI} and Gag_{20}), CMV and Tetanus toxoid in 58 HIV-1$^+$ cART-treated individuals were assessed by proliferation, IFN-γ, perforin and IL-2 production. Flow cytometry investigated expression of markers associated with T-cell differentiation (CD27/CD28), activation (HLA-DR/CD38), co-stimulation/inhibition (CD28/CTLA-4), senescence (CD57) and exhaustion (PD-1). Data were analysed by univariate and multivariable regression models (SAS, v9.1.3) incorporating patient age, time since HIV-1+ diagnosis and ART duration, with significance defined as p<0.05.
Results: Time since HIV-1$^+$ diagnosis was a significant independent predictor of the increase in IFN-γ response to HIV-1 Gag_{20} and rise in IL-2 production to CMV when adjusted for patient age and ART duration (p=0.040, r^2=0.17; p=0.014, r^2=0.45 respectively). Patient age, adjusted for ART duration and time since HIV-1$^+$ diagnosis, independently predicted the decline in the IL-2 response to Gag_{20} (p=0.029, r^2=0.35), increase in CD57+ CD8 T cells (p=0.048, r^2=0.07) and intermediate CD28+CD27- CD4 T cells (p=0.007, r^2=0.34), and the decrease in CD28+, PD-1+ and early CD28+CD27+ CD8 T cells (all p<0.04, r^2≥0.10). Increasing ART duration independently predicted the decline in

CD38+, CD38+HLA-DR- and CD27+ CD4 T cells when adjusted for patient age and time since HIV-1$^+$ diagnosis (all p≤0.04, r^2≥0.12).

Conclusions: Decline in Gag-specific IL-2 production, increased senescence, decreased co-stimulation and reduced early CD8 T cells, are characteristic of HIV-1 immune dysfunction and were independently predicted by advancing patient age. Although age significantly contributes to changes in T-cell function and phenotype, ART duration and time since HIV-1$^+$ diagnosis proved to be important explanatory variables of the distorted immune profiles of the ageing HIV-1$^+$ cohort.

O15

The antiviral inhibitory capacity of CD8+ T cells predicts the rate of CD4+ cell decline in HIV-1 infection

H Yang[1], H Wu[2], G Hancock[1], G Clutton[1], N Sande[3], X Xu[1], H-P Yan[2], X Huang[2], B Angus[3], K Kuldanek[4], S Fidler[4], T Denny[5], J Birks[1], A McMichael[1] and L Dorrell[1]

[1]Oxford NIHR Biomedical Research Centre, University of Oxford, Oxford, UK, [2]Capital Medical University, Beijing, China, [3]Oxford University Hospitals NHS Trust, Oxford, UK, [4]Imperial College London, London, UK and [5]Duke University, N Carolina, UK

Background: Lack of an immune correlate of HIV-1 control is a significant obstacle to the development of an effective vaccine. Rare individuals who maintain low or undetectable plasma viral loads without antiretroviral therapy (ART) show potent CD8+ T cell-mediated suppression of HIV replication in vitro. Whether this is a determinant of the rate of progression in viraemic individuals is unknown.

Methods: We developed a quantitative assay to measure the capacity of ex vivo CD8+ T cells to inhibit HIV-1 replication in vitro. We examined CD8+ T cell antiviral activity in 50 HIV-seropositive ART-naive adults with diverse progression rates. Linear mixed models were used to determine whether CD8+ T cell antiviral function could explain inter-individual variation in the rate of CD4+ cell decline.

Results: There was a significant interaction between CD8+ T cell antiviral activity in vitro and the rate of CD4+ cell decline in chronically infected individuals followed for a median 4.5 years (n = 30, p <0.0001). In a second prospective analysis of 20 recently infected subjects with a known date of HIV-1 acquisition, CD8+ T cell antiviral activity strongly predicted subsequent CD4+ cell decline (p <0.0001) and explained up to 73% of the inter-individual variation in CD4 slope during 3 years' follow-up. In addition, it was inversely associated with viral load set-point (r = -0.68, p = 0.002).

Conclusions: The antiviral inhibitory capacity of CD8+ T cells is highly predictive of CD4+ cell loss in the first 3 years of HIV-1 infection. It has potential as a benchmark of effective immunity in vaccine evaluation. Furthermore, if these findings are confirmed in larger prospective cohorts, assessment of CD8+ T cell function could have prognostic value in patients with CD4+ cell counts above current thresholds for ART initiation.

Prevention and Testing

O16

HIV indicator diseases across Europe study (HIDES I): results from the pilot phase

M Rayment[1], A Sullivan[1], D Raben[2], J Reekie[3], B Gazzard[1] and J Lundgren[2] on behalf of the HIV Indicator Diseases Across Europe Study Group

[1]Chelsea and Westminster NHS Foundation Trust, London, UK, [2]Copenhagen HIV Programme, University of Copenhagen, Copenhagen, Denmark, and [3]University College London, London, UK

Objectives: To define the methodology to deliver a European wide survey of HIV prevalence in proposed indicator diseases or conditions (ID). To identify ID with the recommended cost-effective HIV prevalence of > 0.1%.

Methods: From Autumn 2009, all individuals not known to be HIV positive, presenting for care of one of eight ID (Table 1) were prospectively offered an HIV test. The following data were captured: HIV test result, previous testing behaviour, past medical history, and demographic data.

Results: 3588 individuals were included in 33 surveys in sixteen countries. Sixty-six were newly diagnosed HIV positive (overall prevalence: 1.8% [95% CI:1.4–2.3]). All eight ID fulfilled the criterion of demonstrating an HIV prevalence of >0.1% (Table 1). 83% of individuals diagnosed HIV-positive were male, 58% identified as MSM, and 9% were injecting drug users. 52% had previously tested HIV negative (median time since last test: 1.58 years). The odds of a positive test result was independent of the presenting ID (p>0.1), but was dependent on the individual being non-white (odds ratio (OR): 5.2 [2.2–12.6] p=0.0002), MSM (OR 23.7 [10.2–55.2] p<0.0001), actively injecting drugs (OR 10.9 [3.5–33.5] p<0.0001) or testing in a European region other than the northern region (p<0.05).

INDICATOR DISEASE	Individuals having HIV test (n)	HIV positive (n)	Prevalence (%) (95% CI)
Total	3588	66	1.84 (1.42-2.34)
A. Sexually transmitted infection	764	31	4.06 (2.78-5.71)
B. Malignant lymphoma	344	1	0.29(0.006-1.61)
C. Cervical or anal dysplasia or cancer	542	2	0.37 (0.04-1.32)
D. Herpes zoster	207	6	2.89(1.07-6.21)
E. Hepatitis B orC	1099	4	0.36(0.10-0.93)
F. On going mononucleosis-like illness	441	17	3.85(2.26-6.10)
G. Unexplained leukocytopenia	94	3	3.19(0.66-9.04)
H. Seborrheic dermatitis/exanthema	97	2	2.06(0.25-7.24)

Conclusions: HIDES I has successfully described a method to identify diseases that should prompt routine testing for HIV infection. Given all 8 ID evaluated exceeded the recommended HIV prevalence of >0.1%, all individuals in the presenting to any health care setting with one of these ID should be recommended to have an HIV test. A strategy is currently being developed in collaboration with ECDC and WHO Europe aimed at guiding the implementation of this novel public health initiative across Europe.

O17

General Medical Council guidance in relation to testing for HIV in patients lacking mental capacity: a national survey of opinion from Intensive Care

A Pryce[1] and M Dodd[2]

[1]Royal Hallamshire Hospital, Sheffield, UK, and [2]Northern General Hospital, Sheffield, UK

Background: A majority of patients in Intensive Care Units (ICUs) lack capacity to consent to investigation and treatment. General Medical Council (GMC) guidance informs clinical management but adherence in the context of a critically ill patient may be affected by individual clinical opinion. Challenges in critical care include limited history, multisystem disease and unpredictable return of mental capacity in the context of a life-threatening illness. Accurately identifying and testing patients with HIV using 'high-risk' behaviour or 'indicator illness' models pose limitations.

Methods: A national survey examining HIV testing in ICUs was developed in collaboration with the Intensive Care Society (ICS). 120 ICUs were contacted by email and asked to complete an online, pre-piloted questionnaire at a dedicated website. Data was collected from 1st August to 31st October 2011.

Results: The response rate was 44% (53/120).

30/53 (57%) responders believed GMC regulations should be changed to allow for global testing of HIV in all ICU patients lacking capacity, irrespective of their diagnosis.

37/53 (70%) agreed that critical illness should be nationally recognised as an indicator illness for HIV.

49/53 (92%) supported a change to GMC regulations to allow for HIV testing of ICU patients lacking capacity when a member of staff suffered a related needle stick injury.

19/53 (36%) thought that in the context of testing for HIV in the patient's best interests, this should only be defined by the presence of HIV indicator illnesses or by 'high risk' behaviours.

5/53 (9%) believed that HIV testing should only be performed when assent from next-of-kin is obtained.

Conclusion: An HIV result may inform potentially life-saving treatment. An assessment of return of capacity is complex and 'limiting future choices' may be more difficult to define for ICU patients. The majority of ICUs believed that GMC guidance should be changed to allow for global testing of HIV in patients lacking capacity and there was even greater support for 'critical illness' being

recognised as an indicator illness. A minority was content to rely upon traditional indicator illnesses or 'high risk' behaviours to guide testing providing 'overall clinical benefit' in line with current GMC guidance. Overwhelming support for testing index needle-stick patients lacking capacity was expressed. HIV testing in ICU poses significant challenges which are not specifically addressed in GMC or national testing guidelines.

O18
Opt-out HIV testing policy implemented as routine standard of care for acute medical admissions in a high prevalence area: effective and sustainable

A Barbour, D Philips, S Draper and A Elgalib
Croydon University Hospital, London, UK

Background: Numerous UK studies have presented the feasibility and acceptability of HIV testing in acute medical settings; however the implementation and sustainability of this practice embedded in routine clinical care, beyond research pilots has yet to be demonstrated. We report our experience of rolling-out routine HIV testing as an NHS trust policy that is standard of care, delivered by acute medical staff.
Methods: From July 2011 a routine opt-out HIV testing policy commenced: 'All patients aged 16–79 years, attending the Acute Medical Unit (AMU), have a standard HIV test unless they decline'. This is delivered by general medical doctors and AMU nurses, who received focussed training by local HIV specialists. The HIV team also made supportive visits to AMU. Over the first 3 months nurses were more proactive in testing than doctors and by October 2011 AMU visits were reduced as nurses took on leadership for the policy. From the start of the policy, the AMU proforma was amended to allow staff to document prospectively: test offer, acceptance and reasons if declined. This data was later matched with demographics and test results obtained from hospital records.
Results: There were 3709 admissions in the first 6 months: median age 57 years and 50% female. The ethnicity was: 54.7% Caucasian, 6% Black African and 6% Black Caribbean. 1390 (37.5%) patients had samples for HIV testing their demographic profile is comparable to that for all admissions. The test rate increased from 33.2% in the first 3 months to 41.3% in the second 3 months ($p<0.005$ Chi^2). In a randomly selected group (n=396), the HIV test uptake rate was 84%. Detailed analysis on offer rate and reasons for refusal and factors associated with uptake will be presented at the conference. Seven new HIV diagnoses were made: baseline CD4 counts: 1029, 781, 249, 247, 230, 187 and one in process. They were all promptly linked into care. Four of these would not have been tested otherwise. One had primary HIV infection with a wife 18 weeks pregnant. One had HIV-associated nephropathy, she started HAART immediately.
Conclusion: Our experience shows that a routine opt-out HIV testing policy:
- can be implemented in an acute medical setting
- can be delivered and sustained by existing medical staff with no extra resources beyond laboratory costs
- achieves greater test rates when nurses take ownership and lead the policy
- is effective: identifies new diagnoses that would not otherwise be made in this context

O19
Recently acquired HIV infections: an overview of surveillance in the UK

A Aghaizu, R Smith, M Kall, J Tosswill, G Murphy and V Delpech
Health Protection Agency, London, UK

Background: Recent HIV infections are indicative of ongoing transmission. Testing for recent infection with HIV was introduced as part of routine national surveillance in 2009. Here, we report the results of the first two years of national monitoring in England and Northern Ireland.
Method: Cross-sectional analyses of surveillance data from over 90 laboratories and 50 clinics in England and Northern Ireland. The data incorporate results from an HIV antibody assay modified for the determination of HIV using an avidity test, and clinical data including initial CD4 count, simultaneous AIDS diagnoses and antiretroviral therapy.
Results: Coverage of testing increased from 26% to 46% of all new diagnoses reported until end June 2011. Socio-demographic characteristics linked to samples received were similar to those of all newly diagnosed. Between 2009 and 2011, the overall proportion of recent HIV infections was 15% which was highest in the lower age groups with 25% and 20% among those 15–24 and 25–34 versus 12% and 8% among those 35–44 and over 50 years, respectively. Recent infections were highest among men who have sex with men (MSM) (23%), followed by heterosexuals (10%) and people who inject drugs (4%). One in three MSM aged less than 35 years acquired their infection recently compared to one in seven over 50. The highest proportions of recent infections among heterosexuals were in women aged 15–24 (20%) and men aged 25–34 (15%). Half of all recent infections were diagnosed in London.
Conclusion: One in four MSM and one in ten heterosexuals diagnosed with HIV between 2009 and 2011 had a probable recent infection indicating high levels of ongoing transmission. These findings underscore the need for continued targeted and monitoring of prevention efforts.

O20
Can point of care HIV testing in primary care increase identification of HIV? The RHIVA 2 cluster randomised controlled trial – update

W Leber[1], H McMullen[1], S Bremner[1], S Kerry[1], D Millett[2], S Mguni[2], D Awosika[2], S Creighton[2], J Figueroa[3], G Hart[4], M Sampson[5], J Anderson[2] and C Griffiths[1]
[1]Centre for Primary Care and Public Health, Queen Mary University of London, London, UK, [2]Homerton University Hospital NHS Foundation Trust, London, UK, [3]NHS City & Hackney, London, UK, [4]University College London, London, UK, and [5]Barts and The London NHS Trust, London, UK

Background: Increased access to HIV diagnostic tests is being advocated in the UK to reduce the numbers of both undiagnosed and late presenting people living with HIV. Increasing rates of HIV testing in primary care is a key intervention. The British HIV Association (2008) and NICE (2011) recommend universal opt-out HIV testing in primary care in areas where two or more people per 1,000 are diagnosed HIV positive. In Hackney, East London, 8/1000 are estimated to be infected. How best to deliver HIV testing in primary care remains to be established. Point of care rapid HIV antibody tests are a valuable addition to the diagnostic repertoire and may be particularly useful in primary care. A pilot study of rapid HIV testing offered during the new patient health check in a single surgery in Hackney in 2008 demonstrated that testing was both feasible and acceptable to patients and staff. Based on these preliminary data we describe a cluster randomised controlled trial.
Methods: RHIVA 2 is a cluster randomised controlled trial across participating GP surgeries in Hackney. Practices are randomised to either the intervention or the control group. In addition to standard HIV care, intervention practices offer a rapid HIV test to patients aged 16 years or older during the new patient health check or at first consultation. Patient recruitment started on the 19th of May 2010, and the planned duration of the study is two years.
Results: Forty surgeries out of a total of 45 in Hackney have agreed to participate in the study and 20 have been randomised to the intervention and 20 to the control. All intervention practices have been trained and initiated rapid HIV testing. Two practices have dropped out. 28,274 patients have registered since the trial began. 6,607 HIV tests have been offered and 3,213 (49%) performed. Nine patients have had a reactive rapid test, of which 7 were confirmed HIV antibody positive; two tests were confirmed false-reactive. All 7 patients were referred appropriately to Homerton Hospital for specialist care.
Conclusion: The use of rapid point of care testing in general practice is viable and may contribute to increasing early HIV case detection preventing rapid disease progression, onward transmission and reduce costs to health care budgets.

O21
4th generation (Ag/Ab) HIV testing: 47% of clinics contradict current guidelines

E Rezel[1], C Walker[2] and S Collins[2]
[1]London School of Hygiene and Tropical Medicine, London, UK, and [2]HIV i-Base, London, UK

Background: One in four HIV positive people in the UK are unaware of their HIV status. National testing guidelines have been in place since 2008 with a statement launched in 2010 affirming that '*HIV testing using the latest (4th*

generation) tests are recommended in the BHIVA/BASHH UK guidelines for HIV testing' Despite this, frequent queries from service-users to the HIV i-Base information phone line throughout 2010–11 indicated low awareness of these guidelines in clinics and that people were often given incorrect responses to their queries about HIV testing.

Methods: A 'mystery-patient' design was used to deliver a phone-based semi-structured questionnaire to the first point of contact at 100 randomly generated clinics across the UK and Ireland. A scenario was established to reveal what and how information is provided to a worried service-user who is uncertain about attending the clinic for testing following a possible exposure to HIV through unprotected sex. A thematic analysis of the frequency of responses for each aspect of the questionnaire was conducted using a qualitative coding methodology.

Results: Sexual Health Clinic responses to the question '*is it a* 3rd or 4th generation test you offer?' were grouped into ten categories based on the respondents' understanding of the question and the clarity and detail of the explanations provided. A substantial 47% were unable to provide suitable explanations about the type of testing the clinic offered categorised as "Didn't know", "inaccurate/unclear response" and "not answered". Responses to the questions, '*how accurate are the results and when should I come and get tested?*' were equally mixed with only 24% of clinics mentioning the accuracy of fourth generation tests at 4 weeks post exposure and 36% only mentioning accuracy at 12 weeks, suggesting 3rd rather than 4th generation testing procedures. Overall, only 17% of subjects adhered to the BASHH statement on HIV window periods with accuracy. The qualitative responses to other questions revealed a wide range of services, some of which were excellent.

Conclusions: The results from this initial survey support the concern that low awareness of HIV testing technology may be a barrier to testing, may delay diagnosis and contribute to unnecessary patient worry and concern. This also risks losing the opportunity to test whilst a potentially HIV-positive person is at a stage of acute infection. This could further increase the risk of an individual transmitting infection to contacts before being tested. Simple training for sexual healthcare providers, especially those responding to telephone enquiries from patients on current guidelines, epidemiological data and developments in testing and treatment, could result in substantial personal and public health improvements in current services.

O22
HIV partner home sampling by oral fluid: feasibility, acceptability and outcomes

G Bell, A Pryce, H Ellam, S Naylor, S Herman, S Green, R Omer, R Foster, G Kudesia, A Tunbridge and C Bowman

Sheffield Teaching Hospitals NHS Foundation Trust, Sheffield, UK

Background: Sero-discordant partners of HIV positive patients are advised to test annually for HIV, to facilitate early diagnosis among this high risk group. Barriers to repeat testing include the cost and inconvenience of time off work to attend clinic. HIV home sampling by oral fluid has been validated for local use and found to be acceptable when offered to MSM during outreach studies, although uptake amongst Black Africans was poor. This study assessed the feasibility and acceptability of offering home sampling for HIV to sero-negative current partners.

Methods: Sero-discordant partners, who were due an annual screen over the 3-month period September to December 2011, were selected to take part. They were offered the option of attending clinic or receiving an oral fluid home sampling kit by post, with a pre-paid envelope to return the sample to the virology laboratory.

All specimens were tested by two HIV assays, namely Roche COBAS and Genscreen Ultra which had been validated previously for oral fluid testing. In addition total IgG was done on all specimens to assess sample adequacy.

Results: Of 42 partners offered a kit, 38 (90.5%) accepted, and 34 (89%) returned a sample. All 34 samples were tested as per protocol. All samples were positive for total IgG (one patient had to submit a repeat oral fluid specimen as the initial specimen did not have adequate IgG level). Thirty samples were negative by both HIV assays, 3 specimens were reactive in one of the two assays. Follow up serum samples from all the 3 patients were negative for HIV.

Many participants expressed appreciation of the convenience of home sampling and said they would use again. No problems were identified with using the kits.

Conclusions: Oral fluid testing can be integrated in a routine diagnostic laboratory using automated screening systems. There is a high demand for home sampling for HIV among sero-discordant partners, allowing more convenient and hence more reliable uptake of annual testing.

O23
Who would use PrEP? Predictors of use among MSM in London

A Aghaizu[1], D Mercey[2], A Copas[3], A Johnson[2], G Hart[2] and A Nardone[1]

[1]Health Protection Agency, London, UK, [2]University College London, London, UK, and [3]MRC Clinical Trials Unit, London, UK

Background: As recent randomised controlled trials have demonstrated a reduction of HIV transmission with pre-exposure antiretroviral prophylaxis (PrEP), efforts are currently underway to assess its potential as a public health intervention to reduce HIV incidence. The Gay Men's Sexual Health Survey is a serial community-based survey among men who have sex with men (MSM) in London. Here we assess the level of current and intended future use of PrEP among MSM and characterise those attending sexual health clinics, the most likely PrEP delivery setting.

Method: Cross-sectional, self-administered survey of 842 HIV negative MSM, determined by an unlinked anonymous saliva sample, recruited from bars, clubs and saunas in London between March and June 2011.

Results: One in ten (10.2%, 83/814, 95% C.I. 8.2–12.5%) and one in 50 (2.1%, 17/809, 95% C.I. 1.2–3.3%) MSM reported having ever used post exposure antiretroviral prophylaxis (PEP) and PrEP respectively. Half reported that they would be likely to use PrEP if it were to become available as a daily pill, (50.3% (386/786, 95% C.I. 46.7–53.9%). MSM were more likely to consider future use of PrEP to prevent infection with HIV if they were < 35 years (AOR 1.34, 95% C.I. 1.00–1.74), had unprotected anal intercourse (UAI) with a casual partner in the last year (AOR 1.93, 95% C.I. 1.38–2.69), had attended a sexual health clinic within the last year (AOR 1.60, 95% C.I 1.13–2.28) and had previously used PEP (AOR 1.75, 95% C.I. 1.12–2.73). More than half of MSM (54.8% 95% C.I. 51.3–58.2, 457/834) reported attending a sexual health clinic in the last year with those more likely aged < 35 years (AOR 1.74, 95% C.I.1.32–2.30), reporting ten or more partners (AOR 1.90, 95% C.I. 1.41–2.57) and UAI with casual partners in the last year (AOR 1.53, 95% C.I. 1.10–2.13).

Conclusion: At present, the concept of PrEP for prevention of HIV in the form of a daily pill is acceptable to one in two sexually active HIV negative MSM in London. MSM reporting high risk behaviours attend sexual health clinics suggesting this is a suitable setting for the delivery of PrEP. With PrEP unlikely to be available to all MSM, identifying those at highest risk will be a key component for its use as a public health intervention. However, as PrEP only provides partial protection and may lead to increased risk behaviour, behavioural risk reduction must form a major part of any PrEP intervention.

O24
HIV-1 Transmitted Drug Resistance (TDR) in Paired Plasma and Seminal Fluid: Persistence in Semen and Little Evidence of Differential Evolution

S Shaw[1], D Pao[2], P Cane[3], A Badhan[3], F Koning[3], K Hobbs[1], C Ross[1] and M Fisher[1]

[1]Royal Sussex County Hospital, Brighton and Sussex University Hospital NHS Trust, Brighton, UK, [2]Department of Behavioural Medicine, UCL School of Pharmacy, London, UK, and [3]Virus Reference Department, Microbiology Services, Health Protection Agency, London, UK

Background: Transmitted drug resistance (TDR) in HIV-1 infection is associated with decreased susceptibility to antiretroviral therapy (ART). With acquired ART resistance, archived virus rebounds in the absence of ART; in TDR the mutations usually persist but may slowly revert to wild type.

In the male genital tract anatomical compartmentalisation is believed to influence the rate of evolution of TDR. This study compared the TDR profile in the plasma and genital secretions of HIV-1 infected men (including minority species) in patients who remain ART naïve and in those initiated on ART.

Methods: ART-naive HIV-1 infected male subjects with baseline TDR mutations (as per Shafer 2009) provided paired blood and semen samples. On initiating ART, samples were collected every 4 weeks until plasma viral load (VL) was <40 copies/mL.

Plasma and seminal fluid samples were analysed using population-based sequencing and allele specific PCR (codons 103, 181, 184).

Urine samples were tested to exclude concurrent genital infections.

Results: 15 subjects provided paired samples, 7 of these provided >1 sample while ART naive. 6 provided samples during initiation of ART.
All subjects were men who have sex with men (MSM).The median age was 37.2 years and the median plasma VL= 6990 copies/mL.
Plasma samples: 11 subjects had NRTI mutations (≥1 of M41L, T69D, T215D/E/S/T, L210W, K219N), 7 had NNRTI mutations (≥1 of K101EK, Y181C, K103N G190A) and 3 had a PI mutation (L90M). 4 subjects had more than one mutation. Semen samples: all but one had identical TDR mutations to the corresponding plasma. In one subject a K103N mutation was present in plasma but not semen. Time from baseline RT to last paired sampling was between 6 and 350 weeks (median= 29 weeks). One subject demonstrated persistence of TDR in plasma and semen for nearly 7 years. On allele specific (minority species) PCR analysis, 7 subjects had TDR in plasma, 4 of whom had paired semen TDR. On starting ART, seminal TDR persisted until the plasma HIV-1 VL was <40 copies/mL.
Conclusions: TDR mutation patterns in the plasma and seminal fluids were very similar and could persist for up to several years. This supports the potential for onward transmission of TDR (including multi-drug TDR) from drug-naive/undiagnosed individuals. There was little evidence of differential evolution in semen and plasma. Population-based sequence analysis alone appears to be sufficient to describe resistance in patients with TDR.

Antiretroviral Treatment

O25

Elvitegravir/cobicistat/emtricitabine/tenofovir DF (Quad) has non-inferior efficacy and favorable safety compared to efavirenz/emtricitabine/tenofovir DF in treatment naïve HIV-1 infected subjects

P Sax[1], E DeJesus[2], A Mills[3], A Zolopa[4], C Cohen[5], D Wohl[6], J Gallant[7], M Bosse[8], K White[9], C Liu[9], A Plummer[9], B Kearney[9], E Quirk[9] and A Cheng[9]
[1]Brigham and Women's Hospital, Harvard Medical School, Boston, US, [2]Orlando Immunology Center, Orlando, US, [3]Anthony Mills MD, Inc., Los Angeles, US, [4]Stanford University, Palo Alto, US, [5]Community Research Initiative of New England, Boston, US, [6]University of North Carolina, Chapel Hill, US, [7]Johns Hopkins School of Medicine, Baltimore, US, [8]Gilead Sciences, Uxbridge, UK and [9]Gilead Sciences, Foster City, US

Background: The integrase inhibitor elvitegravir (EVG) has been coformulated with the pharmacoenhancer cobicistat (COBI), emtricitabine (FTC), and tenofovir DF (TDF) in a single once daily tablet (Quad). We report the Week 48 results of a prospective, randomized, double-blind, active-controlled, ongoing Phase 3 trial comparing Quad with co-formulated efavirenz/emtricitabine/tenofovir DF (EFV/FTC/TDF) as initial therapy for HIV infection.
Methods: Treatment-naïve subjects with HIV were randomized 1:1 to blinded Quad or EFV/FTC/TDF once daily plus matching placebos. Eligibility criteria included screening HIV RNA ≥5,000 copies/mL (c/mL), CLCr >70 mL/min and sensitivity to EFV, FTC, and TDF. Randomization was stratified by HIV-1 RNA > or <100,000 c/mL. The 1° endpoint was the proportion of subjects with HIV RNA <50 c/mL at Week 48 per the FDA snapshot algorithm (12% prespecified non-inferiority margin).
Results: 700 subjects (89% male, 37% non-white, 33% with VL >100,000 c/mL) were randomized and treated. The 1° endpoint was met; Quad was non-inferior to EFV/FTC/TDF with 88% and 84%, respectively, having viral suppression at Week 48 by snapshot algorithm (difference +3.6%, 95% CI -1.6%, +8.8%). Among subjects with baseline HIV RNA >100,000 c/mL, response rates were similar (Quad 84%, EFV/FTC/TDF 82%). Virologic failure rates at Week 48 were 7% in both arms (FDA snapshot). At Week 48, mean CD4 cell increase was 239 cells/μL in Quad and 206 cells/μL in EFV/FTC/TDF (p=0.009). Drug discontinuation rates for adverse events were similar (Quad 3%, EFV/FTC/TDF 5%). Among AEs occurring in >10% of subjects (all grades), nausea was significantly more frequent in Quad than EFV/FTC/TDF (21% vs. 14%) while dizziness (7% vs. 24%), abnormal dreams (15% vs. 27%), insomnia (9% vs. 14%) and rash (6% vs. 12%) were significantly less common in Quad than EFV/FTC/TDF. CLCr decrease occurred by Week 2 of Quad therapy and was significantly greater than with EFV/FTC/TDF (−14.3 vs. −3.0 mL/min by Week 48). Total cholesterol and LDL increases at Week 48 were significantly lower for Quad than EFV/FTC/TDF.
Conclusions: In this first Phase 3 study directly comparing once daily single tablet regimens for HIV, Quad demonstrated similarly high response rates compared to EFV/FTC/TDF and favorable CNS, rash, and fasting lipid results. These results suggest that Quad could become an important new option for initial HIV therapy.

O26

Efficacy, safety and pharmacokinetic results of an ongoing international phase 3 study comparing elvitegravir/cobicistat/emtricitabine/tenofovir DF (Quad) with ritonavir-boosted atazanavir plus emtricitabine/tenofovir DF in treatment naïve HIV-1 infected subjects at 48 weeks

E DeJesus[1], C Orkin[2], J Rockstroh[3], J-M Molina[4], K White[5], X Wei[5], A Plummer[5], B Kearney[5] and A Cheng[5]
[1]Orlando Immunology Center, Orlando, FL, USA, [2]Barts and The London NHS Trust, London, UK, [3]University of Bonn, Bonn, Germany, [4]Saint Louis Hospital, Paris, France, and [5]Gilead Sciences, Foster City, CA, USA

Background: Quad is a single tablet regimen (STR) in development composed of an integrase inhibitor elvitegravir (EVG), the pharmacoenhancer cobicistat, emtricitabine (FTC) and tenofovir DF (TDF). Described are Week 48 results of a Phase 3 study comparing Quad with ritonavir-boosted atazanavir (ATV/r) plus fixed dose FTC/TDF in treatment naive HIV-infected subjects.
Methods: Subjects with HIV RNA ≥ 5000 c/mL, CLCr >70 mL/min, no prior HIV therapy, and no resistance to ATV, FTC, or TDF were randomized 1:1 to receive either Quad or ATV/r+FTC/TDF (stratified by baseline HIV RNA ≥ and < 100,000 c/mL) in an ongoing, blinded, active-controlled study. 1° objectives included the proportion of subjects with HIV RNA <50 c/mL at Week 48 (FDA snapshot algorithm, 12% prespecified noninferiority margin) in the intent to treat population and assessment of safety. 2° objectives included pharmacokinetic/dynamic (PK-PD) and bone mineral density (BMD) analyses.
Results: 708 subjects were randomized: 90% male, 26% non-white, 39% with VL ≥100,000 c/mL. The primary objective was met; Quad was noninferior to ATV/r+FTC/TDF with 90% and 87%, respectively, having HIV RNA of <50 c/mL at Week 48 (difference +3.0%, 95% CI [−1.9%, +7.8%]). Among subjects with HIV RNA > 100,000 copies/mL, response rates were similar (Quad 85%, ATV/r+FTC/TDF 82%). Virologic failure (FDA snapshot algorithm) was infrequent, 5%, in both arms. Median CD4 increases were similar (Quad 207 cells/μL, ATV/r+FTC/TDF 211 cells/μL). Discontinuation rates for adverse events (AE) were similar (Quad 4%, ATV/r+FTC/TDF 5%). Among AEs occurring in ≥ 5% of subjects, AEs associated with elevated bilirubin levels were significantly higher in ATV/r+FTC/TDF and no AEs were significantly higher in Quad. Median change in CLCr from baseline was −12.7 mL/min in Quad and −9.5 mL/min in ATV/r+FTC/TDF ($p < 0.001$). Median triglyceride increases were 11mg/dL in Quad and 29 mg/dL in ATV/r+FTC/TDF ($p = 0.006$). PK-PD analyses showed ~ ≥ 90% efficacy across all quartiles or octiles for EVG Ctrough. Median BMD changes for hip were: Quad vs. ATV/r+FTC/TDF (−2.45%, - 3.46%) and for spine (2.87%, −3.59%) ($p > 0.05$ for both).
Conclusions: Quad demonstrated noninferior efficacy and was well tolerated at 48 weeks in this Phase 3 blinded active-controlled study in treatment naïve HIV infected subjects. The efficacy of Quad was confirmed by robust PK analyses. These data support the use of Quad as a potential new STR option for initial HIV treatment.

O27

Intensification of suppressive ART with maraviroc reduces CD4 T-cell activation, increases early stage CD8 T cells and improves anti-HIV-1 function, without detriment to humoral recall response

S Westrop[1], G Moyle[2], M Nelson[2], S Mandalia[1], A Jackson[2], B Gazzard[2] and N Imami[1]
[1]Imperial College London, London, UK, and [2]Chelsea and Westminster Hospital, London, UK

Background: CCR5 plays a role in immune activation and adaptive immunity, and CCR5 antagonists such as maraviroc (MVC), which block HIV-1 entry, potentiate immune modulation. We hypothesized that MVC intensification impacts responses to recall and neo-immunogens, T-cell phenotype, function and delayed type hypersensitivity (DTH) in HIV-1+ subjects.

Methods: A 24-week, 6 visit, placebo-controlled study into addition of 150mg oral MVC bi-daily to a boosted-PI regimen in HIV-1+ persons with undetectable viral load. Subjects received DTH tests, IM tetanus, meningococcal and oral cholera immunisations. Anti-tetanus, -menC and -cholera antibody titres, T-cell function and phenotype were assessed. Linear mixed models and intent to treat analysis interpreted changes from baseline.

Results: Of 157 HIV-1^+ patients referred, 67 were screened and 47 enrolled, randomised 1:1 to receive MVC (n=23) or placebo (n=24). MVC intensification significantly increased IFN-γ production to HIV-1 Gag and TTox, early and intermediate CD8 T cells, late and CD38-HLA-DR+ CD4 T cells. Activated CD38+HLA-DR+ CD4 T cells and expression of co-stimulatory CD28 declined, accompanied by an increase in co-inhibitory CTLA-4. DTH and serum chemistry remained unchanged. Significant antibody titre increase to MenC neo-immunisation was shown in the MVC arm, however unlike the placebo arm anti-cholera antibodies remained at baseline levels. MVC expedited lymphocyte proliferation to tetanus boost with no differential effect on the humoral recall response.

Conclusion: MVC intensification modifies T-cell proliferation, cytokine release, differentiation, activation, co-stimulation and co-inhibition, and displays divergent impact on oral versus IM neo-responses, however has no effect on booster immunisation. CCR5 antagonism influences immune profiles of HIV-1+ patients, adjusting T-cell phenotype and function, and the formation of humoral immunity to newly encountered antigen.

O28
An investigation into the frequency and reasons why patients switch antiretroviral therapy and which antiretrovirals are commonly implicated in toxicity

A Boyle[1], S Sonecha[1], C Pacho[2], S Mandalia[1] and M Nelson[1]

[1]Chelsea and Westminster NHS Trust, London, UK, and [2]Sant Pau Hospital, Barcelona, Spain

Background: Previous investigation into antiretroviral (ARV) therapy switches in our HIV cohort suggested an annual switch rate of 20% in 2006. The purpose of this study was to investigate whether this switch rate has changed in recent years, determine reasons why patients change regimens, and identify which ARVs are most likely to be switched for toxicity concerns.

Methods: The electronic patient database was reviewed to identify all patients within our HIV cohort who switched ARV therapy between 1st December 2009 and 31st May 2011. Details of which ARVs were switched and the reasons why were recorded.

Results: Nine hundred and twenty three regimens were switched over 18 months affecting 8.4% (n=722) of the total number of patients on treatment during this time.

The most common reason for switching medication was due to toxicity, occurring in 452 (49%) cases. Other reasons included simplification (15%), clinical trials (8%), virological failure (8%) and drug interactions (4%). The remaining 16% switched for various reasons including pregnancy and co-morbidities.

Of 452 switches for toxicity, 25% were due to efavirenz (89 out of a total of 113 were due to CNS side effects), 11% tenofovir (28/49 renal complications), 10% Kaletra (18/46 GI disturbances), 10% atazanavir (24/44 jaundice), 6% abacavir (21/28 actual or perceived cardiovascular risk), 6% darunavir (10/25 GI disturbances), 6% saquinavir (21/25 actual or perceived cardiotoxicity), and 5% zidovudine (11/21 concerns over long term adverse effects). Other ARVs accounted for 12% of toxicity switches and the causative drug was unknown in the remaining 9%.

NRTIs	OTSR (95% CI)	PIs	OTSR (95% CI)
Zidovudine	43.5 (27.0 to 66.6)	Darunavir	15.0 (9.7 to 22.2)
Tenofovir	6.4 (4.7 to 8.5)	Saquinavir	96.1 (62.2 to 141.8)
Abacavir	18.6 (12.3 to 26.9)	Kaletra	69.1 (50.6 to 92.2)
Emtricitabine	1.2 (0.5 to 2.3)	Atazanavir	27.2 (19.8 to 36.5)
Lamivudine	1.4 (0.3 to 4.2)		
INI		**NNRTIs**	
Raltegravir	15.0 (6.0 to 30.9)	Efavirenz	27.8 (22.9 to 33.5)
CCR5		Nevirapine	3.1 (0.6 to 9.1)
Maraviroc	5.2 (0.1 to 29.2)	Etravirine	25.7 (15.3 to 40.7)

An observed toxicity switch rate (OTSR) per 1000 patient years (95% CI) was calculated for each ARV.

Conclusion: 8.4% of patients switched therapy in 18 months predicting an annual switch rate of 5.6% which is lower than observed in 2006. Saquinavir and Kaletra have a significantly higher OTSR than the other PIs as does Zidovudine compared with the other NRTIs. Nevirapine has a significantly lower OTSR than the other NNRTIs.

O29
Effects of HIV/HCV co-infection on the efficacy of antiretroviral treatment for HIV: a meta-analysis of 5408 patients in 10 randomised clinical trials

F Pulido[1], A Hill[2], Y van Delft[3] and C Moecklinghoff[4]

[1]Hospital 12 de Octubre, Madrid, Spain, [2]Liverpool University, Liverpool, UK[3]Janssen, Tilburg, The Netherlands, and [4]Janssen, Neuss, Germany

Background: The effects of HCV co-infection on the efficacy of antiretroviral treatment have not been clearly established. There have been conflicting results from cohort studies of antiretroviral treatment in HIV/HCV co-infected patients, which have used a range of efficacy endpoints.

Methods: A detailed MEDLINE search was conducted to identify HIV clinical trials with published analyses of the efficacy of antiretroviral treatment by HCV co-infection. A meta-analysis of the clinical trials was conducted, with the standardized endpoint of HIV RNA <50 copies/mL at Week 48 (ITT Time to Loss of Virological Response (TLOVR) algorithm).

Results: Ten clinical trials were identified: seven in antiretroviral-naïve patients (Gilead 934, KLEAN, ECHO, THRIVE, SENSE, ARTEMIS, CASTLE), and three in pre-treated patients (MONET, OK-04, TITAN). Overall, 637/5408 (12%) patients had HIV/HCV co-infection by HCV antibody tests (this percentage was in the lower range of the percentage of HIV/HCV co-infected patients reported in cohort studies in North America and Europe (median 37%, range 9–64%). The mean percentage of patients achieving HIV RNA <50 copies/mL at Week 48 was 68.2% for HIV/HCV co-infected patients versus 80.4% for HIV mono-infected patients. The absolute difference in efficacy was 11.5%, (95% confidence intervals (CI): 7.7% to 15.3%, p<0.001). The difference in efficacy was consistent in trials of treatment-naïve patients (difference = 11.1%, 95% CI 6.5% to 15.6%) and in pre-treated patients (difference = 13.2%, 95% CI 4.6% to 21.1%). There was no evidence for heterogeneity of this difference between trials (Breslow-Day tests, p=n.s.). A high proportion of endpoints in the TLOVR analysis are discontinuations of randomized treatment for adverse events or other reasons.

Conclusions: Treatment efficacy as measured by HIV RNA<50 copies/mL (ITT TLOVR) at Week 48 was 11.5% lower in HIV/HCV co-infected patients compared to those with HIV infection alone (p<0.001). The cause of the lower efficacy of antiretroviral treatment in HIV/HCV co-infected patients is unclear. The low percentage of HIV/HCV co-infected patients in this analysis, compared with published cohort studies, suggests that HCV co-infected patients are under-represented in HIV clinical trials.

O30
The emergence of drug resistant HIV variants at virological failure of HAART combinations containing tenofovir and lamivudine or emtricitabine within the UK CHIC cohort

N Bulteel[1], M Nelson[1], D Churchill[2] and C Sabin[3]

[1]Chelsea and Westminster Hospital, London, UK, [2]Brighton and Sussex University Hospital Trust, Brighton, UK, and [3]UCL Medical School, London, UK

Background: Lamivudine (3TC) and emtricitabine (FTC) are guideline choices for combination highly active antiretroviral therapy (HAART). 3TC has a shorter intracellular half life than FTC and may be more likely to lead to the development of drug resistant HIV variants.

Methods: In this study we analysed linked data from the observational UK Collaborative HIV Cohort (CHIC) Study and UK HIV Drug Resistance Database (HDRD) to investigate the rate of development of K65R or M184V resistance mutations in patients failing on combinations containing tenofovir (TDF) and efavirenz (EFV) with either 3TC or FTC. Virological failure was defined as 1 viral load > 400 copies/ml. Rates were stratified by demographic variables, current

CD4 count and current viral load. Significant associations were identified using Poisson regression models and multivariable analyses were performed adjusting for the variables above. Logistic regression was used to determine whether there were any significant associations between type of regimen and detection of resistance mutation.

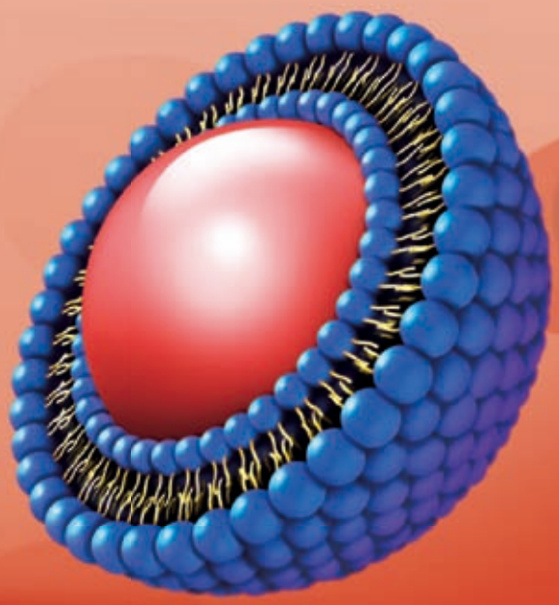
Results: 5455 patients received either (or both) 3TC, TDF and EFV or FTC, TDF and EFV contributing 6465 episodes over 9962 person-years follow up. 47 of these episodes were preceded by resistance tests showing development of K65R or M184V mutation and were hence excluded. The majority of episodes consisted of FTC- (n=5190) rather than 3TC- (n=1228) based regimens. 21 episodes of K65R were detected over the course of follow up, giving an overall event rate of 0.21 (95% CI**:** 0.12–0.31)/100 person years. The overall event rate for detection of M184V was 0.38 (95% CI: 0.26–0.5)/100 person years. 201 patients receiving either regimen for the first time experienced virological failure. Of those receiving 3TC (n=53), 7 (13.2%), 12 (22.6%) and 15 (28.3%) developed K65R, M184V and either K65R or M184V respectively. Of those receiving FTC (n=148), 13 (8.8%), 20 (13.5%) and 26 (17.6%) developed K65R, M184V and either K65R or M184V respectively. Although patients on 3TC were more likely to develop resistance, this was not statistically significant in univariable (OR 1.85 (95% CI: 0.89–3.85, p=0.09)) or multivariable analyses (OR 1.89 (95% CI: 0.89–4.01, p=0.1)).

Conclusion: In our study, failing a 3TC/TDF containing regimen favoured the development of M184V and K65R although this failed to reach statistical significance.

GALEN

DaunoXome

liposomal daunorubicin



Delivering efficacy in advanced HIV-related Kaposi's sarcoma[1]

DaunoXome® Injection Prescribing Information

Adverse events should be reported. Reporting forms and information can be found at www.yellowcard.gov.uk. Adverse events should also be reported to Galen Limited on 028 3833 4974 and select the customer services option, or email info@galen.co.uk. Medical information enquiries should also be directed to Galen Limited.

Presentation: Each vial of DaunoXome contains a sterile, pyrogen-free, preservative-free emulsion consisting of liposomal daunorubicin hydrochloride, present as citrate salt, equivalent to daunorubicin 2mg/ml (50mg). The emulsion is red and clear to slightly opalescent in appearance. The product is an injectable, intended to be administered by intravenous infusion. **Indications:** DaunoXome is indicated for the treatment of advanced HIV-related Kaposi's Sarcoma. **Dosage and administration: Adults:** DaunoXome should be administered by intravenous infusion over a minimum period of 30-60 minutes. The recommended initial dose is 40mg/m^2 every two weeks, and the dosage must be adjusted for each patient. DaunoXome should be diluted with 5% dextrose for infusion before administration, to a recommended concentration of between 0.2mg and 1mg daunorubicin/ml. Aseptic technique must be strictly observed in all handling, since no preservative or bacteriostatic agent is present in DaunoXome or in the materials recommended for dilution. The calculated volume of DaunoXome should be withdrawn into a sterile syringe and instilled into a sterile container with the correct amount of 5% Dextrose Injection. Therapy should be continued as long as disease control can be maintained. **Children under 18 years:** Not recommended. **Elderly:** The safety and efficacy of DaunoXome in patients over 65 years has not been established. Cardiotoxicity may be more frequent in the elderly. **Patients with impaired hepatic or renal function:** Limited clinical experience exists in treating hepatically and renally impaired patients with DaunoXome. Therefore, based on experience with conventional daunorubicin hydrochloride, it is recommended that the dosage of DaunoXome be reduced if the bilirubin or creatinine serum levels are elevated as follows: Serum bilirubin 1.2 to 3mg/dl (20.3 to 50.8µmol/l), give 75% of the normal dose; serum bilirubin >3mg/dl (>50.8µmol/l) or creatinine >3mg/dl (>265µmol/l), give 50% of the normal dose. **Caution:** The only fluid which may be mixed with DaunoXome is 5% Dextrose Injection. An in-line filter is not recommended for the intravenous infusion of DaunoXome. Procedures for proper handling and disposal of anticancer drugs should be followed. **Special precautions for storage:** Vials should be stored at 2°- 8°C and protected against exposure to light. Diluted DaunoXome should be used immediately. If not used immediately, diluted DaunoXome should be refrigerated for no longer than 24 hours at 2°-8°C. **Contra-indications:** Hypersensitivity to DaunoXome, any of its excipients or other anthracyclines/anthracenediones; pregnancy and breast feeding. **Warnings and Precautions: Cardiotoxicity:** DaunoXome and other anthracyclines can cause cardiotoxicity, notably congestive heart failure due to cardiomyopathy. The risk increases with total cumulative dose of anthracyclines, pre-existing cardiovascular disease, a history of mediastinal radiation and in the elderly. Caution should be exercised in these patients, including those previously treated with anthracyclines, or those with previous or concomitant therapy with other cardiotoxic compounds. Careful monitoring of cardiac function is essential. All patients should undergo baseline ECGs, echocardiography and measurement of left ventricular ejection fraction (LVEF) prior to starting DaunoXome and regularly during treatment. LVEF must be determined when a cumulative dose of 320mg/m^2 has been reached, then at every 160mg/m^2 thereafter. Determination of LVEF may be considered after each treatment cycle and before any additional DaunoXome is administered in patients with risk factors for cardiotoxicity, or those receiving high dose DaunoXome per cycle (e.g. ≥120mg/m^2). Reduction of the QRS wave on ECG is considered indicative of cardiac toxicity. Whenever cardiomyopathy is suspected, and/or LVEF has decreased significantly (e.g.20% decline from pre-treatment values) or is lower than would be expected (e.g. <45%), the benefit of continued therapy must be carefully weighed against the risk of producing irreversible cardiac damage. It is recommended that DaunoXome is stopped if signs or symptoms of heart failure occur. **Haematological toxicity:** The most significant effect is usually neutropenia; anaemia and thrombocytopenia may also occur, but are usually less marked. Persistent, severe myelosuppression may result in sepsis, or haemorrhage. Complete blood counts must be performed prior to each dose and frequently during the course of DaunoXome therapy. Haematological toxicity may require dose reduction, suspension or delay of therapy. Patients with malignancies or HIV infection, whose immune system is compromised, must be monitored carefully for evidence of infections. Anti-infective therapy should be employed in the presence of suspected or confirmed infection and during febrile neutropenia. Caution is also warranted when combining DaunoXome with other agents which suppress bone marrow function. **Injection site reactions:** Care should be taken to ensure that there is no extravasation of DaunoXome during administration, as extravasation is reported to result in erythema, pain and swelling around the site of tissue infiltration. **Acute infusion associated reactions:** Acute infusion-related reactions have been reported. These generally occur within the first 10 minutes of the infusion and subside when the infusion is slowed or halted. Symptoms typically include back pain, flushing, chest tightness and dyspnoea. Acute allergic/anaphylactic reactions, sometimes associated with hypotension, have also been reported. **Interactions:** Caution should be exercised when DaunoXome is used concomitantly with other myelosuppressive or cardiotoxic agents. There is a theoretical possibility of interaction between DaunoXome and Protease Inhibitors and Non Nucleoside Reverse Transcriptase Inhibitors; refer to SPC for more details. **Pregnancy and lactation:** DaunoXome is contraindicated during pregnancy and lactation. DaunoXome may cause serious birth defects when administered during pregnancy. Women of childbearing potential must use effective contraception while they or their male partner is receiving DaunoXome, and for 24 weeks following discontinuation of DaunoXome. The active ingredient of DaunoXome, daunorubicin, has been shown to be mutagenic, teratogenic and carcinogenic in *in vitro* and *in vivo* experiments. **Effects on ability to drive and use machines**: Patients should be informed that dizziness, nausea and vomiting have been reported with DaunoXome and may affect the ability to drive and operate machinery. **Side effects: Very common (≥10%):** infections, bone marrow suppression, agranulocytosis, neutropenia, febrile neutropenia, leucopenia, pancytopenia, thrombocytopenia, anaemia, infusion-associated reactions (including back pain, flushing, chest tightness, dyspnoea, allergic reactions), headache, dyspnoea, stomatitis, mucosal ulcerations, nausea, vomiting, diarrhoea, abdominal pain, alopecia, asthenia, fatigue, fever and chills; **Common (≥1% and <10%):** dehydration, depression, dizziness, decreased LVEF; **Uncommon (≥0.1% and <1%):** sepsis, septic shock, congestive heart failure and cardiomyopathy; **Rare (≥0.01% and <0.1%):** anaphylactic reaction, atrial fibrillation, myocardial infarction and palmar-plantar erythrodysaesthesia syndrome (refer to SPC for full details regarding side effects).**Overdose:** The primary anticipated toxicity from overdose is myelosuppression. Other side effects may occur in more pronounced form, such as cardiomyopathy. In the event of overdose, bone marrow function and cardiac function should be carefully monitored with appropriate therapy for any severe side effects. **Basic NHS cost:** £138.00 per vial containing 50mg DaunoXome. **Legal classification:** POM. **Marketing Authorisation Holder:** Galen Limited Seagoe Industrial Estate, Craigavon, Northern Ireland, BT63 5UA. **Marketing Authorisation Number:** PL 27827/0007. **Full prescribing information available from:** Galen Limited, Seagoe Industrial Estate, Craigavon, Northern Ireland, BT63 5UA. **Date of Preparation:** November 2011.

Reference

1. Gill PS, Wernz J, Scadden DT, et al. Randomized phase III trial of liposomal daunorubicin versus doxorubicin, bleomycin, and vincristine in AIDS-related Kaposi's sarcoma. *J Clin Oncol.* 1996;14:2353-2364

For further information, please contact: Galen Limited , Seagoe Industrial Estate, Craigavon, BT63 5UA, UK

PMR-JAN-2012-0067 Date of preparation: January 2012

Poster Abstracts

Access and Service Delivery

P1

A highly cost-effective and targeted service promotion campaign using Facebook

A Hughes and S Day
Chelsea and Westminster Hospital, London, UK

Background: Facebook is now the leading online social media site in the world with over 30 million active users in the UK, 50% of who log on every day. It enables promotion to be targeted to specified demographic groups and is cost-effective because advertisers only pay for users who actually click through to their website. We financed a Face book advertising campaign promoting our HIV testing and sexual health services to men having sex with men (MSM), an often hard to reach and marginalised group.

Methods: The simply designed advert featured throughout October, November, and December 2009 and offered a free rapid HIV testing and sexual health screening service to users actively logged on to their Facebook account. We targeted men interested in men, aged between 18 and 50 years, that were single or in a relationship and living within 50 miles of our City's location. Users clicking onto the advert were automatically diverted to our sexual health/HIV website's appointments section. Each click-through incurred a small fee ('Pay-per-click').

Results: The campaign targeted 30,580 registered Facebook MSM users. Over 3 months the advert appeared 2.86 million times. Up to 9750 individuals were exposed to the advert on any given day and it frequently featured several times a day to each user. In total, 872 (2.9%) registered MSM users clicked through to our website at an average cost of £0.55 per click. These 'clickers' were aged 18–24 (55%), 25–34 (27%), 35–44 (14%) and 45–54 (4%) years. The total cost of the campaign was £483. Face book provided regular statistical reports that enabled us to monitor its effect control our budget and prospectively tailor the advert accordingly.

Discussion: This simple Pay-per-click Facebook campaign advertised to a significant proportion (8.5%) of the UK MSM population (estimated UK MSM population is 3.6million). Assuming Payment by Results income, only 0.3% (3–4) of clickers would need to have subsequently attended our service to make the campaign cost-neutral. Similar campaigns could be used to target other marginalised groups e.g. young persons or other geographical locations. Whilst the functionality, diversity and social reach of Facebook is growing year on year, this presents a highly cost-effective opportunity for service and/or health promotion.

P2

Screening HIV infected adults in Malawi for anaemia: impact on eligibility for anti retroviral therapy

I Page[1], S McKew[2], A Geophrey[3], J van Oosterhout[4] and I Bates[2]
[1]The University of Manchester, Manchester,UK, [2]The University of Liverpool, Liverpool, UK, [3]Queen Elizabeth II Hospital, Blantyre, Malawi, [4]The University of Malawi, Blantyre, Malawi

Access to Anti Retroviral Treatment (ART) has expanded to areas with weak health care infrastructure and limited access to laboratory facilities. The World Health Organization (WHO) recommends ART commence when CD4 is ≤ 350 cells/μL. Where CD4 count is not available, however eligibility for ART is determined by clinical assessment using the WHO clinical staging system. This results in delayed treatment and increased mortality. Anaemia (Hb ≤ 8 g/dL) is WHO Stage III condition and indicates eligibility for ART. It is also an independent risk factor for increased mortality in HIV. We assessed the impact of measuring Hb in addition to clinical assessment on the number of previously untreated patients deemed eligible for ART at an African HIV outpatient clinic. We performed clinical assessment and Hb measurement by HemoCue, a portable battery powered device, which provides immediate numerical result. Eligibility for ART was recorded after each step and compared to CD4 count performed as part of routine care. 500 patients were assessed over 4 weeks. 59 (12%) of patients had a WHO Stage III or IV condition on clinical assessment. 31 (6%) had a Hb ≤ 8 g/dL. 339 pts had CD4 count measured, of which 226 (67%) had CD4 ≤ 350 cells/μL. We assessed the effectiveness of clinical assessment and Hb measurement of detecting patients with CD4 ≤ 350 cells/μL. 36 (16%) of patients with CD4 ≤ 350 cells/μL were classified as eligible for ART by clinical assessment alone. When Hb measurement was added to clinical assessment 48 (21%) of patients with CD4 ≤ 350 cells/μL were identified.

We considered whether the existing WHO threshold of Hb ≤ 8 g/dL predicts a CD4 count of ≤ 350 cells/μL. We suggest that an appropriate Hb threshold would be one with a positive predictive value (PPV) of over 90% for CD4 ≤ 350 cells/μL. The PPV of Hb ≤ 8 g/dL was 100%. The PPV of Hb ≤ 10 g/dL was 91%. The combination of clinical assessment and Hb measurement with a threshold of ≤ 10 g/dL identified 74 pts (34%) with CD4 ≤ 350 cells/μL. Measuring Hb with a threshold of ≤ 8 g/dL, in addition to clinical assessment results in a 5% absolute increase in the number of patients with CD4 ≤ 350 cells/μL identified as eligible for ART. With a threshold of Hb ≤ 10 g/dL the absolute increase is 18%. This represents a doubling of the number of patients with low CD4 appropriately commencing ART in comparison to clinical assessment alone. Routinely measuring Hb and commencing ART at a threshold of Hb ≤ 10 g/dL could save many lives.

P3

An evaluation of a peer led intervention for people newly diagnosed with HIV

B Sultan, C Sandford, D Pao, I Wood, S Edwards and P Benn
Mortimer Market Centre, Camden Provider Services, Central and North West London Foundation Trust, London, UK

Background: Although HIV infection shares common features with other chronic illnesses, it poses a number of unique challenges that heighten vulnerability to psychological adjustment difficulties and can have profound consequences on physical, psychological and social wellbeing, as well as onward transmission. Support at diagnosis is explicitly recognised in the 2011 Standards for Psychological Support for People Living with HIV and other guidelines, which state that any intervention aimed at improving outcomes must have a clear theoretical basis.

Methods: We undertook an evaluation of a structured, peer-led, group-based and participatory newly-diagnosed course (NDC) at an HIV treatment centre in London. The NDC, led by experienced facilitators, runs for 6 sessions and covers impact of diagnosis, disclosure, medical aspects, transmission and relationships, wellbeing and support networks. All individuals attending the NDC in 2011 were given a questionnaire at sessions 1 and 6. Demographic information and validated self-perceived outcome measures were collected using the Likert-type scale. Data from matched questionnaires were entered in Excel 2007 and analysed in STATA vs 10.0 using the Wilcoxon signed rank test.

Results: Sixty-five people attended 5 courses; 54/65(83%) were male, 49/65(75%) were MSM, and 57/65(88%) completed the course. Overall, 48 questionnaires were completed either before or after the course and 28(49%) completed questionnaires both before and after. There was a 98% (n = 42) satisfaction rate with the course and perceived improvement in emotional state (z=-3.252, $P = 0.0011$). Confidence was improved in dealing with**:** HIV status (z=-4.168, $P < 0.0001$); sex and relationships (z=-3.785, $P = 0.0002$); the future (z=-4.049, $P = 0.0001$). There was perceived improvement in: access to information about HAART (z=-3.436, $P < 0.0001$); knowledge about HIV transmission (z=-4.26, $P < 0.0001$); accessing PEP (z=-4.508, $P < 0.0001$).

Conclusion: The evaluation shows that delivery of peer-led support at diagnosis is associated with immediate improvement in reported knowledge of HIV, psychological wellbeing and coping strategies, with no observed difference between risk groups. Such support has an effective role to play in understanding the patient narrative and matching it with the medical perspective, and is likely to improve individual health outcomes and reduce transmission, as well as increase self-care, health-seeking behaviour and engagement with healthcare providers.

P4

Can the EACS guidelines for neurocognitive testing be practically implemented into a UK clinical setting?

T Rashid, L Greene, L Garvey, J Walsh, NE Mackie and A Winston
St Mary's Hospital, Jefferiss Wing, London, UK

Background: Screening for non-AIDS associated co-morbidities has become routine in HIV care, however screening for neurocognitive (NC) impairment remains challenging for many reasons including several algorithms being proposed and the potential for high numbers of patients being referred for time consuming formal neuropsychiatric (NP) assessments. We assessed the feasibility of implementing the 2011 EACS guidelines on NC screening in a cohort of stable, neurologically-asymptomatic, HIV infected patients on combination antiretroviral therapy (cART) to assess the percentage of subjects who would be referred for formal NP testing based on these guidelines.

Methods: Patients attending a large UK clinic between October and December 2011 underwent NC screening in accordance with the EACS guidelines. Screening sequentially involves the following assessments, with subjects proceeding to the next stage based on results of the initial assessment; 1) exclusion of confounding conditions, 2) three screening questions on NC function, only proceeding if at least one positive, 3) assessment of instruments of activities of daily living (IADLs) and then proceeding to formal NP testing if one or more IADLs are impaired. Data were collected prospectively together with demographic data and HIV disease characteristics.

Results: Of 58 patients screened, mean age was 45 years (27–68), 79% were male. Ethnicities were diverse with 52%, 22% and 26% of Caucasian, Black and other ethnicities, respectively. Plasma HIV RNA was < 50 copies/mL in all subjects. 24 (41%) patients had confounding conditions on initial screening (the majority attributed to severe mental health conditions). Of the remainder, 5 (15%) answered at least one screening question that constituted progression to assessment of IADLs, i.e. answered 'yes, definitely' for at least one of the screening questions. No impairments in IADLs were seen and therefore none of these 58 neurologically asymptomatic patients on stable cART would have been referred for formal NP testing.

Conclusion: Using this algorithm in a UK clinic setting may be practical and is unlikely to result in large numbers of HIV infected subjects being referred for formal NP testing**.** Assessment of this algorithm in neurologically symptomatic subjects is required.

P5

Enhancing patient safety in a large HIV out-patient service: evaluation of an electronic results checking system

D Nugent, N Uthayakumar, R Ferrand, S Edwards and P Benn
Mortimer Market Centre, London, UK

Background: HIV services face the challenge of regularly monitoring growing cohorts of patients and ensuring that abnormal results are acted upon promptly. We identified a number of concerns regarding our previous paper-based results checking system (PBC) (i) missing results, (ii) delayed delivery, (iii) clinician error and (iv) lack of an audit trail. These put patients at risk of delayed identification of significant drug toxicity and serious conditions e.g. acute hepatitis. We planned to introduce an electronic results checking system (ERC) to overcome these issues. The ERC classifies results as normal, non-urgent and urgent according to pre-defined thresholds. This pilot compared the speed and performance of both systems to identify biochemical abnormalities prior to implementing ERC.

Methods: For a 3 week period in July 2011 we compared the time intervals from sampling to (i) receipt of results; (ii) clinician review of urgent/ non-urgent abnormalities and (iii) review of non-urgent abnormalities by the regular clinician for both systems. Abnormalities were graded and both systems were reviewed daily by one of three clinicians. Data was analysed using STATA V11.0. Mann–Whitney U-tests were used to compare the intervals using both systems.

Results: Of 513 patients undergoing ≥ one blood test, 296 (57.7%) had ≥ one biochemical abnormality identified by the ERC. 307/371 (83%) biochemical abnormalities were identified simultaneously by the PBC. Of the 307, 33 (10.7%) were classified as urgent, 130 (42.3%) non-urgent and 144 (47%) as not clinically significant. The median interval between sampling to (i) receipt of results was 1 (IQ range 1–2) vs 4 days (IQR 3–5), $P < 0.0001$; (ii) clinician review 3 (IQR 1–4) vs 3 days (IQR 3–6), $P < 0.037$; and (iii) review of non-urgent abnormalities by the regular clinician 2 (IQR 1–4) vs 10 days (IQR 9–12), $P = 0.136$, for ERC and PBC respectively.

7/64 (11%) of the missing PBC results were classified urgent. ERC missed three abnormalities highlighting a software error which has now been corrected.

Conclusion: Biochemical abnormalities are common among our HIV cohort. Compared to PBC, ERC was significantly faster in identifying laboratory abnormalities, facilitating timely management. The pilot enabled the software error to be corrected prior to ERC's use in routine practice. Given the high volume of tests performed, we anticipate the ERC will avoid delay/non-identification of a significant number of abnormal results within our service.

P6

Lost for good? – an audit of local guidelines to return HIV patients back to care

J Doctor[1], E Ghorani[2], M Carder[1] and J Walsh[1]
[1]St Mary's Hospital, London, UK, [2]Whipps Cross Hospital, London, UK

Background: Regular clinic review of patients with HIV is associated with improved outcomes and is recommended by BHIVA. Recently, the HPA has suggested monitoring rates of loss to follow-up (LFU) from HIV-services as a quality of care indicator. We present here the results of an audit of a recently implemented local policy (LP) to identify and return LFU patients back into care.

Methods: The LP defines LFU patients as having not attended clinic for 12 months, requiring these patients to be contacted to encourage return to services. Patients who had not attended clinic for 12 months or more since 1st June 2009–31st May 2010 ($n = 211$) were retrospectively selected for study. Using digitalised patient data, we assessed (i) Demographics of this population; (ii) Whether LFU patients had been correctly identified; (iii) Whether contact had been attempted and (iv) The outcome of contact. We were additionally interested in the outcome of patients identified as vulnerable by their clinician. Demographic data of a sample of patients who had attended clinic between April–November 2011 ($n = 2774$) were used for comparison.

Results: Of 211 LFU patients, 118 (55.9%) had transferred care with the remaining 93 (44.1%) eligible for return to our service (eLFU). Of these, 68 (73.1%) were identified by the LP and 53 (57.0%) were contacted. Of the contacted patients, 18 (34.0%) returned to care with a median time of 15.5 days post-contact (interquartile range 9.25–37). Of the six patients identified as vulnerable, all were contacted and 2/6 subsequently returned to care.

Compared to a random sample of clinic attenders, the eLFU population was significantly more likely to be younger (mean age [years] 38.6 vs 43.6; $P < 0.0001$), of Black Caribbean ethnicity (14.3% vs 3.7%; $P < 0.0001$) and with more advanced immunological suppression (proportion with CD4 < 200 10.9% vs 3.6%; $P = 0.033$).

Conclusion: We report promising early results of a recently introduced local guideline for the identification and return to care of HIV patients previously lost to regular follow-up, indicating the potential for successful wider application of similar protocols. Our results suggest the need for more robust systems for follow up of vulnerable adults. The demographics of our LFU population are similar to previously published results, although the association between Black Caribbean ethnicity and LFU in our cohort was not found in a recent national study- this likely represents a local phenomenon.

P7

Routine emotional health screening in an HIV clinic: implementation and outcomes

B Kelly, C McCormick, H Webb, W Majewska and M Pakianathan
St George's Healthcare NHS Trust, London, UK

Background: People living with HIV are recognised as being at increased risk of developing psychological problems. BHIVA guidelines recommend regular mental health screening of all patients. We investigated the utility of a self completed emotional health screening tool in detecting patients with previously unreported emotional health concerns.

Methods: All patients attending an inner-city HIV clinic during a 9 month period in 2011 were asked the following questions based on NICE guidelines as part of an annual health assessment**:**

(i) During the past month have you often been bothered by feeling down, depressed or hopeless?
(ii) During the past month have you often been bothered by little interest or pleasure in doing things?
With the additional question
(i) Is this something with which you would like help?
Based on their responses to these questions patients had an initial assessment with a health adviser. Additional interventions, initiated following this assessment, were then reviewed.
Results: Of the 991 patients who completed the annual health assessment, 860 (87%) answered the emotional health questionnaire. 440/860 (51%) answered no to all three questions. 420/860 (49%) patients answered yes to at least one of the NICE recommended questions, 183/420 (44%) indicated they would like help. 63/183 (34%) patients were either already known to have emotional health concerns or their issues had been resolved prior to health adviser assessment. Of the remaining 120/183 (66%) patients with no previously reported emotional health concerns a wide range of interventions were undertaken, as shown below. 11/120 (9%) received > 1 intervention.

Counselling with health adviser	40
One off health adviser session	33
HIV per support group	20
Clinical psychologist	11
Housing/benefits adviser	11
GP–depression assessment	9
Other support agency	9
Keep fit / massage	4
Psychosexual therapy	4

Discussion: Within our cohort, almost half the patients reported an emotional health issue. 120/183 (66%) indicating a desire for support were not previously known to have emotional health issues, and therefore may have remained undetected without a structured screening intervention. The emotional needs of people living with HIV are complex and these outcomes suggest that one approach to improve the detection of unreported emotional health concerns may be quite simple – ask direct questions, and have a process in place to deal with the answers in a systematic way.

P8
Starting treatment according to guidelines evaluation (STAGE): a multicentre audit of HIV patients in the UK

I Reeves[1], N Premchand[2], A Schwenk[3], P Brennan-Benson[4], V Lee[5] and T Whitehead[6]
[1]Homerton Hospital, London, UK, [2]Newcastle University Hospital, Newcastle, UK, [3]North Middlesex Hospital, London, UK, [4]St. Peter's Hospital, Chertsey, UK, [5]Manchester Royal Infirmary, Manchester, UK, [6]Gilead Sciences Ltd, Cambridge, UK

Background: The British HIV Association (BHIVA) guidelines recommend antiretroviral treatment (ART) for HIV patients, with a CD4 count < 350/mm^3 and advise considering treatment for those with a CD4 of 350–500/mm^3 plus certain conditions or other risk factors. We conducted a multicentre audit to assess whether HIV patients are being managed according to these guidelines and to encourage discussion as to how HIV services could be further improved.
Methods: During 2011, clinical staff at five major HIV management centres in the UK collected data to provide a 'snap-shot' of care. Data were collected from each clinic's SOPHID return with retrospective review of patient records for factors not reported in SOPHID. Only patients with a minimum of 6 months of follow-up were considered. Demographic data, surrogate markers, cardiovascular disease risk, hepatitis status, disease stage, partner HIV status, and treatment status were recorded.
Results: Data on this 3873 patient cohort showed that 52 patients who should have been receiving ART according to the guidelines were not. Of these, 23 patients had decided not to start ART when recommended by the clinical team, 6 have now commenced treatment,one has been lost to follow-up, and 1 had a single CD4 count of < 350/mm^3 but otherwise had a CD4 count of > 400/mm^3. The audit revealed that many patients who had a CD4 count of 350–500/mm^3 did not have a recorded 'checklist' of indicators for possible earlier ART. The factors most commonly undocumented were the HIV status of partner(s) and the risk of cardiovascular disease.
Conclusion: The majority of patients are being managed according to the guidelines. The audit process was beneficial**:** 6 patients are consequently on ART. However, missing data may indicate that patients who might benefit from ART are not starting treatment because of inadequate monitoring. Clinicians must pay particular attention to the regular assessment of patients with CD4 count of 350–500/mm^3 so that all those who may benefit from earlier treatment are identified.
Supported by a research grant from Gilead Sciences

P9
Uptake of online support by people with HIV

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

Background: An innovative UK-wide online support system for people with HIV was launched in January 2011. The service was tailored to target 'personas' such as gay men, African people and young people and was designed by and for people with HIV in the UK. As a wholly new initiative this was closely monitored.
Methods: Ongoing evaluation includes collecting statistical data on all aspects of the programme alongside user feedback. This enables analysis of who is using it and what for.
Results: By September 2011 (8 months of use) 2135 people had signed up for membership. There had been 39,818 page views and 1769 people had registered to receive e-newsletters. Videos of personal experiences had been viewed 5,634 times in all and 1771 people had completed a Lifecheck (online health needs assessment). Additionally, 727 people had joined the discussion forums. Membership is from all groups but is highest amongst 35–44 year olds. Membership tends to be slightly younger than SOPHID data, is more likely to be male, and much more likely to be white and/or gay, with gay men accounting for 78% of all 'early adopters' of the support system. Lifecheck comparisons show that while there was no relationship between age and likelihood of improving health and/or wellbeing, African people and women were more likely than others to achieve an improved score after the use of online tools and support. Unsurprisingly, this also means that heterosexuals were more likely than gay men to show an improved score. People signing up were from all areas of the UK with 43% from London – a direct match with SOPHID data. However, comparison with SOPHID also suggests a deficit of registrations from Eastern areas of England compared with other areas of England and Wales. Membership signup is ongoing and active recruitment continues.
Conclusion: A range of reasons for disparities in early membership have been advanced including private access to technology, comfort with its use and differing complexity of problems between groups. However, given that women and people of African origin show the highest levels of health improvement via site tools, it will be important to continue making the site more accessible and appealing to them.

P10
Use of self-management tools in an online support service – who, what, how?

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

Background: A new online support system by and for people with HIV included the development of a range of tools supporting self-management. These include peer experience videos, CD4 and viral load trackers, email and text reminders for treatments and appointments and a needs assessment which allows people to measure health improvement from a baseline.
Methods: Data is collected on all sections of the service, including use of the tools, and evaluated. Additionally, every page of the site has a feature allowing comment and feedback by members.
Results: Data from the first 8 months of service use to September 2011 shows that people using the tracking tools and reminders tend to be younger on average than people with HIV in the UK (SOPHID). The most popular tools are viral load and CD4 tracking, with 521 people using this in the initial period. Useage is highest amongst those aged 25–34. Those under 24 are most likely to use text reminders for treatment adherence (141 people). Use of these tools is much higher amongst people diagnosed recently (up to 2 years) and they are more likely to be male, white and/or gay. However, repeat needs assessment data demonstrates that women and African people were most likely to show

improved health and wellbeing scores following use of online tools and support. Demographic data is not available for video views but there were 5,634 views of the 12 video personal stories and e-newsletters were requested by 1,769 members (83% of total registered). Given that increasing numbers of people access the site via mobile technology, requests were made for its optimisation for use on mobile phones.

Conclusion: Tools for self-management are most popular with younger people and those more newly diagnosed, though some people continue to find them useful after 20 years of living with HIV and longer. This aspect of the service should be of particular interest and help to clinicians supporting the newly diagnosed and those experiencing difficulty with adherence or attendance. More work needs to be done to promote the service to African people and women. Further development is underway to optimise use of the service and tools for smartphones including an iPhone app.

P11
How much is your specialist pharmacist worth?

C Okoli and K Khonyongwa
North Middlesex University Hospital, London, UK

Background: HIV medicine is an area of high drug involvement both clinically and financially. Proactive pharmacy involvement is encouraged to facilitate that treatment choices are the most appropriate and cost-effective. Several investigations have been published that reveal the benefits of pharmacy interventions, but few evaluate the affect of specialist pharmacists.

In an attempt to quantify the impact of specialist pharmacists, we conducted an evaluation of drug interventions in the HIV outpatient centre of our hospital based in London. The specialist clinical team at the trust includes three consultants and 1.5 whole time equivalent (WTE) specialist pharmacists. The aim of this audit was to assess the interventions made by the pharmacists in the HIV outpatient centre and to evaluate the proportion and cost impact related to their specialist involvement.

Methods: Prospective data were collected on interventions made by the specialist pharmacists for all HIV outpatients presenting with prescriptions during a four-week period beginning on 14 March 2011. Specialist drug knowledge was defined as information that is not available in general pharmacy reference sources, but may be available within guidelines or published research.

Results: A total of 313 prescriptions relating to 577 items (468 antiretroviral drugs) were clinically screened by two specialist pharmacists during the four-week period, worth a total value of £266,938. For the 577 items, 85 (14.7%) interventions were recorded. A total of 49 interventions (58%) required specialist drug knowledge.

The total cost-saving resulting from interventions made by the specialist pharmacists during the four-week period was £8,713, relating to a 3.3% saving. A total of £6,863 of the cost savings were categorised as specialist interventions, contributing to 79% of the total cost savings.

Conclusion: Specialist pharmacy interventions led to a cost saving of 3.3% of the monthly budget, with 79% of these savings attributed to specialist interventions.

P12
Improvement in time taken to see newly diagnosed HIV patients following implementation of five key measures

M Toby, H Alexander, T Kleinhentz, J Hutchinson, D Darling, A Teague, A Menon-Johansson, R Kulasegaram and M Desai
St Thomas' Hospital, London, UK

Background: British Association of Sexual Health & HIV (BASHH) guidelines stipulate that all patients with a new HIV diagnosis should be seen by a specialist ideally within 48 hours or, at the latest 14 days of being informed of a positive result. Two quality improvement projects (QIPs) were done at a large teaching hospital during 2006–2010. Changes in service provision in the GUM/HIV department were made to attain this accessibility standard for new patients testing HIV -positive in the 2 GUM clinics and were evaluated again in 2012.

Method The components of these 2 key QIPs over the 5-year period comprised**:**

An increase in clinic frequency; the number of weekly new patient HIV specialist nurse clinics was increased from 5 to 11 facilitating more rapid reviews (2008)

Creation of new patient slots within every consultant and registrar led general HIV clinic in the HIV outpatient slot where previously there had been just been one HIV new patient clinic weekly (2008)

Training health advisors (HAs) to use the trust appointment system which allowed them to give new patients nurses or doctors appointments (2009)

Creation of a new HIV patient database which signposted health advisors and nurses to expedite appointments for new patients for medical review (2010)

Establishment of a dedicated HIV seroconversion clinic to fastrack patients experiencing HIV seroconversion (2009)

The benefits of these changes were evaluated in 2012.

Results: Mean time for new HIV patients to be offered an HIV nurse appointment fell from 31 days in 2006 to 7 days in 2011 ($P < 0.001$) and time to doctors appointment fell from 59 days in 2006 to just 12 days in 2011 ($P < 0.001$) .12/39 (31%) of patients were offered a doctor appointment within 48 h of receiving an initial positive result in 2011 versus 3/44 (6.8%) of patients in 2009 ($P < 0.01$). For nurse appointments; 18/27 (66.6%) were offered an appointment within 48 hours in 2011 versus 7/38 (18.4%) in 2009 ($P < 0.001$)

Conclusion: There has been a consistent decrease in the time to see a HIV specialist over 5 years .These changes have been embedded, resulting in sustained improvement. The majority (66%) of new patients are now being offered nurse appointments within 48 hours. In addition to more appointments, an important factor contributing to this improvement has been the enhanced multidisciplinary team approach; streamlining of the HA roles and nurse and HA database usage to expedite appointments for patients with greatest medical need

P13
The use of a peer support outreach service in a dedicated adolescent HIV outpatient clinic

J Ellis, H Byrne, S Ghosh, D Cox, A Smith, N Tanna and K Prime
St George's Hospital, London, UK

Background: To describe 12 months experience using the Body & Soul peer support outreach service (PSOS) in a dedicated HIV adolescent clinic, seeing 18–24 year olds, at a SW London Hospital. Body & Soul is a London-based charity providing support to young people infected or affected by HIV. Their PSOS aims to improve HIV positive adolescents' emotional and physical health. The peer mentors are HIV infected or affected adolescents aged 18–25 years who have undergone specialist training at Body & Soul and accreditation by the Open College Network. Since October 2010 two mentors have attended each monthly adolescent HIV clinic and are available for patients to talk to about a variety of issues e.g. attendance at clinic, adherence, emotional and social well-being. Mentors are supervised by both Body & Soul and the adolescent HIV clinic.

Methods: To evaluate the usefulness of the PSOS, patients attending the monthly adolescent HIV clinic between 1/10/10–14/9/11 were asked to complete a semi-structured questionnaire detailing**:** patient demographics, experience of seeing a peer mentor, what issues were discussed, usefulness of discussion on a scale of 1 – not helpful at all to 5 – very helpful, overall rating of the PSOS and whether adolescents would like to see the service continue. The questionnaires were either self-completed during clinic or were conducted as a telephone interview. DNA rates were also collated pre and post introduction of PSOS.

Results: Of the 33 patients attending the HIV adolescent clinic, 25 (76%) completed the questionnaire and 18 (72%) had seen a peer mentor during the preceding 12 months. Of these 18, the mean age was 19.7 (range 18–21), 56% were male and 78% were of Black African origin. A range of topics were discussed; those reported to be most helpful were use of condoms, contraception and HIV disclosure (median scores 5/5). Other topics discussed included treatment, sexual intercourse and family median scores 4/5). Overall the service was rated as 4/5 (median score). Of those 18 surveyed, 100% would like the service to continue. There were a median of 2 missed appointments every 5 months before the introduction of the PSOS compared with 2 every 8.5 months post PSOS.

Conclusion: This single-centre study highlights the benefits of PSOS including a reduction in missed appointments. Results suggest that a high proportion of patients engaged with peer mentors, finding discussions helpful and that all wanted the PCOS to continue.

P14

The sexual health behaviour of HIV positive patients in an urban UK cohort

E Pugh[1], M Pakianathan[2], C McCormick[2], H Webb[2], K Korley[2] and S Patel[2]
[1]Accident & Emergency, St Helier Hospital, London, UK, [2]Courtyard Clinic, St George's Hospital, London, UK

Background: BHIVA guidelines recommend a full sexual health screen upon diagnosis of HIV infection followed by yearly unless indicated by sexual practice. Each patient attending our service is offered an annual health check which currently covers body mass index calculation, smoking and alcohol history, cardiovascular and fracture risk, hepatitis screening and sexual health assessment.

Methods: Annual health assessments were offered to all patients attending the outpatient clinic (n = 1199), and data were compiled onto a database. Sexual health data were further analysed.

Results: 918/1199 (544, 59% male) were included**:** median age 44, median CD4 count 541/mm^3, 91% on HAART. Ethnicity: 327 (36%) white, 426 (46%) black African, 79 (9%) black Caribbean/other, 86 (9%) other. Route of infection: 576 (63%) heterosexual, 311 (34%) MSM, 31 (3%) other. 709 (77%) were non-smokers and 536 (58%) did not drink alcohol. 71 reported oral sex only (66/71 male, 63/66 (95%) MSM). Condom use: 578/833 (69%) always, 183 (22%) sometimes, 72 (9%) never. Only 45/346 women < 55 yrs (13%) were using long acting contraception - IUD (33/346, 10%), depoprovera (7/346, 2%), sterilisation (5/346, 1%). Only 438/918 (48%) were aware of post exposure prophylaxis (PEP). 249 (27%) accepted a sexual health screen. 3% (7/249: all male, 5 MSM, 2 heterosexual) were identified with a new sexually transmitted infection (*Chlamydia trachomatis* n = 4, Gonorrhoea n = 4). Syphilis screening identified 10 cases (all MSM) of previously unknown infection.

Table showing sexual activity (SA) of our cohort (833/918, 91% SA)

Sex	Number	Number reporting last sex within (%):				
	SA (%) n = 833	Not SA (%) n = 85	1 weak n = 277	3 months n = 514	3–12 months n = 113	>1 year n = 206
M	502 (60)	42 (49)	189 (68)	249 (48)	59 (52)	106 (51)
F	331 (40)	43 (51)	88 (32)	265 (52)	54 (48)	100 (49)

Conclusion: Our nurse led annual health screen (uptake rate 77%, 918/1199) is an effective way to screen HIV positive patients allowing focussed targeted healthcare interventions. Understanding the sexual behaviour of our cohort ensures we individualise care and consider appropriate services that may be beneficial such as specialist contraceptive services, PEP awareness and risk reduction strategies.

P15

SpR Trek: the next generation

A Williams, B Goh and C Orkin
Barts and The London NHS Trust, London, UK

Background: To achieve CCT Genitourinary medicine trainees must achieve multiple competencies in HIV subspecialties as assessed historically by direct clinic observation and more recently by formal Work Place Based Assessments (WPBAs). To ensure equitable access to the subspecialist HIV clinics within this large rotation we developed a new specialist HIV clinic training model in December 2010 giving trainees access to 15 subspecialist clinics with integrated WPBAs. Trainees were involved in designing the model and progress is reviewed quarterly. To further inform this process anonymous questionnaires were sent to all past and present trainees in our region to gain their views of specialist HIV training pre and post the new model. We report the findings of an assessment of clinic exposure and of the questionnaire.

Methods: We analysed the number of essential specialist clinics attended by all current and past trainees (≥2005) and invited them to complete a Survey Monkey questionnaire of HIV specialist training.

Results: The survey was circulated to 22 individuals, 13 current trainees & 9 post CCT. 17/22 (77%) completed the survey, 10/13 (77%) current trainees and 7/9 post CCT (78%). Breakdown of current trainees per year of training**:** 1st: 1, 2nd: 3, 3rd: 4, 4th: 2. Breakdown of post CCT: 6 completed pre 2008, 1 in 2011. 6/14 (43%) respondents who had worked in the unit prior to the new model found it difficult to arrange WBPAs. Essential clinics were defined as KS, TB, hepatitis, renal, lymphoma, treatment advice and pregnancy. Past trainees achieved 24/63 (38%) essential subspecialist clinic encounters over 4 years of training. Current trainees have completed 36/91(40%) essential subspecialist clinic encounters over a mean 2 years of training. 53/91 (58%) are scheduled to be done pre CCT. Freetext comments in the questionnaire revealed exclusively positive feedback from current trainees.

Conclusion: The questionnaire achieved a high response rate (77%). Although 57% of trainees reported no difficulty in arranging clinical assessments in the old model, only 38% exposure to essential specialist clinic encounters was achieved over 4 years of training. Current trainees have already achieved 40% of essential specialist clinic encounters in a mean of 2 years of training. The scheduled rotation projects 98% exposure by CCT. This new training model has been well received and achieved universally positive feedback from current trainees.

P16

Every second counts – Audit of waiting times for blood tests in an HIV outpatient service

M Hourihan and D Scott
Barts and The London NHS Trust, London, UK

Background: Interventions which improve patient experience and satisfaction are key to service transformation. A common NHS complaint is time spent waiting for a blood test to be taken. Changes in nurse staff mix, with appointment of a nursing assistant (Band 3), coupled with innovation in IT, with roll out of care record system (CRS) allowed introduction of patient held, pre-printed, request labels. Approximately 2400 HIV patients attend this inner city clinic.

Previously, serological requests were recorded in patient notes, which had to be pulled when the patient attended for bloods. Significant time was spend by reception staff finding notes that were not immediately available; with consequences of patients waiting and reception staff not able to perform their other duties.

Methods: A prospective audit of patients attending for blood tests was performed in June 2011. Data on visit date, time, minutes waiting, appointment type (walk in or booked clinic appointment) was recorded. Comments were also recorded if a patient was called but not in the waiting room.

Results: There were 466 patients attending for blood tests (20% cohort). The average (mode) wait was 2 minutes, with a mean of 3.9 minutes (range < 1–60 minutes). 97% (450) were called within 15 minutes, with only 16 waiting more than 15 minutes - of these, comments recorded were 4 had gone to pharmacy, 4 had not been registered by reception, and 2 were not in the department.

Conclusion: The process of blood requests has been transformed in several ways.

(i) A system not reliant on finding patients notes has released receptionist time.

(ii) Clinicians pre-print future request labels which are brought by the patient and presented at phlebotomy. This ensures only necessary tests are performed and avoids unnecessary investigations. This has pathology cost savings.

(iii) The appointment of a dedicated nursing assistant has streamlined nursing pathways, freeing qualified staff to deliver other duties.

(iv) Virtual outpatient clinics are popular for stable patients, and short waits for blood tests further improves patient experience.

P17

Resource utilisation and cost of managing adverse events (AEs) associated with highly active antiretroviral therapy (HAART) in patients with HIV-1

D Mladsi[1], S Curtis[2], M Bell[1], T Ito[2], M Wilson[1] and M Aboud[2]
[1]RTI Health Solutions, Manchester, UK, [2]Janssen-Cilag, High Wycombe, UK

Background: Use of non-nucleoside reverse transcriptase inhibitors (NNRTIs) such as rilpivirine and efavirenz in treatment-naive HIV-1 patients can be associated with the development of central nervous system side-effects, rash and lipid elevations. Resource utilisation and costs associated with managing adverse events (AEs) are, therefore, key factors in assessing the cost-effectiveness of treatment.

Methods: A Delphi approach was used to estimate the healthcare resources used in the management of AEs in current practice in the United Kingdom. Responses from 64 British healthcare professionals working in HIV were collated and distributed to all respondents for review and validation. Costs were then calculated by multiplying the proportion of patients requiring each resource (GP visit, specialist visit, tests/monitoring, hospitalisation, drug costs) by the number of units of each resource used and its associated 2010 unit cost. Costs were then summed across each AE, by grade, to estimate total cost for each grade of AE (Division of AIDS, 2009).
Results: Estimates derived from the Delphi panel suggest that the management of rash, dizziness, abnormal dreams and lipid elevations have a considerable resource impact. Based on the incidence of AEs for rilpivirine-based and efavirenz-based regimens reported in the pooled ECHO and THRIVE trials during the first 48 weeks of treatment, mean costs associated with the management of AEs in treatment-naive HIV-1 patients were £49.25 in the rilpivirine-treated group versus £122.92 in the efavirenz-treated group.

The cost per patient of managing these AE in England has been estimated at:

AE	Grade	Estimated mean cost (95% CI)
Rash	2	£124 (75–187)
	3	£736 (524–980)
	4	£1,494 (1,232–1,784)
Dizziness	2	£85 (52–127)
	3	£369 (222–548)
	4	£1,092 (847–1,366)
Abnormal dreams	2	£29 (18–41)
	3	£67 (44–94)
Triglyceride levels	3	£358 (273–444)
	4	£491 (376–606)

Conclusion: The costs of managing AEs associated with NNRTIs are considerable and rise with the severity of the AE. Given that rilpivirine has better tolerability profile compared with efavirenz, it is anticipated that the resource impact and cost of managing AEs will be lower in patients receiving rilpivirine than in those receiving efavirenz.

P18
Questionnaire-based evaluation of the contraceptive needs of HIV positive women at a south London HIV clinic

A Bucknor, H Webb and K Prime
St George's Hospital NHS Trust, London, UK

Background: 1331 HIV positive patients attend our service, of whom 557 (42%) are women. This study aimed to evaluate their contraceptive needs.
Methods: Questionnaires were distributed to HIV positive women > 16years presenting between 01.08.10–31.01.11. Data regarding age, ethnicity, HIV status, sexual activity, pregnancy history and contraceptive use were obtained. Data were analysed with Microsoft Excel 2007.
Results: 165 questionnaires were distributed; 109 were completed (response rate 66%). 61/97 (63%) women were of childbearing age (16–45 years) and 79% Black African. Median time since HIV diagnosis was 5–9 years. 67/97 (69%) reported contraceptive use**:** 51 (76%) condoms, 13 (19%) intrauterine device or system, 4 (6%) depo provera and 3 (4%) the oral contraceptive pill (OCP). Although 89/99 (90%) were taking antiretrovirals (ARVs), 29 (33%) women were unaware of potential interactions with certain methods of contraception. 3 women on ARVs were on the OCP; 2 of these prescribed by their GP. For those using condoms, only 32/51 (63%) reported consistent use. Contraception was accessed as follows: 32/51 (63%) during their HIV appointment, 11/51 'non-prescription' access, 6/51 GP, 5/51 family planning service at our clinic, 3/51 family planning clinic elsewhere and 2/51 young person's clinic. 77/102 (75%) had previously been pregnant and 36/91 (40%) reported unplanned pregnancies, with 18/36 citing the cause as 'no contraception used', 11/36 a 'failure of contraception', 2/36 cited both. 62 women reported pregnancies not ending in a live birth; 55% had terminations, 34% miscarriages and 11% still births. Frequency of contraceptive discussions varied: 30/77 (39%) had contraception discussed with them ≤ once a year, including 2 women who had never discussed contraception, 19/77 (25%) > once a year and 28/77 (36%) discussed it on every visit. 50/74 (67%) women discussed contraception with a doctor, often in conjunction with another healthcare professional. 57/76 (75%) of respondents stated preferring to access contraception at the same time as their HIV appointment; reasons included a wish to deal with issues in one appointment and a reluctance to disclose HIV status to other services.
Conclusion: An on-site service providing HIV positive women with effective, regular access to contraceptive information and prescription may increase appropriate contraceptive use, reducing the number of unplanned pregnancies and terminations.

P19
Management of stable HIV patients in a community based satellite outpatient HIV service – an appropriate model of care

J Thornhill, R Browne and A Nageswaran
St Ann's Hospital, London, UK

Background: The medical model of care for people living with HIV has changed over the past 30 years. Management has moved from an inpatient to an outpatient-based model, especially as the number of patients stable on treatment increases. The BHIVA guidance 'standards for HIV clinical care 2007' identified two distinct types of services required to meet the needs of HIV positive patients.
Firstly a HIV centre providing acute inpatient care and referral services for peripheral centers in networks and secondly HIV units providing outpatient care for the majority of patients with uncomplicated HIV infection. We aimed to evaluate this model of care in a North London community based satellite outpatient service against current best practice guidelines (BHIVA clinical standards 2007).
Methods: Data was collected retrospectively from electronic patient records and case notes. A pathology lab link was used to track if resistance tests were sent and for hepatitis serology. Data was collected and analyzed using excel.
Results: All HIV clinic attendances between 1/10/2010 to 31/12/2010 were included. This was a total of 106 patients. The average age was 40.6 years. 52% were male. The standards looked at were**:**
(i) HIV testing & diagnosis: There were 14 new diagnoses with an average CD4 count of 540; two of the newly diagnosed had a CD4 < 200.
(ii) Initiation and use of HAART: 71% were on HAART. Of the newly diagnosed four did not have a resistance test at baseline. For those staring HAART for the first time 9.4% did not have hepatitis B status checked in the previous year. Four had a CD4 count of < 200 and of these only one was not on HAART.
(iii) Failure of HAART: 79.3% achieved an undetectable VL within 6 months of starting HAART. 86.6% of patients were fully suppressed on HAART. One failed a 1st line regimen and was changed to 2nd line.
(iv) Acute Illness: One patient was transferred for inpatient care.
(v) Sexual Health: 62.3% had an STI screen in the previous 12 months, 82% of women had cervical cytology.
(vi) Mortality: There were no recorded deaths, 3 patients were lost to follow up.
Conclusion: Our findings suggest that management in a community based satellite HIV centre is in line with best practice guidelines, with an increasing trend in no of diagnoses, good average CD4 count at diagnosis and few with CD4 < 200. HAART was used as per guidelines and sexual health screening was adequate. This supports the management of stable patients in satellite centers.

P20
Assessment of HIV care using a single set of HIV care quality measures

J O'Halloran, S Clarke, F Lyons, F Mulcahy and C Bergin
St James's Hospital, Dublin, Ireland

Background: HIV care quality measures have recently been published in the United States by Horberg et al to provide a tool to allow for standardised evaluation of HIV care. While many organisations including the British HIV Association (BHIVA) have developed comprehensive guidelines on all aspects of HIV care with auditable outcomes recommended for many individual standards, a single set encompassing the core standards is not yet available.
Methods: Records of outpatients were prospectively reviewed over a four week period for compliance with HIV care quality measures in a large HIV centre. Data was collected on seventeen standards as defined by Horberg et al.
Results: Of 423 patients reviewed, 409 (97%) met criteria for retention in care. 406/409 (99%) had a CD4 + count performed twice in the preceding year. Screening for Hepatitis B and C was recorded in greater than 99.5% of

patients. 374/409 (91%) received pneumococcal vaccine at least once. Of 180 patients susceptible to hepatitis B virus (HBV) infection, 92% received one HBV vaccine and 89% completed the vaccination course. 335/409 (82%) received influenza vaccine. 57/61 (93%) were prescribed prophylaxis for *Pneumocystis jiroveci* pneumonia. 83% of patients had gonorrhoea/ chlamydia screening at least once. 71% had annual syphilis serology. Assessment of high risk sexual behaviour and intravenous drug use (IVDU) was documented annually in 377/409 (92%) and 129/409 (30%) cases respectively. In IVDU, 88/100 (88%) had annual documentation of drug use. Tuberculosis screening was available in 251/371 (68%) cases. 399/409 (98%) complied with the BHIVA guidelines for initiation of anti retroviral treatment (ART). Of the 359 patients on ART, 307 (86%) were virally suppressed. 355/359 (99%) patients were either virally suppressed or had an appropriate treatment plan documented. In total, >85% compliance was achieved in 12 of 17 care outcome measures.

Conclusion: HIV quality care measures as outlined by Horberg et al can be applied to patients attending our service. Steps to address the lower rates of tuberculosis and sexually transmitted disease screening, along with improvement in influenza vaccination uptake can now be implemented. The implementation of this set of measures affords the opportunity to benchmark HIV care with our international colleagues.

P21

Assessment of addiction staff attitudes 6 months post integration of HIV and addiction services

S Surah[1], J Klnahan[2], S Keating[1], F Mulcahy[1], E Keenan[2] and F Lyons[1]

[1]GUIDE Clinic, St James's Hospital, Dublin, Republic of Ireland, [2]The Drug Treatment Centre Board, Dublin, Republic of Ireland

Background: HIV infected drug users contribute disproportionally to HIV related morbidity and mortality. Attendance for methadone is excellent in this cohort, in stark contrast to outpatient HIV care. Consequently an in-reach HIV clinic was developed with addiction services, providing on site HV medical care and provision of antiretrovirals (ART).

Methods: Six-months post development of this service, all addiction staff members were invited to complete an anonymous questionnaire to evaluate changes in attitudes and perception.

Results: 30/60 (50%) completed questionnaire. All 30 felt there was a need for the clinic.

Staff breakdown: doctors 9 (30%), nurses 8 (27%), non-medical 13 (43%). Median length of time working in addiction services was 3 years.

Attitudes towards the purpose of the clinic, benefits of the service, important features of an in-reach clinic, and impact upon addiction staff were assessed.

Purpose of clinic: engagement with HIV services/antiretrovirals 19 (63%), provision of holistic care 1 (3%), education/research/training 5 (16%).

Service benefits: 53% felt patients were less chaotic than a year ago. 74% believed patients were seen in a more timely fashion for their HIV care. 71% felt patients were more likely to take ART and be adherent with it. 64% believed that this new initiative was less chaotic than previous services.

Staff impact: 53% of staff believed this new service had an impact on their working day. 10 cited better liaison & communication between teams, and 11 claimed improved HIV education and knowledge.

Conclusion: Integration of HIV and addition services has facilitated the provision of care to challenging patients with multiple co-morbidities. It has enabled better communication between services and specialities to provide holistic care to marginalised patient populations.

P22

To determine the influence of a home delivery service of HIV medicines on adherence to HIV therapy

S Castelino[1], H Miah[2] and V Auyeung[2]

[1]Guy's & St. Thomas' NHS Foundation Trust, London, UK, [2]King's College, London, UK

Background: Successful treatment of HIV requires a high level of patient adherence to anti-retroviral therapy. Home delivery of HIV medicines has expanded rapidly over the last two year in HIV units in London and these stable patients are receiving supplies of four to 6 months. Evaluating whether change in the mode of supply of medicines is associated with any change in adherence and patient outcomes needs to be reviewed.

Methods: Retrospective analysis of medical notes of one hundred patients who were started on home delivery (HD) and 100 patients who received supplies from the clinic based hospital HIV pharmacy (standard care) over a 3 month period (Jan–Mar 2011) were reviewed over a 6 month period. Patient demographics and type of HIV regimen were recorded. HIV viral load, CD4 (%) and adherence were analysed using SPSS for windows version 18, McNemar test, repeat measure ANOVA test and independent *t*-tests.

Results: No significant difference was found in the number of patients with a suppressed HIV viral load who were on home delivery versus the standard care patients ($P = 0.650$). There was a general rise in CD4 (%) over time, but the average (mean) CD4 (%) was statistically similar between the two groups. Adherence levels also remained statistically similar between home delivery and standard care patients ($P = 0.350$). Over 50% of patients on HAART did not have adherence recorded over the 6 month period.

Conclusion: The average (mean) HIV viral load and CD4 (%) was not significantly different between the home delivery and standard care group indicating that the mode of supply did not affect adherence. Adherence documentation needs to be standardized and documented routinely.

P23

Reasons for non-utilisation of a home delivery service among patients stabilised on antiretroviral therapy at 3 outpatient clinic sites

J Tan, S Sonali, M Bower, B Smith and M Nelson

Chelsea and Westminster Foundation Trust, London, UK

Background: Delivery of antiretrovirals (ARV) using the home delivery (HD) service has many advantages. A major one is the cost saving generated as a result of zero-rated V.A.T. for medications delivered via HD. At the time of data collection, 49% of patients across the three clinics were actively using HD.

Objectives: To identify reasons for non-uptake of HD of ARV by patients and thus inform on methods to improve future development of the service.

Methods: A simple tick-box style questionnaire was given to patients presenting to pharmacy who declined to have their ARV delivered via HD. Recurring themes from preliminary data were distilled down to 5 major reasons listed on the questionnaire. These were *inconvenience, privacy, negative experience with delivery service, rarely being at home* and *moving home*. These were further split into sub-categories which patients could select. Space was allocated for patients to expand on reasons not available from the list and to comment whether anything could be done to change their view on HD. Data collection was carried out from 10 Oct–10 Nov 2011.

Results: From 146 questionnaires, 330 reasons for refusal were given. *Inconvenience* (32%), primarily due to difficulty coordinating delivery times (16%), was the main refusal reason. This was followed by concerns surrounding *privacy* (26%), especially when living in shared housing. *Being away from home* due to frequent travelling and/or irregular working patterns accounted for 27% of the responses while 7.3% were due to previous poor experience of delivery service. Moving home/ changing address comprised 2.4% of the responses.

Conclusion: Inconvenience and confidentiality have been the main concerns raised from the outset of HD. Despite offering assurance of high confidentiality standards, extended delivery times and various delivery options many individuals are still averse to using HD. Negative preconceptions of delivery services formed from previous experiences are also a deterrent. Although the potential cost savings achieved through HD is recognised, many individuals do not feel these savings justify perceived inconvenience and potential loss of anonymity. All these factors have to be considered if commissioners and service providers are to set realistic targets for registering patients onto HD.

P24

Developing models of shared primary and specialised care for people with HIV in the UK

A Williams[1], J Hutchinson[2] and C Estcourt[2]

[1]Barts and The London NHS Trust, London, UK, [2]Queen Mary University of London, London, UK

Background: Currently most HIV care in the United Kingdom (UK) is led by Genito-Urinary Medicine or Infectious Diseases specialists. Historically, links between specialist and primary care have been poor. This is changing due to increased willingness of HIV+ patients to disclose their status to their general practitioners (GPs); government policy shifting specialist care provision into

general practice; and constraints on prescribing of non-antiretroviral drugs in specialised units. GPs may lack the knowledge and skills to provide specialist HIV care but are better placed to manage associated chronic conditions (eg increased cardiovascular risk, mental health problems). Appropriate shared care could confer significant benefits for patients but there are no published recommendations for models of shared primary and specialist HIV care (shared HIV care).

The aim of this study is to describe existing examples of shared HIV care in different settings as a first step in developing feasible and acceptable models of shared HIV care to inform future commissioning of HIV services in the UK.

Methods: (i) Literature search to determine current practice, and identify key healthcare stakeholders (specialised clinicians, GPs, commissioners), in shared HIV care for HIV+ patients in developed countries. (ii) Semi-structured interviews with key healthcare stakeholders using a mixed-method topic guide (quantitative and qualitative questions) to explore their experiences and models of shared care used. We will analyse the responses to the qualitative questions using a 'Framework' approach and synthesize the findings to develop two or three models of shared HIV care which are feasible within current UK practice.

Results: We identified a small number of relevant shared HIV care models in England, Australia, and Switzerland. Interviews with at least ten key informants and analysis are on-going. Preliminary findings suggest that management of HIV infection per se by GPs is likely to be unfeasible but a model which ensures that GPs are supported educationally and financially to provide appropriate primary care for HIV+ patients could work in the UK. We will present examples of feasible models.

Conclusion: There are few examples of shared primary and specialised care for HIV+ patients in the developed world. Further work must explore patient acceptability and health care costs associated with shared HIV care models before recommendations for widespread implementation can be made.

P25
Understanding HIV and the holistic health approach: developing a level 2 OCNC accredited course for people newly diagnosed with HIV

K Alexander[1] and C Armstead[2]

[1]George House Trust, Manchester, UK, [2]Elton John AIDS Foundation, London, UK

Background: George House Trust (GHT) received funding from the Elton John AIDS Foundation (EJAF) to develop courses for people with HIV. A key aim of the project was to secure National Open College Network (NOCN) accreditation for GHT's course for people newly diagnosed with HIV. Accreditation allows course participants to gain credits for their learning, which they can put towards future study, for example on a degree course.

Methods: The newly diagnosed course, renamed Understanding HIV and the Holistic Health Approach during the accreditation process, was developed to ensure that course participants achieve the following learning objectives:

- Understand the terminology used within the field of HIV health care.
- Understand the implications of and reasons for HIV disclosure.
- Understand how HIV is passed from one person to another.
- Understand the importance of health relationships and adherence to antiretroviral medication.
- Understand the basic rights of people living with HIV contained within the Equality Act.

Each objective is linked to clear and measurable assessment criteria. Course participants can demonstrate that they have met these criteria through active participation in each of the five weekly sessions that comprise the course, and through written assignments undertaken in their own time. Course work and assignments are assessed and marked by GHT staff delivering the course. The course objectives and assessment criteria have been accepted by NOCN as meeting their standards for level 2 accreditation. As a result, participants passing the course gain 2 NOCN credits.

Results: Since accreditation, 11 gay and bisexual men with HIV have taken part in a course and have chosen to be assessed. All have passed GHT's internal marking of their course work and assignments and need only to be externally verified by NOCN to receive their credits. These credits will represent an additional outcome for course participants to add to the increased knowledge and understanding of their condition evaluation of the course demonstrates they gain. GHT is now exploring developing the course for e-learning, to widen access to its benefits.

P26
Establishment of an Annual Health Clinic for HIV positive individuals

L Lewis, C Gamble, E Stevens, S Chidzomba, AM Tranter, V Ennis, C Bradbury, C McInnes, C Stradling, M Van Der Linde, S Barrett, J Cox and S Taylor

Birmingham Heartlands HIV Service, Birmingham, England

Background: BHIVA guidelines for the routine investigation & monitoring of adult HIV-1-infected individuals 2011 and EACS version 6 guidelines advise on appropriate annual monitoring which maintains the health of people living with HIV. Standard care at our centre aims to fulfil these recommendations, however, it is identified that patients frequently do not stay or are reluctant to take these opportunities when offered. With this in mind the multi-disciplinary team (MDT) discussed new ways of working in order to meet this need. The outcome of this was the establishment of a new annual health clinic (AHC).

Methods: The AHC was set up fortnightly & overseen by Clinical Nurse Specialists (CNS). Screening was performed for sexual health; urine protein/creatinine ratio; urinalysis; cytology; Hepatitis B/C serology; cardiovascular risk (CVR); fracture risk; neurocognitive and mood screens. Disclosure, child testing & PEPSE are discussed with the patient. Findings are recorded in an easily identifiable booklet, filed in the notes for medical review at the doctor appointment 2 weeks later. Band 5 nurses co-ordinate the clinic & an MDT of Dieticians, Occupational Therapists, Sexual Health Nurses, & Health Advisors deliver the care. The appointment is approximately one hour. An information leaflet explained the purpose and format of the clinic i.e. it replaces a routine blood test appointment; it is not an additional visit. This one-stop shop enables other appointments throughout the year to be less time consuming & complicated.

Results: To date 99 patients have attended with 69% male, 31% female with a mean age of 42yrs. The satisfaction survey in progress suggests it is highly acceptable to patients. 100% have had CVR, bone fracture risk, neurocognitive & mood screening carried out. 100% have been offered a sexual health screen & of those 70% have been screened. A benefit is to proactively provide advice & screening to prevent common conditions occurring or detect them early. Patients have an opportunity to meet the wider MDT to develop therapeutic relationships.

Conclusion: The aim of the AHC was to ensure guidelines regarding annual patient care are met. The clinic has been instrumental in the identification of problems which may otherwise have gone undetected or taken longer to be recognised. This has allowed prompt treatment. An audit comparing AHC to standard care will be completed in March 2012.

P27
Prescribing of non-HIV related medications – a move back to primary care

C Mullooly[1], A Vas[2], A Sukthankar[2] and S Ahmad[1]

[1]University Hospitals of South Manchester NHS Foundation Trust, Manchester, UK, [2]Central Manchester University Hospitals NHS Foundation Trust, Manchester, UK

Background: Over the years HIV physicians have often provided non-HIV medical care to their patients. This is sometimes due to a patient's reluctance to disclose the diagnosis to their general practitioner. However, this practice is neither clinically safe nor financially viable for an HIV drug budget.

In 2008 the Greater Manchester Sexual Health Network (GMSHN) HIV Group issued a statement advising all HIV care providers in the area that from 1st January 2009 primary care prescribing by HIV physicians should cease. A list of permitted medications (such as co-trimoxazole, fluconazole, loperamide) was also issued with this statement. In 2011 we reviewed the success of this change.

Methods: The lead HIV consultant and pharmacist were contacted at the 8 HIV care centres (A-H) across Greater Manchester. They were asked to provide data on all medications prescribed outside the guidelines of the 2008 statement during 2010 (1 year after the changes were implemented). Pharmacy databases, patient records and prescriptions were used to source the data. The name of the medication and number of prescriptions issued were specifically requested.

Results: All 8 centres submitted data, however, only 4 centres gave results for the entirety of 2010 (2 with and 2 without quarterly breakdowns), the other 4 centres submitted data for the last quarter of 2010 alone. The prescriptions issued outside the guidelines of the 2008 statement are presented below:

	No. of prescriptions per 100 patients under HIV care									
	2010				September–December 2010					
	A	*B*	*C*	*D*	*C*	*D*	*E*	*F*	*G*	*H*
Topical	0	2.8	14.2	2.1	6.1	0.3	11.0	0.5	0.1	0
Antibiotic	0	2.2	2.0	0.3	0.7	0	17.8	0	0	0
Cardiac	0	0.6	2.7	0	0	0	0.9	0	1.4	0
Analgesia	0	0.6	1.4	0	0	0	3.6	0.2	0.5	0
Other	10.2	1.1	7.7	3.6	3.4	0.9	9.5	2.3	3.1	0.9
Total	10.2	7.2	27.7	6.0	10.1	1.2	42.7	3.0	5.2	0.9

Discussion: The results varied between centres with many appearing to have implemented the change well. The remainder still need to take further action to tighten up prescribing. Some centres also need to ensure GU prescriptions are allocated to the correct budget. Several prescriptions deemed 'outside of guidelines' might have been acceptable depending on the indication e.g zopiclone use when starting efavirenz. The results have been fed back to all HIV prescribers in the region via the GMSHN HIV group with suggestions for improvement. We plan to perform the review again next year.

P28
Quality matters: HIV service evaluation against proposed quality indicators

K Seneviratne, E Herieka, C Chapman and S Sundaram

Royal Bournemouth and Christchurch Hospitals NHS Foundation Trust, Bournemouth, UK

Background: Local service quality indicators (SQIs) for measuring the quality of HIV services have recently been published. In a climate where commissioning and payment are likely to be driven by patient outcomes, we evaluated the performance of our HIV service against these SQIs together with some of our own indices based on current best practice.

Methods: Retrospective case note review of all new HIV diagnoses from August 2008 to July 2010. Data collected included demographics, appointment access, baseline screening including sexual health screening (SHS), timing of antiretroviral therapy (ART) initiation, CD4 and viral load results, documentation regarding GP disclosure and PEPSE. Descriptive analysis was done using Microsoft Excel.

Results: 62 patients were eligible; 82% were male, 86% White and 57% were homosexual. Mean age was 36 years (range 19–69 years). Mean CD4 at diagnosis was 342cells/mm^3. 48% of newly diagnosed individuals had a baseline CD4 < 350. 98% had a CD4 count performed within 1 month of diagnosis (a proxy of being in care); however, only 48% of patients were seen by a HIV specialist within 2 weeks of diagnosis.

93% had a baseline resistance test. 95% were started on ART within 6 months of CD4 ≤ 350. Of those who started ART, 65% achieved viral suppression by 6/12 and this increased to 88% at 1 year. 64% were still on the 1st ART regimen at 1 year of treatment and 95% had a CD4 count of > 200 at 1 year.

52% of newly diagnosed individuals had a SHS within 3 months of diagnosis. PEPSE advice was not documented in 77% of notes. Of those individuals who had agreed to disclose HIV status to GP (81%), all had correspondence to GP from the last clinic visit.

Conclusion: The desired SQI targets are being met with regards to starting ART and achieving good virological and immunological outcomes. However the access target of two weeks from diagnosis for a HIV specialist review is not being met. Since 2000, the service has seen a 20% increase in HIV diagnosis year on year. Workforce planning is in progress to accommodate this increase in workload. We have developed a new patient proforma to ensure that baseline SHS and safe sex advice including PEPSE are not overlooked. HIV was diagnosed late (CD4 < 350) in nearly half of the individuals despite continued efforts to improve testing within primary and secondary care.

P29
An audit of the clinical outcomes and user satisfaction of an HIV virtual advice clinic

M Wood and T Thirunavukarasu

Royal Liverpool and Broadgreen University Hospitals NHS Trust, Liverpool, UK

Background: Our regional HIV care network operates a monthly virtual clinic. This service has not been assessed previously as to the clinical outcomes from the advice it issues (audit), or as to physician (user) satisfaction with the process.

Methods: Cases presented at the meeting between June 2009 and September 2010 were retrospectively reviewed for clinical data (casenote review) and a clinician satisfaction questionnaire sent to the physician in charge of the patient's care. We used the following audit standards**:** 1) After a change in HIV therapy (or intervention) a patient should be virologically suppressed (HIV Viral Load < 50 copies/mL) by 6 months. 2) Physician is satisfied with advice they receive (Likert scale rating of 3 or above, 1 = bad 5 = excellent).

Results: Twenty-five questionnaires were returned. Of those that took advice (n = 22), the mean Likert rating was 4.7 (range 5 to 4), in those that didn't take advice (n = 3) the mean Likert rating was 4.7 (range 5–3).

Advice Category (Number of advice episodes)	Took advice n (%)	*If* took advice, VL < 50 copies/ml at 6 months n (% of those taking advice)	*If* took advice, Switched away from suggested regime by 6 months n (% of those taking advice)	*If* took advice, Remaining on suggested regime 6 months after switch n (% of those taking advice)
Viral load Rebound (18)	15 (83%)	6 (40%)	6 (40%)	9 (60%)
Drug-Drug Interaction (1)	1 (100%)	1 (100%)	0	1 (100%)
Co-Morbidities (8)	7 (87.5%)	7 (100%)	1 (14%)	6 (86%)
Previous cART treatment or resistance (10)	7 (70%)	4 (57%)	1 (14%)	6 (86%)
ARV side effects (10)	9 (90%)	8 (89%)	1 (11%)	8 (89%)
Total ARV advice episodes (47)	39 (83%)	26 (67%)	9 (23%)	30 (77%)

Conclusion: When advice was issued for patients with pre-existing resistance and cART treatment or viral load rebound, a higher than expected level of non-complete HIV viral suppression at 6 months was seen. This potentially represents treatment compliance issues in a group of treatment experienced patients, as the aim of all advice issued was to achieve HIV viral suppression. Overall users of the meeting were satisfied with the process, even if clinical advice was not taken.

P30
The impact of courses for people with HIV on their knowledge, health and behaviour

K Alexander[1] and C Armstead[2]

[1]George House Trust, Manchester, UK, [2]Elton John AIDS Foundation, London, UK

Background: To assess the impact of its courses for people with HIV, funded by the Elton John AIDS Foundation (EJAF) George House Trust (GHT) operates a monitoring system based on the completion by clients of questionnaires at key stages.

Methods: Clients taking part in a GHT course for people newly diagnosed with HIV or a residential weekend for people living with HIV, were asked to complete a questionnaire at three key stages**:** before the course; at a recall meeting 5 to 6 weeks after the course and 12 months after the course. The questionnaires at each stage asked the same questions focusing on 3 broad areas: knowledge and understanding of HIV (for the newly diagnosed course only); emotional and physical health (including engagement with health services); sexual behaviour and substance use. The response rate for the recall questionnaires was 61% For the 12 month questionnaires, the response was 7%. Therefore, the results reported refer only to participants who completed

an initial and recall questionnaire for the courses they attended. A focus group and 18 in-depth telephone interviews with course participants supplemented the questionnaire data.

Results: The newly diagnosed courses considerably increased participants' understanding of HIV. For example, there was an increase from 29 to 69 in the number of people who said they understood fully what CD4 count means. While participants reported little change in their physical health, the courses gave them greater confidence in dealing with clinical staff and provided some with strategies to make their relationships with clinicians more productive. The courses had a generally positive effect on participants' emotional health with respondents reporting less depression, improved self-esteem, greater self-confidence and reduced isolation. The results on sexual behaviour and substance misuse were more mixed, but there was evidence of increased thinking around disclosure and condom use. The courses also provided people with an opportunity to reflect on their substance use and information to support efforts to change behaviour.

Conclusion: GHT's courses are effective in increasing participants' knowledge of HIV. They also contribute to reduced isolation and improved emotional health among participants, and provide a forum for increasing thinking and discussion of sexual behaviour and substance misuse.

P31
Understanding the health needs and risk behaviours of new HIV patients

M Desai, M-A Bevin, H Holland, D Darling, A Mukela, A Menon-Johansson and J Fox
Guy's & St Thomas' Hospitals NHS Foundation Trust, London, UK

Background: Understanding the social support needs and risk behaviours of new HIV patients is essential to provide cohort-specific services, improve quality of life and prevent onward transmission of HIV.

Methods: A Microsoft Access database was created to improve reporting of new HIV diagnoses to the Health Protection Agency (HPA) and collect data to inform service development. These included risk behaviour, testing practices, health indices and social status. Data collection was undertaken by Health Advisors and HIV Specialist Nurses at the time of the first HIV clinic visit between 01/09/2010 – 31/12/2011.

Results: Data were collected on 328 individuals. The cohort demographic summary was: 81% men; median age 38 years; 51% white; 49% MSM. The majority of patients (64%) were new diagnoses; the remainder were transferring their HIV care. The proportion with recorded GP details was 62% of newly diagnosed and 48% of transfer patients.

Health care utilisation and sexually transmitted infections (STI) data were available for 83 (42%) new HIV diagnoses of which 53 were MSM. In the last 12 months, 43% had visited their GP, 23% attended an out-patient hospital department and 12% had attended A&E. While diagnoses were mostly made in a GUM clinic, a notable proportion were made in GP (17%) and out-patient departments (13%)

In the preceding 3 months: 60% reported unsafe anal/vaginal sex and the same proportion. Over the same period, new STIs were diagnosed among 16% heterosexuals, 19% MSM. Measures of social deprivation were high: 17% reported housing problems and 26% were unemployed.

Lifestyle factors that could be targeted were common: obesity (median BMI 24kg/m^2 with 10% categorised with grade II/III obesity); current smokers (25%); >21 units/week of alcohol consumption (5%) and recent recreational drug use (22%).

Conclusion: In a heterogeneous cohort of HIV new attendees, a significant number had posed a risk of onward transmission despite many attending healthcare services prior to diagnosis. At the time of initial engagement with HIV services, there were considerable social and general medical health needs/risk behaviours which need to be targeted to improve wellbeing and morbidity. With a large portion of patients without a GP; these data support both the targeting of interventions to improve health/health status and prevent onward transmission within the HIV service as well as the need to encourage patient engagement with primary care.

P32
Barriers affecting Home Delivery uptake

Z Mohammad, S Munshi and I Reeves
Homerton University Hospital, London, UK

Background: Home delivery of Antiretrovirals represents a significant cost saving initiative, whilst offering patient convenience. In the current financial climate, NHS Trusts in London are required to meet cost saving targets within the HIV budget. The aim of this study was to investigate the effect of prompting prescribers to consider home delivery and to describe reasons given by patients for declining the service.

Methods: Suitable candidates with an undetectable viral load for a minimum of 6 months were identified through a clinical database. A two tier prompting system was initiated. Firstly, a form was designed and attached to the clinical notes of the patients identified prior to their doctor's appointment. This prompted a discussion with the patients and assessed their reasons for declining. Secondly, a patient message was programmed into the clinic management system which reminded clinicians to offer the service at the point of attendance. Data were collected from April 2011 to January 2012.

Results: 214 patients identified as suitable candidates
171 patients recruited since April 2011 (48% increase)
98 (57%) of these patients were due to a prompt
73 (43%) of patients not on original target list were recruited
86 prompt forms returned of which 55% female and 45% male
Of these, 47 (55%) did not commence HD of which half indicated they did not want to be asked again
The most common reasons documented by patients for not signing up to home delivery were confidentiality and disclosure issues centred around their accommodation (36%); locations of community pharmacy pick up points (16%) and lack of trust in the home delivery service (12%).

Conclusion: Prompts were an effective strategy to increase recruitment onto home delivery. It is likely that this strategy also reminded clinicians to recruit additional patients not on the initial list. Recruited patients over this period led to a cost saving of approximately £200,000 per year. With increasing emphasis on home delivery targets in alleviating pressure on the budget, more patient focussed strategies are needed to improve patient recruitment.

P33
Local authority social care funding survey report

Y Azad and L Dunkeyson
NAT (National AIDS Trust), London, UK

Background: Over the last two years there have been significant changes to the way in which social care for people living with HIV is funded. There was concern that the change from a ring-fenced grant (the AIDS Support Grant) to a non-ring fenced funding line in the Formula Grant for 'HIV/AIDS Support', combined with wider Local Authority budget cuts, could threaten the provision of social care for people living with HIV in England.

Methods: In October 2011, with research approval from the Association of Directors of Adult Social Services, surveys were sent to all 152 local authorities in England asking about spending on and provision of social care services for people with HIV, so as to ascertain the impact of funding changes. Although responses were not received from all local authorities, over 75% of the funding allocated to HIV social care through the 'HIV/AIDS Support' funding line in the Formula Grant was accounted for. The survey included a number of questions repeated from a previous survey (2008/09) to allow for comparison. The results were analysed and a series of recommendations made.

Results: In 2010 and 2011 more than a third of local authorities did not use all the funding allocated to them through the 'HIV/AIDS Support' funding line to provide social care for people living with HIV. This was a higher proportion compared with those who did not use all of the ring-fenced ASG in 2008/09. Approximately half of local authorities did not fund HIV specialist social workers meaning people living with HIV only have access social care through generic services. However training for generic social care staff is not available in all areas.

Over 90% of local authorities now require people living with HIV to meet their standard eligibility threshold in order to qualify for social care. Most local authorities set this threshold at 'substantial', making it difficult for people living with HIV to access the social care they need. Previously the majority of people with HIV did not have to meet standard eligibility thresholds.

Conclusion: This survey illustrates how the removal of the ring-fence for HIV social care funding has impacted on the provision of social care for people living with HIV. It also highlights an important role people can play in holding local authorities to account for how they spend the money allocated to HIV social care.

P34

Post-exposure HIV prophylaxis following sexual exposure : a retrospective audit against BASHH guidance

S Cherif, N Lomax and R Drayton

Department of Integrated Sexual Health, Cardiff Royal Infirmary, Cardiff, UK

Background: In 2006, the British Association of Sexual Health and HIV (BASHH) recommended post exposure prophylaxis (PEPSE) to be given within 72 hours following unprotected vaginal or anal intercourse with an HIV positive source or with a source of unknown HIV status but from a high risk group. They suggest that patients should complete 4 weeks of therapy and should re-attend for HIV testing at 3 months and 6 months post-exposure.

Methods: The case notes of all patients who received PEPSE in our department between January 2009 and December 2010 were retrospectively reviewed and audited against these guidelines.

Results: 64 patients received PEPSE. 59 (83%) were male, 38 (72%) were MSM. The median age group was 25–34 years. A total of 44 (69%) presented directly to genitourinary clinic, 9 (14%) were referred by SARC and 11 (17%) were referred from A&E. 30 (47%) patients had had sexual intercourse with a known HIV positive source. The remaining 34 contacts were of unknown HIV status of whom 4 (12%) were immigrants from a high prevalence area for HIV, 1 patient was a current intravenous drug user, 14 (41%) were MSM and 15 (44%) were reporting a sexual assault. PEPSE was prescribed in accordance with the guidelines 'recommended' indications in 47/64 (73%) patients and 15 (23%) were given PEPSE under 'consider PEP' indications. Two patients were prescribed PEPSE outside BASHH guidance. Time from exposure was documented in 45 (70%) of patients, all of whom were prescribed PEPSE within 72 hours (median time 13–24 hours, range =<12–72 hours). 49 (77%) patients completed the PEPSE course. 6 (9%) patients did not attend for further assessment. A further 9 (14%) patients failed to complete 28 days treatment, documented reasons were patient's choice in 4, 1 patient tested HIV positive at baseline, 3 patients developed side effects, and 1 patient denied sexual assault at later stage. 60 (94%) patients received Truvada and Kaletra. Four patients were prescribed different regimen due to established viral resistance in the source. All patients had a baseline HIV test performed and were offered hepatitis B vaccination. 55 (86%) patients accepted an STI screen. Three and 6 months follow up was attended by 45(70%) patients and 33(52%) respectively. None of these patients were found to have seroconverted.

Conclusion: PEPSE is predominantly being prescribed in line with the recommended indications and is dispensed within 72 hours of risk exposure. Completion rates were satisfactory. Attendance for 3 months and 6 months post-exposure HIV testing needs improving. A re-audit is recommended in view of new PEPSE guidelines (2011).

P35

Following up persons 'lost to follow up': experiences of a medium-sized HIV centre

C Evans[1], M Rayment[1], V Delpech[2] and R Jones[1]

[1]Chelsea and Westminster NHS Foundation Trust, London, UK, [2]Health Protection Agency, London, UK

Background: On average, 90% of adults attending HIV services in any one year attended the following year. The remainder become 'lost to follow up. ' Some seek care elsewhere; others disengage from services and re-present late. We aimed to determine the rates of loss to follow up in our clinic population, and to identify subsequent presentation in alternative settings.

Methods: The hospital database was used to identify individuals who had not engaged in HIV care for more than 12 months during the period 2007–2010. Demographics, laboratory results and ARV experience at the last clinic visit were recorded. Medical records were reviewed to identify reasons for default. Where reasons were unclear, efforts were made to contact patients via telephone and by post. Finally, the HPA SOPHID database was interrogated to identify individuals who may have later presented for care elsewhere.

Results: Of 690 regular clinic attendees, 79 individuals (11%) were identified as being lost to follow-up. Of these, the majority (91%) were men. Three individuals (3.8%) had died, and 34 (43%) had formally transferred their care or returned to their countries of origin. For the remaining 42 individuals (53%) no documentation was available to explain why they had defaulted follow-up. In 7 cases (17%) there was evidence of attempted recall by clinicians. Following attempts to trace these individuals, two re-engaged in care. Attempts were limited by a lack of current contact information. Of the 40 truly lost to follow up (5.8% of total clinic caseload), the majority (70%) identified as white (with 20% identifying as black African). At the time of last visit, median CD4 count was 432 cells/μl (range 7–823), and 18 patients (45%) were on antiretroviral therapy with 13 (72% of this group) having an undetectable viral load. The HPA SOPHID database revealed that three (7.5%) of these individuals have subsequently presented for care at alternative centres.

Conclusion: In our centre, a small fraction of attendees become lost to follow up. In fewer than half of cases, however, are reasons known. Attempts at recalling those patients truly lost were hampered by a lack of contact details. The use of the SOPHID dataset can be successfully employed to identify those still engaged in care in the UK. Maintaining contact details and improving communication with other healthcare providers (eg; primary care) may improve recall exercises in the future.

P36

Meeting the psychological needs of people living with HIV: an evaluation of the HIV psychiatric liaison service in an urban area

J Hyam[1], N Lomax[2], S Hall[2], C Knapper[2], R Drayton[2] and G Griffin[2]

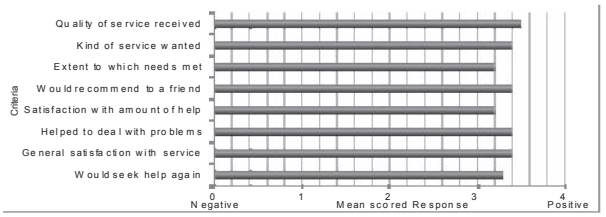
[1]Cardiff University, Cardiff, Wales, [2]Department of Integrated Sexual Health, Cardiff Royal Infirmary, Cardiff, Wales

Background: In response to recent guidelines regarding psychological support for people living with HIV, the aim of the study was to evaluate current HIV psychiatric liaison service provision in an urban area.

Methods: A questionnaire-based psychiatric liaison service evaluation was conducted, supplemented with a qualitative study focussing on the psychological implications and individual experiences of people living with HIV. Questionnaires were distributed to all HIV positive patients seen in clinic between 13th October and 8th December 2011 who were current or previous users of the HIV psychiatric liaison service. Quantitative data from the questionnaires was collated and represented graphically. Qualitative data from free text boxes was classified into themes. Following this, semi-structured interviews were conducted with 20 HIV positive patients attending Consultant, Registrar or multidisciplinary team clinics between 14th and 23rd November 2011. Interviews focussed on experiences of general practitioner (GP) disclosure, coping mechanisms and relationships with family, friends and partners. Qualitative data from the semi-structured interviews was analysed thematically.

Results: 18 questionnaires were returned over the study period (43% response rate) and none were excluded from the study. Patient satisfaction scores were high for all criteria with mean scores ranging from 3.2 to 3.5 on a scale of 1–4.

79% of respondents stated that they would prefer to discuss their mental health issues with the HIV psychiatric liaison team rather than their GP. Identified themes included the desire for specialised care, greater confidentiality and less stigma felt in the integrated sexual health setting. Disclosure rates were: 85% (GPs), 80% (friends), and 60% (family and partners). Complex adjustment experiences and coping mechanisms were identified. The majority of participants reported positive lifestyle changes and a proactive approach to the management of the condition. Less positive experiences included struggles relating to negative self-perception, denial and substance abuse.



Conclusion: Given the well documented links between HIV and psychiatric co-morbidities, responsive and high-quality service provision is crucial. The HIV psychiatric liaison service has been shown to be a valuable provision for people living with HIV, however additional funding is essential to expand the service and further meet their psychological needs.

P37

Accuracy of ethnicity data in non-white MSM with HIV in London

H Williams[1], A Elgalib[2], V Delpech[3] and G Sethi[1]
[1]Guy's and St Thomas' NHS Foundation Trust, London, UK, [2]Croydon University Hospital, London, UK, [3]Health Protection Agency, London, UK

Background: It is important to record ethnic group for patients with HIV as those of non-White ethnicity may require tailored care. Ethnicity data recording is an area which is susceptible to error and there is concern that if patients' ethnic group is not accurately recorded there may be an underestimation of the burden of HIV in non white ethnicities.
Methods: Non white MSM with HIV attending for care at two centers in London were recruited between 1st August and 30th September 2011. They were asked to self describe their ethnic group. They were then asked to pick an ethnic group to describe themselves from 2 limited lists of ethnic group descriptors currently used by the UK Health Protection Agency and NHS to analyse sexual health and HIV data. These answers were then compared to the actual ethnic group descriptor held on the patients' current hospital records and discrepancies (or 'non-agreement') were looked for.
Results: Of the 30 study participants 20% (n = 6) were born in the UK. 50% (n = 15) of the participants stated that they spoke English as their first language. When asked to describe their own ethnic group 23 different individual answers were given. The commonest of these was 'Black Caribbean' which was given by 10% (n = 3) of the participants. 33.3% of participants (n = 10) had complete agreement between their self description of ethnic group and of the ethnic group recorded in their hospital records. 36.7% (n = 11) had no agreement at all. 56.7% of participants (n = 17) had complete agreement between the two forced choices of standard NHS ethnic group descriptors and 10% (n = 3) had no agreement. 23.3% of participants (n = 7) had complete agreement between their self description of ethnic group and the first list of forced choice ethnic group, 46.7% (n = 14) showed no agreement. 20% of participants (n = 6) had complete agreement between their self description of ethnic group and the second list of forced choice ethnic group, 40% (n = 12) showed no agreement.
Discussion: This study shows considerable disagreement between patients' own perception of their ethnic group and that which is recorded on their hospital records. When forced to choose an ethnic group descriptor from lists used in standard NHS care these patients may not feel that they can accurately describe their own ethnicity. This is a concern as if these patients are being mis-identified at a clinic level it is likely that they are not being offered support services tailored for their individual needs.

P38

The importance of social care support for people living with HIV: findings from a snapshot survey of healthcare professionals

Y Azad and L Dunkeyson
NAT (National AIDS Trust), London, UK

Background: Over the last two years there have been significant changes to the way in which social care for people living with HIV is funded. There is concern that the change from a ring-fenced grant (the AIDS Support Grant) to a non-ring fenced funding line in the Formula Grant for 'HIV/AIDS Support', combined with the wider Local Authority budget cuts, could threaten the provision of high-quality social care services for people living with HIV in England. As part of wider research into the importance of social care, we carried out a survey to find out what impact healthcare professionals working in HIV feel that social care support has on their patients' ability to manage their HIV and health more broadly.
Methods: In 2011 149 healthcare professionals working in HIV were surveyed to gather evidence on the value of HIV social care from a medical and public health perspective.
The survey was conducted online via Survey Monkey between 7 March and 15 April and was promoted to members of BHIVA, CHIVA, NHIVA and the Society of Sexual Health Advisors. The sample was opportunistic and is likely to over-represent those with strong views on social care. Nevertheless the results offer an insight into the range of social care needs experienced by people living with HIV.
Results: Healthcare professionals frequently refer patients to social care services, the majority – 65% - referring at least once a month. The most frequently cited reasons for referrals were those associated with poverty. Psychological support needs were also frequently cited. The survey also showed significant number of patients had trouble accessing social care - 45% of respondents reported problems. Barriers cited included a lack of capacity in local services, high eligibility thresholds and the loss of specialised HIV social care support. However, the results also indicated that the vast majority of healthcare professionals – 77% - felt social care had a positive impact and helped their patients.
Conclusion: This survey illustrates the continuing need for social care support for people living with HIV, the positive impact that such support has on people's lives, and the value placed on it by HIV healthcare professionals.

P39

A review of referrals and uptake of service for psychological support in an HIV treatment centre

T Campbell[1], J Griffiths[1], A Sambath[1] and R O'Connell[2]
[1]Newham Psychological Services, London, UK, [2]Newham Hospital, London, UK

Background: In the high income setting, HIV infection is more common in those with mental health diagnoses; those with HIV infections are more likely to suffer from mental health problems. Depressive disorder can be associated with adherence concerns and poorer outcomes in HIV. New BHIVA standards for psychological support emphasise the importance of mental health care provision for people living with HIV. Appropriate identification of needs and onward referral is key to successful management. In differing populations, expectations regarding mental health care and emotional support may impact on acceptability and uptake of psychology services. To identify gaps in care and facilitate service planning, a review of referrals from an HIV treatment centre to the HIV psychology team was undertaken. Service uptake and diagnoses were also examined.
Methods: Data collection was from paper and electronic records in both the HIV unit and psychology clinic. All HIV positive patients referred in the period June 2010–May 2011 were eligible for inclusion.
Results: 75 patients were referred from the HIV centre for psychology assessment. 42 (56%) were female. Mean age of men was 42.8 years (range 26–70) and women 38 years (18–65). The majority of women were African (n = 38, 78.6%). Amongst men, 13 (39.4%) were African, 11 (33%) were white UK, and 3 (9.1%) Black British. The most common diagnosis was depression: 35% of women and 39% of men. Men were more likely to be referred for memory or neurocognitive difficulties, whereas women were more likely to be referred for HIV adjustment, immigration related distress and general support. Uptake of assessment and treatment was low. Of women referred, 31% attended for initial assessment and 26% continued care. For men, 48% attended initial assessment and 45% continued care.
Conclusion: In our clinic setting, uptake of specialist HIV-related psychology was low for both assessment and treatment. This was particularly apparent for women. In a predominantly African cohort, expectations and acceptability regarding psychological support may influence uptake after referral. The HIV and psychology services are reviewing range and acceptability of current approaches to psychological care provision.

P40

HIV and parenthood: clinicians and commissioners working together to make this a reality for our patients

O McQuillan[1], S Stephenson[2], S Doran[3] and C Babu[1]
[1]Manchester Centre for Sexual Health, Manchester, UK, [2]Greater Manchester Sexual Health Network, Manchester, UK, [3]Public Health Manchester, Manchester, UK

Background: In the past patients with HIV requiring sperm washing or fertility treatment often needed to travel long distances as such treatments were available only in one centre in the UK. In the absence of any clear referral pathways managing such patients proved extremely challenging to clinicians. Patients experienced long delays and significant inconvenience during this stressful period. With the development of additional centres offering such treatment we worked with colleagues in the Sexual Health Network and local PCTs to design clinical and commissioning guidelines and referral pathways for these couples. We audit how these guidelines have been implemented since their introduction and since the setting up of dedicated HIV fertility (complex) clinics in 2010.

Methods: Retrospective case note review of all patients entered into the fertility database set up at the time of adoption of above guidelines in June 2010. Data including demographics, clinical characteristics and pathway referral times were collected.
Results: A total of 28 couples were reviewed between June 2010 and December 2011, in 12 of these both partners had HIV and in the other 16 only one (discordant) had HIV. Of all 56 patients a total of 17 women (average age 32 years) and 23 men (average age 36 years) were HIV positive. The majority of the couples attended for reproductive advice and with fertility problems but in at least 11 couples, sperm washing was also warranted to prevent transmission of HIV from a positive male partner to a negative female. The pathway of referrals were from standard HIV clinics to complex clinic (average time 82 days) then onto local gynaecology team for a decision regarding need for fertility treatment (average time 148 days). A specially designed form was then completed and submitted to the commissioning panel (average time to decision 47 days) and then an onward referral to the specialist fertility treatment centre (average time to review 61 days).
Conclusion: Even with our limited experience we feel that these guidelines and the subsequent introduction of fertility clinics have streamlined the previously complicated and haphazard referral process for couples where one or both partners might have HIV and who wish to start a family. During the process of writing up and subsequently putting these guidelines into practice clinicians from different specialities and commissioners have successfully worked together towards achieving a common goal.

P41
Abstract withdrawn

P42
Switching between formulations of antiretrovirals: A highly managed process

N Marshall, L Swaden, C Clarke, P Knight and M Johnson
Royal Free Hospital NHS Trust, London, UK

Background: A number of antiretrovirals have undergone formulation changes. Switching large numbers of patients between formulations, especially those on home delivery in a safe and cost-effective manor is challenging. We describe the process used at a large London teaching hospital, using Nevirapine 400 mg prolonged release as an example.
Methods: Step 1**:** A patient information leaflet is created by the HIV Pharmacy Association (HIVPA) to aid switching using pictures and text.
Step 2: Stock of the new formulation is kept in reserve until stock of the current formulation has been reduced to one weeks usage.
Step 3: A memo is sent to all prescribers detailing the method of transition, and how to manage those on home delivery.
Step 4: A memo is sent the home delivery company outlining the method for transition, and detailing the use of a supplementary sticker to indicate patient has been consented and counselled on the switch to the new formulation. The HIVPA leaflet is sent by with all deliveries of the new formulation.
Step 5: For standard out patient prescriptions, prescribers are asked to check current supply of nevirapine 200mg tablets, to ask the patient to use this up and to prescribe sufficient nevirapine 400mg prolonged release until the next appointment. For home care prescriptions, clinicians follow the same procedure as for outpatients, but also sign a sticker documenting consent and counselling on the new formulation, and prescribe one month on an outpatient prescription to be collected that day.
Step 6: On receipt of prescription in pharmacy a sticker is applied which requires documentation that all patients switching are counselled, provided with the HIVPA leaflet, and one month of the new formulation supplied. Patients are asked to return any time two weeks after switching to collect outstanding supplies to avoid potential waste in the event of intolerance. Patients on home care are asked to contact the home delivery company two weeks after switching to arrange delivery.
Conclusion: This procedure has been used to switch a number of formulation changes and has minimised the potential risks associated with change in medication. Home delivery is the more challenging element of the switch. The availability of information leaflets produced by HIVPA which are able to address unlicensed dosing schedules is invaluable.

Age, Gender and Migration-related Issues

P43
SWIFT: Switching from lamivudine/abacavir to emtricitabine/tenofovir improved lipids while maintaining virologic suppression in older HIV subjects

K Henry[1], E DeJesus[2], R Campo[3], UF Bredeek[4], H Wang[5], L Dau[5], D Piontkowsky[5] and M Bosse[6]
[1]Hennepin County Medical Center, Minneapolis, USA, [2]Orlando Immunology Center, Orlando, USA, [3]Univ of Miami School of Medicine, Miami, USA, [4]Metropolis Medical, San Francisco, USA, [5]Gilead Sciences, Foster City, USA, [6]Gilead Sciences, Uxbridge, UK

Background: In prior treatment naive and experienced studies, use of FTC/TDF has shown favorable lipid profile and has not been associated with increased MI risk. However, there are limited data on the impact of switching from 3TC/ABC to FTC/TDF, particularly in older HIV+ subjects.
Methods: Prospective, randomized 48 week study to evaluate the efficacy and safety of switching subjects on 3TC/ABC + PI/r with HIV RNA < 200c/mL ≥ 3 months to FTC/TDF or continue 3TC/ABC. Subjects were stratified by PI/r and comorbidities (CV disease, DM, hyperlipidemia). Primary endpoint was time to loss of virologic response (TLOVR) (>200 c/mL, premature discontinuation, or ARV modification = failure). Lipid profile and 10-year Framingham scores were evaluated though Week 48. This is a sub analysis by age < 50 or ≥ 50 years (years).
Results: 311 subjects treated (FTC/TDF n = 155, 3TC/ABC n = 156), 198 (64%) were < 50 yrs and 113 (36%) were ≥ 50 yrs. Of those ≥ 50 yrs, 53% were randomized to FTC/TDF and 47% continued 3TC/ABC, 84% were male, median age (range) 54 (50–75), 58% taking lipid-lowering agents, and 31% on LPV/r and 87% with co-morbidities. Overall, switching to FTC/TDF was non-inferior to 3TC/ABC by TLOVR (86% vs. 83%) through Week 48. In subjects ≥ 50 yrs, FTC/TDF remained non-inferior to 3TC/ABC by TLOVR (92% vs. 87%; difference of 4.7%; 95% CI [-7.6%, 17.8%]) and fewer subjects on FTC/TDF vs. 3TC/ABC experienced VF (0 vs. 4; $P = 0.037$). In subjects ≥ 50 yrs, early discontinuation rates (8.8% vs.12.1%) and AEs related to study drug (5.3% vs. 8.1%) were lower with FTC/TDF, as were Grade 3 or 4 AEs (8.3% vs.17%)[0]. Mean eGFR declined in both arms at Week 48, with -1.9 mL/min on 3TC/ABC and -8.3 mL/min on FTC/TDF ($P = 0.007$ between arms) and there were no differences in renal discontinuations. Median changes from baseline to Week 48 in lipid parameters for subjects ≥ 50 yrs**:** TC (-0.49 mg/dL; $P < 0.001$ vs. -0.28; $P = 0.030$), TG (-0.47 mg/dL; $P < 0.001$ vs. -0.14; $P = 0.42$) and mean (SD) change within arms in 10-year Framingham scores were -2.1 (5.5; $P = 0.008$) and -1.1 (5.6; $P = 0.18$) for the FTC/TDF vs. 3TC/ABC treatment arms.
Conclusion: In this older HIV+ population, switching subjects from 3TC/ABC to FTC/TDF maintained virologic suppression with a lower rate of virologic failure and improved lipid parameters and Framingham scores. Declines in eGFR were seen in both arms, higher in the FTC/TDF arm, with no differences in renal AEs.

P44

Are predictors of osteopenia and osteoporosis in HIV-infected individuals over the age of 50 years different to the general population?

A Holyome[1], D Johnathan Hughes[1], S Mandalia[2], B Patterson[2], D Asboe[2], S Barton[2], M Boffito[2] and A Pozniak[2]

[1]Imperial College London, London, UK, [2]St. Stephen's Centre, Chelsea and Westminster Hospital, London, UK

Background: Osteopenia and osteoporosis are associated with old age and are seen with increasing frequency in HIV-infected individuals. The role of long-term exposure to HIV-related inflammation and cART in causing these remains unclear. A clinic dedicated to HIV-infected patients over 50 years of age was established in January 2009 and has been running successfully for two years. All individuals attending the clinic are offered a DEXA scan to assess the presence of osteoporosis.

Methods: Individuals attending our OVER50 HIV clinic underwent a DEXA scan to measure both spine and femur T scores, determining the presence of osteopenia or osteoporosis. We performed a univariate and multivariable logistic regression analysis (SAS version 9.1) evaluating the service we offered to identify factors associated with the presence of osteopenia or osteoporosis. These included**:** age, gender, ethnicity, smoking status, HIV infection duration, nadir and current CD4 counts, duration of cART treatment, exposure to protease inhibitors (PI) or tenofovir (TDF), and vitamin D levels.

Results: Between January 2009 and October 2011, 176 patients attended the OVER50 HIV clinic. Median (range) age of the 134 who underwent a DEXA scan was 59 (50–84), 120 were male, 112 were Caucasian, 12 Black African and 10 other. 112 were non-smokers and 22 smokers. Median (range) nadir CD4 count was 168 (1–677), current CD4 595 (188–2004), HIV infection duration 159 (1–352) months, cART intake 114 (1–304) months. 63 of 134 patients had never been exposed to PIs and 117 never to TDF. Median (range) vitamin D level was 58 (1–150). 79 patients had a diagnosis of osteopenia or osteoporosis (n = 19; 14%). Multivariable logistic regression model identified only age and gender as significant independent predictors of osteopenia and/or osteoporosis and no significant associations were found for any of the HIV-related factors.

Conclusion: In our HIV-infected over 50 population, DEXA scanning has been shown to be useful in diagnosing osteoporosis, especially in patients who do not attend their GP practice. The occurrence of osteoporosis in HIV-infected patients > 50 years is similar to reports in HIV-infected individuals of all ages and higher than in the general population. Neither length of HIV nor total duration of cART exposure was associated with the development of metabolic bone disease. To confirm these findings, larger cohort studies are warranted.

P45

Assessment of neurocognitive impairment in HIV-infected individuals over 50 years of age

DJ Hughes[1], T John Barber[2], A Holyome[1], B Patterson[2], S Mandalia[2], J Catalan[2], E Williams[2], D Ratcliffe[2], A Magretts[2], D Asboe[2], A Pozniak[2] and M Boffito[2]

[1]Imperial College London, London, UK, [2]St. Stephen's Centre, Chelsea and Westminster Hospital, London, UK

Background: With an ageing HIV population, co-morbidities, possible HIV-associated neurocognitive disorders (HAND) and social issues contribute to increased anxiety and depression. As part of our clinical service dedicated to those aged over 50, we perform formal psychological and neurocognitive assessments to assess symptomatic individuals and optimise referral pathways.

Methods: Our clinical routine HAND assessment involves screening for anxiety (GAD7), depression (PHQ9) and in response to patient concerns on memory, attention, cognition and function, we also perform**:** a) 'Everyday Memory Questionnaire' (EMQ), a subjective measure of memory failure in everyday life; and b) International HIV Dementia Scale (IHDS). The patient is referred to psychology in response to an abnormal result, or for full neuropsychometric testing if both IHDS and EMQ are abnormal. We evaluated the service and performed a univariate and multivariate logistic regression analysis (SAS version 9.1) to identify factors associated with high GAD7/PHQ9 and low EMQ/IHDS scores. These included: age, gender, ethnicity, HIV infection duration, nadir and current CD4 counts, and duration of cART treatment.

Results: Of the 176 patients who attended the OVER50 HIV clinic within 2 years, 55 had an interpretable GAD7, 56 PHQ9, 40 EMQ and 62 IHDS. Median (range) age was 59 (50–84). Median (range) nadir CD4 count was 148 (61–236), current CD4 557 (391–728), and duration of cART was 164 (97–228) months. 13/55 and 17/56 patients had a GAD7 score ≥ 10 and a PHQ9 score ≥ 10 respectively and were referred to psychology. 11/40 patients had an impaired EMQ score and 15/62 patients had an IHDS score ≤ 10. No significant associations were found for any of the studied factors on HAND assessment results. However, having an abnormal GAD7 score was associated with having an abnormal PHQ9 score ($P = 0.038$) and there was a trend towards having an abnormal PHQ9 score associated with a low IHDS score ($P = 0.085$).

Conclusion: Assessment for neurocognitive impairment in HIV-infected individuals over 50 years of age has been shown to be useful in its diagnosis and enhancing referral outcome. HIV-infected individuals are more likely to suffer with depression in the presence of anxiety. Exclusion of anxiety and depression when testing for HAND in patients over 50 years is important, as mental slowing, memory loss and motor disorders are common manifestations. To confirm these findings, larger cohort studies are warranted.

P46

Prevention rather than cure? Promoting resiliency in young people living with HIV

K Gurney

Camden Provider Services, CNWL NHS Trust, London, UK

Background: Young people(YP)living with HIV have a high level of psychological need due to the difficulties faced negotiating adolescence with HIV.As part of a wider approach to screen for mental health difficulties in YP transitioning to our services,resiliency was assessed with a view to developing future preventative psychological interventions.

Methods: The Mood and Feelings Questionnaire(MFQ)was used as a screening tool for depression and the Resiliency Scales for Children and Adolescents(RSCA)were used to assess perceived resources and potential vulnerability. The RSCA uses three sub-scales**:** Mastery (optimism, self-efficacy, adaptability) Relatedness (trust, support and tolerance from and for others) Emotional Reactivity (sensitivity and recovery from distress). Results from the subscales are combined to provide an Index of Resource and Vulnerability.

Results: 20 YP completed questionnaires during assessments with the psychologist in 2011. The median age was 17yrs(range 15–23),14 female and 7 male. 19 out of the 20 acquired HIV perinatally, 1 sexually. MFQ**:** 5 YP scored within a range which suggested depression. RSCA: The Resource Index provides an estimate of the YP's perceived internal resources by combining the Mastery and Relatedness scales. 5(25%) scored below average, 6(30%) low and 9(45%) average. The Vulnerability Index compares the discrepancy between the Emotional Reactivity score(reported ability to manage distress)and the Resource Index(reported personal resources). Scores were 2(10%) below average, 6(30%) average, 8(40%) above average and 4(20%) high.

Conclusion: YP accessing our HIV service score lower than a community sample of peers on perceived resources, and higher on measures of vulnerability. RSCA scores for those also reporting depression fitted a profile of low perceived resources and high vulnerability. This assessment structure may be used to identify preventative intervention strategies for YP not reporting depression but where vulnerability to future psychological distress is identified. Such interventions could be tailored to promote resilience in the following ways**:** managing emotional reactivity using relaxation, or distress tolerance; building on mastery by encouraging activities which promote self-efficacy and hope; building on relatedness by targeting key relationships with other people, addressing the impact of secrecy and stigma, encouraging access to informal and formal peer support.

P47

Measurement of hsCRP in HIV-infected individuals over the age of 50 years

B Patterson[1], DJ Hughes[2], A Holyome[2], S Mandalia[1], A Pozniak[1], D Asboe[1], S Barton[1] and M Boffito[1]

[1]St. Stephen's Centre, Chelsea and Westminster Hospital, London, UK, [2]Imperial College London, London, UK

Background: Highly specific C-reactive protein (hsCRP) has been associated with an increased atherosclerotic risk in HIV uninfected individuals and is an established predictor of future coronary events. However, its role as an inflammatory marker in people with HIV infection needs to be clarified. We aimed at measuring hsCRP in HIV-infected individuals attending the OVER50 clinic over approximately two years (2009–2011).

Methods: Individuals attending the OVER50 HIV clinic had hsCRP measured as part of their clinical assessment. We performed a univariate and multivariable logistic regression analysis (SAS version 9.1) to identify factors associated with an elevated hsCRP. These included: age, gender, ethnicity, smoking status, HIV infection duration, having a detectable viral load, nadir and current CD4 counts, duration of cART, Framingham cardiovascular risk, and statin therapy.

Results: One hundred and twenty-two patients attending our OVER50 HIV clinic between January 2009 and September 2011 had an hsCRP level measured. Median (range) age was 57 (50–82) years. 9 were female (7%), 104 were Caucasian (85%), 9 black (7%) and 9 other (7%), 21 were smokers (17%). 10 patients had a detectable viral load (8%) and 49 were on current statin therapy (40%). An abnormal hsCRP was present in 14 (11%) individuals (normal range 0.0–5.0 mg/L), median (range) 6.6 (5.2–119) mg/L. No association between the factors investigated and having a raised hsCRP was seen.

Conclusion: In our cohort of HIV-infected individuals over 50 years of age many of whom have polypharmacy including statins, and the majority with an undetectable viral load, hsCRP measurement did not seem to be associated to age or other risk factors. Further studies investigating the association between raised hsCRP and cardiovascular risk are ongoing and research assessing hsCRP and clinical outcome in HIV-infected individuals on cART is warranted.

P48

Multiple risk factors for poor health outcomes in adolescents living with or affected by HIV

A Smith Barnes

Body & Soul, London, UK

Background: The aim of this needs assessment was to identify risk trends amongst a convenience sample of HIV infected and affected adolescents accessing support services in London and to use those findings to inform service improvement.

Methods: The YRBS (Youth Risk Behaviour Survey) was modified to improve relevance to the target population, and included items specifically on HIV and excluded questions that were less relevant for vulnerable teenagers in London. This survey was administered anonymously to youth accessing teen services at a third-sector organization over two service days in February 2011. Youth could opt out of participating, and were given a clear explanation of the use of the survey data to inform service delivery and knowledge of their needs.

Results: 51 youth participated in the survey, of which 50 met the inclusion criteria of filling in more than 90% of the questionnaire. All youth were either HIV + or HIV-affected, with 64% HIV + . The median age was 17, and 54% of the youth were female. 2/3rds of the youth had experienced the death of a parent or sibling. More than half of the youth were carers, of which 37% took care of family members for three or more hours a day. 30% of participants had considered suicide in the last year. 40% of youth have been in a physical fight in the last year.

Half were sexually active. Amongst sexually active teens, the following trends were reported: more than ¼ sexually debuted before 14 and ½ before 15, the median age for sexual debut is 14. 30.4% have had sex after using drugs or alcohol and 30.4% of sexually active teens had either personally been pregnant or had 'gotten a girl' pregnant. 62.5% always use condoms, 29% sometimes use condoms, and 8.3% never use condoms.

Conclusion: HIV+ and HIV affected adolescents engage in risk taking behaviours or are subject to risks that may additionally jeopardize their health. Given the fact that the risk behaviours of this group extend beyond biological needs, it is crucial that appropriate, patient-centred care recognize and respond to the complex needs profile of this vulnerable population.

P49

Exploring need: a cross-sectional study of people accessing nutritional support from The Food Chain

A Ehrlich[1], HS Jones[2], D Nicholls[1], A Duncan[3] and K Smith[1]

[1]The Food Chain, London, UK, [2]The Catholic Agency for Overseas Development, London, UK, [3]Guy's and St Thomas' Hospital NHS Foundation Trust, London, UK

Antiretroviral therapy has enabled people living with Human Immunodeficiency Virus (PLHIV) to attain near-normal life expectancies, but has brought with it complex nutritional demands. The Food Chain (TFC), a charity dedicated to supporting nutrition in PLHIV in London, received 762 referrals in 2011. Given the changing demographic of PLHIV in London and an increasingly challenging economic climate, the degree to which psychosocial and clinical difficulties currently affect TFC's clients' access to nutrition is unclear. Here we explore, for the first time, cross-sectional data on the factors preventing this cohort from accessing adequate nutrition.

Psychosocial, clinical and demographic data from all clients (197) receiving support from TFC in March 2011 were analysed. Data were collected at the time of referral using TFC's referral form, and stored on an online database. Quantitative analyses were carried out using Excel to explore themes such as gender, ethnicity, immigration status, financial situation, and physical disability. Where appropriate, clients were omitted from individual analyses if no data was provided. Results were compared with published data on PLHIV in London.

36% (71) of clients were female. Age distribution was skewed towards higher ages: 51% were 35–49 years old, and 34% were > 50 years old. 48% (94) and 38% (75) were of white and black African ethnicity, respectively. Residency status was uncertain (due to immigration control) in 13% (27) of clients. Income and food budget data was provided by 54 clients, of whom 50% (27) were in financial difficulty. The median weekly income was £64.15p (minimum £0, maximum £330); 30% (16) reported £0 income. 30% (59) of clients were isolated, 61% (120) were physically disabled and 15% (30) reported depression and/or anxiety. 51% (98) were referred for more than one reason.

Demographically, TFC's clients largely mirror the general population of PLHIV in London. The cohort is ageing, and psychosocial, clinical and demographic complexities present in isolation or combination in clients. Most notable are financial problems, isolation, and physical disability. This preliminary analysis can inform TFC and other HIV service-providers of factors affecting access to nutrition of PLHIV in London, aiding service-planning and policy. As UK austerity measures become harsher and food prices rise, TFC must continue to monitor clients to assess changes in need. Our findings will form baseline data for such work.

P50

Do internationally recognised links between HIV and gender based violence have relevance in the UK?

S Petretti[1], A Welbourn[2], A Namiba[3], M Sachikonye[4], E Sinyemu[4], R Mbewe[1] and K Seeley[5]

[1]Positively UK, London, UK, [2]Salamander Trust, London, UK, [3]WECARE+, London, UK, [4]PozFem UK, London, UK, [5]Sophia Forum, London, UK

International studies (Garcia-Moreno & Watts, 2000, Maman et al., 2002, Hale & Vazquez 2011) report strong reciprocal links between gender based violence (GBV) & vulnerability to HIV. However the UK is yet to recognise such links, partly because of a dearth of formal investigations in the UK. This study aimed to address the lack of UK evidence around HIV & GBV & fill the resulting policy gap by proposing recommendations.

The qualitative study involved a focus group discussion with six women with HIV who had experienced GBV in the UK. The discussion took an empowering approach and created strict ethical guidelines to ensure the security and safety of participants, working with WHO (2001) recommendations on involving women affected by GBV and living with HIV in all research process stages.

The study identified *inter alia* the following issues:

The breadth and extent of violence, including physical, sexual, psychological, economic, legal & institutional violence

Escalation of already violent relationships after HIV diagnosis

Women's silence about GBV because of complex emotional bonds with persecutors and stigma around both HIV & GBV

Legal, financial & psychological issues relating to dependence on perpetrators of violence

Fault & blame ascribed to women living with HIV & the use of blackmail by violent partners, especially within discordant relationships

The absence of structural support networks for UK women

The enduring burden of violence & its implications for future relationships & mental health

Multiple problems with prosecution process

The study also proposed the following recommendations for policymakers & service providers:

Better training for healthcare professionals in recognising signs of violence

The Government must formally recognise the link between GBV & HIV

Importance of peer networks to empower women with HIV to overcome GBV

Better human rights awareness for women with HIV

The links between HIV & GBV in the UK are a nascent research area. While this study has yielded strong anecdotal evidence, further quantitative & qualitative research should be undertaken to reinforce these findings.

P51

Baseline HIV knowledge of adolescents: a retrospective review of intake knowledge assessments

A Smith Barnes

Body & Soul, London, UK

Background: Illness related knowledge is associated with treatment perceptions and understanding in chronic illness. The purpose of this study is to examine HIV specific knowledge of adolescents (aged 13–19) upon registration at a community organisation for people living with and affected by HIV in London.

Methods: During 2011, all new adolescent registrants at a community organisation undertook a brief, 5-item screening process to measure baseline understanding of key concepts related to HIV, including**:** basic comprehension of the HIV diagnosis, CD4 count, viral load, transmission routes, and ways for a person living with HIV to stay healthy. 66 new registration charts containing assessment were retrospectively reviewed to evaluate knowledge trends.

Results: 66 total charts were reviewed; 50 of 66 belonged to HIV positive (HIV+) adolescents and the remaining 16 belonged to HIV affected (HIV-Af) adolescents. Items were scored 1–3**:** scores of 1 indicated little or no understanding, 2 indicated some understanding, and 3 indicated a satisfactory understanding of basic concepts. Maximum score for individual assessment was 15 and minimum score was 5. The mean score for registrants was 9.136, indicating some understanding of key concepts related to HIV. HIV+ adolescents demonstrated a slightly higher overall understanding (mean 9.52) than HIV-Af adolescents (mean 8.563), a trend that was consistent across all items. There were no significant differences in knowledge between male or female scores. Adolescents aged 13 had lower mean scores than adolescents aged 14–19 (8.421 versus 9.511 respectively).

Adolescents scored higher on broader concepts (HIV, transmission routes, and ways for a person living with HIV to stay healthy) than on specific concepts (CD4 count and viral load). Overall scores for understanding specific concepts were low both before and after adjusting for potential factors such as age, HIV status, or gender (mean of 1.712 for CD4 count and 1.5 for viral load out of a potential 3 points each item).

Conclusion: Adolescents demonstrated some understanding of basic concepts related to HIV however there is substantial potential for improvement, especially around knowledge of specific concepts like CD4 count and viral load. There is need for additional research to identify factors contributing to individual differences in HIV knowledge. Adolescents require targeted programming aimed at building HIV knowledge.

P52

Effects and acceptance of peer mentors in a young adult group with HIV – an evaluation of a new and innovative targeted service

H Williams, H Treston-Davies, A Mukela, A Teague and D Chilton

Guy's and St Thomas' NHS Foundation Trust, London, UK

Background: Young adult patients with HIV are a vulnerable group who can be difficult to engage in services. We introduced Peer Mentorship to our young adult HIV outpatient cohort with the aim of improving their health and wellbeing with particular focus on engagement with HIV care, thereby improving long term prognosis.

Methods: Peer Mentors were introduced to the young adult outpatient cohort (aged between 18 and 25) in May 2011. Following their introduction patients who had seen them in clinic were asked to complete an anonymous paper questionnaire requesting their opinions on how the session with the mentor had affected their feelings about their HIV diagnosis and care. Attendance rates in clinic were compared pre and post the introduction of the Peer Mentors.

Results: 14 questionnaires were completed between May and November 2011. Of these, 5 patients (36%) had seen a peer mentor on a prior occasion. When asked *''After you saw the Peer Mentor how would you rate how HIV affects your life on a scale of one to ten? (one being the worst and ten being the best)''* the median score out of ten was 7 (range 4–10). When asked *''Have you noticed a change in your thoughts and / or feelings since you saw the Peer Mentor?''* a score between 1 and 10 was given, where 1 represented *''a lot of change for the worse''* and 10 represented *''a lot of change for the better''*. The median score for this question was 8 (range 4–10). Attendance rates did not change following the introduction of peer mentorship to this young adult cohort. When asked for qualitative feedback on the peer mentorship, verbatim quotes included *''She is down to earth and easily understandable and has great insight into psychological effects of living with HIV and ART''* and *''I think this is a great service to offer to people with recent diagnosis or people with questions about living with HIV''*

Discussion: This evaluation of a pilot peer mentorship programme has demonstrated that the service was well received by its users and had a positive impact on their sense of well-being. Evaluation of the impact of Peer Mentorship on individual patients was not possible as the questionnaires completed were anonymised to encourage honest feedback. The service did not however, influence the clinic attendance rates during the initial phase after its introduction. As more individuals have the opportunity to meet with the peer mentors, further evaluation of this service may show more of an impact on attendance rates in clinic.

P53

Contraceptive preferences following pregnancy among HIV infected women: a study from a district general hospital in the UK

P Thayaparan, T Balachandran and M Kawsar

Luton and Dunstable Hospital, Luton, UK

Background: Safe and effective family planning practices are important among sexually active HIV infected women in reducing HIV transmission and to avoid unintended pregnancies.

Concentrations of hormonal contraceptives can be altered when co administered with anti retroviral therapy (ART) and interactions are not always predictable.
The objective of this study was to determine patterns of contraceptive utilization among HIV positive women following a pregnancy.
Methods: It is a retrospective case notes review of all the women who had a pregnancy during the period of 2008–2011. A total of 87 women were included in the study. Data were collected from Genitourinary Medicine records using a structured questionnaire and analysed by using SPSS program.
Results: Mean age was 34 yrs ranging from 20–43 yrs.About a half were married (47) and a quarter (23%) were single and 87% sexually active. Majority (91%) were of African origin; 67% had HIV subtype C; 26% resistant to one or more class of HIV drugs; 55% had a nadir CD4 fewer than 350; 44% diagnosed at an antenatal setting and 71% were living with HIV for more than a year. Of the partners, 38% have HIV and 73% were aware of their partner's HIV status.
In the past, 18% had a miscarriage and 16% reported a termination of pregnancy, Consistent condom use was reported as 18% and 7% never used a condom; two thirds of women are on ARTs. In 27% of women, the last pregnancy was not planned and 7% has a positive child.
Condoms were the most popular single method of contraception (49%) followed by Depo-Provera (14%), sub dermal implant (10%), combined oral contraceptives (8%), progesterone only method (4%) and tubal ligation (4%). Intrauterine devices were the least popular method used by 1% of women and 8% was not using any form of contraception.
Discussion: Patients taking concomitant hormonal contraceptive and antiretrovirals are counseled to use an alternate method of birth control in addition to the hormonal agent. Despite changes in hormone concentrations, there are limited data on the effects of antiretroviral drugs when combined with hormonal contraceptives.
Conclusion: While condoms are the most popular method, Depo-Provera and Implant remain the preferred choice of hormonal contraceptive method among women after a pregnancy.
Clear guidelines are needed as to the interaction between the ARTs and hormonal methods in order to prescribe them safely.

Basic Science, Immunology and Virology

P54

The combined anti-HIV-1 activity of emtricitabine and tenofovir with the integrase inhibitors elvitegravir or raltegravir show high levels of synergy in vitro

R Kulkarni, R Hluhanich, D McColl, ME Abram, MD Miller and K White
Gilead Sciences, Inc., Foster City, CA, USA

Background: The clinical efficacy of combination HIV-1 therapy is influenced by drug adherence, potency, phamacokinetics, metabolism, plasma and intracellular half-life, penetration into replication sites, and antiviral synergy. The combined antiviral activity of the nucleoside/tide analog reverse transcriptase inhibitors (NRTIs) emtricitabine (FTC) + tenofovir (TFV) are synergistic. The mechanisms of this synergy include increased FTC and TFV phosphorylated anabolites within cells and increased production of stable, TFV chain-terminated primer/reverse transcriptase (RT) complexes (dead-end complexes). The antiviral effects of combinations of FTC+TFV plus antiretroviral agents of all major drug classes (non-nucleoside reverse transcriptase inhibitors (NNRTIs), protease inhibitors (PIs), and integrase strand transfer inhibitors (INSTIs)) were investigated.
Methods: Combination three-drug antiviral activity was evaluated in 5-day cytopathic assays in MT-2 cells acutely infected with HIV-1 and were analyzed using the combination index (CI) method of the CalcuSyn software. The effect of the pharmacoenhancer cobicistat (COBI) was also evaluated using an overlay with the three-drug combination experiment of the INSTI elvitegravir (EVG)+FTC+TFV to evaluate synergy of the QUAD pill (EVG/COBI/FTC/TDF).
Results: Combinations of FTC+TFV with the HIV INSTIs EVG or raltegravir (RAL) showed the strongest synergy with CI scores of 0.52 ± 0.10 and 0.52 ± 0.05, respectively. An overlay of COBI at 25 μM did not significantly change the synergy score for FTC+TFV+EVG. Combinations of FTC+TFV with the NNRTIs EFV and rilpivirine (RPV) showed synergy to moderate synergy with CI scores of 0.57 ± 0.08 and 0.73 ± 0.13, respectively. Combinations of FTC+TFV with the protease inhibitors darunavir or atazanavir showed moderate synergy with CI scores of 0.77 ± 0.11 and 0.83 ± 0.19, respectively. FTC+TFV showed additivity with lopinavir (CI = 0.97 ± 0.10). No antagonism was seen for FTC+TFV and any third agent studied, or COBI.
Conclusion: The observation of synergistic anti-HIV-1 activity for combinations of FTC+TFV with an NNRTI (EFV or RPV) and the stronger synergy with an INSTI (EVG or RAL) suggests enhancement of the individual anti-HIV activities of these compounds within cells that may contribute to potent treatment efficacy. These results open up new areas of research into interactions between RT and integrase inhibitors.

P55

Phagocytic uptake of transmitted/founder virus-infected CD4 + T cells enhances macrophage infection

CJA Duncan, RA Russell, AE Baxter, AJ McMichael and QJ Sattentau
University of Oxford, Oxford, UK

Background: Macrophages are an important cellular reservoir of HIV-1 infection and are central to the pathogenesis of HIV-associated neurological disorders. Better understanding of the determinants of macrophage tropism will critically inform HIV-1 eradication strategies. Recently identified transmitted/founder (T/F) viruses are responsible for initiating infection in 80% of heterosexual mucosal transmission events. However, T/F viruses have been shown to be poorly infectious for macrophages by the inefficient fluid-phase uptake of cell-free virions. We hypothesised that a novel route of macrophage infection, by phagocytic uptake of infected $CD4^+$ T cells, may overcome this restricted ability of T/F viruses to infect macrophages.
Methods: We employed co-cultures of primary autologous monocyte-derived macrophages and $CD4^+$ T cells in an optimised *in vitro* model of cell-to-cell transmission, combining live- and fixed-cell time-lapse imaging and a unique panel of chimeric luciferase reporter T/F viruses, to assay the relative efficiency of cell-free versus $CD4^+$ T cell-associated macrophage infection.
Results: We observed real-time phagocytic uptake of T/F virus-infected $CD4^+$ T cells, which resulted in robust macrophage infection. Of the CCR5-tropic T/F viruses tested, all were significantly more efficient at initiating a spreading macrophage infection after 6h of co-culture than following cell-free infection, assayed in multiple donors using a combination of flow cytometry, luciferase reporter assay, and p24 ELISA. Spreading infection was not the result of ongoing $CD4^+$ T cell replication since a non-macrophage tropic X4 virus did not initiate a spreading infection following macrophage-T cell co-culture.
Conclusion: Phagocytic uptake of HIV-1 infected CD4 + T cells resulted in efficient macrophage infection, a finding that supports a role for macrophages in early events post-transmission, and has important implications for the founding of the macrophage reservoir.

P56

Discordant reconstitution of HIV-1- and CMV-specific responses in cART-treated HIV-1+ patients – what can we learn from co-infection?

N Grageda[1], SJ Westrop[1], A Jackson[2], S Mandalia[2], G Moyle[2], M Nelson[2] and N Imami[1]
[1]Imperial College London, London, UK, [2]Chelsea and Westminster Hospital, London, UK

Background: In the majority of $HIV\text{-}1^+$ individuals cART reduces HIV-1 RNA load and results in numerical CD4 T-cell count recovery. However, both CD4 and CD8 T-cell responses to HIV-1 remain deficient, exhibiting low proliferative capacity and cytolytic function. In patients co-infected with cytomegalovirus (CMV) however, cART decreases the risk of CMV reactivation, reduces CMV viraemia and restores CMV-specific T-cell responses. We evaluated the magnitude and functional specificity of both HIV-1- and CMV-specific T-cell responses in order to elucidate the underlying mechanism as to why cART reconstitutes CMV- but not HIV-1-specific responses.
Methods: IFN-γ, IL-2 and IL-10 ELISpot assays were carried out on fresh peripheral blood mononuclear cells of chronically infected $HIV\text{-}1^+$ individuals, in order to compare functional responses to CMV whole lysate, CMV pp65, HIV-1 Gag-p24 and Nef peptide pools (Wilcoxon signed-rank test). Individuals who responded to CMV whole lysate or pp65 were classified as 'CMV responders'. Of these, inter-group analysis between viraemic (HIV-1 RNA

load ≥ 10000 copies/ml plasma) and aviraemic (<50 copies/ml plasma) patients was performed (Mann-Whitney U test).

Results: 57 chronically infected HIV-1$^+$ individuals were enrolled in the study. In CMV responders (n = 48), greater frequency of IFN-γ, IL-2 and IL-10 production was observed to CMV whole lysate and the pp65 peptide pool compared to Gag p24 and Nef peptide pools (all $P < 0.001$). Viraemic CMV responders (n = 10), exhibited significantly increased IFN-γ responses to Gag-p24 and Nef peptide pools compared to aviraemic CMV responders ($P = 0.018$ and 0.004 respectively; n = 31), however there was no significant difference in CMV-specific responses between the two groups when stratified by HIV-1 plasma RNA.

Conclusion: Polyfunctional (both IFN-γ and IL-2 production) responses to CMV are restored in HIV-1$^+$ individuals receiving suppressive cART, whilst CD8$^+$ T cells specific to HIV-1 remain dysfunctional, only producing IFN-γ. High IL-10 responses to CMV indicate strong suppressive T-cell function that may dampen HIV-1-specific cell-mediated responses.

P57
HIV-1 alters macrophage apoptosis in response to Streptococcus pneumoniae

P Collini, R Read and D Dockrell

University of Sheffield and Royal Hallamshire Hospital, Sheffield, UK

Background: Invasive pneumococcal disease (IPD) including pneumococcal pneumonia is more common in those with HIV-1 infection. Despite reconstitution of T cell immunity with antiretroviral therapy (ART) a significantly elevated risk for IPD remains in HIV-1 seropositive individuals, which is also independently associated with HIV-1 viraemia. These observations suggest an influence of HIV-1 on the immune defence against *S. pneumoniae* (Spn) beyond its effects on T cell mediated immunity. Timely macrophage (Mϕ) apoptosis is critical to the early resolution of Spn infection in the lung, yet with HIV-1 infection it has been observed that Mϕ exhibit prolonged survival and resistance to apoptosis. We investigated whether HIV-1 infection alters the M? apoptotic response to Spn.

Methods: Three *in vitro* models of alveolar M? +/− HIV-1 were used; the pro-monocytic cell line U937 v its HIV-1 expressing clonal derivative U1; healthy donor monocyte derived M? (MDM) exposed to HIV-1 gp120/control and MDM derived from HIV-1 viraemic individuals/controls. Each was challenged with opsonised Spn (serotype 2) or mock infection (MI) and apoptosis measured over 20 hours by counting apoptotic nuclei, cells containing hypodiploid DNA and measuring caspase-3/7 activity.

Results: Following Spn, induction of hypodiploid DNA was significantly less among U1 than U937 ($P < 0.01$), fewer U1 (24.2% ±11.40) than U937 (53.7% ±14.5, $P < 0.05$) developed apoptotic nuclei and significant increases in caspase 3/7 activity were only seen in U937 cells. When 14 day old MDM were challenged with Spn in the presence of gp120, fewer MDM developed apoptosis (25.1% ±12.12 v 53.3% ±10.45) and MDM exhibited significantly less caspase 3/7 activity ($P < 0.05$) than those challenged with Spn in the absence of gp120. Preliminary data indicates that this reduction in apoptosis is associated with reduced bacterial killing. Compared with seronegative controls, MDM from HIV-1 viraemic subjects accumulated less hypodiploid DNA than control MDM post Spn.

Conclusion: Following Spn challenge, HIV-1 infection is associated with reduced induction of M? apoptosis, and HIV-1 gp120 may be sufficient to mediate this. HIV-1 infection may result in a M? phenotype that resists apoptosis in response to Spn. This could undermine the bactericidal and anti-inflammatory advantage gained by M? apoptosis following Spn phagocytosis and may contribute to susceptibility to invasive pneumococcal disease in HIV-1-seropositive individuals.

P58
Phenotypic characterisation of virus-specific T cells in treated HIV-1 infection: Profiling total and multimer-specific CD8 T cells

N Grageda[1], S Westrop[1], A Jackson[2], S Mandalia[2], G Moyle[2], M Nelson[2] and N Imami[1]

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

Background: Maturation and activation of T cells is critical for effective immune control of viruses including HIV-1. In patients with established HIV-1 infection, a skewed maturation/differentiation profile has been linked to viral pathogenesis. Furthermore, chronic immune activation is one of the strongest predictors of disease progression. In HIV-1 uninfected individuals, asymptomatic CMV is associated with higher T-cell activation. Combination (c)ART reduces T-cell activation, however little is known about its effect on CD8 T-cell maturation. We evaluated the magnitude and characteristics of both HIV-1- and CMV-specific T-cell responses in order to further elucidate the effect of cART on virus-specific T-cell differentiation and activation.

Methods: Activation (HLA-DR/CD38) and maturation (CD45RA/CCR7) profiles of total and multimer-specific CD8 T cells from cART-treated HIV-1+ CMV+ co-infected patients (median 420 CD4 T cells/μl blood) were examined ex vivo. Multi-parameter flow cytometry using MHC Dextramer and Pro5 Pentamer technologies was carried out. Non-parametric intergroup analysis was performed using Mann-Whitney U test, and paired data was analysed by Wilcoxon signed-rank test, with significance defined as $P < 0.05$.

Results: The 31 HIV-1+ patients studied showed a significant reduction in naïve and central memory (TCM) compartments ($P = 0.022$ and 0.020 respectively), and a significant increase in terminally differentiated (TEMRA) subset within total CD8+ T cells, compared to healthy controls ($P = 0.028$). CMV TM10-specific CD8 T cells had a significantly higher TEM:TEMRA ratio (median 4.65), than the rest of the CD8 T-cell pool (median 1.32; $P = 0.016$). A similar distribution was observed for HIV-1 HA9-specific CD8 T cells. There was no significant difference between activation profiles of CMV TM10-specific CD8 T cells compared to the rest of the pool, and the two multimer technologies used were comparable.

Conclusion: T-cell maturation profiles of total CD8 T cells, indicate a significant shift towards the TEMRA subset in treated HIV-1+ patients. Although CMV-specific CD8+ T cells have been shown to be predominantly of the TEMRA subset in untreated HIV-1+ individuals, here we show that in cART-treated HIV-1+ patients CMV-specific CD8 T cells are primarily at the effector memory, TEM, stage of differentiation. This indicates cART-mediated adjustment of T-cell maturation and further studies aim to assess differences in activation and exhaustion status.

P59
How common is the mutation E138K in the UK?

D Bradshaw[1], D Dolling[2], C Booth[3], M Nelson[1], D Dunn[2] and D Asboe[1]

[1]Chelsea and Westminster Hospital, London, UK, [2]MRC Clinical Trials Unit, London, UK, [3]Royal Free Hospital, London, UK

Background: The HIV-1 non-nucleoside reverse transcriptase inhibitor (NNRTI) rilpivirine has recently been licensed in the UK for naïve patients following the ECHO and THRIVE trials. However, individuals failing therapy with rilpivirine commonly develop an NNRTI mutation in RT, E138K. This reduces susceptibility *in vitro* to etravirine by ~ 5-fold, and to the other NNRTIs by 2–5-fold. An association between E138K and M184I has also been described, E138K possibly compensating for the reduction in replication capacity incurred by M184I.

Methods: We searched bulk sequenced resistance tests in the UK HIV Drug Resistance Database for patients harbouring E138K as either a predominant or detectable mixture mutation.

Results: E138K was found in 60/31574 (0.19%) ART (antiretroviral)-naïve individuals and 85/13406 (0.63%) ART-experienced individuals. Fifty-three of 85 (62.3%) ART-experienced individuals were within the UK Collaborative HIV Cohort. Further analysis focused on these. Thirty-four (64.2%) were male; 22 (41.5%) had a probable MSM exposure, 24 (45.3%) a probable heterosexual exposure, 4 (7.5%) another exposure and 3 (5.7%) were missing this information. Twenty-nine were white (54.7%); median age was 39. Individuals with both E138K and NNRTI-experience (more than 30 days of therapy) (n = 41) were compared to controls lacking E138K, who were also NNRTI-experienced, but had a major NNRTI mutation (n = 410). A significant association was found between prior etravirine (ETR) exposure and E138K (OR:27.93, 95%CI: 7.47–103.54, $P < 0.01$).

	No ETR experience	ETR experience
No E138K	407 (99.3%)	3 (0.7%)
E138K	34 (82.9%)	7 (17.1%)

Association between E138K and prior ETR exposure

No association was found between prior efavirenz (EFV) or nevirapine (NVP) exposure and E138K; between E138K and M184I; or between HIV clade and

E138K. No association was seen between NNRTI exposure and E138A/G/P/Q.
Conclusion: E138K is a rare mutation, with a UK prevalence of 0.19% at baseline and 0.63% in ART-experienced patients. A significant association with prior ETR but not EFV or NVP exposure was observed in this study.

P60
Predictors of immunologic failure in treatment naive HIV infected patients who start highly active anti-retroviral therapy (HAART)

A Tesema[1], A Kumie[2], A Showa-Amare[3], A G-Yohannes[1] and T Gabrekidan[1]
[1]Abt Associates Inc., Addis Ababa, Etthiopia, [2]Addis Ababa University, Addis Ababa, Ethiopia, [3]Zewditu Memorial Hospital, Addis Ababa, Ethiopia

Background: Sincevirologic monitoring in HIV positive patients on HAART is widely unavailable in resource limited countries like Ethiopia, immunologic monitoring becomes a very important clinical monitoring tool. Despite its importance, sufficient data is unavailable on the magnitude and independent predictors of immunologic failure in the Ethiopian context.
Objectives: To investigate the magnitude and independent predictors of time to immunologic failure in treatment naive HIV infected patients who start first line HAART.
Methods: A retrospective follow-up study on patients started on HAART in Zewditu hospital was conducted. A sample of 1400 patients enrolled for ART care between March 2005 and February 2009 were included. Baseline socio demographic, behavioral and clinical information was collected and analyzed using SPSS version 15. The main outcome indicator was time to immunologic failure and those without immunologic failure were censored at the time they were lost-to-follow- up or at the last day of clinic visit. The distribution of time to immunologic failure between groups after initiation of therapy was estimated using the Kaplan- Meier method and Log-rank test. Multivariate COX Proportional Hazard regression analysis was performed to see the significance of association between dependent and independent variables.
Results: 1400 patients on HAART were retrospectively followed for a median time of 32 months. Of these, 258 (20.4%) developed immunologic failure. The incidence of immunologic failure was found to be 7.7 per 100 person years of follow-up. The risk of failure was highest in the first 6 months and gradually decreased then after. The median increase in CD4 count at 7 month after initiation of HAART was 94 cells/mm3 (IQR 38–162). Age >40 years (HR, 1.533; CI 1.187–1.981), Pre-HAART CD4 count > 200 cells/mm3 (HR, 0.653; CI 0.468–0.913) and modification to the baseline HAART regimen (HR, 0.653; CI 0.493–0.862) were independently associated with immunologic failure.
Conclusion: The immunologic response to HAART in the Ethiopian setting is comparable to findings in both developed and other resource limited settings and it is associated with Pre-HAART CD4 T cell values, age and modification to HAART. The specificity and predictive value of immunological failure to identify those with treatment failure should be further evaluated.

P61
Cloning a defective SIVmac239 genome into modified vaccinia Ankara, MVA

G Cholapura-Puttaswamaiah[1] and T Blanchard[2]
[1]University of Manchester, Manchester, UK, [2]North Manchester General Hospital, Manchester, UK

Background: It has previously been shown that MVA has a cytokine receptor profile and replication properties that make it a promising recombinant HIV vaccine vector. Recombinant MVA boosts T cell responses very efficiently and is currently widely used as vaccine candidate for many pathogens including HIV. Attempts to achieve a similar effect in eliciting neutralising antibodies to primary isolates of HIV employing MVA expressing HIV virus-like particles (gag & env) have been disappointing so far. Here we describe a method for inserting the genome of an HIV-like virus within the genome of MVA. The first naturally-occurring example of a poxvirus encoding an infectious retrovirus was discovered by Hertig et al. We have mimicked this natural recombination event by employing a synthetically constructed defective SIVmac239 genome recombined within a modified vaccinia Ankara (MVA) genome driven by T7 RNA polymerase.
Methods: Our recombination vectors employ transient β-galactosidase (β-gal) and red fluorescent protein (RFP) markers, enabling the construction of complex markerless recombinants in primary chick embryo fibroblasts. The defective SIV genomic plasmid employed for recombination was 17,735 base pairs in size, inserting in deletion VI of the MVA genome. Multiple mutations and deletions introduced in the defective SIV genome prevent the formation of infectious retroviruses by vertebrate cells infected by recombinant MVA, but limited production of retroviral proteins is predicted to occur. The defective SIV genome encodes green fluorescent protein adjacent to an internal ribosomal entry site, to enable easy detection of retroviral RNA.
Results: The defective SIVmac239 genome was synthesized in tandem with selection and recombination sequences, and all cloned into a pBR322 plasmid then sequenced. A separate similar plasmid encoding phage T7 RNA polymerase with a different MVA insertion site was also constructed and sequenced. Coinfection (with MVA) and cotransfection (with plasmids) of primary chick embryo fibroblasts demonstrated expression of β-gal but not RFP. Construction of recombinant MVA encoding SIVmac239 was accomplished by selection for β-gal alone.
Conclusion: The construction of recombinant MVA encoding a synthetic HIV-like genome is described. In distinction from earlier work, only transient expression of markers is required, enabling the future construction of more complex recombinants.

P62
Comparison of CD4 response to cART in patients with HIV 1, HIV 2 and dual (HIV1/2) infected patients in a large ethnically diverse UK HIV cohort.

S Shivasankar[1], L Campbell[2], S Adikari[1], M Sudhanva[3] and C Taylor[1]
[1]Department of HIV Medicine, King's College Hospital, London, UK, [2]HIV Research Group, King's College London, London, UK, [3]Department of Virology, King's College Hospital, London, UK

Background: In the UK, approximately 137 HIV-2 and 35 dual infections (HIV-1&2) had been reported to the Health Protection Agency by 2010. Previous non-UK studies have shown poorer CD4 cell recovery in cART treated HIV-2 infection.
Aims and Objectives: To describe CD4 counts changes in treated HIV-1, HIV-2 and dual infected UK patients.
Methods: HIV-2 and dual infected patients attending between April 2002 and October 2011 were identified using virology databases. All patients were heterosexual. HIV 2 and dual infected patients were matched with heterosexual HIV 1 patients attending over the same period. Data on all attendees were extracted from electronic patient records.
Results: A total of 1467 heterosexual patients attended during this time. 1449 were HIV-1 infected,10 HIV-2 and 8 dual infected.

	HIV- 1 (1449)	HIV 1&2 (8)	HIV-2(10)
Sex/Ethnicity	901(62)	5(62.5)	7(70)
n(%)	1271 (87.7)	7/8 (87.5)	9/10 (90)
Females	176(12.1)	1/8 (12.5)	1/10 (10)
Black African	2 (0.13)		
/Caribbean			
White other			
Ethnicity not known			
Age at HIV diagnosis (Mean,SD)	35.2 (9.5)	37.4 (2.5)	37.7 (13.5)
AIDS diagnosis n(%)	326(24)	0 (0)	2 (20)
Median (IQR) Nadir CD4 count	192(80, 313)	269 (67, 286)	483(169,710)
First line cART n (%)	745(69)	3(42.9)	0
NNRTI + 2 NRTI	194(18)	4(57.1)	4(40)
PI + 2 NRTI	127(13)	0	1(10)
Other			
Median (IQR) CD4	(n = 1066)	(n = 7)	(n = 5)
ART Start	206 (94, 330)	305 (76, 377)	228 (195, 343)
3 months	225.5 (235, 321)	261.5(171, 560)	235 (159, 329)
6 months	308.5 (235, 400)	424 (212, 547)	228 (214, 231)
12 months	358 (285, 463)	411 (232, 728)	343 (339, 344)

Conclusion: Median CD4 cell recovery appears to be delayed for HIV-2 patients at 6 months. By 12 months, however all groups reached median CD4 counts above 300. Dual infected patients reached a median CD4 count of above 350 at 6 months compared to other two groups. However we appreciate that our study is limited by the small number of HIV 2 and dual infected patients. Larger studies are needed to investigate whether CD4 counts responses are similar between the three groups.

P63

Distinct HIV-1 Gag- and Nef- specific responses correlate with immunophenotype in treated chronic HIV-1 infection

A Herasimtschuk[1], T Thaventhiran[1], M Nelson[2], G Moyle[2], B Gazzard[2], F Gotch[1] and N Imami[1]

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

Background: Specific functional and phenotypic immune profiles have been associated with slower progression of HIV-1 infection. Early and robust CD4 T-cell responses to Nef and a preserved Gag p24 proliferative response are associated with better prognosis. Slow clinical progressors have been shown to have less generalized CD4 T-cell immune activation relative to rapid progressors. This study aims to determine the correlations between function and phenotype in treated chronic HIV-1 infection.

Methods: Functional responses in peripheral blood mononuclear cells (PBMC) from cART-treated HIV-1$^+$ individuals were assessed in ELISpot assays for IFN-γ and IL-2 production following stimulation with overlapping pools of Gag and Nef peptides. Subjects were characterised as being responders to both Gag and Nef (n = 3), Gag (n = 5), Nef (n = 4) or as low-responders (n = 5). These functional profiles were compared to the immunophenotypic profiles, as measured by flow cytometric analysis, and markers of immune activation (CD38, HLA-DR), senescence (CD57), apoptosis (CD95) and exhaustion (PD-1, TIM-3) assessed. Expression of these markers on CD4 and CD8 T cells from HIV-1 seronegative donors was also investigated (n = 11).

Results: Patients were well matched with CD4 T-cell counts > 300 cells/μl blood and plasma HIV-1 RNA < 50 copies/ml in all subjects. Percentage co-expression of HLA-DR and CD38 was significantly higher in the HIV-1$^+$ subjects compared to healthy donors ($P < 0.0001$ for both CD4 and CD8 T-cells). The Gag responders tended to have higher co-expression of these markers in the CD4 T-cell subset, and the low-responders lower expression. A similar pattern was seen for CD4$^+$HLA-DR$^+$ T cells. Nef responders tended to express less CD38, particularly on CD8 T cells. Responders to both Gag and Nef had higher expression levels of CD57 and CD95, lower percentage expression of PD-1, and lower expression of TIM-3 (in terms of mean fluorescence intensity), particularly on the CD8 T cells.

Conclusion: These findings indicate that the functional responders to Gag and Nef peptides have distinct phenotypic profiles. Increased levels of HLA-DR on the CD4 T cells of the Gag responders may reflect increased activation of virus-specific cells. Further studies characterising peripheral PBMC and HIV-1-specific T cells using pentamer staining, and comparing functionality, are warranted.

Cancer and Malignancies

P64

Treatment of anal intraepithelial neoplasia and prevention of anal carcinoma

J Thornhill[1], M Jit[2], K Klein[1], N Hickey[1], D Awosika[1], N Singh[3], M Sheaff[3] and M Nathan[1]

[1]Homerton University Hospital NHS Foundation Trust, London, UK, [2]Health Protection Agency, London, UK, [3]Barts and The London NHS Trust, London, UK

Background: The rates of anal carcinoma (cancer) have increased over recent decades in Europe and the US[123]. The anal cancer rates are much higher in HIV positive (+) men and have increased over time[4]. Moreover, compared to HIV negative people, local clearance rate of anal cancer is much reduced in HIV + people (87% v 38% at 5 years), after chemoradiotherapy[5]. Progression to anal cancer from high-grade anal intraepithelial neoplasia (AIN 2/3) has been noted in a number of small observational studies at a rate of 8.6% to 14.3% over 5 years[6789]. An opportunity may exist to prevent anal cancer through treatment of AIN 2/3. We present retrospective data on AIN 2/3 cases that underwent laser ablative treatment.

Methods: Data on patients who had a minimum of 3 year follow-up after AIN 2/3 diagnosis and who underwent ablative treatment for AIN 2/3 was reviewed.

Results: A total of 91 patients (35 AIN 3; 56 AIN 2) were identified. Fifty six (61.5%) were HIV +, the others were negative (33) or of unknown status (2). Eighty two (90.1%) were males (80 men who have sex with men). Mean age was 36.9 (range 20 – 68). Thirty seven cases (66%) had a CD4 nadir of ≤ 200. Median follow-up for the cohort was 69 months (mean 69.9; range 36–180 months). None of the patients in this cohort developed anal cancer. Twenty five cases (45%) had been HIV + for 15 years or more.

Markov model-based analyses suggest that treatment may have prevented lesion progression in a proportion of patients.

One patient who did not meet the criteria of 3 years of follow-up and was thus excluded from the analysis went on to develop anal cancer. This 49 year old man was HIV + for 21 years with a CD4 nadir of 8. He had 3 quadrant AIN 3 disease.

Interpretation: (i) In our cohort of 91 patients with high grade AIN disease, no one developed anal cancer after a median of 69 months of follow up (minimum 3 years).All patients received laser ablative treatment for AIN 2/3.

(ii) Although no large natural history studies exist, available data suggests that AIN 2/3 in some instances can progress to anal cancer. Previously we established 36 months as an adequate period to assess outcome of treatment[10].

(iii) Though no one in this cohort developed cancer, there was a case of cancer in a treated patient (follow up <3 years). It is likely this represents a late presentation, where treatment had no impact in reversing the process of malignancy.

We now need prospective data on treatments employed to prevent anal cancer.

P65

Ex-vivo recognition of immediate-early T cell epitopes within open reading frame ORF50 and K8 of Kaposi's sarcoma-associated herpesvirus (KSHV) by HIV/KSHV-coinfected individuals

S Mletzko[1], Y Shahrabi[1], A Hislop[2], V Harding[1], M Nelson[1], F Gotch[1] and M Bower[1]

[1]Chelsea and Westminster Hospital, London, UK, [2]Birmingham University, Birmingham, UK

Background: KSHV is the aetiological agent of the endothelial cell malignancy Kaposi's sarcoma (KS), the most common cancer in individuals with untreated HIV/AIDS. KSHV can establish life-long asymptomatic infection in immunocompetent individuals. However, upon immunosuppression the incidence of KS in KSHV carriers dramatically increases. Several lines of evidence indicate that Kaposi's sarcoma oncogenesis is associated with loss of T cell mediated control of KSHV-infected cells. Although several HLA-restricted, KSHV-specific CD8 epitopes have been identified, the frequency of recognition of these epitopes is low and the responses they elicit appear weak compared with responses to known epitopes from viruses such as HIV and Epstein-Barr virus (EBV). Host control of KSHV infection and KS oncogenesis by T cells remains underexplored. We hypothesised that new KSHV-specific epitopes can be identified which stimulate T cells with detectable frequencies.

Methods: We hypothesised that the best candidate targets would be the immediate-early transactivating proteins ORF50 and K8. This is primarily because in cells replicating EBV, a closely related γ-herpesvirus, there is a time window where the equivalent genes are expressed before any immune evasion genes are activated. It is believed that this drives expansion of some T cell responses seen in EBV. The K8 equivalent in EBV is an immunodominant target. To investigate recognition of KSHV-specific peptides, peripheral blood mononuclear cells (PBMC) were separated and IFN-γ ELISpot assays were conducted using overlapping peptide libraries which spanned ORF50 (126 peptides) and K8 (56 peptides). Peptides were synthesised based on the sequence of KSHV as 15mers overlapping by 10 and used in pools containing 10–13 peptides, each at a final concentration of 2 μg/mL.

Results: Using PBMCs from KSHV-infected donors in remission from KSHV-related malignancies, we found *ex-vivo* responses in IFN-γ ELISpot assays to KSHV immediate-early protein K8 but not to ORF50. One novel pool (12 peptides) of immediate-early epitopes from K8 was recognised by 33% (4 out of 12) of individuals tested and elicited a response of 108.3–47.5 spot forming cells (SFC) per million; mean = 97.3.

Conclusion: This study identifies one novel pool of epitopes derived from immediate-early K8 protein recognised by KSHV-seropositive, HIV co-infected individuals and will be useful in future immunological studies into the CD4 and CD8 response against KSHV.

P66

Accuracy of fluorodeoxyglucose positron emission tomography with computed tomography and magnetic resonance spectroscopy in differentiating between primary cerebral lymphoma and non-malignant CNS lesions in HIV infected patients

C Hogan[1], A Bonington[1], S Bonington[2], B Carrington[2], P Julyan[3], G Coutts[3], S Khoo[4], H Reynolds[4], R Swindell[2] and A Varma[5]

[1]Department of Infectious Diseases, Monsall Unit, North Manchester General Hospital, Pennine Acute Trust, Manchester, UK, [2]Department of Radiology. The Christie NHS Foundation Trust, Manchester, UK, [3]Christie Medical Physics and Engineering, The Christie NHS Foundation Trust, Manchester, UK, [4]Department of Infectious Diseases, Royal Liverpool and Broadgreen University Hospital Trust, Liverpool, UK, [5]Department of Neurology, Salford Royal Hospital Trust, Salford, UK

Background: Cross-sectional imaging modalities are unable to differentiate between Primary Cerebral Lymphoma (PCL) and Non-malignant CNS lesions in HIV-infected patients. Fluorodeoxyglucose Positron Emission Tomography with Computed Tomography (FDG-PET CT) and Magnetic Resonance Spectroscopy (MRS) may provide a non-invasive means of more accurate differentiation, enabling rapid treatment. In this study we have prospectively investigated the use of FDG-PET CT & MRS in distinguishing between PCL and non-malignant CNS lesions in HIV-infected patients.

Methods: HIV patients presenting with neurological symptoms and one or more contrast enhancing brain lesions on CT or MR were prospectively recruited from two centres in the north of England. All patients were commenced on anti-toxoplasmosis therapy as per standard practice and underwent a FDG-PET CT & MRS. All images were reviewed by 2 independent assessors. Brain biopsies were sought in those with FDG-PET CT suggestive of lymphoma and in those with a FDG-PET CT suggestive of non-malignant disease and who failed to respond to standard therapy at 2 weeks. Final diagnosis was based on clinical and radiological response to treatment or histology where available. 10 patients were recruited (8 male, mean CD4 61cells/uL, mean age 38 years). 10 underwent FDG-PET CT & 8 MRS. 2 patients had Lymphoma, 1 confirmed by brain biopsy and 1 by CSF cytology. 6 patients had cerebral toxoplasmosis, 5 confirmed by clinical & radiological response to therapy and 1 by autopsy. 1 patient had progressive multifocal leucoencephalopathy (PML), based on clinical & radiological response. 1 patient had metastatic non-small cell lung cancer (NSCLC) confirmed by brain biopsy.

Results: FDG-PET CT accurately identified both cases of lymphoma. All cases of cerebral toxoplasmosis were identified as non-malignant disease. FDG-PET CT was equivocal in the case of PML. FDG-PET CT wrongly identified metastatic NSCLC as non-malignant disease. The presence of haemorrhage within the lesion was suggested as the reason for the inaccurate result. MRS was performed in 8 subjects. 3 scans were suggestive of lymphoma; 1 true positive & 2 false positive. 4 scans were suggestive of a non-malignant lesion; 1 false negative & 3 true negative. 1 scan was equivocal (toxoplasmosis).

Conclusion: All cases of cerebral lymphoma and cerebral toxoplasmosis were correctly identified by FDG-PET CT confirming this to be a useful.

P67

Abstract withdrawn

P68

Anal intraepithelial neoplasia: single centre experience

D Grover[1], M Johnson[1], C Smith[2], C Fine[1] and O Ogunbiyi[1]

[1]Royal Free Hampstead NHS Trust, London, UK, [2]University College London, London, UK

Background: The incidence of anal intraepithelial Neoplasia (AIN) and Anal squamous cell carcinoma (ASCC) has risen significantly over the past decade, in particular in HIV positive men who have sex with men (MSM). In response to this a monthly Ano-rectal service run by a HIV physician and colorectal surgeon was introduced in the HIV outpatient clinic. The clinic was introduced to provide specialist services for patients with a history of anal warts or previously diagnosed AIN. Symptomatic patients were screened by anoscopy +/- (surgical) evaluation under anaesthesia (EUA) where indicated. Patients were referred by their regular clinic doctor or self referred through promotion throughout the clinic. We sought to describe our experience over the first 12 months of this new service.

Methods: Data was prospectively collected on all patients attending the clinic, including demographics, clinical presentation, antiretroviral history, current and nadir CD4, and HIV viral load (VL), duration of HIV infection and time on highly active antiretroviral therapy (HAART), and current smoking status. All figures quoted as median (inter quartile range).

Results: 73 patients were seen over 12 months. 85% (61/73) were Caucasian, the majority 91% (67/73) were MSM. Age 45 (41–50) years, CD4 at presentation $511x10^9$ /L (362–741), CD4 nadir $152x10^9$ /L (26–288). 95% (69/73) were on HAART, 82% (60/73) had a VL < 40 copies/ml. Median time since HIV diagnosis was 15 years (10–20), with 11 (6–13) years on HARRT. 75% (55/73) were smokers.

40% (30/73) presented with a history of previous AIN or anal warts and underwent an Anoscopy +/- EUA for screening. Of these 27% (8/30) were diagnosed with AIN: AIN-1 (3), AIN-2 (2), and AIN-3 (3). 3/8 had prior diagnosis of AIN, the remainder were all newly diagnosed. 3/30 (10%) were diagnosed with ASCC and were managed by the surgeons and oncologists.

Conclusion: A high rate of anal cancer was detected in this selected, symptomatic population over a 12 month period. We plan to expand the service to include a screening clinic specifically targeting all HIV positive, MSM who are > 40 years, or have low CD4 nadir, or HIV infection > 10 years to undergo routine screening for AIN with Human Papilloma Virus (HPV) cytology, HPV typing and baseline Anoscopy.

P69

Introducing cervical cancer screening in an informal settlement

L Mbau[1], L Kabare[2] and K Kinagwi[1]

[1]AMREF (African Medical and Research Foundation) – Kenya, Nairobi, Kenya, [2]University of Nairobi, Nairobi, Kenya

Background: Cervical cancer has a devastating impact on women's health worldwide. It is responsible for at least 250000 deaths yearly majority from low and middle income countries. Most cases (99%) are linked to Human Papilloma Virus (HPV). Cervical cancer is preventable through vaccination and screening. The age standardized incidence rate for East Africa is the highest in the world at 44.32/100,000 women. The disparity in morbidity and mortality between high- and low-income populations has been attributed to a lack of national screening guidelines and funding for cervical cancer prevention. World Health Organization estimates that only 5% of women in developing countries have been screened.

Methods: A cross-sectional study was carried out to provide evidence for an effective cervical cancer screening model in a resource limited setting. A campaign to build capacity and community awareness was carried out after which cervical cancer screening was added to the services offered at the centre. The screening method used involves naked eye inspection of the cervix after application of Acetic Acid and Lugol's Iodine (VIA/VILI). Cervical biopsy was used to confirm positive VIA/VILI results and determine progression. All women visiting the Health Centre between April and July 2011 were counselled on cervical cancer screening. Those who were eligible and consented were screened. Data collected was entered into SPSS for analysis.

Results: A total of 186 women were screened, 67% (123) of whom were HIV positive. Among women screened 23% (43) were VIA/VILI positive of whom 79% were HIV positive. Results for 17 biopsies showed cancer and precancerous lesions in 9 (53%), cervicitis in 5 (29%) and normal results in 3 (18%). There was a statistically significant relationship between HIV status and VIA/VILI result.

Conclusion: Cervical cancer screening using VIA/VILI is effective, acceptable and affordable within low resource settings. Due to higher prevalence of cervical dysplasia in HIV positive women cervical cancer screening should be part of their routine care. VIA/VILI was found to have low specificity in this populations due to high prevalence of Sexually Transmitted Diseases which may result in over-treatment. VIA/VILI may be a suitable alternative for screening required to overcome the challenges in low-resource settings. A large scale randomized intervention study is required to confirm these findings, establish cost-effectiveness and determine scalability.

P70

HIV testing in cancer: experience from a tertiary oncology hospital

D Lebari[1] and E Kaczmarski[2]
[1]North Manchester General Hospital, Manchester, England, [2]Christie NHS Foundation Trust, Manchester, England

Background: HIV infection has been shown to increase the risk of malignancy. Non-Hodgkin's lymphoma, Kaposi's sarcoma and cervical cancer, in particular, are AIDS-defining conditions. Patients with these conditions should be routinely recommended to have an HIV test. The UK chief medical officer, in a letter in September 2007, emphasised increasing the detection and diagnosis of HIV.
Methods: Case notes and laboratory virology results of patients referred or initially diagnosed with Non-Hodgkin's lymphoma (NHL), Kaposi's sarcoma (KS) and cervical cancer from March 2007 to July 2011 were retrospectively reviewed.
Results: 1391 patients were diagnosed or referred with NHL, KS or cervical cancer within the study period. A sample of 229 case notes and laboratory evidence of testing were reviewed. Twenty one percent (34 of 158) patients with NHL were known to be tested for HIV; eighty-six percent (6 of 7) patients with KS were known to be tested for HIV; and one percent (1 of 64) patients with cervical cancer were known to be tested for HIV.
Conclusion: A significant number of patients presenting with HIV clinical indicators to this tertiary oncology hospital are not being offered a HIV test routinely. This represents a missed opportunity and increases the potential for late diagnosis and onward transmission of HIV. The lymphoma unit are in the process of incorporating universal testing for all new diagnoses and referrals. A multidisciplinary team has been organised to negotiate testing within the colposcopy services in the region.

P71

Non-melanoma skin cancers among HIV-infected persons in the HAART-era

E Garlassi[1], V Harding[2], H Allen[2], B Allin[2], N Lee[2], M Nelson[2] and M Bower[2]
[1]University of Modena and Reggio Emilia, Modena, Italy, [2]Chelsea and Westminster Hospital, London, UK

Background: Since the advent of highly active antiretroviral therapy (HAART), there has been increasing attention on the non-AIDS defining cancers, including non-melanoma skin cancers (NMSC). Whilst epidemiological studies frequently exclude NMSC, two studies have reported an increased relative risk of NMSC in people living with HIV. However, little data exist on the pathological details and outcomes of NMSC in this population.
Methods: A retrospective, single centre study was performed involving HIV-positive patients with histopathologically confirmed non-melanoma skin cancers, collecting cases from the national centre for HIV malignancy (1996 to 2011). Data regarding clinicopathologic features and outcome were analyzed using descriptive statistics.
Results: Fifty eight patients (57 male) were identified with a mean age of 54 years (range: 31–77). These patients had a total of 159 NMSC excised: 126 basal cell cancers (BBC) and 33 squamous cell cancers (SCC). The median CD4 cell count at cancer diagnosis was 343 cells/mm^3 (range: 1–937) and 76% were on HAART. For patients with BCC, 23% had adverse histopathological subtypes (morphoeic, infiltrative or micronodular) and there was no correlation between adverse subtypes and immune function (CD4 cell count $P = 0.14$, plasma HIV viral load $P = 0.55$, HAART usage $P = 0.62$, duration on HAART $P = 0.16$, or duration HIV seropositivity $P = 0.65$).
Conclusion: NMSC are part of the growing list of cancers that may be encountered in patients living longer with chronic HIV-infection. Patients presented at a younger age and frequently with more aggressive pathological subtypes, but NMSC do not appear to be significantly associated with immune function or HAART.

Children and Pregnancy

P72

Instrumental births in women with HIV in the UK and Ireland: data from national surveillance, July 2008 to December 2011

A Jackson[1], J Masters[1], K Harding[2] and P Tookey[1]
[1]UCL Institute of Child Health, London, UK, [2]Guy's and St Thomas' Hospitals Foundation Trust, London, UK

Background: Invasive procedures in labour have been discouraged for women with HIV because of a potentially increased risk of mother-to-child HIV transmission. However, where women are on suppressive HAART, planned vaginal delivery is increasingly common and it is likely that the rate of instrumental deliveries will rise. Instrumental delivery rates for women with HIV in the UK and Ireland have not previously been reported.
Methods: Comprehensive surveillance of obstetric and paediatric HIV in the UK and Ireland is conducted through the National Study of HIV in Pregnancy and Childhood (NSHPC). Since July 2008 details of instrumental delivery have been requested. Singleton vaginal births between July 2008 and December 2011 in women diagnosed with HIV before delivery were included in this analysis; of 1355 such births 1124 (83%) included information on instrumental delivery. Data on instrumental deliveries for England was taken from Health Episode Statistics (www.HESonline.nhs.uk) for 2008–2011.
Results: Instrumental delivery was reported in 77 (6.9%) of 1124 singleton vaginal births to HIV-positive women: in 45/77 (58%) forceps were used, in 26 (34%) ventouse (includes one with both), and in 6 (8%) type of instrument was not specified. 94% were planned and 6% unplanned vaginal deliveries. No perinatal infections have been reported so far (infection status known for 52/77 infants). About 15% of vaginal deliveries were operative in England over the same period, with approximately equal use of forceps and vacuum extraction.

Instrument	HIV (singletons)	England (all)
Forceps	4.0%	7.4%
Ventouse	2.3%	8.0%
Not specified	0.5%	
Total	6.9%	15.4%

Conclusion: Operative vaginal deliveries are less common in the HIV-positive population than in the general population, with forceps used more often than ventouse; this may reflect BHIVA/RCOG advice to use forceps in preference to ventouse to reduce the risk of neonatal trauma. Instrumental deliveries are likely to increase in number as more women with HIV achieve undetectable viral load and deliver vaginally. It is encouraging that so far no perinatal transmissions have been reported in infants delivered instrumentally, but numbers are low. As the obstetric management of women with HIV is normalised, the NSHPC provides an important tool for monitoring the impact of changes in practice, including the use of invasive procedures during pregnancy and at delivery.

P73

The association between ethnicity and late presentation to antenatal care among pregnant women living with HIV in the UK and Ireland

S Tariq[1], J Elford[1], M Cortina-Borja[2] and P Tookey[2]
[1]City University London, London, UK, [2]UCL Institute of Child Health, London, UK

Background: UK and Ireland guidelines state that all pregnant women should have their first antenatal care appointment by 13 weeks of pregnancy ('antenatal booking'). In the UK and Ireland, over 1400 women living with HIV are reported as pregnant annually. Few studies have explored antenatal booking in this population. We present results of an analysis looking at the association between maternal ethnicity and late antenatal booking in HIV-positive women in the UK and Ireland.
Methods: We analysed data from the National Study of HIV in Pregnancy and Childhood (NSHPC), the UK and Ireland's comprehensive surveillance

programme for obstetric and paediatric HIV. We included all pregnancies in women who were diagnosed with HIV before delivery and had an estimated delivery date between 1 January 2008, when antenatal booking date started to be routinely collected, and 31 December 2009. Late booking was defined as antenatal booking at 13 weeks or later. The baseline reference group for all analyses comprised women of 'white' ethnicity. Logistic regression models were fitted to estimate adjusted odds ratios (AOR).

Results: There were 2721 eligible reported pregnancies; 63% (1709) had data available on antenatal care booking date. In just over 50% of pregnancies (871/1709) the antenatal booking date was ≥13 weeks of pregnancy. Women diagnosed with HIV during the current pregnancy were more likely to present for antenatal care late than those previously diagnosed (59.1% *vs.* 47.5%, $P < 0.001$). Where the mother knew her HIV status prior to becoming pregnant, the risk of late booking was increased for women of African ethnicity (AOR 1.80; 95% confidence interval (CI) 1.14, 2.82; $P = 0.011$). In women diagnosed with HIV during pregnancy, the risk of late booking was also higher for women of African ethnicity (AOR 2.98**:** 95% CI 1.45, 6.11; $P = 0.003$) and for women of other black ethnicity (AOR 3.74: 95% CI 1.28, 10.94; $P = 0.016$).

Conclusion: In this analysis, over half the women booked for antenatal care later than advised by national guidelines. Women of African or other black ethnicity were more likely to book late compared to white women. Women initiating antenatal care beyond 13 weeks miss the opportunity of early screening for HIV (if not already diagnosed) and other conditions, and (if positive) have less time to engage with HIV antenatal services. This may have an adverse effect on maternal and infant outcomes, including mother-to-child transmission of HIV.

P74
A study to assess the oral health of children with HIV and their experiences and attitudes, as reported by parents

S McDonald[1], S Welch[2], J Phillips[3], V Clark[4] and I Chapple[5]
[1]Birmingham Community Healthcare NHS Trust, Birmingham, England, [2]Heart of England NHS Foundation Trust, Birmingham, England, [3]Edinburgh Dental Institute, Edinburgh, Scotland, [4]Birmingham Children's Hospital NHS Trust, Birmingham, England, [5]University of Birmingham, Birmingham, England

Studies of HIV infected children in the United Kingdom pre Highly Active Anti-Retroviral Therapy (HAART) have reported high dental caries prevalence, with 63–68% of children examined having experienced caries. Periodontal health has been reported as the same as non-infected siblings. Oral soft tissue lesions are more prevalent in this cohort. It has also been reported that a high number of children with HIV have never attended a dental surgery. This study assessed the oral health attitudes, experience and access of children with HIV in the West Midlands and prevalence of oral diseases in the HAART era.

A convenience sample of 86 Children attending medical reviews in all regional paediatric HIV clinics was employed. Parents were approached for permission to take part in the study, which involved a questionnaire and an oral examination of their children, undertaken by a single trained examiner. Parents completed a questionnaire asking about previous dental attendance and oral problems in the preceding 12 months. Oral examination included assessment of soft tissue lesions, dental caries and periodontal status. Demographic data and contemporaneous information about HIV staging was assimilated from medical records. The office of national statistics Child Dental Health Survey formed a control dataset. Birmingham East, North and Solihull Research Ethics Committee approved the study (ref: 10/H1206/3).

Parents of 61 children agreed to their participation (71%). Volunteers were 3–16 years (mean 10.1 ± 3.56). 10% of children were noted to have soft tissue lesions associated with HIV; 44 (72%) children had caries experience and 46% had gross plaque deposits; only 10% were plaque free. 28% of children had never attended a dentist and 20% had only attended once. Only 45% of parents had informed their dentist of HIV status.

Caries prevalence amongst children with HIV disease in the West Midlands is high and oral hygiene is poor, compared to national surveys. The majority of children are not regular dental attenders and dentists are frequently unaware of the child's HIV status which has implications for preventive care and holistic management. Lack of disclosure may also lead to children not being monitored appropriately for soft tissue lesions known to be associated with HIV. We conclude that formalised oral care pathways should be developed for children with HIV disease, as part of their general healthcare.

This study was supported by a BHIVA Research Award.
[BHIVA Research Awards winner 2008: Steven Welch]

P75
Testing children of HIV positive parents – how a look back review of living and deceased patients and an MDT approach can result in increased testing of children, teenagers and young adults

J Greig[1], K Rogstad[1], S Naylor[1], S Green[1], F Shackley[2], J Hobbs[2] and H Cobb[1]
[1]Sheffie,d Teaching Hospital NHS Trust, Sheffield, UK, [2]Sheffield Children's Hospital, Sheffield, UK

Aims: (i) To perform a review of all current HIV positive patients attending HIV services in one city, to determine whether they have children and if so have they been tested for HIV.

(ii) To determine the feasibility of a look back exercise on deceased patients. To use a multi-disciplinary forum to elicit the best approach to families with untested children.

Method: A review was performed of all current HIV positive patients attending the Departments of Genitourinary Medicine and Infectious Diseases, and those who had died. Where children were identified who had not had a documented HIV test performed in the UK, a discussion was held by a multidisciplinary team including the paediatric HIV team, specialised HIV social worker and specialised HIV nurses. Various approaches were used to encourage testing including GP IT systems.

Results: The look back exercise identified 309 families with children. For 274 families (89%) testing of the children had been completed. Of the 35 families, where testing was incomplete, 5 were refusing testing, 9 were awaiting paediatric appointments and for 21 either further clarification was required or discussion was on-going.

After the look back exercise, 8 families who still refused testing were referred to a bi-monthly MDT meeting. This has resulted in 6 children being tested where parents had completely refused previously, including where a mother had died some years previously and the family were not in contact with services. One child has legal proceedings underway and 6 further children remain untested. The approaches used, including the use of GP IT systems will be discussed. The on-going need, to ensure testing for those children who may subsequently enter the UK, was identified.

Conclusion: Testing children of parents who initially refuse can be achieved through the use of an intensive MDT approach, including where parents have died. However there will still be some cases where recourse to legal action through child protection services may be required.

P76
Pregnancies among women seen for HIV-clinical care – predictors and trends over time

S Huntington[1], C Thorne[2], J Anderson[3], M-L Newell[4], G Taylor[5], D Pillay[6], T Hill[1], P Tookey[2] and C Sabin[1]
[1]UCL Institute of Epidemiology & Health Care, London, UK, [2]UCL Institute of Child Health, London, UK, [3]Homerton University Hospital NHS Foundation Trust, London, UK, [4]Africa Centre for Health and Population Studies, University of KwaZulu-Natal, Somkhele, South Africa, [5]Imperial College Healthcare NHS Trust, St Mary's Hospital, London, UK, [6]Health Protection Agency, Centre for Infections, London, UK

Background: Women with HIV accessing clinical care include women of different ethnicities, ages and levels of morbidity. The characteristics of this diverse group continue to change with an increasing number of older women and women on ART, many of whom choose to have children. We identify factors predictive of having a pregnancy among women accessing care in 2000–2009 and changes in the pregnancy rate.

Methods: The UK Collaborative Cohort (UK CHIC) Study, a large cohort of adults receiving HIV clinical care, was linked to a surveillance study of HIV-positive women accessing antenatal care, the National Study of HIV in Pregnancy and Childhood. Pregnancy incidence (all outcomes) was assessed for each calendar year using women (16–49 years old) under follow-up at a UK CHIC site as the denominator and linked women conceiving that year (after HIV diagnosis) as the numerator. Changes in pregnancy rate were assessed using logistic regression, accounting for repeat measures, CD4, age, ART use, and ethnicity.

Results: The number of women accessing care at a UK CHIC site increased each year from 2074 in 2000 to 4876 in 2009. In total, 1637 pregnancies

occurred among women accessing care, the number increasing from 72 in 2000 to 230 in 2009. Older women were less likely to have a pregnancy (AOR 0.44 per 10 year increment in age [95% CI 0.41–0.46] $P < 0.001$), as were women with CD4 < 200 cells/mm^3 (AOR 0.67 [0.56–0.79] $P < 0.001$ compared to CD4 200–350 cells/mm^3), and women of white ethnicity (AOR 0.65 [0.55–0.77] $P < 0.001$ compared to black-African). The proportion of pregnant women who were on ART (at start of year) rose from 43.1% (n = 31) to 65.2% (n = 150) but ART use was not predictive of having a pregnancy (AOR 1.03 [0.92–1.14] $P = 0.63$).

Pregnancy rate increased among women of black-African ethnicity (AOR 1.06 per later calendar year [1.03–1.08] $P < 0.001$), women on ART (AOR 1.04 [1.01–1.07] $P = 0.003$), women not on ART (AOR 1.05 [1.03–1.08] $P < 0.001$) and women in all age groups; 16–25 years (AOR 1.07 [1.02–1.12] $P = 0.004$), 26–35 years (AOR 1.06 [1.04–1.09] $P < 0.001$) and > 35 years (AOR 1.05 [1.00–1.09] $P = 0.03$). The overall pregnancy rate increased by about 5% each year (AOR 1.05 [1.03–1.07] $P < 0.001$).

Conclusion: HIV-positive women are increasingly likely to have a pregnancy. HIV-positive women planning a pregnancy or with a pregnancy require a high level of clinical management; this is likely to continue as an increasing number of older women and women on ART have children.

P77
Pre-term delivery in women taking protease inhibitors: a class effect or due to individual agents?

H Parker[1], S Allstaff[2] and J Wilson[1]

[1]Centre for Sexual Health, Leeds General Infirmary, Leeds, UK, [2]Tayside Sexual and Reproductive Health Service, Ninewells Hospital and Medical School, Dundee, UK

Background: As described in the BHIVA pregnancy guidelines, a significant association between the use of highly active antiretroviral therapy in pregnancy and pre-term delivery (PTD) has been shown. The use of a protease inhibitor (PI) was found to be associated with PTD in the combined Swiss and European Collaborative Study cohorts and also in a North American cohort study. PIs are commonly used in pregnancy in women in whom nevirapine is contraindicated.

Methods: We conducted a retrospective review of our pregnancy cohort to assess if this association is a class effect or drug specific.

Results: Data on 101 pregnancies in 97 patients occurring between July 2006 and April 2009 was available with details documented in a spreadsheet. The cohort was predominately of black African origin with a mean age of 30.4 years. Of the 101 pregnancies two were terminated and there were three first trimester miscarriages. Those patients whose outcomes were unknown due to transfer, dispersal or emigration were discounted as was the data of one patient who refused treatment. The remaining patients were then analysed based on antirerovirals taken in pregnancy – nevirapine (n = 23), saquinavir/ritonavir (SQV/r) (n = 38), lopinavir/ritonavir (LPV/r) (n = 27) or atazanvir/ritonavir (n = 2). All patients also took a nucleoside reverse transcriptase inhibitor backbone. The two patients who took atzanavir/ritonavir had a mean gestation of 35.5 weeks but were discounted due to small numbers. Also discounted was a patient who during the course of her pregnancy took both saquinavir and lopinavir. The mean gestation at delivery on SQV/r was 39.2 weeks with no PTDs (defined as gestation below 37 completed weeks). In contrast the mean gestation on LPV/r was 37.4 weeks with eight PTDs of which three were before 34 weeks' gestation. The mean gestation with nevirapine was 38.4 weeks with four PTDs three of which were pre-34 weeks. Whilst no significant difference was found between the mean gestation in those taking LPV/r versus NVP and SQV/r versus NVP, the mean gestation at delivery was significantly lower with LPV/r compared with SQV/r ($P = 0.005$).

Conclusion: These findings suggest that PTD is not associated with PIs as a class but with individual drugs with lopinavir associated with a shorter gestation. As saquinavir is no longer used first line in our clinic, further research is required to establish if increased rates of PTD are seen in the newer PIs which we are currently favouring.

P78
Clinic-based anthropometric measurements of lipodystrophy and associations with antiretroviral therapy in HIV-infected adolescents

H Sacre[1], R Chalmers[2], K Klassen[2], G Tudor-Williams[1], C Foster[2], S Walters[2], EGH Lyall[2] and MP Rhoads[1]

[1]Imperial College London, London, UK, [2]Imperial College NHS Trust, London, UK

Background: Lipodystrophy (LD) and lipid abnormalities are observed in HIV-infected patients and have been linked to cardiovascular risk. In adults, LD is associated with antiretrovirals, including protease inhibitors (PI), notably ritonavir, and nucleoside reverse transcriptase inhibitors (NRTIs), especially stavudine. However, assessing LD in adolescents is complex. Further validation of objective methods assessing LD in adolescents is required. The objective of this study was to undertake observational research in HIV-infected adolescents to determine 1)association between LD and antiretroviral therapy, and 2)the use of clinic based anthropometric measurements in detecting LD and dyslipidaemia.

Method: A single centre cross-sectional study of HIV-infected adolescents aged 12–18. Anthropometric measurements included body mass index, waist and hip circumferences, mid-upper arm circumference and triceps skin fold thickness. History of antiretroviral exposure and non-fasting total cholesterol (TC), high-density lipoprotein (HDL), low-density lipoprotein (LDL) and triglyceride levels (mmol/L) were obtained. Patients were categorised as with or without doctor-diagnosed LD (dLD). Chi-square and Mann-Whitney U tests were used.

Results: Forty HIV-infected adolescents were recruited**:** 21(52.5%) were female, 34(85%) Black African and 6(15%) had dLD. Black African ethnicity appeared to be protective 4 (66.7%) with dLD, 30 (88.2%) without ($P = 0.03$). dLD was associated with increasing age median: 15.6yr (IQR 14.7, 16.2) with dLD; 13.7 (IQR 12.7, 14.8) without ($P = 0.02$), current PI use 6 (100%) with dLD; 16 (47.1%) without($P = 0.02$) and current use of ritonavir 6 (100%) with dLD; 13 (38.2%) ($P = 0.01$). Ever use of ritonavir was associated 6(100%) with dLD; 15 (44.1%) without dLD ($P = 0.02$) There was no association with current use of NRTIs or ever use of stavudine. and no anthropometric or lipid differences between the two groups. The median TC was 4.1 (IQR 3.5,5.0), 5 (12.5% were above the 95th percentile; median HDL was 1.3 (IQR 1.1, 1.5) and 5 (12.5%) were below the 5th Percentile; median LDL was 2.3 (IQR 1.9,3.0) and 4 (10.0%) were above the 95th percentile.

Conclusion: Clinical lipodystrophy was associated with exposure to PIs, particularly ritonavir boosted. Single anthropometric measurements did not support doctor-diagnosed LD. However, this finding is limited by small cohort size as different LD phenotypes could not be separately analysed.

P79
Testing children of HIV positive mothers: experience from a SW London clinic

S Ghosh, W Majewska, S Donaghy, S Storey, H Webb and K Prime

St George's Healthcare NHS Trust, London, UK

Background: National guidance for testing children born to HIV positive mothers, states that adult HIV services must have protocols and procedures for testing children of all known HIV positive parents. We therefore aimed to identify, document and test children of all new HIV positive mothers attending our service and perform a 'look back' to check the HIV status of children of existing HIV positive mothers. A multidisciplinary team (MDT) of doctors, nurses and health advisers from the paediatric and adult HIV service were convened to facilitate this process.

Methods: All women registered at our HIV service between 1/1/09–1/1/12 were identified using Sophid data. Information was collected on a standardised proforma from patient notes or face to face interviews including; number of women with children, ethnicity, total number of children and if tested for HIV, status of tested children, age and country of residence of children. Data was stored on a secure, in-house database. Data has also been prospectively collected from face to face interviews with all newly diagnosed HIV positive women since 1/1/09.

Results: 627 mothers were identified. Information was available on 603/627 (96%). 482/603 (80%) were Black African, 54 (9%) White British and 30 (5%) Black Carribean. 476/603 (79%) mothers had 1056 children. 30/1056 (3%) were not considered at risk of being HIV positive, mostly due to the mother

having a verified HIV negative test after childbirth. Of 1026/1056 (97%) children potentially at risk, 665/1026 (65%) had been tested for HIV; 76/1026 (7%) had already tested HIV positive and were known to our service, 589/1026 (57%) were HIV negative and 361/1026 (36%) were untested or of unknown testing status. 300/1026 (29%) were untested aged ≥ 18yrs, 61/1026 (6%) were untested aged < 18yrs; of those 21/61 (34%) were living in the UK. Reasons given by mothers for children remaining untested included feelings of guilt should the child test positive, the child being medically well or too old to test. No children have yet tested HIV positive since our 'look back' and universal prospective testing of children of newly diagnosed HIV positive mothers began in 2009.

Conclusion: Despite our large cohort of women and children, many children (65%) have been tested for HIV. Very low numbers of children (21/1026; 2%) aged < 18 yrs, living in the UK and identified as at risk of HIV, remain untested. Our MDT remains committed to working with parents to facilitate this process.

P80
The economic hardship faced by families and children affected by HIV in the UK

P Bravo[1] and P Harrowing[2]

[1]Children With AIDS Charity, London, UK, [2]Department of Primary Care and Public Health, Cardiff University, Cardiff, UK

Background: People living with HIV (PLHIV) are facing a long-term condition. Improvements in life expectancy have helped people to reframe their lives and many of them are deciding to make families and have children. Although parenthood has been identified as a positive process for PLHIV, HIV-affected families are facing difficulties to maintain economic stability and cover basic needs of their children. Fears of stigma and discrimination are still being described as one of the main reasons PLHIV do not seek help and support. As part of the only UK-wide fund, which provides financial support to families affected by HIV, this research aims to describe the social and economic needs of children affected by HIV.

Methods: Data was collected from application forms submitted to the fund from January 2010 to December 2011. Support workers completed the applications in collaboration with the families. Data retrieved was the weekly income, household structure, number of children within the family and the main need of the family/children by the time of the application. A descriptive analysis was conducted.

Results: During a period of 24 months a total of 1,065 applications were received and analysed. Over 1,700 children affected by HIV benefited from the fund. 80% of the children were living with only one parent. Most of the families have insecure immigration status and parents were not entitled to work in many cases. Parents were unable to cover basic needs of their children such as clothing, school items and living expenses. Interesting an increasing number of HIV-positive women who were expecting a new baby were in need of support to provide formula milk to their new child.

Conclusion: Children affected by HIV and their families are facing a difficult economic and social scenario. Families are unable to provide basic items to the children, which can make it harder to cope with other dimensions of HIV such as social isolation and fears of discrimination. Lacking clothing, basic items or food brings new worries and stressors to the family and the children. This research supports the call for further funding available to families living with HIV, as well as the need to systematically explore how the lack of economic stability is affecting the coping strategies children and family are using to overcome their HIV-affected condition.

P81
Seroprevalence and vaccination of measles, varicella and rubella in adolescents with vertically acquired HIV infection: a multicentre audit

A Elgalib[1], E Hamlyn[2] and K Prime[3]

[1]Croydon University Hospital, London, UK, [2]King's College Hospital, London, UK, [3]St George's Hospital NHS Trust, London, UK

Background: BHIVA guidelines recommend baseline screening in all HIV-infected individuals for measles IgG, rubella IgG and varicella zoster virus (VZV) IgG. VZV vaccine is recommended for stable, non immune patients with CD4 > 400 cells/ml. Measles-mumps-rubella (MMR) vaccine should be offered to measles IgG-seronegative patients with CD4 > 200cell/ml and to rubella IgG-seronegative women of child-bearing age. We aimed to determine the seroprevalence and vaccination status of measles, varicella and rubella in vertically infected adolescents.

Methods: Standardised questionnaires were distributed, via the HIV in Young Person's Network, to all centres caring for adolescents with vertically acquired HIV infection. Data was collected using case notes review and face to face interviews on**:** demographics, clinical and laboratory data, vaccination status and preferred site for accessing vaccination.

Results: Data from 5 centres was available on 55 patients. The median age was 19 years (IQR 18–21). 64% were female. 92% (47/51) were Black African and 70% (28/40) were born outside the UK. The majority (73%, 40/55) were on HAART; of those, 73% (29/40), had HIV VL < 40 c/ml. The median CD4 count was 474cells/ml (IQR 240–637). History of MMR, measles and varicella vaccinations was known and documented in only 11 (20%), 4 (7%) and 1 (2%), respectively. 78% (40/51) reported that they felt comfortable accessing these vaccinations at their GP surgery. 62% (31/50) preferred vaccination at their HIV clinic, 28% (14/50) preferred vaccination with their GP and 10 (5/50) had no preference. The table shows the seroprevalence of VZV IgG, rubella IgG and measles IgG. 88% (15/17) patients with a negative rubella IgG were females, 87% (13/15) of whom had a CD4 count > 200 cells/ml. 58% (7/12) with a negative VZV IgG had a CD4 count > 400 cells/ml. The majority (70%, 14/20) of patients with a negative measles IgG had a CD4 > 200 cells/ml.

Serology	Positive	Negative	Indeterminate	Total
VZV IgG	28 (67%)	12 (28%)	2 (5%)	42 (100%)
Rubella IgG	15 (45%)	17 (52%)	1 (3%)	32 (100%)
Measles IgG	15 (38%)	20 (50%)	5 (12%)	40 (100%)

Conclusion: Our data show that a large proportion of adolescents with vertically acquired HIV were eligible for measles, rubella and varicella vaccinations yet remain unvaccinated. With increasing pressure on HIV clinics' budgets, we recommend developing effective and clear pathways for vaccination of HIV-infected adolescents via HIV clinics and primary care providers.

P82
Sex and relationships education within families affected by HIV in London: A mixed methods study of parental perspectives

K Reiss[1] and M Collumbien[2]

[1]Independent Consultant, London, UK, [2]London School of Hygiene and Tropical Medicine, London, UK

Background: There is consensus that parent-child communication around sex and relationships is beneficial for the child yet many parents find this topic difficult and the presence of HIV in a family can add complexity. This study aimed to explore attitudes towards sex and relationships education (SRE) among parents from families living with HIV attending support groups at a London-based charity.

Methods: In July and August 2011, focus group discussions (FGD) and a survey were used to interview parents about their experiences of SRE, desires for their children and additional support needed. Comparisons were made between parents with and without an HIV+ child.

Results: Two FGD, N = 10 and N = 11, predominantly comprised parents of HIV- children, all participants of group three, N = 3, had an HIV+ child. 66 parents completed the survey, 16 had one or more HIV+ child. Over 95% of the sample was black African and reported having received little SRE themselves. 82% wanted to communicate openly with their children about SRE and 72% felt able to do so. However, 32% felt worried that talking about sex might encourage children to try it, 31% worried that their child might ask questions they don't know the answer to and 25% didn't know how to start the conversation. The survey sample was not big enough to show statistically significant differences between responses from parents with and without HIV+ children. While the respondents may not be representative of all parents affected by HIV, qualitative data from parents of HIV+ children suggested close relationships, open dialogue on SRE and a permissive attitude towards boy/girlfriends. Not all parents of HIV+ children felt able to discuss all areas of SRE with their child. 71% of all parents wanted support from the charity

sector in communicating with their child about SRE. Parents of HIV+ children expressed strong concern that their messaging alone wasn't enough and wanted medical and charity sector staff to address SRE directly with their children.

Conclusion: It is recommended that medical services and the charity sector continue to provide SRE for HIV+ children to reinforce positive parental messaging and to give details that parents feel unable to address. The charity sector can also support parents affected by HIV through developing their skills and knowledge in communicating with their own children on SRE.

P83
HIV positive adolescents: characteristics and treatment challenges

J Ellis[1], G Norrish[2] and A Elgalib[3]
[1]St George's Hospital, London, UK, [2]Maidstone Hospital, Kent, UK, [3]Croydon University Hospital, London, UK

Background: To characterise the population of HIV positive adolescents attending outpatient HIV services at a district general hospital in South London. At the time of study, there were no dedicated adolescent services within the department, the study was conducted to identify patient needs and inform service provision.
Methods: A retrospective case note review of all HIV positive patients aged 16–25.
Results: 46 patients were identified. Median age 23, 70% (32/46) were female and 52% (24/46) were of Black African origin. The most common HIV risk factor was unprotected heterosexual intercourse (57%). 10 patients (22%) were vertically infected and had been transitioned from paediatric services. 18 (39%) of the adolescents had lost either one or both of their parents. There was a high incidence of self-reported alcohol misuse (21 of 36), recreational drug use (10 of 37), mental health problems (18 of 41) and attempted suicide (6 of 46). 42% of patients were sexually active in the last 6 months, of whom 30% had a regular partner. Of those with a regular partner, 82% had disclosed their status but only 55% reported using condoms. This patient cohort had advanced disease - 57% (26) of patients had CDC stage C disease. 59% of patients were currently on HAART therapy (table 1) and for 70% (19) this was their second regimen. Those patients who had transitioned from paediatric services were more likely to be symptomatic at diagnosis (50% vs 14% $P = 0.014$), been exposed to multiple regimens (100% vs. 60% $P = 0.046$), have poor adherence (71% vs. 0% $P = 0.07 \times 10{-}6$) and also more advanced disease (CDC stage C) (80% vs 44% $P = 0.06$) compared to the behaviourally infected young people.

Characteristic		Number (%)
Currently on HAART	NNRTI	13 (48)
	PI	14 (52)
		27
Length of time on treatment (months) n=27	Median	15
	(range)	(2–78)
CD4 count on Rx (n=27)	<350	10 (37)
	>350	17 (63)
Adherence (n=23)	Excellent	16 (70)
	Good	2 (9)
	Poor	5 (21)
DNA in last 12 months (n=45)	0	9 (20)
	1–3	25 (56)
	>3	11 (24)

Conclusion: This study highlights the high prevalence of psychosocial problems and complex medical needs amongst HIV positive adolescents. Patients who had transitioned from paediatric services had additional complexities. The endorsement of multidisciplinary 'one-stop' clinics providing HIV care, sexual and reproductive health and psychological support in a single visit may address some of the poor prognostic factors characteristic of this cohort.

P84
HIV positive adolescents: bridging the gap between paediatric and adult HIV services

J Ellis, S Ghosh, H Webb and K Prime
St George's Hospital, London, UK

Background: To characterise a cohort of HIV positive adolescents attending an outpatient transition service, for 18–24 year olds, at a SW London clinic. Methods: A retrospective case notes review of all adolescents, currently or previously attending the transition service. Data was collected using a standardized database between 01/09/11–01/01/12 recording: demographics, HIV stage, anti-retroviral therapy (ART), psychosocial issues and sexual/reproductive health data.
Results: 37 adolescents were identified. Median age 20, 19 (51%) male and 31 (87%) Black African. Most (97%) were vertically infected and 33 (89%) had transferred from paediatric services aged 18 years. 5 patients had already transferred to on-site adult HIV care, 3 had transferred elsewhere, 2 were lost to follow up and 2 had died.
Of those vertically infected adolescents previously treated in paediatric services (n = 33), the median age at diagnosis was 5.5 years (range 1–16). The majority (79%) were symptomatic at diagnosis (CDC B/C). 27/33 (82%) had had an AIDS defining illness and 28/33 (85%) were taking ART; of whom, 15/28 (54%) had VL < 50c/ml. Median duration of ART was 11.5 years (range 2–20); only 4% were taking first line therapy. Side effects, simplification of the regimen and resistance (n = 7) were the commonest reasons for change. 43% self-reported poor adherence (2 or more missed doses over last 4 weeks). Most recent median CD4 count was 567 but in 20% was < 200 cells/μl. 12 patients (33%) had missed ≥ 3 appointments in the preceding 12 months; none had been lost to follow up for >1 year. 9/33 (27%) had documented learning difficulties and 27% had mental health problems. Despite this 13/33 (45%) were undertaking university degrees. 21/33 (64%) report being sexually active, of whom 9 (43%) had a regular partner. Of those, 89% had disclosed their HIV status and 89% reported using barrier contraception. 38% of females had previously been pregnant and 25% had previously had a termination of pregnancy.
Conclusion: Characterisation of this cohort has highlighted the advanced stage of HIV at diagnosis, long duration of ART, high prevalence of side effects and poor ART adherence typical of this group. Encouragingly this vulnerable cohort, cared for in a dedicated service, displays a high level of educational attainment, and despite the frequency of missed appointments the service has maintained a high retention rate and low levels of loss to follow-up.

P85
Financial Incentives and motivational interviewing for adolescents with advanced HIV disease; a pilot service

C Foster[1], S McDonald[1], G Frize[1], J Walsh[1] and S Fidler[2]
[1]Imperial College NHS Healthcare Trust, London, UK, [2]Imperial College London, London, UK

Background: In the UK financial incentives (FIs) have been widely used in adolescent populations; from the Educational Maintenance Allowance to improving uptake of Chlamydia screening. Emerging evidence suggests FIs improve medication adherence in select populations. A small proportion of adolescents with perinatally acquired HIV (PaHIV) transfer to adult services with longstanding poor adherence and advanced disease, despite intensive MDT support in paediatrics, resulting in deaths due to end stage HIV despite a treatable virus. We describe a single centre experience combining FIs with motivational Interviewing (MI) to improve adherence.
Methods: The deaths of 2 young adults due to poor adherence, prompted MDT development of the 'Incentive scheme (IS)' in consultation with service users demonstrating both poor and excellent adherence. Eligible patients (CD4 count ≤ 200, off ART despite multiple attempts) received MI by psychologist/CNS during clinic and gift vouchers dependent on VL of**:** £25 for each fall in VL at 2 and 4 wks, £50 VL < 50 c/ml, £25 VL < 50 at 3/12, 6/12 and £50 VL < 50 at 1yr. Maximum FI £200/patient. From Jan 2010, IS was open to all aged 16–25yrs with; PaHIV, longstanding poor adherence despite MDT support, CD4 ≤ 200 cell/ul, willing to start ART and to sign the patient agreement. IS was discussed with clinical and research ethics committees and designated a service intervention. IS was financed by donated MDT speaker fees and outcomes assessed by VL/CD4 count at 1yr.

Results: 11 young people enrolled, 1 declined. Median age 19 (range 16–23), 8 female. At start, median CD4 count 30 cells/ul (IQR 10–160), median VL 12,870 c/ml (IQR 2,382–26,300), previous ART regimens median 3 (range 2–9). ART commenced**:** OD PI based (8), Atripla(1) BD darunavir/rtv, raltegravir, etravirine (2). 7 known to be sexually active; 4 partners ever tested, all negative. Outcomes: 9/11 ever achieved VL < 50, 5 sustained at 1yr. Median CD4 count at 1yr 140 cells/ul (IQR 60–200). Clinical outcomes: No deaths, 2 new AIDS diagnoses (PCP), 6 required admission and 1 pregnancy (delivery VL < 50). Total FI expenditure £1,300: £76 per 50 CD4 cells at 1yr. Currently: median 6/12 post IS; CD4 160 (IQR 20–290), 5 VL < 50 c/mL.

Conclusion: Adolescents represent a particularly vulnerable group living with HIV and many struggle to overturn poor ART adherence set up in childhood. In our experience some young people die with treatable disease and novel adherence interventions are urgently needed.

P86
HIV positive female patients-Are we offering effective methods of contraception?

N Aziz and A Blume
Sexual Health Services, Portsmouth, UK

Background: Antiretroviral drugs have the potential to either decrease or increase the bioavailability of steroid hormones in hormonal contraceptives. If a woman on antiretroviral treatment decides to initiate or continue hormonal contraceptive use, the consistent use of condom is recommended. This is for both preventing Human Immunodeficiency Virus (HIV) transmission and to compensate for any possible reduction in the effectiveness of the hormonal contraceptive.

Objectives: An audit was carried out to review the adherence to the 2008 United Kingdom (UK) National guidelines for the management of the Sexual and Reproductive health of people living with HIV infection. According to the guidelines consistent condom use should be encouraged in conjunction with an additional contraception method.

Methodology: Retrospective analysis of 144 cases was undertaken to ascertain compliance of documentation of offer of contraception. All HIV positive female patients attending the department in 2010 aged less than 50 were included in the audit. 74 women were excluded from the audit. The exclusion criterion was currently pregnant, previous hysterectomy and no sexual partner in last 12 months. 23% were not sexually active in 2010.

Results: Majority of patients (66%) were black African and 52% were aged 36–50.

Condoms were offered in 83% of cases and contraception was discussed in 51%. Out of 36 patients using Contraception, 33 were on Highly Active Antiretroviral Therapy (HAART). Out of 14 patients using hormonal contraception, 4 were consistently using condoms. Use of condoms was not documented in rest of 10 patients.

Conclusion: The recommendations were made to discuss drug interactions and consistent use of condoms with patients using hormonal method of contraception and HAART. This will help to prevent HIV transmission as well as unwanted pregnancies.

As Genitourinary Medicine (GUM) services are moving towards integration with contraceptive services, priority should be given to HIV positive women to seek contraceptive advice in order to enhance their overall care.

P87
A review of the management and outcomes of HIV positive pregnant women in a UK Teaching hospital from 2008–2011

N Gupta, J Cunningham, M Alzouebi, R Youdan, S Bates, S Alston and J Greig
Sheffield Teaching Hospital NHS Trust, Sheffield, UK

Background: The effective prevention of mother to child transmission (MTCT) of HIV is dependent upon appropriate management both in the antenatal period and during the peri and post-partum periods. In the UK, National guidelines developed in 2008, form the basis for a consensus of the optimal management. This audit reviews clinical practice and outcomes over a three year period in a large UK teaching hospital.

Methodology: Pregnant HIV positive women were identified from the local HIV database. Criteria derived from the BHIVA 2008 guidelines were established to ascertain performance and information collated from laboratory software and clinic letters.

Results: 92 HIV positive pregnant women were identified, 80% of whom had been known to be HIV positive prior to their pregnancy. 9% were co-infected with Hepatitis B and 3% with hepatitis C. All but one woman received combination anti-retroviral therapy, 77% of these regimes included a protease inhibitor. 76% of individuals had an undetectable HIV viral load at delivery, and only two had a viral load greater than 400 copies/ml. The Caesarean section (CS) rate was 53%, of which 24% were unplanned sections. There were no cases of MTCT of HIV.

Conclusion: Although the CS rate is higher than in the non HIV infected population, it is comparable to the rates identified in the UK National Study of HIV in Pregnancy and Childhood. With increasing evidence that prolonged rupture of membranes, for those with an undetectable VL, is not associated with increased MTCT rates and that it may be safe to consider vaginal delivery with low level viraemia, the high CS rates in HIV infected women may be reduced.

P88
A review of HIV-infected pregnant women cared for and delivered at a district general hospital: favourable outcomes despite limited resources

A Dean, M Bonney, A Moorcroft and A Elgalib
Croydon University Hospital, London, UK

Background: The success in the antenatal screening for HIV and the high uptake of interventions to reduce mother-to-child transmission (MTCT) of HIV have markedly reduced the MTCT rate of HIV in the UK. The British HIV association guidelines for management of HIV in pregnancy recommend a multidisciplinary team approach when caring for HIV-infected pregnant women. This study aims to look at the outcomes of HIV-infected pregnant women attending a District General Hospital.

Methods: A case notes review of HIV positive women attending our centre in the period from 2008–2011.

Results: In the study period there were 77 pregnancies in 57 women. The overall MTCT rate of HIV was 0%. There were 78 live births. The median age of the women was thirty-four years and 77% (44 of 57) of them were Black African. The main method of contraception was condom use in 72% (40 of 55). The majority, 63% (35 of 51), were unplanned pregnancies. Housing issues were reported in 68% (40 of 55) and financial issues in 71% (35 of 49). Seventy-four per cent (57 of 77) of women were diagnosed with HIV infection through routine antenatal screening. The median CD4 count first recorded during pregnancy was 450copies/ml. In 60% (46 of 76) antiretroviral therapy was started post-conception, with prevention of HIV MTCT the only indication. HAART was used in 93% (66 of 71) of women and monotherapy in 7% (5 of 71). Self-reported adherence was good in 89% (63 of 71) and poor in 11% (8 of 71). Eighty-one per cent of women (60 of 74) had undetectable viral load levels as measured closest to delivery date. Nine, of the fourteen women with a detectable viral load prior to delivery, had a viral load < 1000 copies/ml. Eighty-nine per cent (57/64) women delivered at a gestational age of 37/40 or more. Thirty-nine per cent (24 of 62) of women had vaginal delivery and 61% (38 of 62) delivered by C-section. In 46 of 60 women (77%) planned mode of delivery was achieved compared to 23% (14 of 60) of women who did not have their planned mode of delivery. One hundred per cent (74 of 74) of babies born were HIV negative. Of the babies born 12% (9 of 72) received HAART and 88% (63 of 72) received AZT monotherapy.

Conclusion: Our data shows that favourable obstetrical and virological outcomes are achievable at centres with limited resources such as those available within a District General Hospital. Effective utilization of the existing resources and skill mix is the key to success.

P89
Normalising childbirth in women living with HIV: a London teaching hospital experience

A Kojeku, C Handrahan, A Wight, D Levit, N Marshall, M Johnson, J Hazell and S Kinloch
Royal Free Hospital, Hampstead, London, UK

Background: The prevalence of HIV infection in women giving birth in England and Scotland in 2008 was 0.2%, and in London 0.4%.

In the last decade, there have been significant efforts to reduce HIV vertical transmission.

Objective: To assess the management of HIV pregnant women in a London Teaching Hospital.
Method: A retrospective review of HIV positive women who delivered from January 2008 to November 2011.
Results: At the time of submission, data was available for 56 women (59 pregnancies). 75% of women were born in sub-Saharan Africa. 5 women were diagnosed antenatally.
All the women had multidisciplinary antenatal care by a specialist team. They were all on HAART therapy and had regular Liver Function Tests (LFT), second trimester GTT as well as STD screening.
17% (n = 10) had an abnormal LFT result at some point during the pregnancy. 2 of these women had documented positive Hepatitis serology.
88% (n = 53) had undetectable viral load at delivery. 46% (n = 27) achieved a vaginal delivery. 12% (n = 7) were delivered by elective Caesarean section for detectable viral load whilst the remainder was for Obstetric reasons and maternal request. 15% had emergency Caesarean section one of which was for suspected uterine rupture. There were no significant maternal complications.
None of the babies tested positive for the virus and there was no documented report of teratogenicity.
Conclusion: Our management of HIV positive women in accordance with national guidelines has successfully enabled women to labour and deliver with minimum intervention and zero vertical transmission.

P90
Adverse pregnancy outcomes in HIV positive women: a study from a district general hospital in the UK

P Thayaparan, T Balachandran, M Kawsar, S O'Driscol and M Griffiths
Luton and Dunstable Hospital, Luton, Bedfordshire

Background: Increasing number of women with HIV are choosing to become pregnant as there is dramatic reduction in the risk of vertical transmission. However, management of HIV in pregnancy still poses a variety of challenges and adverse pregnancy outcomes are still common. We aimed to explore the factors associated with adverse outcomes of pregnancy in our HIV cohort.
Methods: It is a retrospective case notes review of all the women attended to our unit and had the HIV care from 2008–2011. A total of 87 women were followed up. Three women had two pregnancies during the study period. Data collected from Genitourinary Medicine and maternity records were analysed by using SPSS program.
Results: Mean age was 34 yrs ranging from 20–43 yrs. Majority (91%) were of African origin; 67% had HIV subtype C; 26% resistant to one or more class of HIV drugs; 55% had a nadir CD4 fewer than 350; 44% diagnosed at an antenatal setting and 62% were planned pregnancies. Prior to the current pregnancy, these women had 121 children**:** 5% of the children have HIV and 33% not tested for HIV. Of the partners, 38% have HIV and 73% were aware of their partner's HIV status.
None of the children born during the study period were infected with HIV; mean birth weight was 2789g; there were 3 sets of twins; one still birth and one child died soon after birth.
Around 46% were on anti retroviral therapy (ART) during conception, 6% had miscarriage and 16% had emergency caesarean section. At delivery, viral load was detectable in 23%, mainly due to poor adherence (11%) and late presentation (9%). 38% of the women experienced an obstetric complication, premature labour 9%; premature rupture of membranes and gestational diabetes both accounted to 4% whilst 3% had post partum haemorrhage.
On ART during conception and late HIV diagnosis that is nadir CD4, less than 350 cells were significantly associated ($P < 0.05$) with having a foetal complication such as prematurity 8%, low birth weight 7% or having a foetal abnormality 2.3%. More analysis is awaited as to drug exposure and adverse outcomes.
Conclusion: Late diagnosis of HIV and ART during conception is significantly associated with adverse outcomes of pregnancy. Widespread HIV testing is essential and has to be extended to non traditional settings. In addition, more studies are needed on ART exposure and adverse pregnancy outcomes.

Co-infections, Opportunistic Infections and Sexually Transmitted Infections

P91
Screening for latent TB infection in HIV positive patients: can this be done?

S Dakshina[1], D Macallan[2] and C McCormick[1]
[1]Courtyard Clinic, St George's Hospital, London, UK, [2]Clinical Infections Unit, St George's University of London, London, UK

Background: Individuals with HIV and TB co-infection are more likely to develop active and rapidly progressive TB. Estimated reactivation rates in seropositive patients with latent TB infection (LTBI) are ~10% per annum or ~30% cumulative lifetime risk (versus 8–10% lifetime-risk in HIV-negative individuals). NICE guidelines recommend screening all patients with CD4 count < 500 cells/uL with tuberculin skin test (TST) and interferon gamma release assays (IGRA), whereas BHIVA guidelines propose a stratified approach, screening with IGRA according to TB risk in the country of origin, ARV duration and CD4 count (including**:** high TB risk/ <2 years ARV/ any CD4; medium risk/ <2 years ARV/ CD4 < 500; low risk/ <6 months ARV/ CD4 < 350). The aim of this study was to analyse the feasibility of screening for LTBI in an inner-city UK HIV patient cohort.
Method: All HIV-positive patients attending a London HIV clinic for one-year (2010–2011) were analysed. Screening was modelled using NICE and BHIVA guidelines.
Results: 1158 patients attended; demographics were 57% male, 43% female; 50% black African, 34% white Caucasian, 8% black Caribbean, 2% black other, 7% mixed/Indian/Asian/other and < 1% unknown. 42% had CD4 count 200–500 and 8% <199 cells/μL.
Modelling NICE guidelines, 579/1158 (50%) patients should be screened for LTBI. By contrast, BHIVA guidelines would include 102/594 from high incidence countries, 27/188 from medium incidence and 9/392 from low incidence, totalling 138/1158 (12%).
Modelling number of cases prevented, assuming 1/3 latent infection rate in black Africans (as suggested by WHO) and a 10% annual reactivation rate, predicted prevention of 19 cases of active TB over one year and 57 lifetime cases in this sub-population. However we only see 10–12 total HIV-TB co-infection cases per annum (56/5 years) and about half of these are in undiagnosed seropositive individuals suggesting that benefits of screening may be over-estimated.
Conclusion: Screening for LTBI in HIV positive patients may reduce the annual and lifetime risk of active TB in co-infected individuals but benefits may have been over-estimated. NICE and BHIVA guidelines generate widely divergent strategies (screening 50% versus 12% of all attendees) with differing cost implications. Further evaluation and modelling of LTBI strategies should accompany roll-out of screening.

P92
Viral relapse is associated with the emergence of new viral strains following treatment in an HIV-positive cohort infected with acute HCV

T Abdelrahman[1], E Bird[2], P Karayiannis[2], J Main[2] and E Thomson[1]
[1]University of Glasgow, Centre for Virus Research, Glasgow, UK, [2]Imperial College London, London, UK

Background: More than 1000 cases of acute hepatitis C (HCV) in HIV-positive men-who-have-sex-with-men (MSM) have recently been reported in urban centres in the Europe, Australia and the USA. Sustained virological response rates (SVR) in acutely co-infected patients are lower than in acutely mono-infected individuals (59 versus 98%) but the reasons for this are not understood. We carried out viral sequence analysis from pre and post treatment plasma samples taken from patients who failed therapy in an established cohort of 160 HIV-positive patients with acute HCV.
Methods: Viral RNA was extracted from paired plasma samples and a 220bp region of the E2 envelope gene was amplified using nested RT-PCR and a combination of genotype-specific primers. Sequences were aligned using Clustal W and phylogenetic trees constructed with MEGA 5.0 using the neighbour-joining method and Kimura two-parameter distance for all substitutions. Genetic distance was calculated as the mean percentage difference between sequences.

Results: Treatment with 24–72 weeks of interferon alpha and ribavirin was completed by the time of analysis in 97/160 (61%) patients. Spontaneous clearance occurred in 19 patients (12%). The remainder were either excluded from treatment because of co-morbidity or refusal (n = 26; 16%), were lost to follow-up, or are still undergoing assessment for treatment (n = 18; 11%). SVR occurred in 79/97 (81%) of patients. The median age was 38 (95% CI:37, 40). 59% of patients were on treatment with HAART, the median CD4 count was 520 (95%CI 490, 610) and the median HIV viral load was < 50 copies/ml (95%CI < 50, 467). 72 patients (74%) were infected with genotype 1 HCV, 21 (22%) with genotype 4, 15 (15%) with genotype 3 and 1 was untyped. 9 patients (9%) were co-infected with 2 or more genotypes. Of the 18 patients that failed treatment, paired samples were available from 11 (5 relapsers, 3 null responders and 3 partial responders). Viral relapse was significantly associated with the detection of new viral strains (80%; 4/5 patients) in comparison with partial and null responders (0%;0/6; $P = 0.015$).

Conculsion: Relapse following anti-HCV treatment in this cohort is strongly associated with the emergence of new viral strains. Further analysis is required using superior methodology such as next generation sequencing to differentiate between reinfection and emerging dominance of pre-existing minority strains.

P93

Is ultrasound an effective screening tool for the diagnosis of hepatocellular carcinoma in patients coinfected with HIV and hepatitis B or hepatitis C?

H Gay, L Raman, C Davies, M Nelson and M Bower
Chelsea and Westminster Hospital, London, UK

Background: Liver cirrhosis is well established as the leading cause of hepatocellular carcinoma (HCC). Worldwide, chronic hepatitis B and C are the leading cause of cirrhosis. Studies have shown that individuals coinfected with HIV and hepatitis B or C are at a higher risk of progression from cirrhosis to HCC which is now the leading non-AIDS cause of death in HIV/hepatitis coinfected individuals.

HCC is more successfully treated if detected at an early stage. The current American Association for the Study of the Liver guidelines recommend that patients with chronic hepatitis and cirrhosis should be screened every 6–12 months. Serum alpha-fetoprotein and abdominal ultrasound are the tools currently employed.

Coinfected individuals in our cohort are screened for HCC using ultrasound and AFP measurement. Discrepancies between the findings on ultrasound and subsequent MRI and CT findings have been observed. Based on this observation we conducted a study to evaluate assess the effectiveness of ultrasound in HCC screening.

Methods: A retrospective study of 9 HIV seropositive patients coinfected with hepatitis B or C undergoing screening, who were subsequently diagnosed with HCC. The parameters assessed included the AFP at the time of HCC diagnosis, ultrasound findings, subsequent CT or MRI findings and biopsy results confirming HCC. The study included all coinfected patients on our screening programme who were diagnosed with HCC between 2005 and 2010.

Results: Four out of the 9 (44%) patients in the study had lesions detected on routine ultrasound. The remaining 5 patients (56%) had no abnormal ultrasound findings but subsequently had lesions detected on either CT or MRI prompted by a raised AFP. Seven patients (78%) had a high AFP at the time of diagnosis, one patient had a normal AFP and one patient's AFP was unknown as his care had been transferred from another hospital.

Conclusion: This study showed that (56%) of the coinfected patients with HCC had false negative screening ultrasound examinations. We suggest that review of the present protocols and guidelines may be necessary and discuss whether there may be an advantage in adding in MR alongside the current screening tools. We also discuss the latest findings on using microRNA in screening for HCC.

P94

Low detection rates of hepatitis delta in Greater Manchester in hepatitis B surface antigen positive patients mono-infected and co-infected with HIV

F Slevin, D Lebari, J Baxter and J Vilar
Monsall Unit, Department of Infectious Diseases, Manchester, UK

Background: Hepatitis delta virus (HDV) is dependent on co-infection with hepatitis B virus (HBV). It has traditionally been considered uncommon in the UK and mostly seen in parenteral injectors. A recent study in South London suggested a prevalence of 8.5%. Recent British HIV Association (BHIVA) guidance suggests that all HIV positive patients should receive annual testing for HDV. The European Association for the Study of the Liver guidance recommends testing all HBV surface antigen (sAg) positive patients once for HDV. We undertook a service evaluation in our population of patients in the Greater Manchester area to ascertain the prevalence of HDV infection. We also looked for any difference in prevalence between HIV positive and negative individuals.

Methods: We reviewed 718 HDV requests done within our Monsall unit between 1st January 2010 and 30th September 2011. We excluded those requests from outside our unit. We divided this cohort into HIV positive (Group A) and HIV negative (Group B) by confirming who was attending for regular HIV viral load monitoring.

Results: We discovered 76 patients were HIV positive (Group A) and 420 were HIV negative (Group B) with no patient of unknown HIV status. 72 patients in Group A were IgG HDV negative (94.6%), 2 were equivocal (2.6%) and 2 were positive (2.6%), with one of them known prior to screening policy. 395 patients in Group B were IgG HDV negative (94%), 15 patients were equivocal (3.6%) and 10 were positive (2.4%). Both Ig G positive patients in Group A HDV RNA positive and 3 of the 10 IgG positive patients in Group B were IgM or HDV RNA positive (6 were negative for both and 1 was not re-tested by the end of study period). All equivocal patients in both groups were negative in all other markers.

Conclusion: Our results demonstrate that in the Greater Manchester area, testing of 76 patients co-infected with HIV and HBV, who were not known to be delta positive picked up 2 cases but only one who was not known prior to starting screening (1.3% chance of detecting new infection). In the HIV negative population, 10 of the 430 patients tested were positive for delta, with only 3 (+1 with data missing) having evidence of active infection (0.9%). There was no difference in prevalence between the 2 groups. Clinically significant Delta infection is rare in the UK and recommendation to test for it annually might need to be re-assessed.

P95

Boceprevir for the treatment of chronic hepatitis C in HIV co-infection

A Ahmed, E Page, M Bower and M Nelson
Chelsea and Westminster Hospital NHS Foundation Trust, London, UK

Background: Co-infection of hepatitis C virus (HCV) and HIV is associated with excess morbidity and mortality. Recently two new treatments for HCV have been licensed, telaprevir and boceprevir. Prior to licensing boceprevir was available to HIV infected individuals co-infected with HCV as part of an early 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 therapy of 4 weeks pegylated interferon (Pegasys® 180 μg weekly) and weight based ribavirin daily. At week 4 a HCV PCR was taken to decide whether to add boceprevir.

Results: 5 patients (4 male and 1 female) were recruited into the boceprevir EAP. All patients were on stable antiretroviral therapy (ARV) for treatment of HIV. 4/5 were receiving a protease inhibitor as part of their ARV treatment and 1 was on raltegravir with truvada. All had an undetectable HIV viral load at entry and median CD4 count was 368 (range 222–742).

2 patients were classified as null responders, 2 partial responders and 1 relapser to previous therapy. 4/5 achieved a greater than 1 log drop in HCV PCR after the lead in phase and all added boceprevir with 5/5 undetectable 4 weeks later. At week 12 and 16 all patients remained undetectable. 1 patient stopped boceprevir at week 8 because of infection related neutropenia but continues with an undetectable HCV PCR at week 36 on pegylated interferon and ribavirin alone.

4 patients had a haemoglobin drop below 10g/dl which required treatment with epoetin and 3 required dose reduction of ribavirin by week 16. 4 patients had a neutrophil count below 1 (10^9/l) with 2 requiring treatment with G-CSF. Commonly reported side effects were depression (4/5) and dysgeusia (4/5).

Conclusion: In this small cohort of co-infected patients who had previously failed treatment for HCV, treatment with boceprevir was associated with a high rate of treatment success although toxicities were seen.

P96

Cost-effectiveness of adult vaccination of HIV-positive individuals with the 13-Valent Pneumococcal Conjugate Vaccine in the United Kingdom

A Charos and P Balmer
Pfizer Ltd, Walton Oaks, UK

Background: Pneumococcal disease (PD) burden remains high among individuals living with HIV. Vaccination of the paediatric population with the seven-valent pneumococcal conjugate vaccine (PCV7) has provided indirect protection from pneumococcal disease to older age groups. However individuals living with HIV may have benefited less from the indirect effects and potentially could benefit from direct protection through vaccination. The study objective was to assess the cost-effectiveness of PCV13 vaccination of HIV-positive adults in the United Kingdom (UK).
Methods: A dynamic cohort model was developed depicting the lifetime risks and associated costs of pneumococcal disease. PD cases among HIV-positive adults were estimated using 2009/10 UK incidence, vaccine effectiveness, and indirect effects from infant vaccination with PCV13. Vaccine effectiveness for PCV13 was based on data from a randomised, double blinded trial of PCV7 in HIV-positive individuals, assuming similar levels of effectiveness against the additional 6 serotypes. PCV13 vaccination was compared to no vaccination as 23-valent polysaccharide vaccine (PPV23) efficacy in HIV-positive adults is in doubt. The analysis used a UK NHS payer perspective, therefore only direct costs and outcomes were included. Health outcomes were measured in terms of cases, deaths and quality-adjusted life year (QALY) avoided.
Results: The annual incidence of IPD and pneumonia among HIV-positive adults was 245 and 466 episodes per 100,000 population respectively. Pneumococcal vaccination of HIV-positive adults with PCV13 in UK it is expected to prevent 286 cases of IPD and 155 cases of pneumonia. By preventing PD, PCV13 vaccination will reduce direct medical costs by £1 million, prevent 55 deaths and add 1,000 QALYs, resulting in an incremental cost of £5,852 per QALY gained. Despite uncertainty around individual parameters, sensitivity analyses suggest that results were robust and PCV13 adult vaccination would be cost-effective even if pneumonia benefits were excluded due to the high risk of IPD among HIV-positive individuals.
Conclusion: Direct protection of HIV-positive adults with PCV13 vaccination is expected to be cost-effective and should be considered as a potential option to address the high incidence of pneumococcal disease in those with HIV.

P97

Eosinophilia: clinical significance in HIV infected individuals

M Sivaram[1], A White[2] and K Radcliffe[3]
[1]Sandwell and West Birmingham Hospital NHS Trust, Sandwell, West Midlands, UK, [2]University of Birmingham, Birmingham, UK, [3]Whittall Street Clinic, Birmingham, UK

Objectives: This study was conducted to determine the relationship between eosinophilia and parasitic infection in HIV infected individuals.
Materials and methods: HIV infected individuals attending an HIV clinic in Birmingham, were recruited and classified as either eosinophilic (> 400 eosinophils/mm^3) or non-eosinophilic. A demographic and parasitic risk history was taken and clinical examination was performed. Urine and stool were examined for parasites, and blood samples taken for parasite serology.
Results: 266 patients (96 eosinophilic and 170 non eosinophilic) were recruited.
Of 64 eosinophilic patients who had a stool examination, one (1.6%) was positive for both strongyloides and schistosoma larvae. Urine microscopy was negative in the 245 patients (88 eosinophilic, 157 non-eosinophilic) from whom a sample was available. 263 patients underwent serological investigation (96 eosinophilic and 167 non eosinophilic)-13 (4.9%) were positive for schistosomiasis and 3 (1.1%) positive for strongyloides. A significant association between eosinophilia and positive schistosomal serology was (P = 0.003) found [11(10.52%) eosinophilic patients, 4(2.3%) non eosinophilic patients]. Eosinophilia was associated with a low nadir CD4 count (P = 0.021) [64(66.7%) eosinophilic patients, 91(53.5%) non-eosinophilic patients] and prior AIDS defining illness (P = 0.041) [32(33.4%) eosinophilic patients, 38(22.4%) non-eosinophilic patients].
7.8% (12 positive, 142 negative) of the patients from developing country and 5.3% (3 positive, 54 negative) of the patients from developed country who had travelled to and lived in a developing country for more than six weeks had positive parasitic serology.
Conclusion: Eosinophilia in HIV infected patients was significantly associated with positive serology for schistosomiasis, low nadir CD4 count and prior AIDS-defining illness.
Country of origin and history of travel to a developing country is also an important determinant of positive parasitic serology.

P98

An investigation into the role of HSV-2 serology in reducing HIV transmission risk behaviour in HIV-infected individuals

O Dosekun, D Axten, H Williams, C Williams, M Desai, CY Tong, A Menon-Johansson and J Fox
Guy's and St.Thomas' NHS Foundation Trust, London, UK

Background: Herpes simplex virus type 2 (HSV-2) is associated with a 2 fold increased risk of onward HIV transmission risk. Most individuals are unaware of their status despite over 60% HSV-2 seroprevalence in new HIV diagnoses in London. Unlike the BHIVA guidelines, the Australian herpes management guidelines recommend routine HSV-2 serology in HIV-infected patients. We aimed to determine whether knowledge of HSV-2 serostatus led to a sustained reduction in HIV transmission risk behaviour in HIV-infected individuals.
Methods: Individuals attending an HIV service from June to December 2010 and not known to have genital herpes were recruited into a prospective, randomized control study (2:1) for HSV-2 serology testing. A sexual behaviour questionnaire was completed and STI screens were carried out at baseline, week 24 and week 48 (W48). The primary outcome was number of unprotected sex acts with partners of unknown or negative HIV status (UPSA) in the preceding 3 months at W48. Qualitative interviews were carried out on a subset of HSV-2 seropositive individuals at W48.
Results: 153 participants were recruited. The majority were white (68%), MSM (76%) and on antiretroviral therapy (65%). Mean age was 39 years. There were 56 controls (no HSV-2 serology) and 97 cases [36 (37%) were HSV-2 seropositive and 61 (63%) HSV-2 seronegative].
At baseline, 15% reported unsafe sex with individuals of unknown or HIV negative status (no difference between controls and HSV-2 serology groups). At baseline and W48 there was no difference in number of UPSA between the HSV-2-seropositive group and controls or between HSV-2 seropositive and seronegative groups (P = 0.227). Unadjusted Mann Whitney and adjusted linear regression showed no difference in number of UPSA, between controls and HSV-2 seropositive individuals over time.
Of 10 HSV-2 seropositive individuals interviewed at W48, all were glad to know their HSV-2 serostatus but only 3 reported increased condom use as a result.
Conclusion: HSV-2 seropositivity has been associated with female gender, heterosexual risk and black ethnicity. This may explain the low prevalence in this predominantly MSM cohort. Awareness of HSV-2 seropositivity did not lead to a reduction in number of unsafe sex acts in HIV infected individuals. This is despite patient preference to know their HSV-2 status. We do not recommended routine HSV-2 serology in HIV patients in this context.

P99

The seroprevalence of hepatitis E virus in HIV positive subjects in a single treatment centre

B Talbot[1], D Webster[2], S Ijaz[3], H Dalton[4] and M Fisher[1]
[1]Brighton and Sussex University Hospitals, Brighton, UK, [2]Brighton and Sussex Medical School, Brighton, UK, [3]Health Protection Agency, London, UK, [4]Royal Cornwall Hospitals Trust, Truro, UK

Background: Hepatitis E virus (HEV) is an emerging infection in developed countries and a major cause of hepatitis worldwide, accounting for over 50% of cases of acute viral hepatitis in endemic areas. In developed countries, HEV has an increasing seroprevalence with age and males are more commonly affected. The clinical features of HEV can range from asymptomatic infection to fulminant liver failure with a poor prognosis seen in those with pre-existing liver disease, pregnancy or alcohol excess. HEV is neurotropic and has been reported to cause neurological complications. Chronic infection with HEV is increasingly recognised in immunocompromised subjects with more

pronounced immunosuppression leading to a higher prevalence with histological changes on liver biopsy consistent with chronic hepatitis. It has been recognised as a cause of chronic hepatitis in HIV infection.
The number of cases reported in the UK has risen significantly in the last few years as a result of increased and improved testing. Published estimates of seroprevalnce in developed countries range from 0.26% to 31%. It may be an important diagnosis to exclude in the HIV population.
Methods: We identified a group of patients to screen for HEV on the basis of**:** (1) CD4 count < 200 with abnormal ALT, (2) presence of hepatitis B surface antigen or hepatitis C antibody, and (3) a clinical diagnosis of peripheral neuropathy. Subjects were screened for HEV IgM, IgG and HEV PCR.
Results: 153 patients were screened (see table). The seroprevalance of HEV IgG was 5.9%. There were no cases of chronic infection identified. There were no factors identified that predicted seropositivity and there was no association with increasing age ($P = 0.381$). All cases were in MSM but this was not statistically significant given that most of the cohort were MSM.
Conclusion: We found a lower than expected prevalence of HEV IgG and no evidence of chronic infection. This may reflect the relative young age of our HIV population who also have well preserved CD4 counts. However previous studies have suggested that accounting for age and sex there is no difference in anti-HEV seroprevalence between patients with HIV and controls.

P100

The burden of liver disease in HIV/HBV co-infected patients accessing antiretroviral therapy in Ghana: the HEPIK study

L Appiah[1], G Foster[2], A Cozzi Lepri[3], G Dusheiko[3], S Bhagani[4], D Chadwick[5], RO Philipps[1], A-M Geretti[2] and DO Adinku[1]

[1]Komfo Anokye Teaching Hospital, Kumasi, Ghana, [2]University of Liverpool, Liverpool, UK, [3]University College London, London, UK, [4]Royal Free Hospital NHS Trust, London, UK, [5]The James Cook University, Middlesbrough, UK

Background and aims: The prevalence of HBV co-infection is 17–20% among HIV-infected adults in Ghana; HEPIK is a prospective study assessing burden and evolution of liver disease in a HIV-positive cohort in Kumasi. As HBV screening is not part of routine practice, patients receive HBV-blindfirst-line ART typically comprising lamivudine with zidovudine or stavudine and nevirapine or efavirenz.
Methods: Consecutive patients testing HBsAg-positive (Murex EIA)were enrolled. At study entry theyunderwent laboratory and clinical evaluation including transient elastography (FibroScan). HIV-1 RNA and HBV-DNA levels were determined by real-time PCR. Patients with detectable viraemia underwent Sanger sequencing of the HIV-1and HBV polymerase genes.
Results: In 2010–2011 HEPIK enrolled225 HBsAg-positive patients;78.7%started lamivudine-based ART in 2003–2011;3.6% receivedtenofovir. In univariateanalyses, factors associated with elastographyKpA values ≥ 12.5 were older age, longer duration of HIV infection,lower CD4 counts at HIV diagnosis, less recent year of starting ART, HBeAg positivity, higher HBV-DNA load, lower platelet counts, higher ALT, AST, bilirubin, and AFP, and lower albumin. Both Fib-4 and Apri were strongly associated with the risk of KpA ≥ 12.5in unadjusted analyses; only Fib-4 retained a moderate independent association after adjustment [OR19.87 (95% CI 0.34, 1177); $P = 0.151$].The area under the ROC curve was 0.85 with Apri as the sole predictor and increased to 0.94 and 0.96 after adding HBV-DNA and Fib-4 respectively ($P = 0.15$).Patients with a longer experience of lamivudine were more likely to have long duration of HIV diagnosis, more advanced HIV, higher HBV DNA, lower platelet count, higher ALT, and higher Fib-4 scores (all $P < 0.05$).Among ART-experienced patients, 41.7% and 63.3%, respectively, had detectable HIV-1 RNA or HBV-DNA; of these 70.6% and 67.3% showed major drug-resistance mutations. No HIV or HBV drug-resistance was detected in ART-naïve patients.
Conclusion: Combined use of transient elastographyand simple laboratory tests provides a promising alternative to liver biopsy for resource-limited settings. A high proportion of patients receiving lamivudine-based ART showed detectable HIV-1 RNA and HBV-DNA and evidence of drug-resistance. Receiving lamivudine-based ART did not influence the likelihood of moderate or high elastography readings.Use of tenofovir remains very limited in HIV/HBV co-infected patients in Ghana.

P101

The prevalence of cryptococcal antigenemia in newly diagnosed patients with advanced HIV in an urban UK cohort

S Patel[1], GY Shin[2], I Wijejewardana[3], R Vitharana[4], I Cormack[4], M Pakianathan[1], T Harrison[3] and T Bicanic[3]

[1]Courtyard Clinic, St George's Hospital, London, UK, [2]Department of Virology, St George's Hospital, London, UK, [3]St George's University of London, London, UK, [4]Croydon University Hospital, London, UK

Background: Cryptococcal meningitis (CM) is a major opportunistic infection and a leading cause of mortality in AIDS patients. Cryptococcal antigenemia can precede CM by weeks to months, and offers an opportunity for targeted pre-emptive therapy with fluconazole. The reported prevalence of cryptococcal antigenemia in patients with advanced HIV in developing country cohorts ranges from 2 to 18%. There are no such data for the UK, and current BHIVA guidelines recommend screening only in those who are symptomatic with CD4 counts <200 cells/mm^3. We thus sought to i) determine the prevalence of cryptococcal antigenemia in a UK urban patient cohort; ii) compare baseline characteristics of patients with and without cryptococcal antigenemia.
Methods: Newly diagnosed HIV patients with CD4 counts <100 cells/mm^3 from January 2004–October 2010, were retrospectively identified using clinical and laboratory databases. Following National research ethics approval, stored anonymised serum samples were tested for cryptococcal antigen (CRAG) by latex agglutination. Demographic data and clinical information were extracted from hospital databases. Follow-up data for antigenaemic patients were obtained from medical records.
Results: 157 patients (56% male) were included**:** median age 42, median CD4 count 26/mm^3, 91 (58%) African and 49 (31%) UK origin; 128 (82%) heterosexual and 26 (17%) MSM. 8 patients (5%) had a positive serum CRAG. 7/8 had CM as first presentation of HIV, and only 1 had latent infection. 7/8 (88%) CRAG positives were African-born compared to 84/149 (54%) of CRAG negatives, although this did not reach statistical significance (P=0.14). Other baseline characteristics did not differ significantly. CM was the HIV-presenting illness in 7% of Africans with CD4 <100 cells/mm^3.
Conclusions: Our study, first in the UK to evaluate cryptococcal prevalence in an HIV cohort, found a prevalence of 5% in new diagnoses with CD4 counts <100 cells/mm^3. The majority of cases however presented with CM, not latent infection. Cryptococcal infection occurred almost exclusively in African-born individuals. A CRAG screening strategy targeting those with CD4<100 may be too late to prevent some cases of CM. Prevention strategies should focus on earlier diagnosis coupled with targeted screening of African-born individuals.

P102

Use of rifabutin in the treatment of tuberculosis in HIV positive individuals

T Rawson[1], S Basnayake[2] and A Pozniak[2]

[1]Imperial College School of Medicine, London, UK, [2]Chelsea and Westminster Hospital NHS Foundation Trust, London, UK

Background: Tuberculosis (TB) treatment in HIV positive individuals is complicated due to drug – drug interactions which occur between components of Highly Active Antiretroviral Therapy (HAART) and anti-tuberculosis agents. This is especially common between protease inhibitors (PI's) and rifampicin. Rifabutin, a rifamycin family member, has fewer drug – drug interactions than rifampicin. It has been shown to be effective in treating tuberculosis in HIV negative/unknown individuals however there is little data on its use in HIV patients who are on HAART. Therefore, we aimed to investigate outcomes of the treatment of patients with TB in HIV co-infection with rifabutin.
Methods: We used a HIV patient database and electronic records to collect HIV and TB associated information and laboratory parameters from the time of TB treatment. To determine long term treatment success, data on relapse and mortality for the following 2 years post finishing TB treatment was collected. For controls we collected data for HIV positive individuals with similar demographics who had been treated with rifampicin based regimes in the same time period.
Results: From April 1999 to November 2010 23 HIV positive patients had been started on rifabutin based anti-tuberculosis treatment. The median age (range) of this cohort was 43 (24 – 74) years. The rifampicin cohort had 79 patients with a median age (range) of 43 (32 – 72) years. The majority (78%) of the rifabutin cohort were on a ritonavir boosted, PI based, HAART regimes

(with rifabutin dose modification to 150mg three times a week) compared to 4% in the control cohort. 22% and 15% of the cohorts, respectively, were HAART naïve. Completion rate of TB treatment was similar between both cohorts (83 & 84% respectively). There was 4% (n=1) & 3% (n=2) recurrence of TB, respectively, in both cohorts in the 2 years following completion of TB treatment. 4% (n=1) and 5% (n=4) of patients were lost to follow up. 17% (n=4) of rifabutin patients had treatment interrupted due to adverse effects (suspected drug fevers) compared to 28% (n=22) of controls (skin 4%, liver 6% and suspected drug fever 18%).

Conclusion: Rifabutin appears to have similar effectiveness in the treatment of tuberculosis in people living with HIV when comparing 2 year outcomes with rifampicin treated individuals. It also appears that rifabutin patients have fewer interruptions of treatment due to skin and liver side effects.

P103
Is testing for latent tuberculosis infection in an UK HIV clinic cost effective?

S Capocci[1], C Smith[1], S Morris[2], S Bhagani[1], I Cropley[1], M Johnson[1] and M Lipman[1]

[1]Royal Free Hospital, London, UK, [2]University College London, London, UK

Background: BHIVA and NICE have published guidelines on testing for latent tuberculosis infection (LTBI) in HIV. BHIVA suggests using interferon gamma release assays (IGRA) in all persons from**:** sub-Saharan Africa on antiretroviral therapy (ART) <2 years, middle TB incidence countries on ART <2 years with blood CD4 <500 cells/μL and low TB incidence countries on ART <6 months and CD4 <350 cells/μL. NICE recommends testing all those with CD4 between 200–500 cells/μL using an IGRA $\pm$ tuberculin skin test (TST) and those with CD4 <200 cells/μL with IGRA & TST. The cost effectiveness of these strategies has not been formally assessed.

Methods: We modelled both screening strategies using our centre's HIV clinical and demographic data obtained between 2000–2010. The number eligible for screening in 2000 using either approach was calculated. Those subjects not eligible were followed at each CD4 count until they met criteria for testing. The primary outcome was development of active TB. Costings used the NICE TB Costing Report 2006. We assumed that**:** all subjects would be screened except those with a TB diagnosis <3 months from HIV diagnosis; IGRA/TST would be positive in 20% of subjects from sub-Saharan Africa, 8% from middle incidence countries and 2% from low incidence countries; a 100% uptake of LTBI treatment with 60% efficacy; QALY reductions for active and treated latent TB were 0.676 and 0.007 respectively.

Results: Table 1 indicates that whilst both strategies prevented cases of TB disease, the NICE strategy prevented more cases and had greater gain in QALYs at a lower cost.

	No screening	NICE	BHIVA
Number in cohort	3306	3306	3306
Eligible for screening	0	2778	1478
Number needing LTBI treatment following screening	0	183	141
Number developed active TB in cohort	72	72	72
Number who developed active TB & were eligible for screening and LTBI treatment	0	66	42
Number of cases potentially prevented by screening	0	39	25
Cost of IGRA/TST (£)	0	79,062	37,940
Cost of LTBI treatment (£)	0	88,524	68,207
Cost of treating active TB cases developed despite screening (£)	367,200	168,300	239,700
Total cost of strategy (£)	367,200	335,886	345,848
QALYs gained by screening	0	25	16
Cost saving gained by screening (£)	-	31,314	21,352

Conclusion: Using data from 2000–10, our model suggests that either strategy is cost-saving. A formal, prospective evaluation in a contemporary population is needed.

P104
Can haemoglobin drop replace rapid virological response in predicting a sustained virological response?

D Awoyemi, S Mandalia, M Bower, M Anderson and M Nelson

Chelsea and Westminster Hospital, London, UK

Background: Hepatitis C treatment with peginterferon and ribavirin can lead to bone marrow suppression, haemolysis and anaemia. A drop in haemoglobin (3 >g/dL) during the first 8 weeks of treatment has been associated with a higher sustained virological response (SVR- 6 months post-treatment) rates. Here we measure the change in haemoglobin with peginterferon and ribavirin treatment and establish whether this predicts SVR rates.

Method: This was a retrospective cohort of all HIV and hepatitis C co-infected patients started on interferon for hepatitis C treatment between January 2007 and September 2010. The clinic prescribing database identified 69 patients started on peginterferon and ribavirin treatment. Patients were separated into two groups according to their SVR at 6 months, and the change in haemoglobin from baseline (+/–2weeks) to week 4 (+/–2weeks) was measured for patients in both groups. A Mann–Whitney U-test, a Yate's corrected chi-squared test and unpaired *t*- tests were used to test for associations between the sustained or rapid virological responders and non-responders and the mean change in haemoglobin.

Results: Patient demographics**:** Mean age was 45 (range 31–71), 63 (91%) were male, 38 (55%) had acute hepatitis and 50 (72%) with HCV genotype 1. Of 69 patients; 44 (64%) had a SVR at 6 months, and 25 (36%) did not have a SVR. 28 patients (40%) had a RVR and 37 (54%) did not have a RVR, 4 (6%) patients had missing data. Of those that had a RVR; 21 (75%) had a SVR and 7 (25%) did not have a SVR (*P*=0.044). The average haemoglobin (hb) drop (n=69) was –1.3g/dL (–2.3g/dL to –0.3 g/dL), and the mean drop in haemoglobin in the ' no SVR group' (n=25) was -1.2 g/dL(–1.9 to –0.6) and –1.3g/dL (–2.5 to –0.3) in the 'SVR group' (n=44). The mean drop in haemoglobin did not differ significantly between the two groups (p =0.401). In the 'no RVR group' the mean hb drop was –1.0 (–2.4 to –0.5), n=37 and the mean hb drop was –1.4 (–2.1 to –0.2), n=28 in the 'RVR group'. There was no significant difference between mean Hb drop in the 'RVR' and 'no RVR' group (*P*=0.942)

Conclusions: A rapid virological response at 4 weeks and a haemoglobin drop > 3g/dL have both been shown to predict SVR rates. In this study we establish whether a drop in Haemoglobin could predict SVR rates and therefore negate the need for a HCV RNA polymerase chain reaction at 4 weeks which may be useful due to cost and unavailability in some clinical settings. RVR did show a significant associated with SVR (*P*=0.044) but the drop in haemoglobin was not associated with SVR (*P*=0.401) or RVR (*P*=0.942).

P105
Audit on clinical management of patients co-infected with HIV and Hepatitis B

L Ceccarelli, S Morris, A Wilson and C Leen

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

Background/Aims: To evaluate the degree of adherence to current British HIV Association (BHIVA) guidelines for the management of co-infection with HIV-1 and hepatitis B virus 2010, at Western General Hospital in Edinburgh with respect to assessment of liver disease progression and anti HBV treatment

Methods: A retrospective systematic review of HIV-HBV case notes (2010–2011) was carried out. Selected recommendations from 2010 BHIVA Guidelines were assessed.

Results: 640 out of 687 (93%) HIV positive patients have been screened for HBV infection. Twenty-six cases of HBV/HIV coinfection were identified. 65,4% (17/26) were HAV immune and 66,6% (6/9) of nonimmune patients received HAV vaccine. A discussion regarding alcohol avoidance, transmission risk reduction and partner notification was documented in 50% of patients over the study period. All patients had a clear antiviral treatment plan written in their notes yearly. HBeAg status and HBV DNA testing had been assessed in 88,4% (23/26) and 96,1% (25/26) of HBV/HIV patients, respectively. Anti-hepatitis delta virus antibody test was checked in 19,2% (5/26). There was no documentation of patients having been offered a non-invasive assessment for liver fibrosis. 62,5% (5/8) of the cirrhotic patients were jointly treated with a hepatologist and all the patients in need were referred for liver transplantation assessment. Of the 8 cirrhotic patients 50% (4/8) and 12,5,% (1/8) had had a regular screening for HCC with ultrasound scan and alpha-fetoprotein respectively. Overall, 88,4% (23/26) of the patients were receiving HAART at

the time of this audit, 91,3% (21/23) were on optimal treatment and 3 patients were ART naive. Two patients (8,6%), on HAART, were receiving 3TC as their sole HBV treatment. Nevertheless, 80% (20/25) of all co-infected patients had HBV DNA undetectable (below <10 IU/mL).

Conclusion: 93% of the cohort had been tested for HBV coinfection. One third of HAV nonimmune patients did not receive HAV vaccine. Hepatitis delta virus antibody was infrequently checked (19,2% of patients). Reassessment of HBV disease progression and surveillance for HCC was very poor. Two patients were on HAART regimen including 3TC as the only HBV active drug. Strict adherence to current HBV management guidelines is very important to ensure high quality of clinical management to all coinfected patients. A dedicated HBV clinic for HIV/HBV coinfection may improve clinical care

P106

Audit of eligibility of hepatitis C/HIV co-infected patients in the Lothian cohort for new HCV protease inhibitor containing regime

KA Devine and C Leen

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

Background: Introduction of the new HCV protease inhibitors has been shown to improve outcomes for mono-infected patients. Recent data shows significant decline in HCV RNA at 24 weeks in genotype 1 co-infected patients on HAART who received either Telaprevir or Boceprevir in combination with Peginterferon and Ribavirin versus those who received current standard of care. We reviewed the proportion of our HCV/HIV co-infected patients who would be suitable for treatment with the new HCV protease inhibitors.

Methods: The case records of all HCV co-infected patients on the unit database were reviewed to assess if they would be candidates for standard of care plus a protease inhibitor. The criteria used were: an undetectable HIV viral load, CD4>200 cells/mL^3, stable on any HAART regime or able to switch to a regime that has suitable PK data with new protease inhibitors, no significant psychiatric illness and no previous significant side-effects with Interferon or Ribavirin.

Results: A total of 74 (58 naïve, 16 experienced) HCV co-infected patients were assessed. Only 1 patient could not switch HAART based on drug-drug interactions. 25/58 patients in the naïve group could not be treated largely due to pre-existing psychiatric problems. 6/16 of the experienced group could not be treated mostly due to previous Interferon and Ribavirin side effects.

Exclusion Criteria	NaïveN=58	ExperiencedN=16
Psychiatric illness	12	1
Detectable HIV Viral Load	9	1
CD4<200	5	0
Not able to switch to PK suitable regime	1	0
Severe thrombocytopenia	0	2
Severe anaemia	0	1
Severe aggitation on Interferon	0	1

Conclusion: Unfavourable drug-drug interactions was not a significant barrier to the use of HCV protease inhibitor in our cohort. An Interferon sparing regime is required to significantly increase the number of co-infected patients that can be treated in Lothian.

P107

High rates of advanced fibrosis and cirrhosis in HIV/HCV Co-infected patients naïve to HCV treatment in an urban ethnically diverse cohort

K Childs[1], J Bayley[1], R Byrne[2], A Suddle[2], K Agarwal[2] and C Taylor[1]

[1]Department of Sexual Health, King's College Hospital Foundation Trust, London, UK, [2]Institute of Liver Studies, King's College Hospital Foundation Trust, London, UK

Background: HIV/HCV co-infected patients undergo baseline and regular screening for Hepatitis C (HCV). HCV mono-infected patients are diagnosed by opportunistic screening in primary care or when symptomatic. Therefore co-infected patients should present at an earlier stage of liver disease.

Method: We identified the HIV/HCV co-infected patients seen at our tertiary referral co-infection clinic who were naïve to HCV treatment at presentation (n=77). These patients were compared to new HCV mono-infected patients also naïve to HCV treatment (n=54). Of the co-infected patients 39 underwent biopsy, 50 elastography (16 both) and of the mono-infected patients 18 had biopsies, 46 elastography (10 both). Fibrosis was analysed as a continuous variable using Fibroscan score and an ordinal variable of: minimal, moderate/severe fibrosis or cirrhosis based on elastography, biopsy or clinically in cirrhotic patients.

Results: The mono-infected group had a median age of 48 yrs and were 67% men; the co-infected group had a median age of 44 years, 78% men. Genotype 1 or 4 made up 63% of the mono and 70% of the co-infected group. There was no difference in fibrosis stage between mono and co-infected patients. Median Fibroscan score was 7.1 kPa in coinfected patients, 7.2 kPa in monoinfected pts.

The mean duration since HIV diagnosis prior to attendance at the co-infection clinic was 7.4 years (SD 7.3) Overall 20% of this cohort who had never undergone HCV treatment were cirrhotic.

Fibrosis stage	HCV mono-infected	HCV/HIV co-infected
Bx 0–2 Fibroscan <7.65kPa	19 (35%)	29(38%)
Bx 3–4 Fibroscan 7.65–13kPa	24 (44%)	31(40%)
Bx 5–6 Fibroscan >13kPa	11(20%)	17(22%)
	54	**77**

Conclusions: Historically, many patients with HIV/HCV co-infection have gone untreated due to low SVR rates and concerns about toxicity. In addition there may be issues with substance or EtOH abuse which preclude HCV treatment. In this cohort untreated HCV viraemia resulted in high rates of advanced fibrosis and cirrhosis. Fibrosis stage in HIV/HCV patients in long-term HIV care does not differ from the mono-infected population who are tested for HCV opportunistically. The advent of directly acting antivirals (DAAs) with improved SVR rates should prompt early referral of HCV co-infected patients for specialist assessment and treatment to avoid progressive fibrosis and the morbidity and mortality associated with the development of cirrhosis

P108

Abstract withdrawn

P109

A case series of otosyphilis – missed opportunities for early treatment?

D Bradshaw, S Pallawella, M Nelson, C Scott and S Day

Chelsea and Westminster Hospital, London, England

Background: Otosyphilis is one of the few reversible causes of hearing loss. A diagnosis of otosyphilis can be made in a patient with audiological symptoms and positive syphilis serology, when other causes have been excluded. Audiological outcome after treatment is generally poor and robust evidence for optimal management is lacking. We present a small case series of otosyphilitic patients.

Method: Case collection and notes review.

Results: Seven patients with otosyphilis were identified between 2007 and 2011. of median age 34yrs. Six (86%) were male. Six (86%) were diagnosed with secondary syphilis and one (14%) late stage syphilis. Six (86%) patients were co-infected with HIV, two (29%) testing HIV positive at syphilis diagnosis. Deafness was invariably the presenting audiological feature and was bilateral in three (43%) cases. All patients had other symptoms of syphilis, rash being the most common (4/6, 67%); three (43%) patients had ocular involvement. Of 6/7 patients who consented to a lumbar puncture, neuro-syphilis was probable in one (17%) patient, excluded in two (33%) patients and considered possible in the remaining patients (50%). The median time from audiological symptoms to syphilis treatment was two months (range two days to six months). Four (57%) had previously visited a health care professional who had failed to diagnose otosyphilis. Six (86%) and five (71%) patients received a neurological regimen and steroid cover respectively.

Overall, hearing improved in three (43%) and stabilised in four (57%) patients. Improved audiological outcome was seen in 2/3 (67%) patients receiving early treatment (<1 month after hearing loss) versus 1/4 (25%) of those receiving late treatment and in 3/6 (50%) receiving a neurological treatment regimen versus 0/1 in the patient receiving standard treatment. Median time to treatment was shorter in patients with established HIV infection (two months) than those testing HIV positive at syphilis diagnosis or testing HIV negative (3.5 months).

Conclusion: Although of small size, this case series identifies a delay to treatment in many cases and that early treatment and/or administering a neurological regimen may provide a better audiological outcome. Patients with established HIV infection may have more regular syphilis testing, potentially reducing the delay to receiving treatment. Although otosyphilis is uncommon, with increasing rates of syphilis in MSM and heterosexual populations, health care professionals must be alert to its auditory manifestations and promptly initiate treatment.

P110
Raltegravir switch improves hepatitis C transaminitis in HIV-1 and hepatitis C (HCV) co-infected individuals

M Cevik[1], L Dickinson[2], G Singh[1], A Scourfield[3] and M Nelson[1]

[1]Chelsea and Westminster Hospital, St Stephen's Centre, London, UK, [2]Royal Liverpool & Broadgreen University Hospital Trust, Liverpool, UK, [3]Brighton and Sussex University Hospital, Brighton, UK

Introduction: HCV is one of the most relevant co-morbidities seen in HIV-infected individuals as evidenced by the negative impact that HIV exerts on the course of HCV infection. Despite remarkable results on HIV infection alone, the impact of highly active antiretroviral therapy (HAART) on liver disease in co-infection remains unknown. We sought to explore the impact of Raltegravir (RAL) on amino transferase (ALT) in HIV/HCV co-infected individuals.

Methods: HIV-infected individuals co-infected with HCV within the last 5 years receiving non-integrase inhibitor containing HAART with a subsequent switch to RAL-containing HAART were identified from a retrospectively maintained outpatient database. Patient demographics were extracted. Biochemical, virological and immunological parameters were collated and individuals received pegylated interferon with ribavirin were excluded. ALT levels at switch and post switch were compared using Kruskal-Wallis test. Spearman's Rank correlation was used to assess the relationship between ALT and HCV-RNA.

Results: Twenty seven HIV-HCV co-infected individuals were identified between January 2007 and January 2012 and seven individuals were excluded. Median age was 44 years (range**:** 31–68). Five had acute and fifteen had chronic HCV infection during the switch. Twenty (100%) had HIV-RNA–1 <40 copies/mL at time of RAL switch. In chronic HCV infected individuals, median ALT levels at the time of switch were 465 IU/L, decreased significantly to 179 IU/L 1 month following switch (P=0.0261) and to 140 IU/L 6 months later (P=0.0225). On the other hand, in acute HCV infected individuals median ALT levels were 1005 IU/L at time of switch but decreased significantly to 220 IU/L 1 month later (P=0.0034) and to 35 IU/L 6 month later (P=0.0026). Sustained improvement in ALT levels from baseline to 1 month and up to 24 weeks after switch to RAL was observed in both groups but the reduction in ALT levels was statistically more significant in acutely infected individuals. ALT and HCV-RNA levels showed a positive correlation at 6 months pre, post and at time of switch both in acute and chronic HCV-infected individuals (Spearman's Rank correlation).

Conclusion: In our study, RAL had a favourable effect on the liver up to 24 weeks after switch in HIV/HCV infected individuals.

P111
Open TB in an HIV clinic – sharing our experience of a serious untoward incident

C Woodward[1], R Miller[2], D Mercey[1], M Young[1] and P Benn[1]

[1]Mortimer Market Centre, London, UK, [2]University College London Medical School, London, UK

Background: An HIV positive patient presented to the HIV outpatient clinic with a productive cough. She was immediately assessed and placed in a negative pressure room. A CXR was consistent with extensive cavitating pulmonary TB, and a sputum was smear positive for acid & alcohol fast bacilli; culture confirmed isoniazid-resistant *M. tuberculosis*. At this time the patient reported respiratory symptoms present intermittently for the preceding 5 months, during which time she had attended the clinic or onsite pharmacy nine times.

Methods: A multi-disciplinary incident team was formed (including service user representation) and agreed that screening should be according to HIV status. HIV positive individuals attending within two hours of the index case were offered screening. HIV negative individuals were informed of a possible exposure to TB and advised to contact their GP. Staff members interacting with the patient during this period were advised to contact Occupational Health. Screening included a CXR and an interferon-γ release assay (IGRA) blood test (QuantiFERON and/or T-SPOT.TB), at least two months after potential exposure.

Results: 237 patients (190 HIV positive and 47 HIV negative) and 5 staff were identified as exposed. Of the 125/190 (63.7%) patients who attended for screening 99 (79%) were men, 46 (37%) were of UK origin, 30 (24%) of African origin, 27 (22%) of European origin, 7 (5%) of South American origin, 15 (12%) were of other origins. 111/125 (89%) were receiving antiretroviral therapy (ART), of whom 98% had an undetectable HIV viral load (VL). The median CD4 count of those on ART was 564 (range 30–1190). 14/125 (11%) were not on ART and had a median CD4 count and VL (range) of 556 (250–950) and 65,231 copies/mL (<50–160000) respectively. No individuals were identified with active TB. 11 individuals had a positive IGRA test and were reviewed by a specialist in TB/HIV. A moderate concordance was noted between the two IGRA tests. Four individuals with a negative IGRA and a CD4<200 also had a Mantoux test (as per NICE guidance). All four patients were Mantoux negative. No negative comments from patients regarding the incident or recall process were received. Of those not screened none has acquired TB to date.

Conclusion: The success in dealing with this incident highlights the usefulness of a multidisciplinary team approach and the benefits of involving service users. IGRA tests facilitated the screening process and were acceptable to patients,

Complications of HIV Disease or Treatment

P112
The Prevalence of a positive screen for anxiety and/or depressive symptoms in HIV-1 infected patients in the UK – The CRANIum Study

R Kulasegaram[1], G Schembri[2], M Johnson[3], C Leen[4], P Hay[5], V Lee[6], A Price[7], M Gompels[8], A Naidoo[9], J Van Wyk[9], C De Alvaro[9] and C Bayon[10]

[1]Guy's and St Thomas', London, UK, [2]Manchester Royal Infirmary, Manchester, UK, [3]Royal Free Hospital, London, UK, [4]Western General Hospital, Edinburgh, UK, [5]St George's Hospital, London, UK, [6]Manchester Royal Infirmary, Manchester, UK, [7]Royal Victoria Infirmary, Newcastle-upon-Tyne, UK, [8]Southmead Hospital, Bristol, UK, [9]Abbott Laboratories, Paris, France, [10]La Paz Hospital, Madrid, Spain

Background: The primary objective of the CRANIum study was to describe and compare the prevalence of a positive screening for neurocognitive impairment and depression/anxiety between HIV-1 infected patients on Highly Active Antiretroviral Therapy (HAART) and HAART-naïve patients in Western Europe and Canada. Here we present data on the prevalence of depressive and anxiety symptoms in the UK cohort. Previously, the prevalence of depression has been reported as 2–50% in UK HIV-infected patients, and varies widely according to methods used, patient population tested and sample size.

Methods: HIV-1 infected patients >18 y/o attending routine clinic visits were eligible for participation. Patients recruited into the study completed the Hospital Anxiety and Depression Scale (HADS) questionnaire to screen for anxiety (HADS-A) and depression (HADS-D). HADS consists of 14 items (7 HADS-A, 7 HADS-D) with 4 options each scored between 0–3.

Results: 2,890 patients were recruited from 15 countries, of which 325 (66 ARV-naïve, 257 ARV-experienced) were from the UK. Of these, 322 fully completed both HADS questionnaires. Mean age was 44 years (range 19 – 74), 77.2% were male and 71.6% were Caucasian. Mean time from HIV-diagnosis was 105 months, 17% of patients had a previous AIDS diagnosis. 34% were unemployed with 81% of these for > 12 months. Previous CNS infection was reported in 5% of patients and 25% had previous psychiatric diagnoses. 10.8% of patients were currently prescribed antidepressants and 3.1% anxiolytic therapy. 16.3% of patients reported illegal substance use in the previous 12

months. Using an ≥8 cut-off for HADS-scoring, 19.3% (ART-naïve 12.1%, ARV-experienced 21.2%, *P*=0.1) of patients had a positive screen for depression, 38.2% (ART-naïve 40.9%, ARV-experienced 37.5%, *P*=0.6) for anxiety and 16.3% (ART-naïve 12.1%, ARV-experienced 17.6%, *P*=0.3) for both conditions.
Conclusion: In the UK sample of this large epidemiologic study, the prevalence of a positive screen for depression in HIV-infected patients (19.3%) was nearly double what has previously been reported in the general population in the UK (approximately 9.7%). These results support a strategy of regular screening for and clinical management of anxiety and depression for HIV-infected patients in the UK.

P113

Cardiovascular magnetic resonance reveals human immunodeficiency virus is an independent risk factor for vascular stiffness

M Asaad, O Rider, P Beak, E Wainwright, A Pitcher, G Hancock, G Clutton, L Dorrell and C Holloway
University of Oxford, Oxford, UK

Background: Premature atherosclerosis has been reported in patients with Human Immunodeficiency Virus (HIV) and is associated with increased vascular stiffness, although the underlying mechanisms remain unclear. We investigated aortic stiffness in patients with HIV to determine the role of HIV, combined antiretroviral therapy (cART) and metabolic disturbances in promoting increased vascular stiffness. Using magnetic resonance imaging (MRI), we measured aortic pulse wave velocity (PWV); a reliable, clinical measure of aortic stiffness linked with increased mortality and coronary heart disease.
Methods: 90 patients with HIV and no history of cardiovascular disease (13 naive to cART) were compared to 74 matched controls. Anthropometric data was collected and fasting venous samples were taken for analysis of plasma metabolites. To assess aortic PWV, MRI was used to measure through-plane flow in the ascending aorta at the level of the pulmonary artery and perpendicular to the descending aorta 11 cm below the pulmonary artery. Aortic PWV (m/s) was determined as $\Delta x/\Delta t$ where Δx is the aortic distance between the two imaging levels and Δt is time delay between the arrival of the foot of the pulse wave between these imaging levels.
Results: Patients with HIV and controls were well matched for age (45 vs 44 years), systolic (121 mmHg vs 118.1 mmHg, p = 0.179) and diastolic blood pressure(77 mmHg vs 75.0 mmHg, p = 0.226), body mass index (25.9 kg/m^2 vs 26.8 kg/m^2, p = 0.243), glucose (5.1 vs 4.9, p = 0.175) and insulin (7.88 vs 6.43 mmol/l, p = 0.218). Total cholesterol was higher in the control group (4.9 vs 4.5 mmol/L, p < 0.05), HDL was lower in patients with HIV (1.4 vs 1.1 mmol/L, p < 0.0001) and triglycerides were raised by 60% (p < 0.001). PWV was significantly higher in patients with HIV compared to controls (6.45 vs 5.57 m/s, p < 0.001). On multi-regression analysis, the presence of HIV, age and systolic blood pressure were all independent predictors of higher PWV (all p < 0.01). There was no effect of cART on PWV and no association between plasma metabolites and PWV.
Conclusion: Using MRI, we have demonstrated that HIV is predictive of increased vascular stiffness as measured by aortic PWV, which is independent of blood pressure, cART and metabolic abnormalities. These data suggest that HIV is mechanistically associated with increased vascular stiffness which may subsequently underlie the pathophysiology of premature vascular disease.

P114

The emerging role of CT coronary calcium scoring in identifying patients of 'high' cardiovascular risk in the HIV population

C Cook, M Boffito, P Holmes, M Bower and M Nelson
Chelsea and Westminster Hospital, London, England

Background: HIV is an independent risk factor for cardiovascular disease (CVD); an important cause of mortality and morbidity in an ageing HIV population. Current BHIVA guidelines recommend annual cardiovascular risk assessment. Since 2010, NICE recommend CT calcium scoring (CTCS) as the first-line diagnostic investigation and risk assessment tool in *non*-HIV patients.
CTCS quantifies coronary artery calcium (CAC); a direct marker for atherosclerosis and correlate of future CVD events. By directly quantifying the disease process in-vivo, CTCS avoids the shortcomings of existing risk stratification tools (e.g. Framingham Risk Study), which do not account for HIV status and were not designed for use in non-whites. The prospective Multi-Ethnic Study of Atherosclerosis cohort of 6814 participants demonstrated that total CAC of >400 Agatston units was associated with 'high risk' for future CVD events [hazard ratio of 20.6].
Methods: 280 HIV patients referred for CTCS over a 2 year period were analysed according to age and gender.
Participants were stratified into 'high risk' (CAC>400) and 'lowest risk' (CAC=0) according to their total coronary calcium burden.
The paired *t*-test was used to assess significance of difference between groups.
Results:

Group	N=	Mean Age (years)	Mean CAC (units)	% 'High risk'	% 'Lowest risk'	*t*-test (difference between groups)
ALL	280	59	142	10	38	*P*<0.001
MALE	262	59	145	10	36	*P*<0.001
FEMALE	18	59	62	9	65	*P*<0.001
AGE <60	161	55	60	5 *	42	*P*<0.001
AGE >60	119	66	255	18 *	31	*P*<0.001
				P<0.001 *		

Conclusions: The authors of this study support the use of CTCS as a CVD risk stratification tool in the HIV population; although no formal referral criteria currently exist. From our data 'high risk' patients were in the minority (10% of all participants), particularly in the younger participant group (just 5% of all participants <60 years old). Furthermore, over one third of all participants (38%) had no detectable coronary calcium burden at all ('lowest risk', CAC=0) conferring a total radiological absence of atherosclerosis. This effect was most pronounced in women (65%). Overall, significantly more patients were 'lowest risk' (38%) as compared to 'high risk' (10%) [*P*<0.001]. These findings imply the additional CVD risk attributed to HIV infection, *may* be over appreciated by referring clinicians. Although limited by small sample size, this study identifies age as a potential means of refining referral criteria; with significantly more 'high risk' patients over 60 years than under 60 years [*P*<0.001].

P115

How commonly is JC virus detected in the cerebrospinal fluid of patients with HIV?

J Bashford[1], M Atkins[2], M Bower[1] and M Nelson[1]
[1]Chelsea and Westminster Hospital NHS Trust, London, UK, [2]Imperial College Healthcare NHS Trust, London, UK

Background: Progressive multifocal leukoencephalopathy (PML) is an opportunistic infection caused by JC virus (JCV) in immunodeficient individuals. The pathological hallmark is irreversible white matter demyelination. The diagnosis is supported by the clinical presentation (subacute motor deficits, ataxia, cortical visual symptoms), characteristic findings on MRI of the brain (bilateral, asymmetric, well-demarcated, T2 hyperintense white matter lesions with no oedema) and JCV detection by polymerase chain reaction (PCR) in the cerebrospinal fluid (CSF). We investigated how frequently JCV was detected in the CSF in HIV seropositive patients with findings on brain MRI suggestive of PML compared to those lacking MRI features of PML.
Methods: We obtained retrospective data of all JCV PCR test results performed on CSF samples between March 2002 and November 2011 from HIV seropositive patients. These results were correlated with results from contemporaneous MRI imaging of the brain.
Results: In total 564 CSF samples from HIV-positive patients were tested for JCV during 117 months, of which 7 (1.24%) were positive. Contemporaneous MRI imaging of the brain was performed in 360/564 (63.8%) patients.
There were 4/221 (1.81%) positive CSF JCV results between 2003 and 2006 inclusive, compared with 3/274 (1.09%) positive results between 2007 and 2010 inclusive.

Contemporaneous MRI of the brain report	Number of CSF samples tested for JCV	Number of positive JCV tests	Percentage of positive samples
Suggestive of PML	64	3	4.69%
Suggestive of an infectious, but non-PML, pathology	77	2	2.60%
Normal or suggestive of a non-infectious pathology	219	1	0.46%
MRI not performed	204	1	0.49%

Conclusions: JCV was infrequently detected in the CSF of HIV-positive individuals over a 9-year period. Although JCV was more frequently found in the CSF of patients with MRI findings suggestive of PML, the detection rate was still <5% suggesting a very high false negative rate for this test. CSF JCV testing should not be performed routinely when MRI of the brain has either not been done, is normal or suggestive of a non-infectious pathology. Even when PML is suspected on MRI of the brain, JCV CSF is unlikely to be positive. We conclude that the vast majority of these tests are unnecessary, offering a potential to significantly reduce costs without compromising patient care.

P116
Pancreatic insufficiency in patients with HIV: Didanosine is not the culprit

T Martin[1], A Scourfield[1], N Rockwood[1], N Martin[2], N Patel[3], M Nelson[1] and B Gazzard[1]

[1]Chelsea and Westminster Hospital, London, UK, [2]University of Bristol, Bristol, UK, [3]Imperial College London, London, UK

Background: Chronic diarrhoea is a significant cause of morbidity in patients with HIV and represents a substantial cost to healthcare. Pancreatic insufficiency is a known cause of chronic diarrhoea in patients with HIV; however, the aetiology and treatment efficacy is unknown in this patient group. Didanosine (ddI) exposure has been postulated as a potential cause of pancreatic damage. We therefore decided to investigate potential causes and treatment of chronic pancreatic insufficiency at our centre.

Methods: A retrospective analysis of 247 HIV positive patients for whom faecal elastase measurement was available was performed to investigate potential associations with core demographic data, HIV infection characteristics, degree of immunosuppresion, exposure to anti-retroviral therapy (ART), alcohol misuse, diabetes, hepatitis C virus (HCV) serology, triglyceride and cholesterol level and symptomatology. The response to pancreatic enzyme replacement for patients with evidence of insufficiency was also evaluated.

Results: Of 247 patients, 103 (42%) had evidence of pancreatic exocrine insufficiency (faecal elastase <200mcg/g). A positive association with exocrine pancreatic insufficiency was found for HCV infection (OR 2.23, *P*=0.03) and the presence of steatorrhoea (OR 2.68, *P*=0.03). There was no association between ddI exposure (*P*=0.34) or stavudine (d4T) exposure (*P*=0.96) and pancreatic insufficiency. 77% of patients who were treated with pancreatic enzymatic supplementation reported a subjective improvement in symptoms.

Conclusions: Faecal elastase sampling should form part of the routine work-up for HIV positive patients with chronic diarrhoea even in the absence of perceived risk factors such as ddI exposure. In particular, if the patient has steatorrhoea or their HCV serology is positive they should be considered for investigation. Treatment with pancreatic enzyme supplementation appears to be effective in the treatment of chronic diarrhoea due to pancreatic insufficiency in the majority of patients.

P117
Tenofovir use may be associated with increased risk of loss of bone mineral density from spine but not from hip

S Das[1], S Bopitya[2] and L David[3]

[1]Coventry & Warwickshire Partnership Trust, Coventry, UK, [2]George Elliot Hospital, Nuneaton, UK, [3]St Cross Hospital, Rugby, UK

Background: Vitamin-D deficiency and abnormal bone mineral density (BMD) have been reported in HIV patients. We aimed to find out effect of antiretroviral therapy (ART) on serum vitamin-D, parathyroid hormone (PTH) level, BMD changes and fragility fracture rates in HIV patients.

Methods: We collected information about baseline demography, risk factors for fracture, viral load (VL), CD4 count, serum 25-OH vitamin-D (n=377), PTH (n=273), phosphate, ionised calcium, creatinine, BMD of spine and hip by DEXA scan (hologic, n=142). Statistics was by one-way ANOVA followed by Dunn's multiple comparison tests.

Results: (table 1)**:** Total 377 patients, mean age 41.1 (+/– 11.9) years, 249 (66%) black African, 197(52%) females, baseline CD4 count 451 (+/– 184) cells/dl, VL 1.4 log (+/– 2.3) copies/mL, duration of ART 52 (+/– 35) months were included in the analysis. Serum vitamin-D were 15.3 (+/– 11.0) ng/mL, PTH (intact) 5.5 (+/– 3.9) pmol/l, corrected calcium 2.13 (+/– 0.9), phosphate 1.0 (+/– 0.2) and creatinine were 73.4 (+/– 21.1) mmol/l. Ninety four (66%) patients had abnormal BMD (T-score of spine or hip or both ≤ 1.0). Vitamin-D level were insufficient (< 30 ng/mL) in 297 (78.7%) and PTH was high (>4.1 pmol/l) in 177 (64.8%) patients. Of 91 (24.1%) patients who had vitamin-D level below 11 ng/mL, PTH was high in 70 (n=91, 76.9%) and abnormal BMD in 50 (n=61, 75.4%) patients. Eleven patients (2.9%) had possible fragility fracture. Tenofovir (TDF) user had higher PTH (*P*=0.002) and lower BMD of spine (0.01) and Efavirenz (EFV) user had lower vitamin-D (0.01) level. On multivariate analysis including all significant variables, only age over 40 (OR 1.7 CI 1.2–3.1) and TDF use (OR 3.3, CI 1.4–7.9) was associated with abnormal BMD of spine.

Table 1: Mean (+/–SD) of serum Vitamin-D, PTH level, BMD of spine and hip

	Vitamin-D (ng/mL)	PTH (pmol/l)	BMD spine (gm/cm^2)	BMD hip (gm/cm^2)
Treatment Naïve (n=31)	16.8 (8.9)	2.4 (1.4)	1.042 (0.1)	1.041 (0.1)
EFV (n=153)	12.6 (6.3)	6.3 (3.7)	1.041 (0.2)	1.051 (0.1)
TDF (n=221)	13.5 (6.6)	6.2 (3.5)	1.038 (0.2)	1.029 (0.16)
Protease inhibitor (PI) (n=112)	13.4 (5.0)	4.4 (2.2)	1.065 (0.1)	1.036 (0.08)
* *P*=value	0.01[a]	0.002[b]	0.01[c]	0.6

[a] *P*=0.01 between EFV and non-EFV; [b] *P*=0.002 between TDF and non-TDF, *P*=0.01 between EFV and non-EFV; [c] *P*=0.01 between TDF and non-TDF.

Conclusion: Patients over 40 year's age on Tenofovir containing regimen may have increased risk of BMD loss from spine. Whether vitamin-D replacement will prevent further bone loss needs further work.

P118
The impact of HIV-1 infection, combination antiretroviral therapy and ageing on renal function

S Mandalia[1], SJ Westrop[1], EJ Beck[2], M Nelson[3], K Farrington[4], N Imami[1] and B Gazzard[3]

[1]Department of Immunology, London, UK, [2]London School of Hygiene and Tropical Medicine, London, UK, [3]Department of HIV/GU Medicine, London, UK, [4]Lister Hospital, Stevenage, UK

Background: Combination antiretroviral therapy (ART) has resulted in longer survival and an increased number of people living with HIV (PLHIV) aged over 50 years. As age increases renal function decreases. This study analysed the relationship between renal function, HIV infection, ARV exposure and increasing age.

Methods: Renal function, measured by age-standardised estimated glomerular filtration rate (eGFR), was assessed in terms of HIV infection, exposure to NRTI, PI and NNRTI drugs. Patients managed at C&W Hospital were grouped by age; 'young' 18–39 years; 'middle-aged' 40–49; 'older' > 50 years. A random intercept model using MIXED procedure in SAS was generated by fitting eGFR results as a dependent variable by changing age group strata, stratified by their exposure to ARV drug classes. Normal age standardised eGFR ≥ 90 whilst eGFR between 60 – 90 mL/min is stage 2 chronic kidney disease and reflects mildly reduced kidney function**.**

Results: 5,048 PLHIV, 87% were men, 65% Caucasians 82% MSM. ART naïve PLHIV demonstrated a reduction in eGFR with increasing age (Table); Those on ART showed similar reductions in renal function with those having been exposed to PIs having a greater reduction than those on NRTIs+NNRTI (Table).

Table	Young Adults 18–39 years	Middle-aged Adults 40–49 years	Older Adults ≥ 50 years	*P*-value
eGFR for Naïve PLHIV	83.5 mL/min	77.5 mL/min	77.5 mL/min	<0.001
eGFR for PLHIV exposed NRTI + PI	82.2 mL/min	79.0 mL/min	74.7 mL/min	<0.001
eGFR for PLHIV exposed NRTI + NNRTI	83.5 mL/min	80.9 mL/min	77.7 mL/min	<0.001
eGFR for PLHIV exposed NRTI + NNRTI + PI	82.8 mL/min	78.9 mL/min	74.7 mL/min	<0.001

Conclusion: The reduction seen in both ART naïve and experienced patients indicated deterioration of renal function independent of age-related changes. In addition to a decline in renal function due to ageing and HIV infection, ARV drugs also add to this. Further analyses of specific drugs may demonstrate long-term renal impairment but PLHIV on and off ART need to have their renal function checked at regular intervals as part of their routine management.

P119
Modelling the pathogenesis of HAND

D Ferguson[1], S Clarke[1], J Clements[2], N Berry[1] and N Almond[1]
[1]National Institute of Biological Standards and Control, HPA, Potters Bar, Herts, UK, [2]John Hopkins School of Medicine, Baltimore, Maryland, USA

An increasingly important consequence of HIV/AIDS is the neurological effects of chronic infection even when peripheral viral load is being controlled effectively. Improvement in anti retroviral therapies means that patients are now entering their 3rd decade living with HIV. However, significant numbers (up to 25%) with controlled viremia develop HIV-1 associated neurocognitive disorders (HAND) which greatly affects their daily quality of life. Detailed scientific understanding of how HIV affects the brain is poor because of difficulties in obtaining relevant clinical samples at appropriate times during infection. Model systems are required that will allow us to develop improved clinical treatments for HAND. The HPA is unique in the UK in the having facilities and scientific infrastructure to maintain the experimental infection of macaques with simian immunodeficiency virus (SIV). This model is considered by most scientists as the best for studying the processes of infection and disease.

We have undertaken *in situ* analysis of brains from cynomolgus macaques (*M.fascicularis*) infected for 20–40 weeks with either neurotropic SIVmac17E-Fr, nef attenuated SIVmacC8 or its wild type equivalent SIVmacJ5. This is a non-accelerated disease progression model and at these time points peripheral viral replication was undetectable,

SIV was identified within the brains of all animals by *in situ* hybridisation, IS-PCR and immunohistochemistry. Pathological changes were observed within SIVmacJ5 and SIVmac17E-Fr infected animals with breakdown of the BBB, influx of CD4+ and CD8+ T cells, loss of oligodendrocyte integrity and neuronal phosphorylation, microglia activation and neuronal apoptosis. Despite an attenuated replication phenotype, the brains of SIVmacC8 infected animals had an influx of CD8+ T cells, microglial activation and astrogliosis.

Characterising events within the CNS during suppression of peripheral viral replication and before neurological symptoms manifest themselves is crucial to understanding the aetiology of HAND. Information is required to inform health care professionals of the future likely impact arising from the neurological complications of HIV and identify new approaches to prevent these occurring, either through improved CNS viral suppression or complementary therapies to support neurocognitive function.

P120
Comparison of tools to calculate cardiovascular risk in local HIV population

C Stradling[1], S Taheri[2], S Hussain[2] and S Taylor[1]
[1]Heartlands HIV Service, Birmingham, UK, [2]University of Birmingham, Birmingham, UK

Background: HIV infection has been associated with increased risk for CVD. The Framingham equation has been shown to underestimate cardiovascular risk (CVR) in HIV patients on antiretroviral therapy. QRISK has not been assessed.

Aims: To assess CVR in local HIV population and determine level of agreement between QRISK and JBS2 CVR tools.

Methods: A convenience sample of 377 patients attending our HIV service for routine clinical care between 2010 and 2011 were screened for risk of cardiovascular disease by dietitians. Children, pregnant women, diabetics (n=10) and those with existing CVD (n=10) were excluded. Demographic and clinical data were collected. JBS2 (based on Framingham) and QRISK scoring systems were used for each patient to predict the 10-year risk of CVD. JBS2 calculated at age 50 years, rather than actual age, was trialled (pre DAD equation) as an adjustment factor in an attempt to account for underlying CV risk from HIV and antiretroviral therapy. Univariate statistical analysis and Bland-Altman plots were performed using Stata (version 11.2).

Results: Mean age was 41±9 years, 75% male, 54% Caucasian, 36% African. Prevalence of CVR factors were**:** 21% family history of CVD, 26% current smokers, mean total cholesterol 5.1±1.0mmol/l, HDL-cholesterol 1.3±0.6mmol/l, systolic blood pressure 129±15mm of Hg. The sample was found to be representative of the HIV population. Prevalence of high CVR (≥10%) varied between scores from 16–62%.

Bland-Altman plots revealed that the QRISK score predicted lower CVD risk as compared with the JBS2 equation at actual age or adjustment at 50 years. On average, the QRISK score was 3.8% lower than the JBS2 score and 9.2% lower than the JBS2 score at 50 years. The limits of agreement showed that the QRISK score could be as high as 12.9% above or as low as 5.3% below the JBS2 Score, with 93.9% of values within the limits of agreement, and as high as 5.5% above or as low as 23.9% below the JBS2 Score at 50 years, with 94.6% of values within the limits of agreement.

CVR Score	Mean ± SD	CVR ≥10% n (%)
QRISK	4.6 ± 6.1	59 (15.7)
Framingham	8.5 ± 7.8	133 (35.3)
Framingham @ 50yrs	13.7 ± 8.7	151 (61.6)

Conclusion: The risk scores predicted by QRISK and JBS2 demonstrated moderate agreement, but differences were pronounced at high CVR. Comparison of these risk scores with DAD equation and CVD incidence is needed to validate their use.

P121
Secondary adrenal suppression and Cushing's syndrome caused by ritonavir boosted effects of inhaled fluticasone, injected triamcinolone and topical clobetasol: a case series

N Marshall, K Gurazada, P Bouloux, B Khoo and M Johnson
Royal Free Hospital NHS Trust, London, UK

The HIV protease inhibitor (PI) ritonavir is used in conjunction with other components of antiretroviral treatments as a pharmacokinetic booster due to its potent inhibition of hepatic cytochrome P450 3A4 (CYP3A4). Co-administration of glucocorticoids metabolized by CYP3A4 with ritonavir leads to accumulation of these glucocorticoids, markedly increasing the risk of iatrogenic Cushing's syndrome and suppression of the Hypothalamic-Pituitary-Adrenal axis (HPA).

We present 11 patients receiving ritonavir-based antiretroviral regimens exposed to intra-articular/epidural triamcinolone (n=6), inhaled/intranasal fluticasone (n=4) and topical clobetasol (n=1). All were referred to the Endocrinology clinic with features of hypocortisolism and Cushing's syndrome. All patients had biochemical evidence of marked adrenal suppression. One or more features of Cushing's syndrome manifested in 7/11. Replacement steroids were required in 10/11 due to prolonged adrenal suppression, 4/10 had complete but delayed recovery of their HPA. Other features included vertebral crush fracture after long term inhaled fluticasone (n=1), and significant deterioration of type 2 diabetes after intra-articular triamcinolone injection (n=1).

The potential interaction with ritonavir and other CYP3A4 inhibitors should be borne in mind by the various specialties prescribing steroids. Fluticasone and triamcinolone should be avoided where possible and alternate steroids should be considered. A secondary option of switching to a non-PI based antiretroviral regimen depending on prior HIV treatment history and resistance should be discussed with the HIV team. An individually tailored, risk-based therapeutic regimen is required with discussion between specialists before prescribing is undertaken.

P122

Antiretroviral therapy can be associated with increase in LDL apolipoprotein-B residence time without increase in LDL-apo-B oxidation and glycation

S Das[1], M Umpleby[2] and M Shahmanesh[3]

[1]Coventry & Warwickshire Partnership Trust, Coventry, UK, [2]University of Surrey, Guildford, UK, [3]University of Birmingham, Birmingham, UK

Background: Longer residence of low density lipoprotein-cholesterol (LDL-C) in plasma can lead to increased oxidation and glycation of LDL-C increasing risk of cardiovascular disease. We investigated relationship between LDL apolipoprotein-B (apo-B) synthesis, catabolism, oxidation and glycation in 12 HIV negative controls and 55 HIV-infected treatment naïve (TN) and patients taking two nucleoside analogues plus either protease inhibitor (PI) or non-nucleoside reverse transcriptase inhibitor (NNRTI) for between 1–6 years.

Methods: Apo-B kinetics was measured following infusion of stable isotope leucine after overnight fast, glycated LDL apo B assay by using a Glyacor kit from Exocell USA and oxidised LDL by Diagenics UK. Insulin Resistance was calculated using Homeostasis Assessment Model (HOMA), serum adiponectin by radioimmunoassay, Cytokines by multiplex bead sandwich immunoassay. Initial comparison between the groups was by one-way ANOVA followed by Dunn's multiple comparison tests.

Results: (Table 1)**:** Mean serum LDL-C, oxidised LDL-C, glycated LDL-C was not different between the groups. Compared to controls LDL apo-B fractional catabolic rate (FCR) were lower in HIV patients (P<0.002) and residence time (RT) was higher in treatment groups (P<0.01). Serum IL-8 was higher in TN and PI group but soluble TNF receptors were not different. Serum adiponectin was lower in the patient group (P<0.003), but HOMA was not. In a linear regression model which included HOMA and IL-8, adiponectin predicted LDL apo-B FCR but not LDL-apo-B oxidation or glycation.

Conclusion: This study demonstrated that antiretroviral therapy can increase LDL apo-B residence time without increasing oxidised and glycated LDL apo-B in plasma, suggesting a different mechanism in HIV patients.

Table 1: Median (Interquartile range)

	Control (n=12)	Cases (n=55)		p-value between groups
		TN (n=15)	PI (n=15)	NNRTI (n=25)	
LDL-C (mmol/l)	1.7 (1.4–2.4)	1.8 (1.4–2.2)	2.5 (1.8–3.1)	2.2 (1.7–2.7)	NS
Oxidised LDL (U/L)	108.9 (86.9–117.1)	105.9 (95.3–119.8)	97.2 (72.3–112.3)	91.2 (72.3–112.3)	NS
Glycated LDL (mg/L)	0.2 (0.1–0.3)	0.3 (0.2–0.3)	0.3 (0.2–0.35)	0.2 (0.19–0.27)	NS
LDL FCR (pools/d)	0.48 (0.3–0.5)	0.2 (0.2–0.3)	0.2 (0.1–0.3)	0.27 (0.1–0.4)	0.002
Residence time hours	2.08 (1.8–2.9)	3.71 (2.7–4.0)	4.11 (2.8–10.5)	3.6 (2.3–6.0)	0.01
IL-8 pg/mL	4.0 (3.3–4.2)	6.0 (4.2–7.5)	5.8 (4.7–6.4)	4.9 (3.9–7.6)	0.015
Adiponectin μg/mL	9.7 (6.9–13.3)	5.4 (4.7–8.5)	5.0 (3.3–6.4)	5.0 (3.1–6.7)	0.003
HOMA	0.9 (0.6 –1.3)	1.3 (0.9 –1.9)	1.4 (1.0 –3.3)	1.3 (0.5–2.0)	NS

P123

Incidence of rash in the 96-week analysis of the pooled Phase III randomised double-blind ECHO and THRIVE trials

C Orkin[1], J Arribas[2], S Hodder[3], HJ Stellbrink[4], S Vanveggel[5], H Deckx[5] and M Stevens[5]

[1]Barts and The London NHS Trust, London, UK, [2]Hospital Universitario La Paz, IdiPAZ, Madrid, Spain, [3]UMDNJ-New Jersey Medical School, Newark, NJ, USA, [4]ICH Study Center, Hamburg, Germany, [5]Tibotec BVBA, Beerse, Belgium

Background: Rash is a commonly- described side effect of HIV therapy. An in-depth investigation of rash in the 96-week analysis of the pooled Phase III double-blind ECHO and THRIVE trials is presented.

Methods: Antiretroviral treatment-naïve adults (N=1368) were randomised 1:1 to rilpivirine (RPV, TMC278) 25 mg qd or efavirenz (EFV) 600 mg qd with TDF/FTC (ECHO) or TDF/FTC, AZT/3TC or ABC/3TC (THRIVE). Adverse events (AEs) were assessed at each visit.

Results: Demographics and baseline disease characteristics were well balanced between treatment groups (overall median age 36 years, 24% female, median baseline viral load 5.0 $\log_{10}$ copies/mL and median CD4 count 256 cells/mm^3). The incidence of rash (grouped term, any grade, regardless of causality) was 12% (n=79/686) in the RPV group vs 26% (n=179/682) in the EFV group (P<0.0001, Fisher's exact test, pre-planned analysis). The most common designated rash diagnoses were**:** rash-not further specified (RPV 6% vs EFV 14%), pruritus (3% vs 5%, respectively), papular rash (0.6% vs 2%) and maculo-papular rash (0.4% vs 2%). No cases of Stevens-Johnson syndrome or toxic epidermal necrolysis were reported in either group. In the RPV group, rash (grouped term) occurred in 13% (66/518) of males and 8% (13/168) of females; in EFV group 26% [134/519] vs 28% [45/163], respectively. Most rashes were mild-to-moderate (0.3% had grade 3 rash in the RPV group vs 0.9% for EFV; none was grade 4) and infrequently led to discontinuation (0.1% for RPV vs 1.8% for EFV) nor were they serious AEs (0% vs 0.3%, respectively). Rash (grouped term) described as 'at at least possibly related to treatment' occurred in 4% (n=29) of patients in the RPV group vs 15% (n=103) of patients in the EFV group (P<0.0001). The incidence of rash was highest in the first 4 weeks, with a lower incidence in the RPV than the EFV group. Few new rash AEs occurred in either group thereafter. Baseline CD4 cell count was not predictive of rash in either treatment group.

Conclusions: In the Week 96 analysis of the pooled ECHO and THRIVE trials, there was a significantly lower incidence of rash (grouped term) and a lower rate of discontinuations due to rash with RPV compared with EFV. Most rashes in both groups were grades 1–2. Few rashes occurred with longer-term treatment.

P124

Comparison of modified Framingham and QRISK2-2011 cardiovascular risk assessment tools in a HIV-1 infected cohort

K Manavi, R McDermott and R Cramb

University Hospitals Birmingham, Birmingham, UK

Cardiovascular disease (CVD) has been reported as an emerging cause of morbidity amongst some of HIV infected patients. A number of CVD assessment scoring tools for identification of patients with high risk of CVD are available. Modified Framingham scoring system is perhaps the most widely used CVD assessment scoring tool. QRISK-2 scoring system has however improved performance over Modified Framingham score in identifying patients with high risk of CVD.

Aim: To compare the degree of agreement of QRISK2 with Framingham for identification of HIV patients with high risk of CVD (>20% in 10 years).

Methods: This was an observational study on the CVD risk score of patients assessed for their cardiovascular risk score in a tertiary HIV centre between February 2011 and January 2012. Patients' clinical and biochemistry information were used to calculate their 10 year CVD risk score on modified Framingham and QRISK2 tools. Patients younger than 50 years were assumed to be 50 years of age on calculation of their CVD scores. In order to include the impact of chronic inflammation in the assessments, all patients were considered to have rheumatoid arthritis for QRISK 2.

Results: CVD scores of 467 HIV infected patients (311 men and 155 women) were assessed. CVD risk score of more than 20% was identified in 33 (7%) patients on QRISK2 and 27 (6%) patients on Modified Framingham

assessments. The inter-rator reliability for risk score of more than 20% between QRISK2 and Modified Framingham was found to be kappa=0.4777 (*P*=0.0005), 95% CI (0.334, 0.620). This showed moderate agreement between Framingham and Q2 scoring systems.

Conclusion: Use of QRISK2 identified 22% more HIV infected patients with significant 10 year CVD risk when compared with Modified Framingham. QRISK2 should be used for CVD risk assessments of HIV infected patients in the UK.

P125

Cardiovascular risk screening in HIV positive patients: high risk patients one year on

S Dakshina, A Beardall, A Kay and C McCormick

Courtyard Clinic, St George's Hospital, London, UK

Background: HIV positive individuals have an increased risk of cardiovascular disease (CVD) and BHIVA recommends annual CVD risk assessments in these patients. Last year we undertook a systematic CVD risk assessment for coronary heart disease (CHD) of an inner-city HIV patient cohort. Using the Framingham cardiovascular risk tool we identified 195/1158 patients with 10-year CHD risk ≥10%. The aim of this study was to evaluate what interventions, if any, were initiated in these patients and if there was any improvement in CHD risk.

Method: A review of medical notes of patients identified with 10-year CHD risk ≥10%; review of correspondence for evidence of GP notification of CHD risk; whether modifiable CVD risk factors were addressed by HIV physicians/GP's and review of repeat Framingham score one year later.

Results: 178/195 notes were available for analysis; 144/178 had a repeat Framingham score. Of those eligible for analysis; 7/144 (5%) women; average age 62yrs and 137/144 (95%) men; average age 56yrs. 43/144 (30%) GPs were informed of the initial CHD risk score versus 101/144 (70%) not informed. In the 'GP informed' group; an average annual drop of 5% in CHD risk was observed in 24/43 (56%); 11/24 (46%) CHD risk remained ≥10%. In the 'GP not informed' group; 52% (53/101) had an average drop of 5%; 32/53 (60%) CHD risk remained ≥10%. In the 'GP informed' group 32/43 (31%) had modifiable CVD risk factors; 12/32 (38%) had evidence of active management by the GP; 8/32 (25%) had a CHD risk reduction after one year; 2/8 CHD risk remained ≥10%. In the 'GP not informed' group 60/101 (59%) had modifiable CVD risk factors; 6/60 (10%) had at least one CHD risk addressed by the HIV clinician/other specialist involved in patient care; 3/6 (50%) had a CHD risk reduction after 1 year.

Conclusion: CVD risk screening is an important component of HIV care. Once a patient with high CVD risk (≥10%) was identified the subsequent management varied and in some no action was taken at all. Communication with GP's was poor (30%). The average annual reduction in CHD risk score in both groups was 5%. Although the GP informed group was smaller more patients had at least one risk factor actively managed and these patients had a greater CHD risk reduction with fewer maintaining a CHD risk ≥10%. All patients with a high CHD risk once identified should have their modifiable risk factors managed appropriately and communication with the GP's should be actively encouraged.

P126

Prevalence, and causes of chronic anaemia in HIV infected patients; implications for survival

K Manavi

University Hospitals Birmingham, Birmingham, UK

The significance of anaemia on survival of HIV infected patients in pre-HAART era has been well documented. Data on the causes of anaemia with modern HAART regimes are scanty.

Aim: To investigate the prevalence and causes of chronic anaemia in a cohort of HIV infected patients on modern HAART regimes.

Methods: This is a cohort study on all HIV infected patients who attended a tertiary HIV centre in 2009 (baseline) and were followed up for more than 14 weeks were included in the study. Anaemia was defined as haemoglobin ≤13 g/dL in men, and ≤11g/dL in women. Information on patients' mortality was abstracted from NHS care records service.

Results: Study cohort consisted of 847 patients (512 men, 335 women). Of those 111 (13%) were anaemic at baseline; 54 (10%) men, and 57 (17%) women. Three women had haemoglobin less than 8 g/dL. Of anaemic patients at baseline, 41 (21 men and 20 women) remained so after a median of 105 weeks of follow up. Common causes of chronic anaemia in those patients included anaemia of chronic disease (n=7), iron deficiency anaemia (IDA) (n=4), and low vitamin B12 (n=4) in men; IDA (n=7), low folate (n=4) and anaemia of chronic disease (n=4) in women.

On follow up, 15 patients including 10 with anaemia at baseline died. Study cohort's mortality rate was 17.7/1000 patients; and 90.1/1000 patients for patients with anaemia at baseline. Causes of death included malignancy (n=4), liver failure (n=2), renal failure (n=2), and AIDS (n=1). Information on causes of six deaths was not available.

On Cox's model, anaemia at baseline [OR: 8.96 (2.21, 36.33); *P*=0.002], and weeks of HIV infection [OR 1.003 (1.000–1.006); *P*=0.025] independently predicted death.

Discussion: Chronic mild anaemia is common in HIV infected patients. Because it may be associated with high mortality, chronic anaemia in HIV infected patients should be fully investigated and treated.

P127

A past history of syphilis is associated with poorer performance in the cognitive domains of memory and learning in HIV-infected subjects on stable cART

J Vera, L Garvey, C Tipple, D Goldmeier and A Winston

Imperial College London, St Mary's Hospital, London, UK

Background: The pathogenic mechanisms underlying ongoing neurocognitive impairment (NC) in HIV-infected individuals on stable combination antiretroviral therapy (cART) are likely to be multifactorial. Concomitant diseases affecting the central nervous system may be one such factor. The aim of this study was to examine if poorer NC performance was present in HIV-infected patients with and without a past history of syphilis.

Methods: From our NC testing database, subjects with a past history of syphilis were matched by age, gender, education and HIV risk acquisition to those without syphilis. NC function was assessed via a computerised battery. All subjects were neurologically asymptomatic HIV- infected on stable cART with plasma HIV RNA<50 copies/mL. NC z-scores were calculated overall (global), for motor domains, memory and learning domains and executive function. NC scores were correlated with history of treated syphilis confirmed by the presence of reactive serum *Treponema Pallidum* enzyme- immunoassay (EIA) and agglutination test (TPPA)and negative rapid plasma regain (RPR).Associations between NC scores and clinical parameters including CPE score, current and nadir CD4 were evaluated using linear regression.

Results: Of 58 (92% male) subjects, 29 had a history of successfully treated syphilis with benzathine penicillin as per local treatment guidelines who were matched to 29 controls by age, level of education and HIV acquisition risk factor. Median (IQR) age was 60 (24–77) years, with current CD4+ count 535 (70–1320) and nadir CD4+ count 190 (10–760) cells/ uL. No statistically significant differences in global, motor or executive function NC parameters were observed between subjects with and without prior syphilis (*P*>0.1 all values, all observations). A trend towards poorer memory and learning scores (mean, SD) was observed in those with prior syphilis (1.4, 0.406) vs no syphilis (1.2, 0.37), (*P*=0.064). In a multivariate model, increasing age and past syphilis were significantly associated with poorer memory and learning domain scores (*P*= 0.001 and 0.045 respectably) whereas CD4+ count and CPE score were not associated (*P*>0.10 all observations).

Conclusion: In this study of neuro-asymptomatic HIV- infected adults on stable cART; history of syphilis was associated with poorer performance in learning and working memory. Further research to better understand the contributions of syphilis and HIV to neurocognitive impairment is warranted

P128

A novel replacement and maintenance regimen for vitamin D deficient HIV positive patients

S Davies, J Freemantle, C Stradling, G Hickinbottom, M van der Linde, J Short and S Taylor

Heartlands Hospital, Birmingham, UK

Background: Data suggest that up to 58% of HIV-infected individuals are vitamin D (VD) deficient (<50 nmol/L). VD deficiency is a risk factor for

osteoporosis in HIV infected individuals and evidence is emerging that other complications such as cancer, chronic infections, cardiovascular, inflammatory and metabolic disorders may be more prevalent in deficient individuals. In HIV negative subjects, supplementation with 50,000 IU of ergocalciferol (D2) a week for 8 weeks has been recommended, although the VD requirements of HIV positive people remains undefined. Our aim was to evaluate a novel in-house VD replacement protocol.

Methods: Adults attending our HIV service between July 2010 and July 2011 were screened for VD deficiency if one of a number of indicator conditions was present (including hypocalcaemia, hypophosphataemia, raised alkaline phosphatase, patient on treatment for mycobacterial disease and efavirenz use). Patients were excluded if they had end-stage renal or liver disease or were pregnant. If deficient, subjects were prescribed 50,000 IU D2 weekly for 12 weeks (correction phase (CP)) followed by the same dose at monthly intervals thereafter (maintenance phase (MP)). VD levels were re-assessed at or around the end of the CP (mean 14 weeks, n=78) and again after at least 12 weeks of the MP (mean 32 weeks, n=53). Serum alkaline phosphatase, phosphate and corrected calcium levels were also monitored. Adherence data was collected through one to one interview with dieticians; lifestyle and dietary advice was also given at this time.

Results: 247 (of 1017) met the testing criteria and of these 238 had VD levels <50 nmol/L. 106 of these received a prescription for weekly D2 and had one or more follow-up VD level. Median plasma VD at baseline was 22.8 nmol/L [inter-quartile range (IQR) 14.8–31.5 nmol/L]; median VD at the end of the CP was 84.5 nmol/L (IQR 63–111 nmol/L), a rise of 61.7 nmol/L ($P<0.05$). After at least 12 weeks of the MP the median VD level was 72.3 nmol/L (IQR 55.4–87.7 nmol/L). 88.4% of patients' VD normalised after the CP and 80.3% remained corrected after 12 weeks of the MP. No patients experienced toxicity or had elevated serum calcium. The main identified reason for ongoing VD deficiency was poor adherence.

Conclusions: Weekly D2 50,000 IU for 12 weeks followed by monthly maintenance corrects VD deficiency in HIV positive patients. Further data is needed to evaluate the long-term efficacy of this protocol.

P129
Comorbidities, cardiovascular risk factors and HIV: disease burden in an urban cohort over 40 years old

A Hartley, M Peterzan and R O'Connell
Newham University Hospital, London, UK

Background: With improved treatment, and near normal life expectancy, challenges in HIV care are shifting. Comorbidities present a challenge: incidence and prevalence are increased due to metabolic effects of the HIV infection as well as antiretroviral (ART) toxicities. ART, drug interactions and polypharmacy add further complexities to patient care. Local population characteristics may impact on comorbidity disease burden eg. diabetes in an African community. Therefore, our aim was to review the comorbidities and polypharmacy of our cohort ≥40 years old, enabling us to facilitate service planning and optimise patient care.

Methods: Inclusion criteria were: age ≥40, alternate clinic attendees in a 1 month period. Data was retrospectively collected by reviewing medical notes and electronic databases.

Results: Of 523 patients aged ≥40 in our cohort, 100 patients were eligible with notes unavailable for 8. Of 92 patients included, 39(42%) were male. The mean age was 48 years (range 40–79 years): 72% between 40–49years, 20% 50–59years, 8% ≥60years. 80% were African, of which 49% were Ugandan. 15% were European, of which 71% were English. 91% acquired HIV heterosexually and 9% were MSM. Mean time HIV positive was 9 years (0–25years). The mean nadir CD4 count was 155 cells/uL. 36% had previous AIDS defining diagnoses. 90% of patients were on ART. 50% and 49% were on PI and NNRTI based regimes respectively. Atripla was the commonest combination (29%). The mean current CD4 count was 470 cells/uL, with 85% viral loads ≤200 copies/uL. 11% were noted to have poor adherence. Regarding cardiovascular risk: 51% had a cholesterol ≥5mmol/L (last lipid profile). 11% were on a statin. Mean HDL was 1.4mmol/L. 20% had hypertension, 9% were smokers, and 5% had diabetes. 5% had established cardiovascular disease. Regarding renal disease: 51% had an estimated glomerular filtration rate (eGFR) between 60–89mLs/min, and 5% <59mLs/min. Other comorbidities included: previous or current psychiatric disorder (21%), peripheral neuropathy (12%), thromboembolisms (8%), lipodystrophy (7%). Excluding ART, 29% were on ≥3 medications, of which 39% were on ≥6 medications.

Conclusion: In this cohort, there is a high prevalence of comorbidities and polypharmacy. With an ageing cohort, we expect this to increase. Implications for our service include increasing awareness and training among physicians, and working in conjunction with other specialities and local GP services.

P130
Factors associated with increased risk of tenofovir-related renal toxicity: case-control study

A Milinkovic[1], M Pavlou[2], A Furco[1], A Copas[2], A Arenas-Pinto[1], JO Connolly[3], S Edwards[1], R Gilson[1] and I Williams[1]
[1]Mortimer Market Centre, CNWL NHS Trust, London, UK, [2]Research Department of Infection and Population Health, University College London, London, UK, [3]Royal Free Hospital, London, UK

Background: Renal toxicity remains a concern in patients receiving tenofovir (TDF) and usually presents as a proximal renal tubulopathy with or without renal impairment or bone disease. We routinely use urine protein creatinine ratio to screen for and tests of proximal renal tubule (PRT) function to confirm TDF renal toxicity. We performed a case-control study to identify factors associated with an increased risk of TDF renal toxicity.

Methods: TDF renal toxicity was confirmed in all cases by tests of PRT function and defined by presence of tubular proteinuria (elevated urine retinol binding protein) and phosphaturia with or without renal impairment. Cases started TDF between 2002 and 2008 and were matched to controls, on a1:3 ratio, by the TDF starting date and duration of TDF treatment. Data was extracted from medical records and clinic data bases. Conditional logistic regression analysis was undertaken to identify factors associated with increased risk of TDF renal toxicity.

Results: 22 cases meeting diagnostic criteria were matched to 64 controls, median duration on TDF: 51 (32–63) months. Cases v controls: Male: 86% v 86%, white: 77% v 70%, median (IQR) age (years): 46 (41–50) v 40 (36–46), median duration (months) on antiretroviral therapy (ART): 81 (41–145) vs 106 (60–154), median CD4 count (10^6/L) at baseline: 210 (130–330) v 260 (160–430), median (eGFR) mL/min/1.73m^2 (at baseline: 100 (89–118) v 104 (92–125).

On univariate analysis, older age, co-morbid conditions (CVD, hypertension, diabetes or cirrhosis), prior AIDS diagnosis and chronic kidney disease (CKD) stage 2 or greater were associated with increased risk of TDF renal toxicity. Concomitant use of PIs, lower CD4 count nadir, lower weight, ethnicity and gender were not associated. On multivariate analysis, older age (per 10 year increase) (OR=3.24, CI (1.45, 7.21), P=0.004), and CKD stage 2 or greater (OR 15.11, CI (1.96, 116.1), P=0.009) were identified as independent risk factors for TDF renal toxicity.

Conclusions: Older age and pre-existing CKD are independent risk factors for TDF renal toxicity. In contrast to previous studies we did not identify concomitant PI use as a risk factor. With an ageing HIV population screening for risk factors prior to TDF initiation, and close monitoring of renal function remains important.

P131
Are traditional risk factors associated with cardiovascular events in HIV positive subjects?

R Daly, J Freemantle, G Koh, C Stradling, M van der Linde and S Taylor
Birmingham Heartlands Hospital, Birmingham, UK

Background: There is concern that HIV may act as an independent risk factor for cardiovascular disease. The reasons are debated. In practice, it is often difficult to know the significance of individual risk factors, thus, a cardiovascular risk (CVR) calculator is employed to assess cumulative risk. NICE recommend primary prevention in those who have a CVR of ≥20% over 10 years. QRISK2, a UK based assessment tool, is validated for use in non-HIV populations. These tools do not take HIV status into account and have not been validated in the HIV positive population. We reflected on our own cohort to assess whether patients who have been diagnosed with ischaemic heart disease (IHD) had traditional risk factors pre event and compared risk factors with that of our HIV positive non IHD population.

Methods: In our department, QRISK2 has been used to assess CVR in those without known cardiovascular disease since 2007. Of 1017 registered patients QRISK2 had been used to assess 352 patients (Non-IHD group) and data on traditional risk factors were recorded. We identified all patients who have had

a significant IHD event, defined as angina with CAD confirmed on angiogram, MI, angioplasty or CABG (n=19). We retrospectively calculated pre-event QRISK2 scores for those who have had a first IHD event. Complete data was available for 15 patients (IHD cohort). We have also reported on CD4 counts and use or non-use of antiretroviral therapy in these groups. Categorical variables were compared by Fisher exact test and continuous variables by Student t test or Mann–Whitney U-test as appropriate.

Results: Of the IHD group, 95% were white and 95% male. Of the non-IHD group, 54% were white and 74% male. Anti-retroviral use or non-use and CD4 cell count were similar between groups.

Risk Factor	IHD n=15	Non-IHD n=352	*P*-value
Age	50 years	41 years	<0.001
Smoking	12 (80%)	95(27%)	<0.001
Central obesity	11(73%)	128 (36%)	0.006
Family history IHD	11(73%)	74 (21%)	<0.001
Hypertension	6(40%)	65(18%)	0.04
QRISK2 median (IQR)	23% (12–33%)	2% (1–6%)	<0.001

Conclusion: In our clinic cohort, traditional risk factors were associated with cardiovascular events and reflected in QRISK2 scores. Despite concern about HIV independently increasing cardiovascular risk, in practice a QRISK2 score was higher in IHD group.

P132
Cardiovascular risk scores in young adults with perinatally acquired HIV infection

S Johnston[1], MP Rhoads[1], S Nichols[2], S Fidler[1] and C Foster[2]
[1]Imperial College London, London, UK, [2]Imperial College NHS Trust, London, UK

Background: Adults infected with HIV have a 1.5 risk of cardiovascular disease (CVD) compared to uninfected controls and are actively managed to address CVD risk factors. BHIVA guidelines recommend monitoring lipids and CVD risk using the Framingham Risk Score (FRS) assessing 10 yr risk of coronary heart disease (CHD). The FRS is validated for ages 30 to 74 in Caucasian populations. Perinatally infected adolescents (PaHIV) have increased rates of dyslipidaemia and endothelial dysfunction, with frequent exposure to PIs and/or Abacavir (ABC) that is often intermittent, throughout cardiovascular development. Currently there is no validated tool assessing CVD risk in this population. We compared the FRS and DAD risk score in our transition cohort.

Method: Demographic data included age, gender, most recent non-fasting cholesterol differential, blood pressure (BP), diabetes and smoking status, and calculated FRS. DAD 5 yr risk score of CHD was calculated using additional data (time on indinavir/lopinavir and current use of ABC). BMI, ethnicity, doctor diagnosed lipodystrophy (dLD), HIV viral load (VL), CD4 count and nadir, hepatitis B and C co-infection were recorded. Statistics**:** Chi-squared, Mann–Whitney, Kruskal-Wallis and Kendall's correlation were used. VL was omitted from correlation with DAD risk due to confounding.

Results: 81 PaHIV young adults were included; median age 20 (IQR 18, 22); 64 (79%) Black African; 44 (54%) female; 18 (22%) ever smoked; 31 (38%) are on a PI and 13 (16%) on ABC. Median results**:** BMI 22.6 (IQR 20.7, 24.6); systolic BP 118.5 (IQR 110.5, 127.8); total cholesterol 4.0 (IQR 3.4, 4.7); HDL 1.2 (IQR 1.0,1.5); non-HDL 2.9 (IQR 2.2, 3.3), 6 (7.4%) had LDL>95th centile (3.3mmol/L). The median DAD score (N=76) was 0.57% (IQR 0.34, 0.82) and FRS (N=74) varied from 1 to 4%, 50 had 1% risk; 24 above 1%. Factors not included in the calculation were compared to the FRS or DAD score. dLD was associated with a higher mean rank DAD score (*P*=0.035) and CD4 nadir was negatively correlated with increasing DAD (–.204, *P*=0.004). There were no significant associations with the FRS > 1.

Conclusions: CVD scores, not validated for young adults, produce very low risk projections. Extrapolation from adult studies suggest that PaHIV infected adults may have a particularly high CVD risk but established tools are inadequate to estimate risk. Alternative methods are urgently required such as imaging and other inflammatory markers- currently under investigation.

P133
Outcomes of first raised ALT in HIV infection

C Lee[1], T Barber[2], E Devitt[2], HM Yapa[2], M Boffito[2] and M Nelson[2]
[1]Imperial College London, London, UK, [2]St Stephen's Centre, Chelsea and Westminster Hospital, London, UK

Background: Liver blood tests including alanine transaminase (ALT) are routinely monitored in patients living with HIV infection. They can be important in the diagnosis and monitoring of much liver pathology including viral hepatitis, drug hepatotoxicity, biliary pathology or non-alcoholic steatohepatitis. Abnormal results may cause alarm or necessitate recall/further investigation. Patients with low level abnormalities are often reassured that these are not significant and should settle. We aimed to describe the outcome of the first abnormal ALT result in otherwise well HIV+ patients.

Methods: Between June 2009 and May 2011 we identified 955 HIV positive patients with a raised ALT ≥50U/L who were asymptomatic of any liver disease. Patients with ALT between 50–59U/L represented over 50% of these and were excluded, as were those without at least 1 subsequent ALT recorded. We undertook an analysis of the first consecutive 100 subjects. Laboratory results, drug history and clinical records were examined to determine the clinical significance of the rise. Demographic and HIV related data were also collected.

Results: 86/100 were between 60–99U/L (within ACTG grade I). Only 15 were > 99U/L (10 between 100–199 U/L; 3 between 200–399U/L and 2 ≥400U/L). 92/100 normalised by time of next test; 6 still raised at the time of audit. Of those that resolved, median time to next normal test was 4 months (IQR 2–5 months) and there were no further abnormal results within 12 months. Only 12 ultrasound scans and 1 hepatitis screen was done. From these, only 3 new diagnoses were subsequently established**:** 1 gallbladder polyp, 1 gallstones and 1 fatty liver. 7 had chronic viral hepatitis. In the remaining 90 the raised ALT normalised without a known cause.

Conclusions: The vast majority of abnormal ALTs had normalised by the time of subsequent testing. Only 3 resulted in a new diagnosis. Currently the American Gastroenterological Association recommends simple, non-invasive serological tests as first line investigations and only suggests more invasive tests or complex imaging as dictated by the clinical picture or if the rise is chronic (>6months). In view of this and the result of this audit, it would be sensible to suggest that asymptomatic patients with a raised ALT of 60–99U/L continue to be reassured and ALT repeated at next visit to ensure normalisation. Hepatitis screening/imaging is only advisable if subsequent ALT remains elevated.

P134
An integrated approach to blood pressure control in HIV

G Noble, I Reeves, R Jackson and L Abrahams
Homerton University Hospital, London, UK

Background: As the prognosis for HIV positive individuals improves there is an increase in age related co-morbidities such as cardiovascular disease (CVD). In our predominately black African HIV population, hypertension is a common problem that can require specialist input in complex cases. The aim of this study was to evaluate an in-reach hypertension clinic, the impact it has on patient outcomes and adherence to national standards.

Methods: 36 patients with hypertension clinic appointments were evaluated. Demographics, GP involvement, co-morbidities, CVD risk, estimated glomerular filtration rate (eGFR) by MDRD, further investigations, current blood pressure and changes to therapy were recorded. These patients were issued with a survey designed to evaluate the clinic.

Results: Of 36 patients, 32 attended at least one clinic appointment, of whom seventeen were women (53%). Mean age was 47 years (31–79). The majority were black African (79%). Over two thirds (69%) had a previous diagnosis of hypertension that was initially managed in general practice. Five (16%) had existing renal disease with eGFR of less than sixty. In line with NICE hypertension guidelines all patients were given appropriate lifestyle advice, underwent full cardiovascular risk assessment and screening for diabetes. 44% of patients were referred for echocardiogram, 43% of these showed an abnormality. In 84% of cases this was left ventricular hypertrophy.

Anti hypertensive medications were introduced or changed in 85% of patients. Blood pressure reduction was seen in most patients attending the clinic with 63% achieving their target BP. The average decrease seen in the 10 year cardiovascular risk was 39% with a range of 8% to 74%.

All patients rated the clinic as good or great on all aspects and were happy with the care they were receiving.

Conclusions: Hypertension is an increasing problem in the ageing HIV population. The introduction of this clinic has improved patient outcomes in those with hypertension. The majority were poorly controlled and a third were newly diagnosed. Medication change occurred in a large majority suggesting the value of expert assessment. Additional cardiac or renal disease was highlighted through further investigation. The service is provided in a multidisciplinary setting which is acceptable for patients and healthcare professionals.

P135
CD8 T-Cells in HIV related neurocognitive impairment (NCI)

T Rawson[1], S Mandalia[1], A Pozniak[2], P Kelleher[1], B Gazzard[2] and T Barber[2]
[1]Imperial College London, London, UK, [2]St Stephen's Centre, Chelsea and Westminster Hospital, London, UK

Background: There is evidence to show association between factors such as plasma viral load (pVL) and CD4 lymphocytes in the pathogenesis of HIV related NCI. There is still, however, little evidence in the literature regarding CD8 lymphocytes in this process. Multiple studies have suggested CD8 lymphocytes may be a possible marker for inflammation, a suggested contributing factor to NCI. Therefore we undertook a preliminary analysis to investigate associations CD8 lymphocytes with NCI in our cohort.

Methods: We retrospectively audited data from our HIV NCI screening clinic, open for referral to all HIV infected adults. All patients were screened for depression (PHQ9) and anxiety (GAD7) prior to neurocognitive testing. Patients at risk of NCI were identified using the International HIV Dementia Scale (IHDS≤10) and Brief NeuroCognitive Screen (BNCS). This includes Trailmaking A&B (TMA/TMB) and Digital Symbol Testing (DST). The Everyday Memory Questionnaire (EMQ) was used as a subjective assessment of memory. HIV associated laboratory parameters from the time of neurocognitive testing were collected from our electronic patient database. Statistical analysis was performed using Mann Whitney testing.

Results: We examined 34 patients after excluding those with depression and anxiety. 5/34 had an abnormal total EMQ score (average >2.07), with 3 scoring abnormally in retrieval (R>2.68) and 3 in accrual (A>1.89) components. 10/34 scored ≤10 in IHDS, but only 4/34 scored significantly in the BNCS (>1 standard deviation away from the mean in at least 1/3 tests). In total 12/34 patients had an abnormal IHDS and/or BNCS. Comparing these patients to the rest of the cohort we observed no significant difference between the current median CD8 (969 vs. 886 *P=0.632*) or median peak CD8 (1479 vs. 1234 *P=0.607).* Median CD4:CD8 ratios were both 0.5 (*P=0.957)* and nadir CD8 was actually lower in the abnormal group (422 vs. 531 *P=0.234)*, but not significantly so.

Conclusion: In this small group we have shown no correlation between HIV related NCI and current, peak or nadir CD8 counts, or CD4:CD8 ratio. It may be worth further considering the role of inflammation and CD8 T cells in larger neurocognitive studies to more clearly determine the role of CD8 T cell levels in the pathogenesis, or for the diagnosis and monitoring, of HIV related NCI, whilst also considering the role of other CSF or plasma inflammatory biomarkers.

P136
Total hip arthroplasty in HIV-infected patients: what are the risk factors?

E Jackson[1], A Middleton[2], D Churchill[2] and K Walker-Bone[1]
[1]Brighton & Sussex Medical School, Brighton, UK, [2]Brighton & Sussex University Hospitals NHS trust, Brighton, UK

Background: Rheumatic manifestations have been reported in HIV infection since 1987. The majority of studies report on inflammatory rheumatic diseases and we have found no epidemiological studies of osteoarthritis and HIV. In the UK, total hip replacement (THR) and resurfacing surgery are generally performed for severe osteoarthritis and data from the National joint registry suggest that the mean age at THR is 78.5 years. We observed that a growing series of HIV patients in our cohort needed to undergo hip surgery and therefore undertook a case-control study to explore the demography and risk factors for THRs in HIV-infected patients.

Methods: This was a case-control study. Our database was interrogated for all patients who had undergone hip surgery (THR or resurfacing) excluding trauma. For each case, 5 age- and gender- and ethnicity-matched controls were selected from the database. Case records were pulled for all cases and controls and data extracted on demographic factors, known risk factors for osteoarthritis (OA) and known risk factors for other pathologies at the hip including avascular necrosis.

Results: In total, 13 patients (12 male and one female) were identified who had undergone hip surgery from the cohort of 1850. Median age at time of surgery was 47.7 years. Pre-operatively the radiographic diagnosis was OA among 9/13 (69%) and avascular necrosis among 4/13 (31%). Exploring the risk factors, the most significant factor associated with cases who had undergone surgery was exposure to glucocorticoids ($P<0.001$). When analyses were confined to those with only radiographic OA pre-operatively (excluding the AVN group), again exposure to steroids was the single most strongly associated factor ($P<0.001$). Cases were also found to have higher maximum serum LDL compared with controls ($P=0.04$) and tended towards higher maximum cholesterol ($P=0.06$). No significant associations were seen with: cigarette smoking, alcoholism, testosterone, chemotherapy, radiotherapy, statins, CD4+ cells, viral load, duration of HIV infection or duration of cART.

Conclusions: In this cohort (median age 47 years), hip surgery was uncommon as would be expected for this age group. When required, the most significant risk factor was exposure to steroids suggesting that the mechanism underlying is more likely avascular necrosis than OA, even though the end-stage radiographic appearanace was osteoarthritis.

P137
Fracture risk in a cohort of HIV positive patients attending an inner-city HIV treatment centre

A Basra[1], M Joshi[1], P Saigal[2], H Webb[2], C McCormick[2] and M Pakianathan[2]
[1]St George's University of London, London, UK, [2]St George's Healthcare NHS Trust, London, UK

Background: HIV+ individuals have reduced bone mineral density (BMD). The European AIDS Clinical Society suggests there is a 60% prevalence of osteopenia in these patients. These guidelines suggest a DXA scan should be considered in patients with one or more risk factors, although this is yet not routinely undertaken in clinical practice. We describe fracture risk and factors in HIV+ individuals which are associated with a higher risk of fracture compared to those at lower risk.

Method: Cross sectional study. A total of 1199 HIV+ individuals in an inner city outpatient HIV clinic underwent annual health assessments. These included a review of various aspects of health including fracture risk. Those <40 years of age and those with missing data required in order to calculate a FRAX score (10 year probability of sustaining a major osteoporotic fracture) were excluded. Depending on their FRAX score, individuals were classified into 3 categories: Lifestyle advice and reassure (A), Measure BMD (B) and Treat (C)).

Result: 579/1199 (48%) were eligible for analysis. There were 504 (87%), 68 (12%) and 7 (1%) in categories A, B & C respectively. Mean age was 49.6 years (range 40 to 83). 213 (37%) were females and 366 (63%) male. Age, BMI and gender were similar across all 3 categories. 7% of individuals in category A had either a previous fracture, or a previous fracture and a parent with a past hip fracture, compared to 77% in category B and 100% in C. 44% in category B were smokers versus 16% in category A. In Category B 21% of people had glucocorticoid use compared to 6% in category A. 9% of patients in category A and 18% of patients in category B drink >3units of alcohol per week. 3% of patients in category A and 7% in category B suffered from rheumatoid arthritis.

Conclusion: A history of fractures is the biggest factor in driving future fracture risk in HIV+ individuals. This is followed by glucocorticoid use and smoking. The study does not take into account the effects of tenofovir and protease inhibitors which have been suggested to contribute to fracture risk. A re-audit of the patient cohort is recommended to see if interventions targeted at those who require treatment or assessment will have reduced their fracture risk. Those in category B and C will now undergo DXA scans.

P138
Monitoring renal function in HIV infection: an audit to compare practice with the European AIDS Clinical Society guidelines

A Wolujewicz and M Kapembwa
North West London Hospitals NHS Trust, London, UK

Background: Chronic kidney disease is common in HIV infection. Up to 40% individuals have renal impairment in some HIV-infected populations. As

individuals grow older on antiretroviral therapy, the prevalence of this non-infectious co-morbidity will continue to rise. It is essential that renal function testing becomes routine practice to trigger early intervention before disease progresses. This may improve quality of life and reduce costs associated with renal replacement therapy. Until recently, there have been few guidelines on how best to do this. The European AIDS Clinical Society (EACS) has published guidelines on monitoring renal function in HIV infection. It is recommended that urinalysis, the glomerular filtration rate, measurement of blood pressure and urine protein to creatinine ratio (uPCR) or urine albumin to creatinine (uACR) are used to do this.

Methods: Case notes of patients attending a single HIV outpatient clinic in 2010 were reviewed retrospectively. Information collected included demographics, medication history, urinalysis, glomerular filtration rate and measurement of blood pressure and urinary proteins. Practice was compared with standards recommended by EACS.

Results: 50 patients were included**:** 50% male, 54% black African, median age 42.5 years (range 21–74), median CD4 count 421.5 cells/μL (range 136–1194). All individuals had a viral load greater than 50 copies/mL. 84% were on antiretroviral therapy. 26% had some degree of renal impairment. 84% had urinalysis performed in the previous year. 56% urinalysis showed proteinuria. 66% had a glomerular filtration rate measured in the previous year. 92% had a blood pressure recording documented. 6 patients did not have uPCR or uACR measured to further quantify proteinuria detected by urinalysis. 5 individuals had an abnormal uACR and a normal uPCR simultaneously.

Conclusion: The monitoring of renal function in HIV infection is not universal. Current guidelines should be reinforced to facilitate improvement. Surprisingly, it is suggested that uACR is a more sensitive marker of renal disease than uPCR. uACR is more consistent with glomerular damage and so measuring uPCR alone risks not detecting glomerular disease. Measuring both uACR and uPCR may help to better establish the type of renal disease in HIV infection and in selection of individuals for renal biopsy. The value of uACR and uPCR measurement in screening for renal disease in HIV infection needs further evaluation.

P139
Mortality in the HAART era at an urban teaching hospital

M Toby, K Conway, S Lucas, N Larbalestier and R Kulasegaram
St Thomas' Hospital, London, UK

Background: Mortality in HIV patients has decreased with the advent of HAART. When deaths occur they tend to be in late presenters with low CD4 counts, in those who test positive then disengage from care and in those with non HIV related illnesses or malignancy.

Method: We analyzed the deaths over a 1 year period in an inpatient HIV cohort in a large teaching hospital in London using hospital records. Cause of death was defined as AIDS defining or non AIDS defining and salient features were collected.

Results: In an inpatient cohort of 191 patients from August 2010 to August 2011 there were 12 deaths (6.7%). 7 out of 12 had an AIDS defining illness as the primary cause of death; 3 had presumed *Pneumocystis jiroveci* pneumonia (PCP), 3 had a malignancy; (2 had non Hodgkins lymphoma and 1 had Burkitts lymphoma)and 1 had progressive multifocal leukoencephalopathy (PML). 4/7 of these patients were late presenters, 2 /7 had been diagnosed several years before but disengaged from HIV services and 1/7 was engaged in HIV care. Median CD4 count of the group was 33 cells/$mm^{3.}$ 6/7 were not on HAART at presentation. 5/7 were classified as Black African, 1/7 was White British and 1/7 was classified as Asian other. The average age was 46 years, 5 were male and 2 were female.

Of the remaining 5 non AIDS deaths, 4 occurred in patients who were already on HAART. Median CD 4 count was 235 cells/mm**.** Average age of this group was 50 years .All were male. 4/5 were White British and 1/5 was Black African. One death was due to severe chronic obstructive pulmonary disease, 2 were due to non AIDS malignancy; (cerebral neuroendocrine tumours and disseminated malignancy) .One death was due to sepsis secondary to peritonitis and the final was due to a cerebral haemorrhage.

Conclusion: Of our overall HIV cohort of 2800 patients, 0.43% (12/2800) died over a 1 year period. This is comparable to the Swiss HIV cohort where 5% of (453 /9053) participants died between 2005 and 2009. 85% of these deaths were not directly HIV related compared to 42% (5/12) of our cohort. 50% (6/12) of our deaths were in patients who were not receiving HAART despite its widespread availability in the UK .Of these, 33% (2/6) were in patients who tested HIV positive then disengaged from HIV services. This group of patients lost to follow up continues to represent an important group to which more services could be targeted.

P140
Descriptive case series of eight HIV positive patients with foot stress fractures

S Chinthapalli, S Mandalia, R Jones, M Bower and M Nelson
Chelsea and Westminster Hospital, London, UK

Background: HIV has been associated with reduced bone mineral density (BMD); a major risk factor for bone fractures. The prevalence of osteoporosis is up to three times higher than in HIV-negative individuals [1]. ARV therapies have also been implicated in reduced BMD. We report our experience of foot stress fractures at a tertiary HIV centre.

Methods: Review of MRI Foot reports of HIV positive patients between 2007–2011 identified 45 images, with eight patients having sustained stress fractures. Electronic records were reviewed.

Results: All eight patients were male between the ages of 39 – 65 years (mean = 49 years). Fractures sustained affected the metatarsal bones (86%) and/or cuneiform bones (14%). 38% of patients sustained more than one foot fracture. The commonest bone fractured is the second metatarsal (36%). The mean CD4 count was 336 cells/μl (range = 89–500 cells/μl) and all patients except one (viral load 1277) had undetectable viral loads at time of fracture.BMD scans showed none of the patients had T scores $\leq$ 2.5 for spine or femur and the mean Vitamin D level was 67nmol/l. The only ARV therapy common to all eight patients is the current or previous use of tenofovir. The mean duration of tenofovir use was 4.7 years (range = 0.6 – 9.9 years). The mean time interval between the start of tenofovir and sustaining the stress fracture is 5.4 years (range = 0.6 – 10.2 years). Only one patient had history of trauma documented at the time of fracture.

Conclusions: The findings suggest that stress fractures of the foot in individuals with HIV may be linked to variables such as ARV exposure. Interestingly, fractures appeared independent of low BMD and high foot impact activities in the main. All the patients in this case series were on tenofovir prior to fracture. However, this finding may be biased by the fact that tenofovir is a commonly used ARV within our centre. Further exploration is required with greater patient numbers. Data regarding antiretroviral therapy and preceding trauma should be further corroborated with patient surveys. Investigation of other potential variables in fracture mechanisms is also warranted.

P141
Steroids strike again – but where is the warning?

K Conway, D Williams, K Walker-Bone and D Churchill
Lawson Unit, Brighton, England

There are 7 case reports in the literature of iatrogenic Cushing's syndrome with secondary adrenal suppression after intra-articular injection with triamcinolone acetate in patients on ritonavir. However there is no mention of this interaction in the British National Formulary, Summary of Product Characteristics for either drug, or the University of Liverpool HIV drug interaction website.

We describe two patients who presented with clinical features of Cushing's syndrome and were found to have marked adrenal insufficiency following injections of triamcinolone.

Case 1: A 50 year old woman with well controlled HIV infection on Kivexa / darunavir / ritonavir, presented with a 4 week history of postural dizziness, lethargy, weight gain, facial swelling and had noticed difficulty getting up from a chair. She had a history of seronegative arthropathy, and had received a triamcinolone injection into both shoulders and trochanteric bursae 2 weeks before the onset of symptoms. She had cushingoid facies, with truncal obesity, abdominal striae, oral candida and proximal myopathy. A random glucose was 16.2mmol/L, her random cortisol was low at 30nmol/L and a short synacthen test showed adrenal insufficiency (Baseline cortisol 14nmol/L, 30mins 242nmol/L, 60mins 302nmol/L). She required steroid replacement therapy, and insulin to control her hyperglycaemia.

Case 2: A 58 year old lady attended for routine HIV monitoring blood tests and reported weight gain and increased appetite. She was HIV positive and stable on treatment with Truvada / atazanavir / ritonavir. Her CD4 count was noted to have fallen to 118 (22%) from 398 (28%), her HIV viral load remained <40copies/mL. On review it was noted she had gained 2.5kg in weight and appeared Cushingoid. She had received an intra-articular injection of triamcinolone acetate into her right knee 4/52 earlier. A random cortisol was low at 67nmol/L and a subsequent short synacthen test revealed adrenal insufficiency (Baseline 210nmol/L, 30mins 360nmol/L, 60mins 441nmol/L).

3 weeks later, her adrenal function had recovered without steroid replacement therapy.
Triamcinolone injections should be avoided in patients taking ritonavir. There are no case reports of a similar interaction between methylprednisolone and ritonavir, which may be a safer alternative to triamcinolone.

P142
Can antiretrovirals increase the risk of venous thromboembolism in HIV-1 infection?

A Scourfield, L Waters, T Martin, S Mandalia, M Bower, B Gazzard and M Nelson
Chelsea and Westminster Hospital, London, UK

Background: Venous thrombo-embolism (VTE) includes deep vein thrombosis (DVT) and pulmonary embolism (PE). Increased rates of VTE have been reported in HIV infected individuals. Whilst there is often a high prevalence of classical risk factors, HIV-specific or antiretroviral related mechanisms have also been proposed. We performed a retrospective analysis of our HIV infected cohort to identify risk factors for DVT/PE.
Methods: Individuals with a new diagnosis of DVT or PE were indentified via electronic clinical codes from 1st January 2008 to 31st April 2011. A case notes review was performed to identify demographics, antiretroviral (ARV) history and the presence of secondary risk factors for DVT/PE. The total exposure for each ARV during the study period was calculated for this group using pharmacy records. This data was compared to the total exposure of the cohort of each ARV for the same defined period.
Results: We identified 25 cases of new VTE, 16 with PE, 7 with DVT and 2 with both. 21 (84%) were male with a median age of 45 years (IQR 39–56). In terms of ethnicity, 18 (72%) were Caucasian, 5 (20%) black African, 1 (4%) Asian and one other. Median duration of HIV infection was 7 years (IQR 4–15). Eighteen were stable on ART with HIV-1 RNA <50 copies/mL, three were on ART with detectable HIV-1 RNA and 4 naive to therapy. No secondary risk factor was identified in 12 (44%) cases, 5 (20%) had active malignancy, 5 (20%) had systemic infection (Crypto Men=2, PCP=1, MAC=1 TB Men=1), 2 (8%) had recent surgery, 1 (4%) was pregnant and 1 (4%) had previous DVT/PE. None were injecting drug users. Antiretroviral data are shown in table 1.
Conclusions: Our data demonstrates almost half of those presenting with a new VTE had no identifiable risk factor which may suggest HIV or ART as contributing factors. Due to the small number and presence of secondary risk factors it was not possible to identify any statistically significant ARV agents but maraviroc was the most strongly associated with VTE.

	Subjects with DVT/PE (n=25)			Cohort (n=5,125)		
Drug	Number exposed	% of group	Proportion of total ARV exposure	Number exposed	% of group	Proportion of total ARV exposure
TDF	20	80	19.7%	4074	79	23.6%
ABC	11	44	8.6%	1540	30	7.7%
FTC	20	80	17.5%	3603	70	19.7%
3TC	13	52	11.9%	1996	39	10.3%
EFV	12	48	11.5%	2494	49	14.3%
TAZ	3	12	3.0%	1027	20	5.6%
MVC	6	24	6.4%	70	1	0.3%
NVP	2	8	3.3%	642	13	4.1%
SQV	1	4	0.5%	249	5	1.3%
AZT	3	12	1.4%	627	12	2.8%
DRV	6	24	7.1%	797	16	3.4%
ETR	5	20	4.3%	332	6	1.4%
RGV	7	28	4.2%	242	5	1.1%
T20	1	4	0.4%	19	0.4	0.1%
DDI	1	4	0.1%	271	5	1.2%
LPV	2	8	1.2%	625	12	3.2%

P143
HIV meningoencephalitis secondary to compartmentalised viral escape with detection of X4 tropic virus in CSF

S Singh, W Tong, J Mullen, S O'Shea and R Kulasegaram
Guy's & St Thomas' NHS Trust, London, UK

Background: There are reports of HIV viral rebound causing meningoencephalitis, either after discontinuation of antiretroviral therapy (ART) or due to compartmentalised viral escape. Treatment involves tailoring an ART regimen aimed at maximising cerebrospinal fluid (CSF) penetration. Such regimes often include maraviroc as studies have shown therapeutic drug concentrations in CSF, and HIV in this compartment is commonly assumed to be R5 tropic. We present a case of HIV meningoencephalitis due to viral rebound where both plasma and CSF virus were predicted to be X4 tropic.
Case: A 30 year old man was admitted with a 10 day history of headache, vomiting, and vertigo. He was diagnosed with HIV in 2009 and had been on ART for 2 years although had never achieved good virological suppression. He developed M184V, K103N and V179D resistance mutations due to poor adherence to Atripla, and had been switched to tenofovir, abacavir and boosted atazanavir 9 months previously. On examination, he had bilateral cerebellar signs. Magnetic resonance imaging (MRI) of the brain showed extensive patchy high signal change. Lumbar puncture had a normal opening pressure; CSF analysis showed a white cell count of 168 (95% lymphocytes, 5% polymorphs), protein 5.59g/L and glucose 3.3 mmol/L. Parallel testing of plasma and CSF for HIV viral load showed 7358 copies/mL (3.87 log) in plasma compared with 2.1 million copies/mL in CSF (6.31 log) suggesting compartmentalised viral escape. His ART regime was changed to Truvada, boosted darunavir and maraviroc to improve CSF penetration. Subsequently, both plasma and CSF viruses were predicted to be X4 tropic using a Geno2pheno clonal algorithm (FPR = 4.8%). Viruses from plasma and CSF were phylogenetically similar, suggesting that inadequate penetration of ART into the CSF was responsible for the discordant viraemia.
The patient made a slow recovery. Lumbar puncture was repeated on day 22 of admission and showed CSF and plasma HIV viral loads of 2,140 copies/mL and 336 copies/mL respectively.
Discussion: This case highlights the importance of considering compartmentalised viral escape as a differential in patients presenting with neurological features. It also challenges the assumption that virus in CSF is likely to be R5 tropic. Discordance between plasma and CSF virus has been shown in some studies, and although the presence of X4 virus in CSF is less common, this case illustrates that tropism testing of HIV in CSF may be clinically relevant.

P144
Use of a novel online cortical test in HIV infected subjects undergoing screening for neurocognitive impairment

H Tam[1], D Ratcliffe[2], A Margetts[2], C Trustram Eve[3], A Pozniak[4], M Boffito[4], P Catalan[2], B Gazzard[4], S Mandalia[1] and T Barber[4]
[1]Imperial College London, London, UK, [2]Department of Psychological Medicine, Chelsea and Westminster Hospital, London, UK, [3]foodforthebrain.org, Oxford, UK, [4]St Stephen's Centre, Chelsea and Westminster Hospital, London, UK

Background: Incidence of HIV associated dementia has declined but cohorts report persisting milder forms of neurocognitive impairment of unknown clinical significance. HIV associated neurocognitive disorders (HAND) is a spectrum of impairment diagnosed by neuropsychological testing and interference in daily functioning. Existing screening tools concentrate on subcortical features such as psychomotor speed, executive functioning, and memory. HAND may have both subcortical and cortical components so additional cortical testing, especially in an aging HIV infected population, may enhance detection rates. Cortical testing may also prove beneficial in detecting non-HIV-related causes of dementia such as Alzheimer Disease (AD). An online screening test for cognitive impairment recently made front page news in the UK for use in those aged 50–70. We aimed to pilot this online test in our HIV cohort presenting for screening for HAND.
Methods: Subjects from our HIV Neurocognitive Clinic were given details about the foodforthebrain.org online cognitive function test (CFT). Our standard tests include depression (PHQ9) and anxiety (GAD7) questionnaires as well as Brief Neurocognitive Screen (BNCS), International HIV Dementia

(IHDS), and Everyday Memory Questionnaire (EMQ). Results of the CFT were emailed in and compared with HIV neurocognitive screening results. Normal scores were defined using standard criteria for each test.

Results: 7/31 patients (median 46 years, range 37–69) completed the CFT (mean score 46, range 17–71). 3/7 showed impairment on the CFT. Of those, 2/3 were impaired on components of the BNCS as well as the IHDS, and 1/3 was impaired on the EMQ. Interestingly, the person scoring lowest on the CFT had no impairment on any of our neurocognitive screening tests.

Conclusions: It may be worth incorporating a cortical test into screening for neurocognitive problems in HIV infected patients. Our online test was only taken up by a small number of subjects. Reasons for this are not clear and would be worth investigating. Use of an online test has logistical and financial benefits. So far, we have only been able to determine acceptability and utility of this test in a small group where there appears to be a correlation between an abnormal cortical test result and our clinic based subcortical screening tests. We aim to provide more online neurocognitive testing for our patients in future.

P145

High incidence of overweight and obesity in a South London HIV clinic

H Tate and C McCormick

St George's Healthcare NHS Trust, London, UK

Background: Since the advent of HAART malnutrition has receded, and a problem of overweight and obesity is emerging amongst the HIV positive. There is little UK data on the true extent of the problem. Better understanding of obesity in the HIV positive population could lead to better health promotion strategies.

Method: Body Mass Index was collected on all clinic attenders in 2010. BMI data were analysed by gender and ethnicity. Here we present data for the clinic's 3 major ethnic groups as numbers in other groups were too small to be significant. A statistical analysis (independent t test) was also carried out to determine whether those on ART had higher BMIs than those not on treatment.

Results: A total of 1040 measurements are presented. High levels of overweight and obesity were found using WHO BMI classification. Obesity rates were higher in women overall, and highest in Caribbean women (although total number was small for this group). Black African women had an obesity rate of 41%, similar to the level of obesity of 38% in general female African population in England (Health Survey for England 2004). Rates of underweight (BMI< 18.5) are not presented, but accounted for less than 2% in all groups except white women (8.5%).

Independent T test showed no statistical difference between those on ART and those not on ART, once those with CD4< 200 were excluded from both groups (as more likely to be unwell and have suppressed appetite). P value was 0.7096 for women and 0.8956 for men. However numbers not on ART were much lower than numbers on ART (n=407 vs n=39 in women, and n= 490 vs n=99 in men).

Women				Men			
	Normal BMI 18.5–24.9 Kg/m2	Overweight 25–29.9 Kg/m2	Obese 34.9+ Kg/m2		Normal BMI 18.5–24.9 Kg/m2	Overweight 25–29.9 Kg/m2	Obese 34.9+ Kg/m2
White n=46	46%	26%	19.5%	White N=346	53%	34.7%	11.2%
Black Caribbean N=32	31%	19%	50%	Black Caribbean n=55	56.4%	29%	12.8%
Black African n=387	21%	36.4%	41%	Black African n=209	30%	44.6%	24.9%

Conclusion: In a sample of 1040 patients, high rates of overweight and obesity were detected. Incidence was highest amongst African and Caribbean women. There was no statistical difference in BMI between those on, or not on ART.

Diagnosis and Testing

P146

Targeted HIV screening in primary care; who should be tested?

K Manavi[1], S Damery[2], R Ryan[2], S Warmington[2], L Nichols[2], R Holder[2], H Stokes-Lampard[2] and S Wilson[2]

[1]University Hospitals Birmingham, Birmingham, UK, [2]University of Birmingham, Birmingham, UK

The sustained proportion of late diagnosis of HIV infection in the UK suggest high rate of missed medical opportunities for the diagnosis of the infection and poor adherence to the guidelines.

Aim: To develop a mathematical mode that uses patients' presentations in primary care settings to identify those at high risk of HIV infection to whom targeted HIV screening should be offered.

Methods: Anonymised data from the Health Improvement Network (THIN) database were used to perform a retrospective nested cohort study to identify demographic, symptoms, clinical diagnoses, and patterns of attendance associated with HIV infection. HIV patients were matched by five-year age group and gender to controls in a 1:3 ratio.

A predictive model was developed to calculate the relative importance of those factors in identifying HIV infection.

Results: 1,194 HIV infected patients and 3,303 controls from 362 general practices in the UK were included in the study. Sociodemographic or clinical data were missing in 982 patients. A total of 3,515 cases and controls were included in the HIV model. A total of 12 of clinical indicator diagnoses in the national guidelines were retained in the final model. Bacterial pneumonia (OR=47.7; [95%CI: 5.6, 404.2]; $P<0.001$), oral candidiasis (OR=29.4; [95%CI: 6.9, 125.5]; $P<0.001$), herpes zoster (OR=25.4; [95%CI: 8.4, 76.1]; $P<0.001$), weight loss (OR=13.4; [95%CI: 5.0, 36.0]; $P<0.001$), non-Hodgkin's lymphoma (OR=12.6; [95%CI: 1.2, 129.8]; $P<0.001$), lymphadenopathy (OR= 11.3; [95%CI: 4.5, 28.3]; $P<0.001$), STI (OR=10.8; [95%CI: 2.7, 43.2]; $P<0.001$), fever of unknown origin (OR=7.2; [95%CI: 2.8, 18.7]; $P<0.001$), blood dyscrasia (OR= 5.7; [95%CI: 1.4, 22.9]; $P<0.001$), diarrhoea- two consultations (OR=4.4; [95%CI: 1.6, 12.1]; $P<0.001$), diarrhoea-one consultation (OR=3.7; [95%CI: 2.3, 6.0]; $P<0.001$), and living in deprived areas -per one quintile increase (OR=1.3; [95%CI: 1.2, 1.4]; $P<0.001$), were conditions strongly associated with HIV diagnosis the following year.

Conclusion: Our model identified clinical diagnoses that should be targeted for HIV testing in primary care settings in a ranking order. General practitioner should prioritise testing those patients.

P147

Routine HIV testing in emergency departments: tough lessons in sustainability

M Rayment[1], C Rae[1], C Hart[2], S Finlay[1], M Atkins[2], R Jones[1], R Brown[2], P Roberts[1], J Walsh[2] and A Sullivan[1]

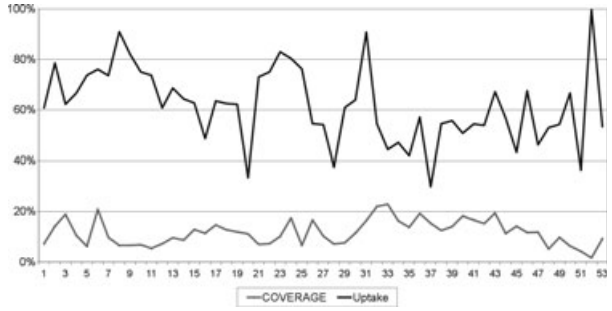
[1]Chelsea and Westminster NHS Foundation Trust, London, UK, [2]Imperial College Healthcare NHS Trust, London, UK

Objectives: Routine HIV testing in non-specialist settings has been shown to be acceptable to patients and staff in pilot studies. How to embed and sustain HIV testing in routine care remains to be answered.

Methods: We established a service of routine HIV testing in a network of Emergency Departments (EDs) in London. Testing has been ongoing for 54 weeks in ED1; for 20 weeks in ED2 (data available for weeks 1–9) and will commence imminently in ED3. Testing is delivered by ED doctors as part of routine clinical care. All patients aged 16 to 65 years are offered an HIV test. Meetings are held weekly and two outcome measures examined: test offer rate (coverage) and test uptake. Sustainability methodology (process mapping; Plan Do Study Act (PDSA) cycles) is applied to maximise these outcome measures.

Results: 19,234 age-eligible patients have attended ED1. Of 2103 patients offered an HIV test (Coverage: 12%) 1273 have accepted (Uptake: 61%). Three patients have been diagnosed with HIV infection: seropositivity 0.24%. Marked variation in the two outcome measures has occurred over the course of the programme. Mean weekly coverage ranged from 5% to 23%, and uptake from 30% to 100% (see chart, ED1 data only). In ED2, there were 7580 attendances in the first nine weeks. 286 HIV tests were undertaken with one new HIV

diagnosis made: seropositivity (0.3%). Two further known HIV-positive individuals who had been lost to follow up accepted tests and re-engaged with care. PDSA cycles with the most positive and sustained effect on coverage and uptake include in-house training delivered by ED doctors, an IT solution prompting the offer of a test, and the production of a periodic newsletter.



Conclusion: HIV testing can be delivered in the ED, but constant innovation and attention has been required to maintain this over an extended period. Patient uptake remains high, but true embedding in routine clinical practice has yet to be achieved.

P148
Cost effectiveness of routine HIV testing in non-traditional settings

E Pizzo[1], M Rayment[2], A Thornton[3], T Hartney[3], M Atkins[4], R Jones[2], A Nardone[3], P Roberts[2], M Tenant-Flowers[5], J Anderson[6] and A Sullivan[2]

[1]Imperial College London Business School, London, UK, [2]Chelsea and Westminster NHS Foundation Trust, London, UK, [3]Health Protection Agency, London, UK, [4]Imperial College London, London, UK, [5]King's College Hospital NHS Foundation Trust, London, UK, [6]Homerton University Hospital NHS Foundation Trust, London, UK

Objectives: This prospective study assessed the costs associated with routine HIV testing in non-specialist settings in areas of high HIV prevalence in the UK.

Methods: As part of the HIV testing in non-traditional settings (HINTS) Study, HIV tests were offered to patients aged 16–65 over three months in four settings**:** Emergency Department, Acute Care Unit, Dermatology Outpatients and Primary Care Centre in London. We assessed the costs of screening in terms of costs per newly diagnosed HIV-infected patient using the data derived from the study. Additionally, national data from the Health Protection Agency's *Survey of Prevalent HIV Infections Diagnosed* (SOPHID) was used to estimate the number of undiagnosed individuals attending each setting over a one year period. A sensitivity analysis was run using the SOPHID data to simulate the costs and cost-effectiveness of HIV screening in different scenarios: applying the modelled undiagnosed HIV prevalence, and changing the HIV test offer and test uptake rates.

Results: Testing as per the HINTS Study cost £19,056 per newly diagnosed patient. Assuming *all* undiagnosed persons had been offered a test and applying the same test uptake rate as the study (67%), the cost per newly diagnosed patient becomes £4,460. In the best possible scenario, assuming 100% coverage and 100% test uptake, the cost per new diagnosis in the HINTS settings amounts to £2,940.

Conclusions: The results of this exercise are encouraging and suggest that a screening programme in a high prevalence area could identify HIV-infected patients at a low cost per diagnosis. Earlier diagnosis of HIV infection may have further cost benefits in terms of early treatment and aversion of incident infections.

P149
Impact of HIV testing in antenatal and other non-STI clinic settings on late and very late diagnoses

H Phelps, A Brown, A Hunter, F Ncube and V Delpech

Health Protection Agency, London, UK

Background: Universal routine antenatal testing for HIV was implemented in 2000 with a 90% uptake target by 2002. Uptake of antenatal testing for HIV increased from 89% in 2005 to 96% in 2010. We examine the impact of antenatal testing as well as testing outside traditional settings on late diagnoses.

Methods: National new HIV diagnoses and CD4 Surveillance databases held at the Health Protection Agency were linked and pregnant women and place of diagnosis were identified. We compare CD4 count at diagnosis in pregnant and non-pregnant women aged 15–44 as well as in heterosexual men. A late diagnosis was defined as a CD4 count <350 and a very late diagnosis as CD4 <200 within 91 days of diagnosis.

Results: Between 2000 and 2010, overall 21% and 51% of pregnant women presented late and very late respectively. The corresponding figures among non-pregnant women were 38% and 62% respectively. There was a decline in the proportion of all women presenting very late at diagnosis, from 40% in 2000 to 32% in 2010. This decline in very late diagnoses was attributed to the decline in non-pregnant women (45% to 35%) with no significant change among pregnant women (23% to 18%). A similar decline was seen in heterosexual men of the same age group diagnosed with a CD4<200, from 51% in 2000 to 33% in 2010. Between 2006 and 2010, there was an increase in HIV diagnoses made outside of genitourinary medicine (GUM) clinics in both non-pregnant women and heterosexual men from 24% to 35% and 23% to 33% respectively, reflecting the national push to increase HIV testing.

Conclusion: Since 2000, women diagnosed during pregnancy have consistently lower rates of late and very late diagnosis compared to non-pregnant women. The decrease in very late diagnoses in both non-pregnant women and heterosexual men and the increase in diagnoses made outside GUM clinics are indications of expanded HIV testing in non-traditional settings. These findings highlight the effectiveness of the antenatal screening programme and the need to further expand the universal offer of HIV testing outside of the antenatal and GUM settings.

P150
A retrospective study of HIV testing in intensive care: significant numbers meet testing criteria according to national testing guidelines

M Dodd[1], P Collini[2], D Dockrell[2] and C Scott[1]

[1]Intensive Care Medicine, Northern General Hospital, Sheffield, UK, [2]Department of Infection and Immunity, University of Sheffield and Royal Hallamshire Hospital, Sheffield, UK

Background: HIV may first present as critical illness requiring general intensive care (GICU) management. Early recognition of HIV in such patients is key to their optimal management. However, in a recent national survey a majority of GICUs did not use any guidelines for HIV testing. The UK National Guidelines (UKNGs) were developed to improve early detection of HIV infected individuals, particularly when presenting with other illness. Testing is typically offered to patients with mental capacity to consent. In GICUs, testing rates may be low because of concerns over patients lacking capacity and non-adoption of formal testing guidelines. Adoption of UKNGs within this setting may help to raise HIV testing rates in line with national trends. This large cohort study assessed all GICU admissions for HIV testing using the UKNG criteria.

Methods: Over one calendar year all admissions to 2 GICUs within the same NHS Trust were retrospectively assessed against the UKNG criteria for HIV testing. 2 assessors (critical care registrar and infectious diseases registrar) reviewed the electronic records and independently placed patients into 3 study groups**:** 'Y' met UKNG criteria for HIV testing, 'N' did not and 'P' did not meet criteria but had a clinical picture that warranted testing on clinical suspicion. Following this strict application of the criteria, a further analysis was undertaken using a pragmatic approach to the UKNG: those where testing could reasonably be delayed until the post ICU period or where a strong alternative factor had lead to the indicator illness (e.g. post operative, hospital acquired pneumonia) were excluded. When assessors' decisions differed, an adjudicator (HIV consultant) was asked to give a final decision on testing.

Results: Without the use of HIV testing guidelines, 4% of admissions were tested for HIV. With strict retrospective application of UKNGs 320 (30%) of GICU patients should have been tested for HIV. Using the pragmatic application of the UKNG 186 (18%) still would have been tested.

Conclusion: In the absence of formal guidelines in these GICUs HIV testing rates were low. A pragmatic application of the UKNG would lead to a fourfold increase in testing. Strict application of the guidance would result in a greater

than seven fold increase. Although UKNGs are not specific to the critical care environment the adoption by GICUs in their present form is sufficient to markedly increase appropriate HIV testing rates.

P151
Late HIV diagnosis or missed HIV diagnosis– an analysis of previous hospital attendance of newly diagnosed HIV patients

J Lightburn, S Ramasami, L Hijazi and M Lascar
Whipps Cross University Hospital, London, London

Background: We aimed to evaluate current HIV testing efforts in a hospital located in an area of high HIV prevalence (greater than 2 per 1,000). Secondly, we aimed to characterise newly diagnosed HIV patients, estimate the costs of their HIV-related admissions and further characterize their use of services in the 5 years preceding their diagnosis.
Methods: Firstly, HIV tests requested by hospital practitioners during 2010 were provided by microbiology and were grouped by origin of request (excluding GUM, antenatal screening and TB services). Secondly, we counted previous attendances to hospital services of newly diagnosed HIV patients from 1.1.2009-31.12.2010 for the five years preceding their HIV diagnosis as recorded by hospital database (PAS). The likely cost of hospital admission of newly diagnosed inpatients was estimated using hospital tariffs (HRG returns)
Results: During 2010 only 318 HIV tests were requested in medical admission settings, representing 8% of the 4,000 yearly admissions aged 16–60 years old. 16/318 (5%) medical admissions tested for HIV were positive. Similarly 9/27 (33%) HIV tests in ITU, 7/676 outpatients and 0/74 HIV tests from A&E tested positive.
We identified 91newly diagnosed HIV positive patients during 2009–2010. 50 patients (54%) were from Black Ethnic minority groups. 48% of patients had a CD4 count below 100 cells/ml at the time of diagnosis (70% had a CD4<350 cells/ml) and a third were diagnosed whilst inpatients. Median CD4 count at time of diagnosis was 338 cells/ml among antenatal diagnoses, 213 cells/ml in GUM diagnosed patients but only 29 cells/ml in those diagnosed as inpatients. The estimated cost of admissions during the study period was £187,000 in addition to £159,969 resulting from 107 ITU days required by 8 inpatients. There were 51 hospital inpatient stays and 204 outpatient attendances (colposcopy and general surgery being the most common) by patients in the 5 years preceding their HIV diagnosis.
Conclusion: Nearly half of new HIV diagnoses had a CD4 count below 100 cells/ml and two thirds have used hospital services in the years preceding their HIV diagnosis. These data would support opt-out HIV screening in our hospital setting, including colposcopy and ITU departments. The impact of a HIV testing intervention on HIV-related admissions and late diagnosis will be evaluated prospectively.

P152
A national survey of HIV testing practices within intensive care units: a need to standardise patient care?

A Pryce[1] and M Dodd[2]
[1]Royal Hallamshire Hospital, Sheffield, UK, [2]Northern General Hospital, Sheffield, UK

Background: There is a national trend to increase HIV testing in myriad healthcare settings with little mention of Intensive Care Units (ICUs). It is unknown how intensive care units are guided in testing for HIV in England.
Methods: A national enquiry examining HIV testing in ICUs was developed in collaboration with the Intensive Care Society (ICS). 120 ICUs were contacted by email and asked to complete an online, pre-piloted questionnaire at a dedicated website. Data was collected from 1st August to 31st October 2011.
Results: A 44% (53/120) response rate was achieved. 5/53 (9%) ICUs reported having written guidelines for HIV testing. Four incorporated the UK National Guidelines for HIV testing (UKNG). One based testing upon specialist advice only.
Ten units without written guidelines had discussed introducing them with three intending to do so within the next 12 months. Of the centres without written guidelines, 7/48 (15%) reported using the UKNGs to guide testing but a further 4/48 (8%) stated they only tested on specialist advice.
The 48 ICUs without written guidelines were given a list of 8 indicator illnesses and asked to state for which their units routinely tested for HIV. Eight gave no response. Three would not routinely test for HIV for any of the illnesses. Unexplained opportunistic infection was the most frequently tested (37/48; 77%). 27/48 (56%) routinely tested in the presence of pulmonary TB and 10/48 (21%) tested in the context of lymphoma. For each of the remaining indicator illnesses less than 10/48 (21%) ICUs routinely tested. No ICU performed HIV testing for all indicator illnesses listed.
Of the 7 units without formal written guidelines who were using UKNG as a basis for HIV testing, less than half reported a more than 25% testing compliance.
Qualitative data revealed some misinformed beliefs regarding HIV testing practices; perception of those 'at risk' of HIV infection and legislation for testing patients lacking mental capacity to consent.
Conclusion: Diverse HIV testing practices were observed across ICUs. The majority (91%) did not possess written guidelines for HIV testing. Some had discussed the need to introduce formal guidelines but only a minority had taken decisive action. Poor compliance with National Guidelines was widespread. This survey indicated a need for raising the profile of HIV testing nationally in ICUs. A consensus within the ICU community to standardise and increase appropriate testing will improve patient care.

P153
Diagnosing and caring for HIV positive patients: a general practice perspective

J Dorward[1], J Cole[1], R Gidley[1], S Hasan[1], A Chinnaraj[4], A Spahn[1], H Anderson[2], N Garrett[2], V Apea[2] and W Leber[3]
[1]NHS East London and the City, London, UK, [2]Barts and The London NHS Trust, London, UK, [3]Centre for Primary Care and Public Health, Barts and The London School of Medicine and Dentistry, London, UK, [4]Clinical Effectiveness Group, Centre for Primary Care and Public Health, Barts and The London School of Medicine and Dentistry, London, UK

Background: There is increasing focus on diagnosis and care of HIV positive patients in general practice (GP). BHIVA and NICE guidelines state that patients with indicator conditions (ICs), or in high risk groups, should be offered an HIV test. Previous studies suggest that patients with undiagnosed HIV often attend GP and opportunities for diagnosis are missed. However, there is no data using GP case notes to assess opportunities for diagnosis, and little data looking at post-diagnosis care in GP.
Methods: As part of a service evaluation, we reviewed computerised GP case notes, from registration until present, for all disclosed HIV positive patients aged ≥16 who were registered at 3 inner city GPs in December 2011.
Results: We identified 96 HIV positive patients (median age 46 [range 27–70], 79% male). Of these, 62 were diagnosed before registering at the GP. The remaining 34 were diagnosed after registration, allowing analysis of diagnosis and all available GP appointments in the preceding 3 years. Pre-diagnosis (n=34)**:** In the 3 years prior to diagnosis 22/34 (65%) patients presented to their GP with ICs. HIV testing was offered or done in GP in 10/22 (45%). Median time from first IC to HIV diagnosis was 29.0 weeks (IQR 14.4–96.6), with median of 4 GP appointments (IQR 3–8) in this time. 10 patients had more than one IC. 14 different ICs were identified, most frequently bacterial pneumonia (8 episodes) and mononucleosis-like syndrome (5 episodes). 18/34 (53%) patients were known to be in high risk groups before diagnosis and HIV testing was offered or done by the GP in 11/18 (61%).
Diagnosis (n=34): 7/34 (21%) patients were diagnosed in GP, and 15/34 (44%) were diagnosed late (CDC stage C or CD4<350).
Post-diagnosis care (n=96): 29/96 (30%) patients had no letter from their HIV clinic within the past year, despite the GP being aware of their diagnosis. 32/96 (33%) patients had seen GPs in the past year for common chronic co-morbidities, and 42/96 (44%) patients had a record of flu vaccination in the winter of 2010–11. 58/78 (74%) patients on ARVs did not have them properly recorded in the GP notes.
Conclusion: To our knowledge this is the first analysis of GP case notes showing opportunities for earlier HIV diagnosis. Although GPs often see ICs, or know patients are high risk, HIV testing is not routine and needs to be increased. Regarding care of HIV positive patients, communication from HIV clinics, routine vaccination and ARV documentation can be improved.

P154
Abstract withdrawn

P155
The personal cost of early and late stage diagnosis of HIV and factors contributing to delayed diagnosis: a qualitative study

M Samuel[1], E Ojilong[1], S Tariq[2], A Teague[1], A Sharp[1] and J Fox[1]
[1]Guy's and St Thomas' NHS Foundation Trust, London, UK, [2]City University London, London, UK

Background: Health economic consequences of late HIV diagnosis are established, but the personal cost to individuals is under-researched. We investigate the psychological and socioeconomic impact of HIV on individuals diagnosed at early and late stage HIV infection in a diverse clinic cohort.
Methods: Individuals testing HIV positive between Jan-Dec 2011 with CD4 count <200 cells/μl (Late Diagnosis, LD) or >350 cells/μl (Early Diagnosis, ED) were recruited. Semi-structured interviews were conducted covering**:** physical and mental health; social circumstance; relationships; missed opportunities for testing and impact of HIV diagnosis. Interviews were recorded and transcribed verbatim. Data were analysed thematically using constant comparative methodology.
Results: 14 EDs and 14 LDs were recruited**:** 62% heterosexual; 28% women; 55% Caucasian; median age 43 years (22–76). LDs described severe physical symptoms, reduced quality of life, mood disorders, reduced workforce participation and housing insecurity preceding diagnosis. Poor knowledge, fear of knowing status and risk underestimation contributed to delayed diagnosis. Many had multiple presentations to health services (hospital and general practice) prior to being offered HIV testing. Test refusal was rare. EDs reported few symptoms, viewed themselves as healthy and HIV as a manageable condition; most tested routinely for HIV. EDs and LDs described an immediate negative response to diagnosis, although some LDs felt 'relief' at finding a cause of ill health. Guilt and blame were common across age, gender, ethnicity and sexuality groups; many feeling 'dirty' and stigmatised. Future hopes varied. LDs often struggling with ill health hoped to return to a state of good health; many felt their visible symptoms increased risk of involuntary disclosure. EDs saw themselves as healthy and described building a positive future with HIV; some considered their diagnosis a prompt to discontinue unhealthy behaviour, most felt in control of timing of disclosure.
Conclusion: Delayed HIV diagnosis impacts physical health, wellbeing and social circumstance. Adjustment to diagnosis and ability to construct a positive identity with HIV was impaired in those with delayed diagnosis. Health economic models do not fully quantify psychological and socioeconomic costs of delayed diagnosis to the individual and the state through factors such as job loss and housing insecurity, and thus underestimate the burden of delayed diagnosis.

P156
HIV testing in patients with Streptococcus pneumoniae bacteraemia

P Papineni, T Rampling and J Klein
St Thomas' Hospital, London, UK

Background: The British HIV Association guidelines 2008 recommends that an HIV test should be considered in all general medical admissions when diagnosed HIV prevalence in the local population exceeds 2 in 1000 population. Our hospital is situated within the London borough of Lambeth, an area that has a rate of 13.28 diagnosed HIV prevalence per 1,000 population. HIV infection is associated with a 20x increased risk of invasive pneumococcal disease. HIV testing should therefore be considered in all patients with Streptococcus pneumoniae bacteraemia, as this may represent the first manifestation of HIV infection.
Methods: All Streptococcus pneumoniae blood culture isolates from January 2008 to July 2011 at our NHS Trust were identified retrospectively using the bacteraemia database. Electronic hospital records were used to identify those who had been tested for HIV. HIV testing was performed using the fourth-generation Abbott Architect Combo Ab/Ag HIV test.
Results: 99 patients with Streptococcal pneumoniae bacteraemia were identified. The mean age was 47.9 years (range 2 months–88 years). 10 patients were HIV positive. 6 were already known positive at the time of their presentation with Streptococcus pneumoniae bacteraemia. The prevalence of new HIV diagnoses in patients with Streptoccus pneumoniae bacteraemia was 4%. Mean CD4 count of those patients newly diagnosed with HIV was 187 cells/ul. 42 patients had a negative HIV test.
The remaining patients (47%) did not have a HIV test performed. 9 patients died; only two of these had a HIV test performed (both negative).
Conclusion: Almost half of all patients with Streptococcal pneumoniae bacteraemia in our Trust did not have a HIV test performed. With the known association between HIV and invasive pneumococcal disease this represents a missed opportunity for HIV diagnosis.

P157
Missed opportunities for HIV testing in the emergency department

R O'Connell[1], D Millett[2], J Harrison[3], J Anderson[2] and E Young[1]
[1]Newham University Hospital NHS Trust, London, UK, [2]Homerton University Hospital NHS Trust, London, UK and [3]NE Thames Emergency Medicine Training Rotation, London, UK

Background: Late presentation of HIV presents challenges to patient health and healthcare costs. Earlier diagnosis means earlier treatment and less morbidity. Also, anti-retroviral therapy (ART) reduces HIV transmission. In the Emergency Department (ED) knowledge of HIV status can directly affect clinical diagnoses and onward referral. ED attendance can be an opportunity for new HIV diagnosis in high prevalence populations.
Aim: To investigate missed opportunities for HIV testing in the ED in a high prevalence UK setting.
Methods: Data collection was retrospective from paper and electronic notes. Main outcome**:** any ED attendance in the 5 years prior to HIV diagnosis. Inclusion criteria: new diagnoses 1/09/09–31/08/10. Exclusions: <17 years; ED attendance related to a positive test; ED attendances prior to 6 months before seroconversion (avidity/clinical evidence); ED attendance before a known negative HIV test. Ethics review designated this investigation service evaluation. Caldecott approval was obtained.
Results: 149 cases are included of which 78 (52.4%) are male. Ethnicity shows diversity**:** 84 (56.4%) African; 16 (10.7%) UK/ Ireland; 20 (13.4%) Black British or Caribbean; 14 (9.4%) other European. Mean age at diagnosis was 37 (range17–69). Most common HIV risk was heterosexual sex (n=107, 71.8%), followed by men who have sex with men (n=28, 18.8%). 31.5% had a CD4<200 cells/μL at presentation; 57% CD4<350 cells/μL (range 0–1070). An opportunistic infection (OI) or HIV related illness (HRI) was found in 57 (38.3%) at HIV diagnosis. Most common OI was PCP (n=10, 6.7%). There were 2 deaths. 53 (35.6%) had attended the ED on at least 1 occasion in the 5 years prior to diagnosis. Five had evidence of seroconversion of which 1 had attended the ED in the 6 months prior to diagnosis. Univariate analysis did not show strength of evidence of association of ED attendance with age, gender, ethnicity or HIV risk. Those who had an OI or HRI at diagnosis were more likely to have attended the ED previously (adjusted OR 2.2; P=0.03; CI 1.1, 4.5).
Conclusion: 35.6% of new HIV diagnoses had attended the ED at least once prior to diagnosis. Direction of association of prior ED attendance with an OI or HRI at HIV diagnosis is hard to determine. In a high prevalence setting, attendance at ED can present an opportunity for HIV testing and earlier diagnosis. Further exploration of reasons for attendance at the ED may help identify which opportunities for testing.

P158
Validation of point-of-care CD4 tests in pregnancy

L-J Chen[1], T Ford[1], R Metcalf[1], J Smith[2], G Taylor[1], A Croucher[2], C Smith[3], S Fidler[1] and S Reid[1]
[1]Imperial College London, London, UK, [2]St Mary's Hospital NHS Trust, London, UK, [3]University College London, London, UK

Background: The use of CD4 counts to initiate ART is considered best practise, although, CD4 counting is beyond the reach of many low and middle income countries. Recent advances in diagnostics have led to the development of simpler, portable point-of-care (POC) CD4 tests such as the PIMA CD4 system Alere. This instrument produces an absolute CD4 count in around 25 minutes using capillary blood. One of the critical areas of POC CD4 testing is

in HIV+ pregnant women where CD4 guided ART is required on real time to determine PMTCT options. However the haemodilution effect of pregnancy means that absolute CD4 counts alter through gestation and there are limited data on POC CD4 tests in pregnancy.

Methods: We compared capillary and venous blood POC CD4 counts during and after pregnancy to standard laboratory flow cytometric CD4 counts with venous blood. The study received ethical approval. Results were collated and the three different CD4 counts analysed to detect differences between the methods. An additional sensitivity and specificity analysis was performed examining the ability of the POC tests to categorise samples as above or below 500 CD4 cells/mm^3.

Results: 120 consenting HIV negative and 2 HIV positive pregnant women in the first trimester of pregnancy were enrolled over an 8 month period. Venous (ven) and capillary (cap) blood samples were taken at the first antenatal visit (12 weeks gestation). There were 122 patients with matched capPOC CD4, venPOC and flow cytometric CD4 counts in the first trimester. The mean (and SD) of the CD4 counts from each group were 749 (248), 717 (219) and 743 (247) respectively. The means of each group were not significantly different (P<0.54) and the 2 POC CD4 counts revealed a strong correlation both with each other (r=0.9) and with flow cytometry (0.8 and 0.84). Bland-Altman analysis showed biases between capPOC and venPOC of +32, and with flow cytometry of +6 and -26 cells respectively. When considering categorising patients'CD4 counts above or below 500, capPOC and venPOC demonstrated 63% and 79% sensitivity and 94% and 93% specificity respectively.

Conclusions: New POC CD4 tests are emerging and Alere's PIMA CD4 is the first to be commercialised. This has the potential to revolutionise delivery of care across all settings but use in pregnancy must be further evaluated to ensure validation. This project will complete mid-2012 and will define the interpretation of POC in pregnant women throughout gestation.

P159

HIV testing in the Acute Medical Unit– setting the scene for universal opt-out testing

J Rycroft, R Hall and S Kegg
South London Healthcare NHS Trust, London, UK

Background: National guidelines recommend extending opportunities for HIV testing in a range of settings including adult medical admissions where the local HIV prevalence supports it. We sought to determine our success at implementation of this recommendation in a busy outer London district general hospital setting with an estimated local HIV prevalence of 8/1000 and a significant proportion of individuals presenting with advanced HIV infection. In parallel, we sought to determine potential barriers to offering HIV testing amongst clinicians.

Methods: Hospital codes for adult acute medical admissions were collected over a two week period and information regarding HIV testing was obtained from the virology laboratory. All doctors working in the acute medical setting were invited to take part in a self-completed questionnaire to assess knowledge and explore current practice regarding HIV testing.

Results: 506 patients were evaluated. 14(3%) were tested for HIV during admission, 3 of which were positive and one case was a new diagnosis. 13/14 (93%) tests were requested more than 48 hours after admission.

68 clinicians completed a questionnaire. 28/68 (41%) felt that all medical admissions should be offered testing for HIV. However, in practice no-one implemented this. Of concern, 24% (15/63) of respondents never or rarely offer an HIV test when a patient is perceived to be from a high risk group. 37% (25/68) of clinicians felt that the process of obtaining consent for HIV testing was fundamentally different to that for other tests. 59% (40/68) believed that comprehensive counselling was required prior to HIV testing. Reasons for not routinely offering HIV testing included a perception that testing was inappropriate (79%, 53/68), lack of clarity regarding who to test (18%, 12/68), and a lack of confidence in ability to manage a positive result (13%, 9/68). 31/67 (46%) were unaware of local arrangements for requesting an HIV test.

Conclusion: We identified low rates of HIV testing despite a high local prevalence. We are now aware of significant knowledge gaps which may be a barrier to targeted HIV testing. We have now moved to universal opt-out HIV testing of all adult medical admissions and this is being supported by a programme to raise awareness of HIV and the prognostic benefit of early diagnosis, and a care pathway to support clinicians faced with a new HIV diagnosis.

P160

HIV point of care testing in the emergency department

H Noble, G Wright and E Young
Newham University Hospital NHS Trust, London, UK

Background: In areas of high HIV prevalence and with high rates of late diagnosis, the Emergency Department (ED) is a potentially important venue for HIV testing. Because the turnaround time for a standard HIV antibody test is several days, it is logistically difficult for ED staff to test a patient for HIV even if the diagnosis is suspected. Barriers to HIV point of care testing (POCT) use in the ED include concerns about effect on patient flow and the four hour target, clinicians' lack of confidence regarding HIV counselling and the cost of the HIV POCT kit. This was a joint project between ED and HIV services to make HIV POCT a routine part of care where clinically indicated.

Methods: A HIV Test Facilitator was employed to work within the ED for one year. Her responsibilities include identification of patients with clinical indicators of HIV, pre and post test discussion, performing POCT and confirmatory serology if POCT reactive, linking patients into care and educating ED staff.

Data collected include demographics, reason for testing, uptake rates, results, rate of loss to follow up. The degree of staff engagement with HIV testing is monitored informally.

Results: From August 2011 57 patients were offered the HIV POCT in the ED and 57 (100%) patients accepted the test. Thirty-eight (67%) were male. Twenty-four (42%) were born in Africa, 19 (33%) were born in Asia and 14 (25%) were born in Europe. Thirty-one (54%) of the patients tested were aged 40+, 24 (42%) were aged 25–40 and two (4%) were aged 18–25. Fifty-six patients were heterosexual, one female was bisexual.

Reasons for testing were past or suspected tuberculosis, suspected *Pneumocystis* pneumonia, hepatitis, shingles, lymphadenopathy, oral thrush, suspected malaria, weight loss, diarrhoea, chest infection, vaginal abscess, rash, need for HIV Post Exposure Prophylaxis, lifestyle factors.

Five (8.8%) tests were reactive, all patients were referred to the HIV team for inpatient admission and all confirmatory tests were positive. Three (60%) patients were male, two were 40+ and one was aged 25–40. The two female patients were aged 40+. All of the patients with a reactive test result were born in Africa.

There has been no identifiable negative impact on the ED.

Conclusions: HIV Point of care testing in the Emergency Department is logistically possible and clinically useful.

Further work is needed to build on early success and improve patients' access to a timely HIV diagnosis throughout the hospital.

P161

Testing children of positive parents – a prospective review of patients attending an inner city HIV centre

K Quinn, E Jenkins, P Tilley, B Plum, L Campbell, D Nayagam, S Hawkins, P Richards, C Ball, M Poulton and E Hamlyn
King's College Hospital, London, UK

Background: Children of HIV infected patients are at risk of perinatally acquired HIV infection, especially if born prior to routine antenatal testing or overseas. British guidelines recommend that HIV clinics perform a look-back exercise to establish the HIV status of all children of infected adults.

Methods: Data, including number of children under 18, child testing status and reasons for not testing, were prospectively collected from consecutive patients attending the adult HIV service over a 6 month period (May-November 2011). Data were analysed using SPSS version 17.0. Where applicable, families were referred to a multidisciplinary team to facilitate testing.

Results: Of 1302 adult patients (59% male; 54% Black African, 8% Caribbean, 35% White), 506 were identified as having 896 children. 706/896 (78.7%) children were resident in UK, of whom 21% were born outside of the UK. Of children resident in UK, 114 children from 79 families were identified as requiring HIV testing. Children of male HIV infected patients and from non-white families were more likely to require follow up (P<0.0001 and P<0.0001, respectively). Reasons for not previously testing were provided from 138 parents and included**:** child healthy 16/138, perceived low risk by parent 4/138, never considered testing 14/138, concern about disclosure of parental status 4/138, fear of result 3/138, child currently or previously abroad 78/138. Of children requiring follow up, outcomes were as follows: 19 tested negative, 24 testing not required on further review of history, 69 ongoing clinical nurse

specialist / health advisor follow up, 1 social services referral. During the audit period one child (15 years) presented with an HIV related illness and subsequently tested positive; no risk factors except perinatal transmission were identified. The child's parent had reported this child as testing negative abroad; this was subsequently found to be inaccurate.

Conclusions: Several at risk children have been identified through this look back exercise. Children of male patients were more likely to be untested highlighting the importance of asking all patients about their children. Caution is required with regards to credibility of reported but unconfirmed negative testing.

P162

Practical challenges implementing national HIV testing guidelines in general medical admissions

D Bassett, D Cousins, TL Davies and A Sukthankar

Central Manchester University Hospitals NHS Foundation Trust, Manchester, UK

Background: The local HIV prevalence is 5.23 per 1000 population (HPA 2010). As recommended by national testing guidelines, routine opt-in HIV testing in acute medical admissions commenced on June 2011 in this hospital. During the first six months of the testing strategy, 8 people were newly diagnosed with HIV and 1263 tests were performed. However around 30% of general medical admissions were tested; the authors wished to examine why testing did not appear to be universal and whether this was patient or clinician dependent.

Methods: Prospective real-time audit over two weeks in July 2011. Template completed by audit team with focus on demographics, clinical presentation and testing behaviour.

Results: 435 patients attended hospital during the audit period including 5 known HIV positive patients and one patient who did not disclose their positive HIV status to acute physicians. The median age was 62 (range 17 –98) and 231 (53%) were male. 134 (31%) of general medical admissions were offered HIV testing. Of those 117 (87%) accepted the test and were subsequently tested for HIV during the two week period. Different physicians had different offer rates ranging from 6% to 74%.

Those offered testing were older (median 74 vs 65; P=0.01) than those not offered but patterns of marital status (P=0.40) and ethnic origin (P=0.38) were similar in both groups. 24 (6%) were deemed to be incapacitated on admission of whom 7 (29%) were tested under best interest guidance.

Conclusion: Although universal testing is a goal, it has not yet been achieved in this service change. Physician variability is a factor probably more significant than patient acceptability. The demographics of those tested were not different to those not offered testing avoiding the concern that people with perceived risk factors were disproportionately offered testing. The future focus for the service is to offer to test all patients as recommended by the national guidance. Further education and training of clinicians has been undertaken to improve the offer rate in the interim.

P163

HIV testing and linking into care- a clinical governance exercise

S Ramasami, M Lascar and J Lightburn

Whipps Cross Hospital, London, UK

Background: We aimed to evaluate HIV testing governance in a setting of HIV prevalence greater than 2 per 1,000 prior to the introduction of opt-out HIV testing in medical admissions.

Methods: A microbiology database (Synergy) search was performed in order to identify all HIV positive tests during 1.1.2009–31.12.2010. The proportion of equivocal and false positive HIV tests was noted. Time to getting a confirmed HIV positive result and time to linking into care in the local HIV unit (defined by seeing a HIV Consultant) were deducted from retrospective notes review, alongside source of HIV request and reason for testing.

Results: 220 were HIV tests initially positive or equivocal. 40 equivocal tests being confirmed negative but surprisingly, 8 equivocal HIV tests requested outside GUM had not been repeated by lab and were later confirmed negative after being identified by our audit. There were 6/220 HIV false positive tests. 58 patients were known HIV positive, but 91 were newly diagnosed HIV and engaged into care successfully. One patient had never received his result and was lost to follow-up. Looking at the source of request for the HIV test in patients engaged into care, 33 patients were diagnosed as inpatients, 33 in GUM, 8 in antenatal care, 8 in outpatients, 7 by GP and 2 by community sexual health services. 10/91 patients had their positive result given more than 14 days after the test, the longest delay being 120 days. Longer delays in linking into care occurred in patients diagnosed as outpatients and by GP. Among the 91 newly diagnosed patients, 70% were late diagnoses with CD4 count less than 350 cells/ml, 44 had HIV clinical indicator diseases at presentation and 27 presented with AIDS defining illnesses (including 14 Pneumocystis Jiroveci pneumonia, 5 extra and/or pulmonary Tuberculosis, 3 Kaposi sarcoma, 2 HIV associated nephropathy). Nearly half of patients had been assessed by a HIV specialist within 2 weeks of receiving a HIV diagnosis.

Conclusion: Tighter protocols in microbiology for dealing with equivocal HIV results and in-house confirmatory HIV tests have now been implemented, including faster turn around time for positive results. We identified a large burden of late presentation of HIV, often with AIDS defining illnesses, where early specialist HIV intervention is crucial. HIV/GUM specialists should have prompt access to HIV positive tests requested elsewhere in the hospital to enable them to facilitate prompt linkage into care.

P164

HIV prevalence in individuals leaving prison and attending drug rehabilitation services – a novel approach to testing prisoners

H Williams, D Axten, F Makia, E Naylor, O Leonard, A Teague and J Fox

Guy's and St Thomas' NHS Foundation Trust, London, UK

Background: Rates of HIV and Hepatitis C are higher in prisons than in the general population. Testing rates in prisons tend to be low and as such prisoners and ex-prisoners may represent an undiagnosed pool of infection.

Methods: From November 2010–March 2011, individuals who had been in prison within the preceding year, were not known to be HIV positive and were attending drug rehabilitation services in Brixton, London, were offered mouth swab testing for HIV and Hepatitis C by genitourinary trained nurses. A questionnaire was completed by participants covering testing history, risk practices and acceptability of modes of testing.

Results: 35 individuals were recruited during 26 walk-in testing clinics, running in parallel with routine services, representing an uptake rate of approximately 10%. The prevalence of HIV was 0/35 (0%) and Hepatitis C was 7/35 (20%). Two new cases of HCV were identified. 20/35 (57%) individuals had previously tested for HIV (median time since last test 4 years) and 19/35 (54%) had previously tested for Hepatitis C (median time since last test 3 years).

11/35 (31%) had been offered an HIV test in prison and of these 2/11 (18%) had undergone testing. 29/35 (83%) individuals supported HIV/Hepatitis C testing in prison and 25/35 (71%) preferred oral swabs compared to a blood test. Concerns regarding testing in prison included fear of a positive result, concerns about confidentiality and fear of needles.

24/35 (69%) individuals had attended either their GP (n=16) or accident and emergency department (n=8) in the preceding 6 months. Of these, 2/24 (8%) had tested for HIV.

Conclusion: The low prevalence of HIV and low rates of testing in ex-prisoners attending drug rehabilitation services suggests that providing specialist staff for HIV testing in this setting is not cost effective. However, oral swabs do represent an acceptable mode of testing to this patient group. Feedback to prison services is being undertaken.

P165

Increasing HIV testing in non-GUM settings – a new training resource

W Majewska[1], M Pakianathan[1], L Bassant[3], C Howland[2], R Forsyth[3] and B Marett[2]

[1]St George's Healthcare NHS Trust, London, UK, [2]BMS Pharmaceuticals Ltd., London, UK, [3]MASH Health, London, UK

Objective: Late diagnosis of HIV remains a challenge in the UK. National guidelines set out criteria for testing outside the genitourinary (GUM) setting. Despite this, testing in other specialties remains low. A training resource was developed with the aim of increasing testing in non-GUM secondary care settings.

Methods: Based on insights gained from DH funded pilot projects, key barriers to testing in hospital settings included a reluctance to discuss an HIV Test as uncomfortable taking a sexual history and misapprehension about individual hospital care pathways when faced with a positive result. Also from the research, to ensure effective training, the resource had to be driven by peer to peer education and give HCP's an opportunity to find the actual form of words on how to offer an HIV test. A collaborative project between the GUM and respiratory departments at St George's Healthcare NHS Trust (supported by Bristol-Myers Squibb), this hospital-level plan comprised a training slide deck and range of supportive materials, including a survey for 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 ability to tailor of key slides in the training deck to specific localities makes the resource bespoke to each hospital.

Results: The training resource supports doctors in offering HIV testing to patients, and alerts them to their own centre's care pathway. Piloted to the respiratory department at St George's Hospital in October 2011, it has since been taken up by more than 20 further centres, with very positive feedback**:** 'Not only did it generate interest and discussion during training but it also helped identify unexpected barriers to testing, leading to practical changes and solutions.' Based on feedback, we are now seeking to develop this for the primary care setting.

Conclusion: Preliminary results suggest that delivery of the training resource is feasible and well received, with plans for continued roll out.

P166

Missed opportunities for HIV diagnosis– 3 year audit in a large urban cohort

D Brawley, D Bell, F Fargie, R Fox, A MacConnachie, R Nandwani, E Peters, A Seaton and A Winter

Brownlee Centre, Gartnavel General Hosptial, Glasgow, UK

Background: The BHIVA National Guidelines for HIV testing 2008 aimed to prompt diagnosis and reduce late presentation. An audit of new diagnoses in a large urban cohort was performed to assess local adherence to these guidelines and estimate the proportion of patients presenting who had previous missed opportunities for diagnosis.

Methods: A retrospective case note review of 340 patients diagnosed from September 2008 to September 2011 was performed. Documented past medical history was screened for HIV clinical indicator conditions prior to HIV diagnosis in addition to previous review and investigations by medical services. Baseline demographics of patients with and without a prior clinical indicator condition were also compared with t test and chi squared statistics.

Results: Ninety-one patients (37%) had a least one documented clinical indicator condition prior to HIV diagnosis. Blood dyscrasia (14 patients), lymphadenopathy (12 patients), bacterial pneumonia (12 patients), chronic diarrhoea (11 patients) and weight loss (10 patients) were the most common conditions. In 56 patients prior contact with at least one medical speciality was documented, most commonly primary care (16 patients), acute medicine (10 patients), ENT (9 patients) and gastroenterology (6 patients). In 13 patients potentially unnecessary investigations were also performed including colonoscopy, lymph node biopsy, bronchoscopy and open lung biopsy.

Patients with a previous clinical indicator condition were more likely to be diagnosed during an acute admission (40% versus 20%, P=0.0002). This group also had a lower mean nadir CD4 count (255 cells/cmm versus 393 cells/cmm, p value=0.00002) and were more likely to be severely immunocompromised at diagnosis with a CD4 count <50 cells/cmm (30% versus 9%, P=0.000002). AIDS defining illnesses were also more common than in patients without a prior indicator condition (30% versus 8%, P=0.0000001). There were no obvious differences in age, sex, ethnicity or documented source of transmission between the two groups.

Conclusions: Additional resources and education are required to increase adherence to the current HIV testing guidelines within primary and secondary care in order to prevent ongoing late presentation with both individual clinical and widespread economic implications.

P167

Universal HIV testing by junior doctors: challenges in its implementation

H Tuite, A Lynam, H Ferris and C Bergin

Department of Genitourinary and Infectious Diseases, St. James's Hospital, Dublin 8, Ireland

Background: UK guidelines advocate a universal approach to HIV testing in healthcare settings. National data have shown good outcomes for patients engaged in care where of 3254 HIV infected adults, 79% were on Anti-Retroviral therapy and 94% had HIV RNA values < 500 cpm. Despite these outcome data and guidelines, results from a recent large city-wide cohort study showed 57% of patients diagnosed with HIV presented late. Misconceptions amongst junior doctors may be a rate limiting step in the implementation of universal HIV testing.

Methods: A written survey of Non Consultant Hospital Doctors was performed. It was undertaken in an institution with an in-house HIV medicine programme. Participants were asked to answer questions regarding their attitudes and current practices regarding HIV testing.

Results: Seventy nine doctors participated in the survey, interns 57% and senior house officers 32%. The mean number of years since graduation was 2. 64% were involved in the care of acute admissions through the Emergency department. 37% had never offered a patient a HIV test. Of those who had offered patients HIV testing, an average of 1 test was offered per month (range 1–10). 52% had never diagnosed a patient with HIV. 40% believed written consent and 48% believed counseling necessary prior to HIV testing. 30% believed that there are insurance implications to testing negative for HIV. Routine HIV testing similar to a full blood count was acceptable to 62% and 77% of participants estimated a life expectancy of 70 or over for patients who engaged in specialist HIV care.

Conclusions: The results of this survey highlight important issues. 37% of participants had never offered a patient HIV testing despite the majority finding routine testing acceptable.These doctors are working in a hospital with an in-house HIV medicine programme and at the very interface where testing is to be encouraged. A targeted educational programme at both undergraduate and postgraduate level along with allied healthcare professions is now being implemented.

P168

The realities of rapid HIV testing in primary care: initial qualitative findings from the RHIVA 2 trial

H McMullen[1], C Griffiths[1], W Leber[1], G Hart[2] and J Anderson[3]

[1]Queen Mary University of London, London, UK, [2]School of Life and Medical Science, University College London, London, UK, [3]Centre for the Study of Sexual Health and HIV, Homerton University Hospital, London, UK

Background: Rapid (point of care) HIV screening is widely used in sexual health centres, but use in general practice is less well established.

Following a successful pilot, the RHIVA2 cluster RCT tests implementation of rapid HIV testing in 40 practices (20 intervention, 20 control) in Hackney. However, additional questions about the feasibility of providing rapid HIV testing in general practice remain. Using qualitative research, a quality assurance programme and aspects of process evaluation we attempt to paint the larger picture of rapid HIV testing in general practice.

Methods: Interviews with patients and health care providers in intervention practices were fully transcribed and analysed thematically. Fifteen interviews were carried out over a 7 month period. Qualitative findings, with quantitative testing data pulled remotely from GP computers, and observations within the parallel quality assurance programme provide rich insights into the reality of rapid HIV testing at the surgery level as well as its feasibility as policy.

Results: Key challenges emerging from the data include standardizing research across diverse surgeries; supporting staff to roll out the intervention, designing appropriate quality assurance activities and ensuring clear patient pathways. Restrictions imposed by the ethics committee frustrate 'natural' approaches to HIV testing.

Discussion: RHIVA2 elucidates the challenges of bringing diagnostic near-patient testing to general practice. The feasibility of providing rapid HIV testing is a discussion much larger than determining whether more patients are found with HIV. The perspectives of providers, uptake of testing and experiences of patients on the care pathway provide important information regarding the feasibility of providing rapid HIV testing in general practice.

P169

Erectile dysfunction clinics – should we be offering routine HIV testing?

T Suchak, A Buchanan, E Rook and M Chauhan
New Croft Centre, Newcastle Upon Tyne, UK

Background: Erectile dysfunction (ED) has long been recognised as a consequence of HIV infection and its treatment. However some causative factors of erectile dysfunction can put this group at high risk of HIV infection e.g. drug and alcohol abuse and psychological issues. Patients seen in ED services are unlikely to have had a HIV test before despite being at risk.
This prospective study assessed the HIV risk factors of patients seen in our ED service and the acceptance of HIV testing in this patient group.
Methods: All new referrals seen in our ED service between September 2011 and January 2012 were offered HIV testing and STI screening. A basic sexual history sheet collected information on previous STI's, previous HIV testing and risk factors for HIV infection. We included data collected in the GUM clinic if seeking help for ED was the sole reason for the patient's visit to GUM and the patient was seen in the ED service as a result of this visit. Data on demographics, risk assessment, uptake, results and patients thoughts were analysed.
Results: Of the 33 patients offered a HIV test, 26 accepted (79%), a higher rate than that seen in general GU Clinics. 3 were already known to be HIV positive and were excluded. 20 had never had HIV testing performed before. Of the HIV tests carried out 13 (36%) were in white males aged over 50; this demographic has been highlighted as being one of the groups with the fastest growing rate of new HIV diagnosis in the UK. 58% had at least one risk factor for HIV infection (MSM, sex with people from high risk countries, IVDU). 44% had known previous STI's indicating possible increased opportunity for HIV acquisition. No new HIV positive patients were identified from this small study.
Conclusion: We have demonstrated that HIV testing in the ED setting is highly acceptable to most patients and feasible for staff. This ongoing study highlighted that ED patients are in fact a high risk group for HIV despite most patients not identifying themselves as so. The number already known to be HIV positive is significant from a small study in an area of low prevalence of HIV. In these cases it appears erectile dysfunction may have preceded HIV infection. By not routinely testing our ED patients we are missing an opportunity to pick up HIV infection in an often previously untapped population. We recommend HIV testing in ED clinics should form part of good clinical practice and be introduced to all ED services nationwide.

P170

A five year (2007–2011) audit of patients newly diagnosed with HIV in Newcastle – why our work is not yet done

N Premchand[1], A Radford[2], P Falkous[2], I Bittiner[2], P Yi Tan[2], K Golds[2], N Sankar[1] and E Ong[1]
[1]*Newcastle upon Tyne NHS Foundation Trust, Newcastle upon Tyne, UK,*
[2]*Newcastle University Medical School, Newcastle upon Tyne, UK*

Background: The prevalence of HIV in Newcastle was 1.6/1000 in 2010. Our previous audit data showed that 50–63% of newly diagnosed patients presented with a CD4 <200. The 2008 HIV Testing Guidelines have previously had minimal impact on the proportion of late presenters.
Methods: A retrospective case note audit of patients whose HIV care was initiated by the ID unit and GUM in 2011 was undertaken to determine the number presenting with late or advanced disease. Clinical indicator diseases for adult HIV infection stated in the 2008 testing guidelines were documented. The data was compared with previous audits from 2007–10 using the same methodology.
Results: In 2011 38 patients were newly diagnosed with HIV in the ID department and 20 in GUM. Of the patients newly diagnosed in ID, 19 (50%) were diagnosed as late presenters with a median CD4 of 56 cells/μl (Range 0–152 cells/μl). Of the newly diagnosed patients in GUM, only 1 (5%) was a late presenter with a CD4 count of 15 cells/μl.

	ID 2011	GUM 2011	ID 2010	GUM 2010	ID 2009	GUM 2009	ID 2008	GUM 2008	ID 2007	GUM 2007
New HIV Diagnosis	38	20	42	24	32	11	46	14	35	26
Advanced Disease %	50	5	52	5	53	27	59	21	63	31
Gender M:F %	76:24	90:10	67:33	95:5	72:28	100:0	54:46	79:21	57:43	81:19
MSM %	42	80	12	68	38	91	35	79	17	54
White British %	61	75	64	77	59	82	54	79	37	65
Black African %	21	15	31	4	34	18	43	14	49	15
Median CD4 Count at Diagnosis	187	501	195	389	188	347	169	419	159	388
CD4 Range at Diagnosis	0–955	15–894	0– 1145	162–851	0–833	109–1019	4–1042	38–953	0–671	61–809
Previous Indicator Disease %	58	55	50	23	50	9	35	29	50	50
AIDS at or Prior to Presentation %	29	0	26	0	25	0	28	0	31	0

Conclusions: The 2008 HIV Testing Guidelines continue to have a negligible impact on reducing late presentation in Newcastle. 55–58% of patients have previously been seen or treated for an indicator disease when HIV testing should have been offered. More concerted efforts are required to educate primary care physicians and non HIV specialists about HIV testing.

P171

The impact of a multi-disciplinary meeting on the rates of HIV in testing in TB patients

F Thorburn
West of Scotland Specialist Virology Centre, Glasgow, Scotland

Background: In the UK the numbers of Mycobacterium tuberculosis (MTB) infections are increasing with the main risk factors being alcohol abuse, adverse social circumstances and being born outside the UK. Worldwide however, HIV infection is the greatest risk for developing tuberculosis. Co-infection with HIV significantly affects mortality and delayed HIV treatment adversely affects patients' prognoses. BHIVA and local guides have been introduced recommending that every patient diagnosed with MTB be offered an HIV test as part of their management. In late 2010 city-wide MTB multi-disciplinary meeting (MDM) was established to discuss all new cases of TB. The team is comprised of both respiratory and infectious diseases consultants (as the infectious diseases team manages the majority of HIV positive patients as well as a proportion of MTB patients) in addition to specialist nurses. We audited HIV testing rates both before and after the MDM was established.
Method: A list of confirmed MTB cases in 2010 was obtained from Public Health and cross-referenced with the laboratory system to determine if an HIV test had been carried out in the year before or after diagnosis. Notes from a sample of patients with no test were reviewed to determine if one had been offered. This was compared with a subset of patients from 2011 (n=105) after the MDM had been implemented.
Results: In 2010 234 cases of MTB were diagnosed. HIV results were available for 141 (60.3%). Eight patients were positive, seven of whom represented new diagnoses. This represents a prevalence of 5.6% in those tested and 3.4% in the group as a whole, both of which are above the local average prevalence of HIV infection. Out of the 30 notes reviewed only one mentioned an HIV test during consultation. In 2011, following the introduction of the MDM the rates of HIV testing increased to 77% out of sample size of 105, including 2 positive results.
Conclusion: Following implementation of the MDM there has been a marked increase in HIV testing rates in patients with MTB, however the aim is to have 100% of patients offered or tested for HIV. Further measures to be implemented include a patient pro forma as a prompt to ensure investigations are carried out and enlisting the help of the specialist nurses in obtaining samples. The data will be re-audited in 2013.

P172

HIV testing in TB and Hepatitis services in a district general hospital

A Vas[1], E Morgan[2], K Padmakumar[2], B Bradley[2], M Williams[2] and J Thornton-Chan[2]

[1]Central Manchester University Hospitals NHS Foundation Trust, Manchester, UK, [2]Royal Bolton NHS Foundation Trust, Bolton, UK

Background: The British HIV Association together with the British Infection Society and the British Association for Sexual Health and HIV published guidelines for HIV testing in 2008. Universal HIV testing was recommended for patients with Tuberculosis (TB) and Hepatitis B and C virus (HBV/HCV). The aim of this study is to audit HIV testing for patients with the aforementioned infections in a district general hospital.

Methods: Retrospective case note review of patients attending the chest clinic with TB and the gastroeneterology clinic with HBV and / or HCV in 2009. Information including demographics and proportion of individuals offered an HIV test were collected.

Results: Testing in patients with TB**:** 34 patients included. Median age 34yrs (range 16–83). 18 (52%) patients were of Asian origin. 18 (52%) patients with pulmonary TB and 16 (48%) patients with extra-pulmonary TB, of which 22 (65%) confirmed *Mycobacteria tuberculosis* (M.TB). 10/34 (29%) patients were offered an HIV test of which 9 (90%) patients accepted the test.

Testing in patients with HBV and / or HCV: 57 patients included; 25 (44%) with HBV, 29 (51%) with HCV and 3 (5%) HBV/HCV co-infection. Median age 36 yrs (range 15–76). Of those infected with HBV 2 (8%) patients were offered an HIV test. 23 (92%) patients had no documentation of being offered a test, however of those, 9 (3%) patients had been seen by another service such as GUM clinic or antenatal clinic, possibly assuming the test had been done at that service. Of 29 patients infected with HCV only 1 (3%) patient was offered and advised to have an HIV test at the GUM clinic, 21 (72%) patients were not offered an HIV test with no supporting documentation. Of 3 (5%) patients with HBV/HCV co-infection, 2 (67%) had failed to attend their appointments and one patient had not been offered an HIV test.

Discussion: Although small in numbers both audits have highlighted the need for increased HIV testing. Uptake of an HIV test when offered was 90% in the TB audit, suggesting a high level of acceptability. HIV testing in the hepatitis clinic was low. This observation may be the result of poor documentation however clinicians have been made aware of the need for offering HIV tests in their service.

We realise the need for ongoing collaboration, clear referral pathways and continued support for our colleagues in other specialities so that universal HIV testing can be achieved.

P173

Audit of new HIV diagnoses in a tertiary centre over a two year period

S Page[1], F Clark[2] and A Freedman[1]

[1]Cardiff University School of Medicine, Cardiff, Wales, UK, [2]University Hospital of Wales, Cardiff, Wales, UK

Background: Late diagnosis of HIV remains a significant barrier to the timely initiation of antiretroviral therapy, as shown by the 2010 BHIVA audit, despite the publication of UK National HIV testing guidelines in 2008. The aim of this audit was to assess adherence to these guidelines in newly diagnosed patients referred to the Infectious Diseases (ID) and Genitourinary Medicine (GUM) services in a large, out of London teaching hospital over a two year period.

Methods: Retrospective case note review of adult patients newly diagnosed with HIV between 1 Dec 2009 – 30 Nov 2011, presenting to either the GUM or ID service. Data collected included patient demographics, circumstances and timing of the diagnosis, CD4 count, as well as time between diagnosis and first specialist consultation. Comparisons were made with national data from the 2010 BHIVA audit, as well as between the two clinics.

Results: A total of 65 patients (51 male) were identified (27 referred to ID, 38 to GUM). Overall 58% patients were diagnosed late (CD4<350 cells/mm^3) and 45% were judged to have had missed opportunities for earlier testing. Late diagnosis was more common in those seen in the ID service (85%) compared to GUM (40%), women, black Africans, heterosexuals and those aged over 50. Most patients were seen promptly in a specialist HIV service after being informed of the diagnosis (mean interval 3 days).

Conclusion: The rate of late HIV diagnosis in this area exceeded the 52% rate reported in the national BHIVA audit in 2010. Further work is required to increase awareness of testing guidelines.

Epidemiology and Surveillance

P174

Monitoring HIV testing outside traditional settings

S Collins, M Ramsay, S-A Ajmal and S Lattimore

Health Protection Agency, London, England

Background: Recent BHIVA and NICE guidelines aim to increase HIV testing across all healthcare settings to diagnose HIV infection earlier and reduce levels of undiagnosed HIV. However, in 2010 it was estimated 25% of people living with HIV were undiagnosed and 50% of adults were diagnosed late. Little is known about trends in HIV testing outside traditional services and patterns of repeat testing. The sentinel surveillance of blood borne viruses collects laboratory data irrespective of test result; providing information on the population undergoing HIV testing.

Methods: Demographic and testing data for people tested for HIV between 2007 and 2010 were extracted from the information systems of 10 sentinel laboratories in England. Service type at first tested was recorded. Duplicate records, reference testing, under 16's, and people tested via unknown locations were excluded. Testing patterns of people with a first HIV test in 2007–2008 who had multiple tests within two years were also analysed.

Results: Overall 541,903 people were tested for HIV across all settings, of which 1.1% tested positive. Half were tested in STI clinics (49.8%), a further 24.2% were tested in antenatal services, 15.2% in primary and 10.8% in secondary services. HIV positivity rates varied by service; 0.3% in antenatal services, 0.7% in primary services, 1.3% in STI clinics, and 2.3% in secondary services. Between 2007 and 2010, the number of people testing for HIV increased by 18.4% from 120,464 to 142,571. By service type, testing through STI clinics showing the smallest overall increase of 17.8%, compared with testing in primary and secondary services which increased by 48.8% and 74.3%, respectively.

Overall one in five (51,645) people tested for HIV in 2007–2008 had a repeat test within two years. The median inter-test interval was significantly shorter (P<0.001) among HIV negative people who subsequently tested positive (median: 91; range: 1–271) compared to those who remained negative (median: 224; range: 1–730). Numbers of tests per person did not vary by final HIV status, or service type.

Conclusion: Since 2007, alongside changes in HIV testing recommendations, testing has increased, particularly outside of STI clinics. Efforts must be maintained to continue expanding testing to patients in a wide range of healthcare settings. Close monitoring of trends in HIV testing among STI clinics, primary and secondary care services will guide future recommendations and implementation.

P175

Capturing HIV patient complexity – implications for national HIV surveillance

C Chau, T Hartney, A Brown and V Delpech

Health Protection Agency, London, UK

Background: As HIV diagnosed persons are living longer, their management is becoming more complex. In collaboration with the Department of Health's Payment by Results National Reference Group we conducted a prospective study to define, and examine predictors for, patient complexity to better inform management and commissioning of services.

Methods: Eight English HIV clinics completed a survey for every patient attendance between July-September 2009. Each patient was categorised as 'new' (diagnosed or starting therapy within last year), 'stable' or as having one or more pre-defined conditions including specific co-infections and co-morbidities, treatment failure, pregnancy and psycho-social problems. The pre-defined conditions were checked against patient attendance frequency and consultation type (doctor/MDT vs other health care personnel) to define complexity. Limited identifiers collected within the survey were used to link to surveillance records so that demographic and clinical predictors of complexity could be identified through multivariate analysis.

Results: 14,208 attendances were captured among 9,225 patients, representing 15% of the HIV diagnosed population in England. Patients meeting nine of the ten predefined conditions attended almost twice as frequently as stable patients and showed a greater degree of doctor/MDT involvement in their care; these were defined as complex. Overall 16% of patients were 'new', 71% 'stable' and 13% 'complex'. 'Complex' patients were broken down as follows: hepatitis co-infection (23%), complex psychosocial problems (with over eight attendances in 12 months) (16%), HIV-related malignancy (13%), pregnancy (10%), TB co-infection (9%), treatment failure (8%), current AIDS or opportunistic infection (7%), psychiatric condition (7%), paediatric in transition (3%), and more than one type of complexity (4%). The following risk factors were found be associated with complexity: younger age (<30 yrs); Black-Other ethnicity, injecting drug use and being in the first year of antiretroviral treatment.

Conclusion: A definition of patient complexity has been validated against attendance frequency and clinical input. Almost one in eight HIV patients were found to be complex; these patients are likely to be more costly to manage. A new dataset (the 'HIV and AIDS Reporting System') will capture patient complexity directly; this system will enhance HIV surveillance, monitor patient outcomes and support commissioning via Payment by Results.

P176

HYPnet audit of cervical cytology in HIV positive women under 25 years of age

S Singh[1], D Chilton[1] and K Prime[2]

[1]Guy's & St Thomas' NHS Trust, London, UK, [2]St George's & Queen Mary's Hospital, London, UK

Background: There are few data regarding cervical pathology in young women with HIV, and the optimum age at which to start screening remains unclear. HIV in Young Person's Network (HYPnet) guidance suggests annual cervical screening in this group from coitarche. Data from the USA shows high levels of pre-invasive cervical lesions in young women with perinatally-acquired HIV. These women may also be at higher risk of cervical pathology progression.

Methods: A standardised proforma was distributed to all centres seeing adolescents with HIV that participate in HYPnet (n=16) from 1/3/11–13/1/12. Clinicians either completed the proforma with the patient present or by retrospective case note review.

Results: 145 proformas were returned from 9 centres. 69% were Black African, 29% Caucasian and 13% other Black backgrounds. Median age 22.5 years (range 15–30). 49% had horizontally-acquired and 46% perinatally-acquired HIV. 26% had had a previous AIDS defining illness. Median age at coitarche was 16 years (range 10–22). Where recorded, 40% (40/100) had a history of a sexually transmitted infection (STI) of whom 45% (18/40) had 2 or more STI diagnoses (range 2–4). Where documented, 51% (65/128) had been or were currently pregnant. 76% (110/145) of women had undergone cervical cytology when aged <25 years; 73% (80/110) of whom were known to be sexually active (not documented in the remainder). 45% (50/110) had a history of abnormal cervical cytology. Of these, 82% (41/50) showed borderline changes or mild dyskariosis, but 18% (9/50) had evidence of moderate or severe dyskariosis. 64% (32/50) of young women with abnormal cytology had undergone colposcopy. 19% (6/32) of colposcopies showed human papilloma virus changes. 25% (8/32) showed cervical intraepithelial neoplasia (CIN) 1. 13% (4/32) showed CIN 2 and 17% (5/32) CIN 3. 31% (10/32) had undergone large loop excision of the transformation zone or surgical removal of cervical warts.

Conclusions: High rates of abnormal cervical cytology were observed in this group of HIV positive young women. Approximately one third with abnormal cytology had undergone treatment for significant cervical lesions. These findings indicate the importance of regular cervical cytology for sexually active HIV positive young women aged <25 years. In addition, high rates of STI and pregnancy also emphasise the importance of providing holistic services for this group of patients, encompassing all aspects of sexual and reproductive healthcare.

P177

Continued improvements in clinical outcomes in the current ART era: epidemiology of a complete clinic population

C Smith[1], F Lampe[1], C Chaloner[1], S Kinloch[2], R Tsintas[2], S Madge[2], A Phillips[1] and M Johnson[1]

[1]UCL, London, UK, [2]Royal Free Hampstead NHS Trust, London, UK

Background: Substantial improvements in morbidity and mortality amongst HIV-positive individuals were seen with the introduction of combination ART. Clearly, maintaining these favourable outcomes is essential. Furthermore, timely diagnosis and enrolment into care of HIV-positive patients is essential to ensure the best possible outcomes.

Methods: We studied clinical, virological and immunological outcomes of a complete single clinic population from its establishment in 1992. A 100% audit of the clinical notes is performed annually to obtain information on antiretroviral therapy, clinical events, hospitalisations and demographics. Laboratory data is transferred electronically.

Results: In 1992, 83% were male, 71% MSM, 22% heterosexual, 81% white and 13% black African. By 2009, these were 75% male, 58% MSM, 39% heterosexual, 61% white and 25% black African. The table below shows outcomes over time.

	1992	1997	2001	2005	2007	2009
N – Clinic population	325	787	1284	2025	2205	2447
Rate of Death*	10.7	5.1	1.3	0.9	2.4	0.5
Rate of New AIDS	29.8	12.3	4.6	3.0	1.8	2.2
Rate of Hospitalisation*	41.1	20.4	10.1	7.3	5.0	5.1
% CD4 count<200*	41	32	14	9	8	6
% Receiving ART	39	39	64	74	78	85
% VL<400 copies/ml#	-	-	88	95	97	97
% VL<50 copies/ml#	-	-	79	89	92	91
Median CD4	290	312	443	460	503	539
N - New diagnoses	73	117	136	129	113	95
CD4<200 cells/mm^3	25	30	32	30	29	27
AIDS/death within 6 months	15	20	20	22	22	19

Conclusion: Rates of AIDS, death and hospitalisations observed amongst HIV-positive people with the introduction of successful cART have been maintained or even experienced a further slight decline. Furthermore, high virological response rates to ART are being maintained. Despite this, there remain a small proportion of individuals who continue to experience high viral loads, and further efforts to identify this group of patients and intervene are ongoing. Individuals are still presenting for the first time for care with a late diagnosis. Concerted efforts to diagnose individuals at an earlier time point are still required

P178

Projected lifetime healthcare costs associated with HIV infection

F Nakagawa[1], A Miners[2], C Smith[1], R Smith[3], R Lodwick[1], V Cambiano[1], J Lundgren[4], V Delpech[5] and A Phillips[1]

[1]University College London, London, UK, [2]London School of Hygiene and Tropical Medicine, London, UK, [3]Clinical Trials Unit, Medical Research Council, London, UK, [4]Copenhagen HIV Programme, University of Copenhagen, Copenhagen, Denmark, [5]Health Protection Agency, London, UK

Background: In the UK, there are more than 3,500 new HIV infections occurring every year, of which 2,700 are in MSM alone and it has been estimated that the total number of people living with HIV will surpass 100,000 by the end of 2012. While HIV can now generally be successfully treated, it represents a burden for the infected individual and a major cost for the NHS. Building on an exercise to model lifetime outcomes and life expectancy, this study estimated the projected lifetime healthcare cost for an individual with HIV infection, in order to provide an estimate of the costs that could be averted by preventing a single case of HIV.

Methods: A stochastic computer simulation model of HIV infection and the effect of antiretroviral therapy (ART) was used to determine the distribution of potential lifetime outcomes and hence costs, of an MSM who becomes HIV-positive in 2010 aged 30 years. Lifetime cost was estimated based on the assumption that individuals were diagnosed at the approximate rate currently

observed for MSM in the UK (median CD4 cell count at diagnosis: 418 cells/mm3) and healthcare management remains as now. The presented lifetime costs include costs of non-AIDS diseases in situations where the individual is seen in the same hospital as for their HIV care. All costs were obtained from published sources and results are shown in 2010 UK pounds.

Results: The estimated mean lifetime cost was £346,700 based on predicted median age at death of 74.8 years. With discounting at 3.5% per annum, the lifetime cost estimate was £168,800. 64% of the projected lifetime healthcare cost was attributed to ART costs.

Conclusion: Based on continuing low rates of virologic failure in treated patients, predicted life expectancy in people with HIV is high in settings with access to good healthcare. The future healthcare cost of 3,500 people being infected in one year is predicted to be in excess of £1 billion. Although future reductions in drug prices could reduce this significantly, these results emphasise the continued need to invest in prevention.

P179

Predictors for delayed baseline assessment of newly-diagnosed HIV-positive adults in the UK: variation across HIV diagnosis settings

Z Yin, A Brown, M Kall and V Delpech

Health Protection Agency, London, UK

Background: To ensure optimal care after HIV diagnosis, BHIVA guidelines recommend baseline tests (CD4 counts and viral loads) are undertaken within two weeks of diagnosis. We use a national cohort of persons newly diagnosed with HIV to assess adherence to guidelines and examine predictors for delayed baseline assessment.

Methods: Adults (≥15 years) diagnosed with HIV in 2010 reported to the national HIV database were linked to the CD4 laboratory data. Each adult's first CD4 count was used as a proxy for the baseline assessment date. Adults were defined as having a 'delayed baseline assessment' if their first CD4 test was >1 month after diagnosis. Predictors for delayed baseline assessment including age, sex, ethnicity, exposure category, and facility of diagnosis (antenatal clinics, general practitioner (GP), STI clinics, other medical settings, community, prison, and blood transfusion services) were examined in a multivariate analysis.

Results: In 2010, 6,125 adults were newly-diagnosed with HIV in the UK, of whom 3.0% (184) died in a year (as reported to June 2011). Of those surviving, 4,023 (68%) had a CD4 test within two weeks, 79% (4,683) within a month, 10% (574) after a month and 11% (684) were likely not assessed by the end of 2010 (42% of those 684 adults were diagnosed in the first half year). Where facility of diagnosis was reported, 69% (2,836/4,126) of adults were diagnosed in STI clinics (77% of 2,784 men and 52% of 1,342 women). Other diagnosis facilities included GP (6.8% of men and 9.6% of women), other medical settings (14% of men and 17% of women) and non-medical settings (2.2% of men and 0.9% of women). One-fifth (282/1,342) of women were diagnosed in antenatal clinics. Of adults diagnosed in STI clinics, about one in ten were transferred to another specialised clinic for HIV care.

Predictors for delayed baseline assessment included: persons who inject drugs (PWID) (adjusted odd ratio (aOR) =2.78, 95%CI [1.52, 5.08], ref: men who have sex with men), adults diagnosed outside London (aOR=1.49, [1.18, 1.90], ref: London) and those diagnosed at a GP (aOR=2.77 [1.98, 3.88], ref: STI clinic) or other medical settings (aOR=1.82, [1.36, 2.45], ref: STI clinic).

Conclusion: In the UK four in five patients are rapidly assessed following diagnosis. Clinical audits and a review of local referral pathways should be conducted to ensure prompt assessment and integration into HIV care after diagnosis.

P180

Current standard of care for men who have sex with men attending genitourinary medicine clinics: frequency of HIV testing and uptake of behavioural interventions

M Desai[1], S Desai[1], A Nardone[1], A Sullivan[2], M Mohabeer[2], D Mercey[3], M Kingston[4], C Thng[4], S McCormack[5] and N Gill[1]

[1]Health Protection Agency, London, UK, [2]Chelsea and Westminster Hospital NHS Foundation Trust, London, UK, [3]Mortimer Market Clinic, London, UK, [4]Manchester Royal Infirmary, Manchester, UK, [5]Medical Research Council, London, UK

Background: Guidance on behavioural interventions (BI) and frequency of HIV testing for men who have sex with men (MSM) who attend genitourinary medicine (GUM) clinics is limited. We reviewed policies and practice in a sample of clinics to determine current standard of care and to support development of an enhanced prevention programme for MSM.

Methods: Between July and December 2011 we reviewed HIV testing and BI policy and practice in 24 of 25 GUM clinics in the GUMNet sentinel network in England, by i)semi-structured interview with each clinic and ii)in a subset of 15 clinics a notes review of the first 40 HIV negative MSM aged over 16 that attended from 1st June 2010.

Results: Written policies were reported by 20 (83%) clinics for HIV testing, 11 (46%) for BI and 20 (83%) had a risk assessment proforma. Eighteen (75%) clinics used criteria to define high risk MSM, of which 17 considered unprotected anal intercourse (UAI) as high risk. Four of the 24 clinics considered all MSM to be high risk and two had no criteria. Twenty-one clinics (88%) offered one or more structured BI, most commonly motivational interviewing (MI) (20/24:83%). All clinics invited MSM back for a repeat HIV test if they had a risk in the previous 3 months. In total 598 notes were reviewed from 15 clinics. The average age was 34 years (range 16–77), 118/598:20% reported an acute STI in the previous 6 months and 200/598:33% reported UAI in the last 6 months. Nearly all (507/598:85%) men accepted an HIV test at the audited clinic visit and 99% of tests were negative. On average, patients had 1.6 HIV tests over one year (range 0–9), with no difference between MSM who had or did not have UAI in the last 6 months. The offer of BI was recorded in only half of reviewed notes (293/598); counselling was offered to 11% of men and MI and cognitive behavioural therapy to 5% and 0.7% of men respectively. Only a small proportion of MSM who had UAI in the last 6 months were offered and accepted a structured BI (29/107:27%), most commonly MI (11/107:10%).

Conclusions: There is variation in HIV testing frequency between clinics but practice meets national guidance of the minimum number of HIV tests for this risk group. There is some uniformity in risk assessment. Only a small proportion of MSM and higher risk MSM, were offered a structured BI. Enhanced guidance on frequency of HIV testing and reinforcement of BI provision is needed to improve HIV prevention for MSM attending GUM clinics in England.

P181

London adult HIV health needs assessment

M Korkodilos[1], J Harris[1], C Foreman[1] and M Ruff[2]

[1]London Specialised Commissioning Group, London, England, [2]Gilead Pharmaceutical Company, Adington, Cambridge, England

Background: 47% of people accessing HIV care in England live in London. Highly active anti-retroviral therapy has resulted in substantial reductions in AIDS incidence and deaths in the UK, which has impacted on the service needs of HIV patients. An epidemiological needs assessment of adults with HIV in London was undertaken to review the current context and likely future trends in HIV and its treatment to inform future planning of HIV services in London.

Methods: Health Protection Agency (HPA) primary HIV surveillance systems; the HIV and AIDS New Diagnoses and Deaths Patient Reporting System (HARS) and the Survey of Prevalent Diagnosed HIV Infections (SOPHID) were linked in order to analyse service use patterns and the spatial distribution of patients resident in London along with trends over time.

Results: There are two distinct epidemics, affecting men who have sex with men (MSM) and black African heterosexuals. During 2006–2008 the average number of new HIV diagnoses outnumbered HIV related deaths more than 15 times. Heterosexually acquired diagnoses have been falling in recent years and new diagnoses in MSM have stabilised at high levels. In 1999 10% of new HIV diagnoses were older than 45 years, in 2009 this increased to 23%. Patterns of residence at time of new diagnoses are different for heterosexuals and MSM. PCTs in north east and south east London had the highest number of new diagnoses in heterosexuals; MSM tend to live in inner London PCTs. There is significant disparity in the size of patient cohorts between HIV treatment sites ranging from 3,250 to 110 patients in 2009. In general the medium and larger sites (>600 patients) are located in inner London. The pattern of service use of heterosexuals living with HIV appears more evenly distributed across London than MSM. Increase in hospital activity varied by site between 2007 and 2009 with between 20 to 315 new patients annually. If the current epidemic trends continue, London HIV patient numbers could increase by 7–9,000 new patients over the next five-years. These trends are likely to make HIV one of the fastest growing chronic conditions in London.

Conclusions: In addition to scoping the current and future demand for HIV services this needs assessment has highlighted the distribution of HIV in London's population which indicates the potential to rationalise current services to fewer care providers. Further work is being undertaken with patient groups and providers to take this forward.

P182

Estimating the number of HIV-affected children and adolescents in London using two mathematical models

A Smith Barnes
Body & Soul, London, UK

Background: An HIV-affected child or adolescent (HIV-ACA) is a person under the age of 19 who has at least one close family member or carer who is HIV positive (HIV+). Studies show that HIV-ACAs are more at risk of early bereavement, carer responsibilities, poverty, exploitation, and subsequent HIV infection. To address this population's needs, it must be measured. The purpose of this study is to estimate the number of HIV-affected children and adolescents aged <19 in London using two distinctive mathematical models.
Methods: We estimated number of HIV-ACAs by individual borough using two methods and HPA and Greater London Authority (GLA) data:
Method 1: We determined the total number of persons <18 in each borough using 2010 GLA estimates. Assuming each child had two adults in a direct caring capacity in their lives (family members or non-related key carers), we multiplied the number of under 18s in the borough by two. The resulting figure (N-Adults) was the number of adults in the borough estimated to directly care for at least one child. We then applied the 2010 borough-specific HIV prevalence data to (N-adults). The resulting number was the Method 1 estimate of number of HIV-ACAs in the borough.
Method 2: We started with HPA's 2010 borough-specific incidence of HIV amongst persons over 15 (N-incidence). Using N-incidence, we applied HPA's national heterosexual prevalence statistic to get the number of heterosexuals living with HIV in the borough. We divided this number in half to crudely estimate the number of HIV+ women (N-women). We applied the borough birth rate, as determined by GLA data, to (N-Women). This resulted in an estimate of HIV-ACAs.
To calculate the London-wide number of affected children, we summed borough estimates.
Results: Method 1 estimates 18, 307 HIV-ACAs in London in 2010. Method 2 estimates 14,341 HIV-ACAs in London in 2010. The mean estimates 16,324 HIV-ACAs in London in 2010. Both calculation methods have intrinsic flaws. Method 1 may overestimate HIV-ACAs by not accounting for MSM prevalence in its calculation. Method 2 may underestimate HIV-ACAs by not taking into account children affected through male carers (MSM or heterosexual).
Conclusions: This study provides an estimate of the number of children affected by HIV in London. Methods could be applied to determine number of HIV-ACAs nationally. Policy and programmes must recognize the incidence of HIV-ACAs and respond accordingly to prevent poor long-term outcomes.

P183

Trends in mortality within a large, ethnically diverse inner city HIV centre

E Cheserem[1], K Quinn[1], M Kariuki[1], L Campbell[2] and F Post[2]
[1]King's College Hospital, London, UK, [2]King's College London, London, UK

Background: Cohort studies in the era of combination antiretroviral therapy of predominantly white HIV positive patients have shown a decrease in deaths from AIDS and a concomitant rise in deaths from non-AIDS-defining illnesses (ADIs). Late HIV diagnosis remains particularly common in black patients and the causes of death in this population remain less well defined. We analysed the causes of death in patients stratified by ethnicity and time from HIV diagnosis.
Methods: Retrospective review of all deaths in HIV infected patients from 1st January 2006 to 31st December 2011 at a large inner city hospital.
Results: 156 patients died during the period studied (median age 43.5 years, 29% women, 47% black ethnicity, median nadir CD4 count 94 cells/μL). The cause of death was an ADI in 27%, non-ADI in 57% and unknown in 16%. Early deaths (<90 days of HIV diagnosis, 19%) were more likely to be due to an ADI than deaths occurring >90 days after diagnosis (61% vs 19%, P<0.0001). Of early deaths, the majority were of black ethnicity (66%), and in our cohort, Black Africans were more likely to die from an ADI than Whites (35% vs. 22%, P=0.04).
Conclusion: In our cohort, ADIs remain a significant cause of death, particularly in patients from minority groups, who are overrepresented compared to local population statistics. This suggests that early diagnosis programs targeting ethnic minorities should be developed to reduce deaths due to late diagnosis.

HIV Treatment and Pharmacokinetics

P184

Pooled Week 96 efficacy and safety results from the double-blind, randomised, Phase III trials comparing rilpivirine (RPV;TMC278) versus efavirenz (EFV) in treatment-naïve, HIV-1-infected adults

C Orkin[1], C Cohen[2], J-M Molina[3], I Cassetti[4], P Chetchotisakd[5], A Lazzarin[6], F Rhame[7], HJ Stellbrink[8], L Taisheng[9], H Crauwels[10], L Rimsky[10], S Vanveggel[10], P Williams[10] and K Boven[11]
[1]Barts and The London NHS Trust, London, UK, [2]Community Research Initiative of New England, Boston, MA, USA, [3]Department of Infectious Diseases, Paris, France, [4]Helios Salud, Buenos Aires, Argentina, [5]Faculty of Medicine, Khon Kaen, Thailand, [6]Vita-Salute, San Raffaele University, Milan, Italy, [7]Abbott Northwestern Hospital, Minneapolis, MN, USA, [8]ICH Study Center, Hamburg, Germany, [9]Department of Infectious Diseases, PUMCH, Beijing, China, [10]Janssen Infectious Diseases BVBA, Beerse, Belgium, [11]Janssen Research & Development, LLC, Titusville, NJ, USA

Background: Two Phase III, randomised, double-blind trials (ECHO and THRIVE) in treatment-naïve adults showed non-inferiority of RPV 25 mg qd compared to EFV 600 mg qd (84% vs 82% ITT-TLOVR at Week 48, respectively). A more favourable tolerability/safety profile was reported with RPV.
Methods: 1,368 patients received (1:1) RPV or EFV, plus TDF/FTC (ECHO) or TDF/FTC, AZT/3TC or ABC/3TC (THRIVE). 96-week efficacy and safety/tolerability were analyzed.
Results: Responses at 96 weeks were similar for RPV and EFV (Table), overall, and by N(t)RTI background, gender and race. Responses were lower in Black patients (RPV 64%; EFV 71%) than in Asians (RPV 90%; EFV 91%) and Caucasians (RPV 80%; EFV 77%). Incidences of abnormal dreams/nightmares, dizziness and rash (Table) and grade 2–4 lipid abnormalities were lower with RPV than with EFV.

	RPV N=686	EFV N=682	Differences between groups [95% CI] or p values
Efficacy, n (%)			
Viral load <50 copies/ mL (Intent-to-treat-time-to-loss of virologic response)	532 (78)	529 (78)	0.0% [−4.4%, 4.4%]
Viral load <50 copies/ mL (snapshot)	524 (76)	522 (77)	−0.15% [−4.7%, 4.3%]
Mean [95% CI] increase from baseline in CD4 count (non completer=failure), cells/mm^3	228 [215;240]	219 [206;233]	Non significant
Resistance*, n (%)			
Virologic failure (VF)	96 (14)	52 (8)	
Rebounder	52 (8)	34 (5)	
Never suppressed	44 (6)	18 (3)	
VF developing NNRTI resistance-associated mutations (RAMs)	46/86 (53)	20/42 (48)	
VF developing N(t)RTI RAMs	48/86 (56)	11/42 (26)	
Safety, n (%)			
Grade 2–4 AEs at least possibly related to treatment	116 (17)	226 (33)	P<0.0001[†]
AEs leading to discontinuation	28 (4)	58 (9)	
AEs of interest at least possibly related to treatment, n (%)[‡]			
Abnormal dreams/nightmares	57 (8)	90 (13)	P=0.0039[†]
Dizziness	55 (8)	182 (27)	P<0.0001[†]
Rash (grouped term)	29 (4)	103 (15)	P<0.0001[†]

*per 100 person-years; #amongst those on ART for >24 weeks
[†]At time of failure with genotypic data; [†]Pre-planned analysis; [‡]Observed in ≥10% of patients in the either group
VF from Week 48 to 96 was 3.2% on RPV (2.9% rebounders) and 2.3% on EFV (2.1% rebounders).

Conclusions: RPV showed sustained (96 week) antiviral efficacy similar to EFV and a consistently more favourable tolerability/safety profile than EFV. Overall, the VF rate was higher with RPV vs EFV. However, similar proportions of VFs were observed in both groups beyond Week 48. Efficacy and safety data between treatment groups were consistent by background N(t)RTI, gender and race; the lowest responses were seen in Black patients.

P185

Lopinavir/ritonavir (LPV/r) combined with raltegravir (RAL) or tenofovir/emtricitabine (TDF/FTC) in antiretroviral-naïve subjects: 96-week safety and efficacy results of the PROGRESS study

R Trinh[1], J Gathe[2], J Reynes[3], F Pulido[4], M Tian[1], L Fredrick[1], T Podsadecki[1], M Norton[1] and A Nilius[1]

[1]Abbott, Abbott Park, IL, USA, [2]Therapeutic Concepts, Houston, TX, USA, [3]Montpellier University Hospital, Montpellier, France, [4]Unidad VIH. Hospital Universitario 12 de Octubre, Madrid, Spain

Background: The PROGRESS study compared the novel nucleoside/nucleotide reverse transcriptase inhibitor (NRTI)-sparing antiretroviral (ARV) regimen of a protease inhibitor (LPV/r) combined with an integrase inhibitor (RAL) to a regimen of LPV/r combined with two NRTIs (TDF/FTC) in ARV-naïve subjects. At the week 48 primary endpoint, 83.2% in the LPV/r + RAL regimen and 84.8% in the LPV/r + TDF/FTC regimen (P=0.850, difference -1.6%, 95% exact confidence interval [CI] -12.0%, 8.8%) were responders with plasma HIV-1 RNA <40 copies/mL by the FDA time to loss of virologic response (FDA-TLOVR) algorithm. LPV/r + RAL was noninferior to LPV/r + TDF/FTC as the lower limit of the 95% exact CI for the difference between regimens was ≥ the protocol-defined threshold of −12%. Safety and tolerability were similar between regimens. Results through week 96 are presented.

Methods: PROGRESS was a randomized, open-label, 96-week trial comparing LPV/r 400/100mg twice-daily (BID) combined with either RAL 400mg BID or with TDF/FTC 300/200mg once-daily (QD) in ARV-naïve subjects.

Results: 206 subjects were randomized and treated (LPV/r + RAL, N=101; LPV/r + TDF/FTC, N=105). Baseline demographics/disease characteristics were similar between regimens; 17% of subjects had plasma HIV-1 RNA >100,000 copies/mL and 26% had CD4+ T-cell concentrations <200 cells/mm3. A similar proportion of subjects in each regimen discontinued the study prematurely (19% LPV/r + RAL, 14% LPV/r + TDF/FTC). At 96 weeks, 66% of subjects receiving LPV/r + RAL and 69% of subjects receiving LPV/r + TDF/FTC were responders by the FDA-TLOVR algorithm (P=0.767, 95% CI for the difference: −15.1%, 10.8%). The mean CD4+ T-cell increases through 96 weeks were similar (281 cells/mm3 LPV/r + RAL, 296 cells/mm3 LPV/r +TDF/FTC, P=0.598). The frequency of treatment-emergent moderate/severe study drug-related AEs was similar between regimens.

Conclusion: Through 96 weeks, the novel combination of LPV/r + RAL resulted in similar safety, tolerability, and efficacy as LPV/r + TDF/FTC. These results support further evaluation of the LPV/r + RAL regimen.

P186

Virologic suppression is maintained in virologically suppressed HIV-1 infected subjects switching from efavirenz/emtricitabine/tenofovir (EFV/FTC/TDF) single-tablet regimen (STR) to emtricitabine/rilpivirine/tenofovir (FTC/RPV/TDF) STR: week-24 results of GS-111

A Mills[1], C Cohen[2], E DeJesus[3], C Brinson[4], K Yale[5], S Ramanathan[5], R Ebrahim[5], S Chuck[5] and A Cheng[5]

[1]Anthony Mills MD Inc, Los Angeles, CA, [2]Community Research Initiative, Boston, MA, [3]Orlando Immunology Center, Orlando, CA, [4]Capital Medical Associates, Washington, DC, [5]Gilead Sciences, Foster City, CA

Background: The implication of temporarily reduced rilpivirine (RPV) exposures when switching virologically suppressed HIV-infected patients from efavirenz (EFV; a CYP inducer) to RPV has not been established. At W12, 100% of subjects switching from EFV/FTC/TDF (ATRIPLA®) to FTC/RPV/TDF (EVIPLERA®) maintained HIV-1 RNA (VL) <50c/mL (primary endpoint). Furthermore, EFV concentrations were above the 90% inhibitory concentration (IC90) for several wks after EFV discontinuation and RPV exposures were in the range of historical values observed in the ECHO and THRIVE studies starting ~2 wks post-switch. Longer-term W24 follow-up of these switch subjects are presented.

Methods: This 48-week, open-label, multicenter study enrolled 50 subjects on EFV/FTC/TDF as their first antiretroviral regimen for ≥3 months with VL <50c/mL at screening. Subjects were interested in receiving the alternate single-tablet regimen (STR) of FTC/RPV/TDF due to EFV intolerance. None had known resistance to any study drug according to historical genotype. Secondary endpoints included evaluation of W24 efficacy, safety, and tolerability.

Results: Subjects received EFV/FTC/TDF for a median 2.5 yrs [IQR: 1.4, 3.6] before switching to FTC/RPV/TDF. One subject withdrew consent before dosing. 100% of subjects (49/49) maintained VL <50c/mL through W24 following switch from FTC/RPV/TDF. Median [IQR] change from baseline for CD4 count was +33 [−62, +92] cells/mm3. FTC/RPV/TDF was well tolerated with no discontinuations due to adverse events (AE). 24% (12/49) experienced a treatment-related AE, mostly Grade 1 (9/12) with no Grade 3 or 4 treatment-related AEs reported. Treatment-related AEs included depression (n=1), hyperbilirubinemia without jaundice/scleral icterus (n=1), and rash (n=2). Mean changes in serum creatinine (10.6 micromol/L) and direct bilirubin (2 micromol/L) were not clinically relevant. Median changes from baseline were significant for fasting total cholesterol (−0.44 mmol/L) and LDL (−0.62 mmol/L); P<0.001 for both. 92% subjects reported >95% adherence (pill count). W24 RPV exposures remained in the historical range.

Conclusion: After switching from EFV/FTC/TDF to FTC/RPV/TDF, virologic suppression is maintained through W24. Transient metabolic induction of CYP enzymes by EFV is not clinically relevant in virologic suppressed, HIV-1 infected subjects switched to FTC/RPV/TDF. FTC/RPV/TDF provided a well-tolerated, alternative STR treatment option in this study population.

P187

Week 96 resistance analysis of the pooled ECHO and THRIVE Truvada subset in treatment-naïve HIV-infected adults with ≤100,000 c/mL baseline viral load

K White[1], V Van Eygen[2], J Vingerhoets[2], K Boven[3], G Picchio[3], R Quercia[4], S Chuck[1] and L Rimsky[2]

[1]Gilead Sciences, Inc., Foster City, CA, USA, [2]Tibotec BVBA, Beerse, Belgium, [3]Janssen R&D, Titusville, NJ, USA, [4]Gilead Sciences, Inc., Stockley Park, UK

Background: Eviplera (single tablet regimen of emtricitabine, rilpivirine, and tenofovir disoproxil fumarate, FTC/RPV/TDF) is approved in the EU for HIV-1 infected treatment-naïve subjects with baseline viral load (BL VL) ≤100,000 c/mL. The once-daily combination of Truvada (FTC/TDF) with RPV or EFV in subjects with BL VL of ≤100,000 c/mL resulted in an 84% response rate in the RPV group vs. 81% in the EFV group (VL <50 c/mL; ITT-TLOVR) at W96 in the pooled Phase 3 trials ECHO and THRIVE.

Methods: Virologic failure (VF) was defined as never achieving confirmed VL <50 c/mL and with a VL increase ≥0.5 $\log_{10}$ c/mL above nadir (never suppressed), or as confirmed VL ≥50 c/mL after an initial confirmed response (rebound). Genotypes and phenotypes of VFs were examined through Wk 96 for the Truvada subset of subjects with BL VL ≤100,000 c/mL.

Results: Among subjects with BL VL ≤100,000 c/mL, 8.0% of subjects (23/288) in the RPV group and 4.7% (12/255) in the EFV group had VF through W96. Between W48 and W96, the rate of VF was low and comparable between treatment groups: 5 subjects in each (1.7% for RPV vs. 2.0% for EFV), mostly due to virologic rebound.

Through W96, NNRTI resistance-associated mutations (RAMs) emerged in 7 of 23 subjects and 3 of 12 subjects in the RPV and EFV groups, respectively. At failure, the most frequently emerging RAMs were E138K in combination with M184I in RPV VFs and K103N in EFV VFs. The N(t)RTI RAMs M184V or M184I emerged in 6 subjects by W48 and 3 beyond W48 of the 23 subjects with VF in the RPV group. No subject in either treatment group developed the K65R mutation.

Overall, phenotypic resistance to any agent in the regimen occurred in 3.1% (9/288) of subjects in the RPV group and in 1.2% (3/255) of subjects in the EFV group through W96. The number of subjects with phenotypic resistance to the treatment NNRTI was comparable between groups; with 4 subjects in the RPV group and 3 subjects in the EFV group.

Conclusions: The efficacy of RPV or EFV with Truvada in subjects with BL VL ≤100,000 c/mL was high and durable over 96 weeks. Through W96, resistance development was low in both the RPV and EFV groups, with most occurring prior to W48.

P188

Ineffective central nervous system penetration of maraviroc(MVC) and ritonavir boosted darunavir(DRV/r) dual therapy

C Okoli, N Ahmed and J Ainsworth
North Middlesex University Hospital, London, UK

Background: Novel two-drug combinations including a protease inhibitor (PI) are an attractive nucleoside reverse transcriptase inhibitor(NRTI) sparing option for some patients, particularly as a switch strategy. We have used the two-drug combination of MVC and DRV/r once a day as a switch strategy in patients with stable low or undetectable plasma HIV viral loads (VL). We identified 3 of 41 patients who experienced a progressive increase in VL (>2000 copies/ml).

Method: The patients were adherent to MVC and DRV/r. For this reason, lumbar punctures were performed. All patients were asymptomatic, one had a history of psychosis. We report results of plasma and cerebrospinal fluid (CSF) VLs, drug levels, genotypic tropism tests and resistance assays on the paired samples.

Results: All patients had R5 tropic virus and past experience of PIs but not PI mutations prior to starting once-daily MVC 150mg with DRV/r 800/100mg. At the point of investigation patients had taken the regimen for >3 months (99, 234, 122 days). Prior treatment was raltegravir/MVC/DRV/r, tenofovir/zidovudine/DRV/r and abacavir/atazanavir/r respectively.

No new resistance mutations or change of tropism was reported for the CSF or plasma virus. All samples had detectable drug concentrations. [MVC] and [DRV/r] were determined by liquid chromatography-mass spectrometry. Plasma and CSF [MVC] exceeded the median EC_{90} for wild-type virus of 0.57ng/ml. Plasma and CSF [DRV] exceeded the median IC_{50} for wild-type virus of 2.75ng/mL.

Cases one and two switched to zidovudine/lamivudine/raltegravir and tenofovir/zidovudine, respectively, continuing DRV/r. Case three remained on therapy, and intensified with abacavir. All patients experienced a >1 log viral load drop one month after treatment intensification, with VLs of 20, 44, 294 copies/ml, respectively.

			Paired tests		Maraviroc			Darunavir		
Case	VL at start copies/ml	Nadir CD4 Cells/mm3	Plasma VL	CSF VL	Plasma (ng/ml)	CSF (ng/ml)	CSF: plasma ratio (%)	Plasma (ng/ml)	CSF (ng/ml)	CSF: plasma ratio (%)
1	<20	350	1034	9091	24.21	1.45	5.98	547	3.23	0.59
2	<20	80	2244	4123	75.14	4.58	6.1	1053	8.54	0.81
3	79	190	3400	26873	42.85	1.6	3.73	4530	5.70	0.13

Conclusion: The combination of MVC and DRV/r once a day was insufficient to prevent replication of HIV in the central nervous system in these patients. Re-introduction of NRTIs reduced plasma HIV VL. Validated measures are required that assess the concentrations of drug within the CSF associated with an undetectable level of virus at that site.

P189

Outcomes of protease inhibitor Darunavir / Ritonavir (DRV/r) monotherapy in a clinical setting

R Castles[1], C Pacho[2], J Swan[1], S Sonecha[1] and M Nelson[1]
[1]Chelsea and Westminster NHS Foundation Trust, London, UK, [2]Sant Pau University Hospital, Barcelona, Spain

Background: Protease inhibitor monotherapy has shown comparable antiviral efficacy when compared with triple therapy and a potential for a reduction in tablet load, toxicity and cost.

Method: All patients commenced on Ritonavir 100mg and Darunavir 800mg monotherapy between 1st January 2008 and 1st January 2011 were identified. A snapshot was taken at 30th June 2011 to see how many remained on monotherapy, the reasons for cessation of treatment and outcome.

Results: 232 patients were commenced on monotherapy between January 2008 and January 2011. 178 patients remain on DRV/r after a mean of 16 months of therapy (range 6 - 42 months), of which 84% have a suppressed viral load (< 200 copies RNA/ml). 49 patients stopped monotherapy after a mean of 10 months (range 1 - 32 months). Table 1 illustrates the reasons for stopping.

21 of the 22 patients who stopped due to VL increase had their regimes intensified with another agent (17 with NRTIs, 2 with NNRTIs and 2 with Maraviroc) while 1 patient had therapy changed completely. 19 of the 21 became virologically undetectable after intensification. The patient who changed regimen did not achieve an undetectable VL.

Table 1: Reasons for discontinuation

Reason for stopping DRV/r			N=49 (%)
VL increase	22 (45)		
ADRs	30%	G.I.*	6 (12)
		Weight gain	3 (6)
		Non-specific toxicity	2 (4)
		CNS	2 (4)
		Skin reaction	2 (4)
Patient Preference	4 (8)		
Planned intensification**	3 (6)		
Miscellaneous	Inadequate response	1 (2)	
	Non-compliance	1 (2)	
	Unknown	1 (2)	
	Drug interactions	1 (2)	
	RIP	1 (2)	

* GI includes nausea, vomiting, stomach pain and diarrhoea

** Planned intensification of regime having temporarily been on monotherapy due to acute illness.

Conclusion: This study shows that DRV/r monotherapy is effective in the majority of individuals. The main reason for patients stopping DRV/r is an increase in viraemia which is successfully managed by intensification in the majority.

This suggests that monotherapy may be an effective, safe and potentially cost saving antiviral option in a selected group of patients.

P190

The utility of resistance testing in the clinical management of HIV-1 infection

D Bonsall, D Bradshaw, S Mandalia and M Nelson
Imperial College London, London, UK

Background: This study reviews the utility of genotypic resistance testing. The prevalence of antiretroviral therapy (ART) resistance in the UK is approximately 8% among ART-naïve patients and 50% among ART-experienced patients. Current guidelines recommend early testing in newly diagnosed patients and prior to starting therapy in persons at risk of re-infection. Suboptimal suppression of viral load (VL) by ART should prompt further resistance testing.

Methodology: HIV-1 genotypes, VL measurements and ART prescriptions were collated retrospectively for all patients receiving one or more resistance test from May 2009–2010 at Chelsea and Westminster Hospital. Resistance to ART was determined using the Stanford algorithm.

Results: A total of 1086 resistance tests were conducted on 998 patients, of whom 879 had at least one successful test. There were 364 tests conducted on treatment-experienced patients, of which 76 (21%) failed. A low VL was predictive of test failure (40% of failed tests vs. 19% of successful tests had a VL <200 copies/ml). Seventy percent of successful tests were conducted on ART naïve patients, of whom 52/633 (8%) had resistance to at least one class of ART classed as 'low-level' or greater using the Stanford algorithm (26 NRTI, 21 NNRTI and 13 PI). In contrast, 70/246 (28%) ART-experienced patients had resistance at the first test (48 NRTI, 32 NNRTI and 17 PI). Excluding failed tests, 54 ART-naive patients and 143 ART-experienced patients had more than one test. Up to 15 tests were ordered per patient since 2001. Only 6/64 (9%) of the repeat tests conducted on naive patients showed increased resistance. Furthermore, 35/166 (21%) tests repeated on ART-experienced patients showed increased resistance, yet only 8/166 (5%) informed a change in ART. There were 33/166 repeat tests that resulted in a change in ART despite no change in resistance. There was no significant difference in log-fold VL decline between those switching ART because of newly detected resistance or those switching despite no change in resistance (1.22 ± 1.16 vs. 0.83 ± 1.31, respectively; student-t test; P=0.2).

Conclusions: The majority of repeat resistance tests provide no new information, particularly amongst treatment-naive patients. Repeating resistance tests among treatment-experienced patients rarely informs ART-regime change and changing therapy on an empirical basis may be equally effective in suppressing VL.

P191
Cost effectiveness of rilpivirine- or efavirenz-based regimens for treatment-naïve, HIV-1-infected patients: NHS England and Wales perspective

I Girod[1], M Bell[3], I Adriaenssen[2] and C Knight[3]

[1]Janssen, High Wycombe, UK, [2]Janssen Global Services, Beerse, Belgium, [3]RTI Health Solutions, Manchester, UK

Background: Rilpivirine (RPV; EDURANT) is an NNRTI recently approved by the European Medicines Agency for use in ARV-naïve adults with viral load (VL) ≤100,000 c/mL. In this population in the pooled Phase III randomised, double-blind ECHO and THRIVE trials, RPV 25 mg qd + 2N(t)RTIs had non-inferior and superior antiviral efficacy vs efavirenz (EFV) 600 mg qd + 2N(t)RTIs at Week 48. RPV had lower incidences of neuropsychiatric events, rash and grade 2–4 lipid abnormalities vs EFV. We determined the cost-effectiveness of RPV vs EFV from the perspective of the NHS in England and Wales using a cost-utility analysis.

Methods: A Markov model was developed, with a 3-month cycle time and six health states defined by different CD4 cell-count ranges, as well as death. Inputs were baseline population characteristics, rates of transition between the different health states, HIV-related and non-related mortality rates, utility weights, ARV drug use and costs, and other healthcare service use and costs. The model allowed for three regimen switches following first-line treatment and provided estimates for a lifetime horizon. Outcomes included lifetime costs and quality-adjusted life-years (QALY). Costs were estimated from the NHS perspective and were converted into 2012 GB pounds. Outcomes and costs were discounted at 3.5% as per requirements from UK health technology assessment agencies. Cost-effectiveness of a RPV- vs an EFV-based regimen was determined as the incremental cost-effectiveness ratio (ICER) based on the incremental cost per QALY gained. Multivariate, univariate and probabilistic sensitivity analyses were performed.

Results: Annual drug acquisition costs were identical for RPV and EFV. However, differences between treatments in safety, treatment discontinuation and CD4 cell count evolution over time influenced overall treatment costs. Hence, over a patient lifetime, the RPV-based regimen cost £3,058 (−1.4%) less than the EFV-based regimen, and generated 0.068 additional QALYs (+0.5%). Scenario and one-way sensitivity analyses also showed the RPV-based regimen dominated the EFV-based regimen. Probabilistic sensitivity analysis revealed a >65% probability that the incremental cost-utility would be below a threshold of £30,000.

Conclusion: Based on this model using 48-week data, RPV 25 mg qd + 2N(t)RTIs is cost-effective for ARV-naïve adults with a baseline VL of ≤100,000 c/mL, with incremental QALY gains at a similar cost compared to EFV 600 mg qd + 2N(t)RTIs.

P192
Five-year follow up of safety and efficacy of Truvada Or Kivexa in combination with Efavirenz in Treatment Naïve HIV patients – Multicenter prospective cohort study

S Das[1], J Arumainayagam[2], E Carlin[3], K Bilakanti[1], L Riddle[4], M Pammi[3], S Chandramani[2], I Ahmed-Jushuf[3] and M Ghanem[4]

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

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

Methods: We collected information about HIV patients who are HLA-B 5701 negative starting treatment with Truvada or Kivexa in combination with efavirenz from Jan 2006 to Dec 2006 with follow up through five-years. Viral load (VL), CD-4 count, estimated GFR (Cockroft-Gault) were measured at baseline and every 12 weeks and fasting lipid profile every 24 weeks. Risk of CVD was calculated using Framingham equation at baseline and every 24 weeks. Statistics were by student's t-test, one- way ANNOVA or Dunn's multiple comparison test. Patients who lost follow up were not included (n=32).

Results: Of 146 patients, 71 were on Truvada and 75 on Kivexa. Most were black African (73%), mean age 41.0 (+/−8.9) years and 43.0% were female. Mean Baseline VL was 5.4 (+/−5.6) $\log_{10}$ copies/ml and CD-4 count 173 (+/−82) cells/mm^3 of blood.

After 5 years (260 weeks), on intention to treat analysis, VL suppression below 200 copies/ml in Truvada and Kivexa arm were78.8% and 80% (*P*=0.1) and below 40 copies in 70.4% and 74.6% (*P*=0.8) respectively. Mean rise in CD-4 count was similar in both groups. Results were not predicted by baseline VL. Increase in serum total cholesterol (TC) was higher in Kivexa (*P*= 0.002), but triglycerides (TG), HDL-cholesterol (HDL), TC/HDL and e-GFR was not different (table 1).

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

Conclusion: In this study, after 5 years of follow up Truvada and Kivexa used in combination with efavirenz in treatment naïve HLA-B 5701 negative predominantly black African patients were safe and effective.

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

		TC mmol/l	TG mmol/l	HDL mmol/l	TC/HDL	e-GFR ml/min	Mean CVD risk (%)
Truvada (n=71)	Baseline	4.0(0.9)	1.4(1.1)	1.1(0.3)	3.6(1.8)	96(23)	2.1(3.2)
	260 weeks	4.9(1.1)	1.6(1.1)	1.5(0.6)	3.3(0.9)	117(33)	5.8 (10.0)
Kivexa (n=75)	Baseline	4.4(1.1)	1.5(0.9)	1.1(0.3)	3.9(0.9)	101(25)	2.3(3.6)
	260 weeks	5.2(1.0)	1.2(1.0)	1.6(0.5)	3.3(1.0)	122(35)	5.0 (6.8)
P-value (between groups)	0.002	0.8	0.1	0.8	0.1	0.1	

P193
Protease inhibitor-based dual antiretroviral therapy (PIDAT) in clinical practice

N Marshall[1], C Smith[2], L Swaden[1], M Tyrer[1] and M Johnson[1]

[1]Royal Free Hospital NHS Trust, London, UK, [2]University College London, London, UK

Background: PI-based Dual Antiretroviral Therapy (PIDAT) is being evaluated as a switch strategy in a number of clinical studies. We looked at its use within our cohort.

Method: Patients switching to a single protease inhibitor (PI/r) plus one other ARV (excluding PI/r) between 2004 and 2011 were identified using our HIV database. Treatment history and indication for switch were identified. Virological outcomes were assessed for those with more than 24 weeks follow up post switch (or failure).

Results: 133 patients were identified**:** 39% (52) switched from dual PI/r based (PI+PI/r+/−other) regimens, 25% (33) PI/r+2NRTI, 5% (7) NNRTI+2NRTI, 12% (16) PI/r monotherapy, and 19% (25) other.

Indications for switch were: 28% (37) rationalisation of dual protease inhibitor-based regimens (15 switch from dual protease inhibitors for other reasons), 29% (39) current NRTI toxicity, 11% (15) intensification of PI monotherapy and 4.5% (6) resistance. VL at switch was <50c/ml in 86% (115). When switching from dual PI/r based regimens, 73% (27/37) switched due to pill burden, 16% (6/37) due to GI side effects, 11% (4/37) due to hyperlipidemia.

The PIs used for PIDAT were 82% (109) DRV/r (101 OD, 8 BD), 8.3% (11) LPV/r, 6.8% (9) ATV/r and 3% (4) other. Second agents were 16% (22) NRTIs (11 TDF, 8 3TC/FTC, 3 ABC), 57% (76) NNRTI (68 ETR, 6 NVP, 2 EFV), 22% (29) maraviroc and 4.5% (6) raltegravir. Etravirine and maraviroc were prescribed once daily in 81% and 79% of cases respectively.

For the 118/133 with follow up >24 weeks / experiencing VF / discontinue PIDAT at any time, 84% (99/118) remained on PIDAT at last follow up, 64% (76) with >52 weeks on therapy. 12.7% (15/118) experienced VF, leading to discontinuation of PIDAT in 9 cases (5 adherence related). 10 others discontinued PIDAT without VF, 6 switched to PI monotherapy (2 due to ETR rash, and 2 due to intolerance of ETR formulation) and 4 to HAART (3 due to toxicity, 1 due to kidney transplantation)

Conclusions: Protease Inhibitor-based Dual Antiretroviral Therapy (PIDAT) is an increasingly common maintenance strategy in our clinic population with 4.4% (116/2645) of our 'on treatment' population taking PIDAT as a switch strategy in October 2011. Outcomes appear favourable, however clinical trials evaluating the non-inferiority of specific PIDAT regimens are awaited to establish outcomes of this strategy.

P194
Is dual therapy the new triple therapy? An audit of maraviroc (MVC) and ritonavir boosted darunavir (DRV/r) in treatment experienced patients

N Ahmed, C Okoli and J Ainsworth
North Middlesex University Hospital, London, UK

Background: We report use of the two-drug combination of MVC and DRV/r once a day as a switch strategy in patients with low or undetectable plasma HIV viral loads(VL), and R5 tropic virus by genotype. Most patients had taken two nucleoside reverse transcriptase inhibitor(NRTI) drugs, and a ritonavir boosted protease inhibitor(PI/r). Pre-existing resistance to lamivudine/emtricitabine and non-nucleoside reverse transcriptase inhibitor(NNRTI) was common in the cohort.

Method: A retrospective case note review was conducted of baseline demographics and outcome. A change of treatment of MVC DRV/r due to HIV viraemia(>20 copies/ml) was defined as virological failure.

Results: 41 patients were included in the analysis, median age was 46 years(range, 23–74), 16/41(39%) were male, and the majority were of Black African origin, 32/41(78%). Median nadir CD4 was 120cell/mm3. The median number of regimens a patient had prior to dual therapy was 7(range, 2–25). The median days on MVC DRV/r was 250(range, 35–722). 22/41 patients(54%) and 19/41(46%) were on 300mg and 150mg MRV once a day, respectively, all with 800/100mg DRV/r. The median CD4 count at baseline and most recently was 380cells/mm3 and 597cells/mm3 respectively. Prior regimens included 21/41 on triple therapy, 14/41 on dual therapy, PI monotherapy(5/41) and quadruple therapy(1/41). 24/41(59%) patients were known to have HIV resistance mutations; 21/24 to NNRTIs. 20/24 had M184V, 12/24 K65R/L74V, and 3/24 had PI mutations. No patients had mutations known to reduce susceptibility to DRV(Stanford algorithm).

Seven patients had a detectable low VL prior to treatment switch. Five of them became undetectable, one has a VL of 74 copies/ml and one had virological failure. Overall, 5 out of 41 patients had virological failure after switching to dual therapy. There was no change in tropism or acquisition of new resistance mutations in these patients and poor adherence was not thought to account for virological failure. Three of them were investigated by lumbar puncture and had central nervous system(CNS) virus levels greater than plasma. Thirty-five of the remaining patients have undetectable VLs and one has a low level VL. Two of the 35 changed treatment due to toxicity.

Conclusions: In this cohort of treatment experienced patients on MVC and DRV/r once a day, treatment change due to virological failure was required in 5/41(12%). Three of these patients had CNS replication of HIV and remained susceptible to MVC and DRV/r.

P195
Switching to atazanavir due to therapeutic tenders: short term outcomes

N Marshall[1], C Smith[2], L Swaden[1] and M Johnson[1]
[1]Royal Free NHS Trust, London, UK, [2]University College London, London, UK

Introduction: From April 2011 the London HIV Specialist Commissioning Group (LSCG) introduced a therapeutic tender for a boosted-protease inhibitor (atazanavir 300mg, ATV). Eligible patients were offered the switch as part of an effort to save £7.8million across London over 2 years. We report our early experience with this process.

Method: Data on all patients who switched to a protease inhibitor for any reason were prospectively collected using the LSCG form. Patient demographics and switch indication were recorded for each switch episode. Short term outcomes of those who switched for cost was compared to those switching for other reasons (discontinuation within 3 months)

Results: Over 10 months (April 2011-January 2012) 201 individuals made a total of 232 switches to a new PI (31 made 2 PI switches). 21/201 were excluded because they switched from ATV to another PI (62% for toxicity/intolerance), leaving 180 not receiving ATV prior to switch. 153 (85%) of these switched to ATV and 27 to another PI (22 DRV/r, 5 LPV/r). 55% of those switching to ATV did so for the tender process, 21% toxicity, 7% intolerance, 7% viral failure/resistance, 10% other/unknown. For those switching to other PIs, reasons for switch were**:** 26% toxicity, 11% intolerance, 26% viral failure/resistance, 19% pill burden, 18% other/unknown. Indication for switch to PI other than ATV were confirmed/suspected resistance (26%), drug interaction (22%), prior intolerance of ATV (11%), PI mono/dual therapy (19%). The % with VL<50 c/ml and the median CD4 count (cells/mm3) were 72% and 595 for those switching to non-ATV regimens, 92% and 604 for those switching to ATV for the tender process and 78% (P=0.02) and 604 (P=0.92) for those switching to ATV for other reasons. 83/84 switches for the tender process were in those already taking a PI (1/84 raltegravir).

Switching due to the tender was not associated with a higher incidence of short term discontinuation (12/78; 15% over 3 months) compared switching to ATV for other reasons (8/51; 16%), or switching to other ARVs (0/15; 0%) (P=0.26). Patients were equally likely to discontinue ATV when co-prescribed tenofovir, irrespective of the indication for switch (16% (14/90) TDF vs 11% (6/54) non-TDF regimens, P=0.46).

Conclusion: During this period, the primary reasons for switching to a PI were the tender process and toxicity. Switching to atazanavir due to the therapeutic tender is not associated with an increase rate of short term discontinuation.

P196
The use of Enfuvirtide in acutely unwell patients

M Evans and E Wilkins
North Manchester General Hospital, Manchester, UK

Background: Enfuvirtide (ENF) is a HIV-1 fusion inhibitor. It is only available as a subcutaneous injection, which patients may not tolerate in the long-term. However, ENF can be useful in situations when the oral route becomes unavailable, for example in patients who are unable to swallow or are not absorbing medications properly. It is safe to use in renal and hepatic failure and no dose adjustments are required.

Method: A retrospective analysis was performed on patients who received ENF between January 2009 and December 2011, using data drawn from patients' case notes, pharmacy and pathology records. Those who received ENF as part of a long term regimen were excluded.

Results: 23 patients were found to have received ENF. Of these, 20 patients were eligible (13 male, 7 female). The mean age of patients was 48 (range 31–73). The mean CD4 count of patients at the start of treatment was 77x106/ L (range 0–254) and the mean viral load was 4.29 log10 copies/ mL (range 1.61–6.94). 1 patient did not have a CD4 count or viral load recorded and was looked after by another department. The commonest indications for treatment were**:** diarrhoea/ not absorbing medications (7 patients), swallowing difficulties (3 patients), intubation (3 patients) and vomiting (2 patients). Other indications included: side effects of other antiretrovirals (ARVs), poor adherence to tablet formulations, reduced level of consciousness, a failing regimen and acutely deranged liver function tests (1 patient each). 1 patient had problems adhering to oral medications and was pregnant. 6 patients had previous resistance to non-nucleoside reverse transcriptase inhibitors (NNRTIs), 5 to nucleoside reverse transcriptase inhibitors (NRTIs) and 2 to protease inhibitors (PIs). The mean duration of treatment was 33 days (range 2–165 days). 3 patients had rash or skin nodules as a documented side effect. A wide range of ARVs were co-prescribed. 5 patients died on treatment. Of the remainder, 10 were successfully switched to regimens containing 1 or more NRTIs, 8 to a PI, 8 to Raltegrevir, 4 to NNRTIs and 1 to Maraviroc.

Conclusion: Acutely unwell patients with HIV-1 infection may be unable to swallow tablets or have impaired absorption from the gut. Enfuvirtide should be considered as an option in cases where ARVs are indicated but cannot be deferred while the patient recovers. In addition, its lack of renal and hepatic toxicity makes it extremely useful in this patient group.

P197
Safety, tolerability, and efficacy of lopinavir/ritonavir (LPV/r) in HIV-infected women: meta-analysis of 7 randomized clinical trials (RCTs) through 48 weeks

R Trinh, A Hermes, L Fredrick, M Pasley, M Martinez and M Norton
Abbott, Abbott Park, IL, USA

Background: The World Health Organization (WHO) estimates that women comprise 50% of the HIV-infected population. Data on safety and efficacy of

antiretrovirals (ARVs) in women are limited. This meta-analysis provides information regarding the safety, tolerability, and efficacy of LPV/r in women as compared with men.

Methods: For this analysis, 7 RCTs met the following inclusion criteria**:** prospective studies of adults receiving the approved dose of LPV/r as part of a 3-ARV regimen with available data from baseline through week 48 on viral load (<50 copies/mL), CD4+ T-cell changes, treatment-related adverse events (AEs) and rates of discontinuation. These studies included 492 women (286 ARV-naïve from 6 RCTs and 206 ARV-experienced from 1 RCT) and 1530 men (1137 ARV-naïve from 6 RCTs and 393 ARV-experienced from 1 RCT).

Results: Through week 48, virologic response rates (viral load <50 copies/mL, ITT Noncompleter=Failure analyses) were similar between women and men (68.9% and 74.2% in ARV-naïve women and men, *P*=0.073, and 52.4% and 57.0% in ARV-experienced women and men, *P*=0.300). Mean changes from baseline to week 48 $CD4^+$ T-cell counts were also similar between women and men (+209 cells/mm^3 and +200 cells/mm^3 in ARV-naïve women and men, *P*=0.420, and +138 cells/mm^3 and +123 cells/mm^3 in ARV-experienced women and men, *P*=0.253).

The incidence of treatment-related moderate/severe AEs was similar in women and men (ARV-naïve: women=34.3%, men=34.9%, P=0.890, ARV-experienced: women=28.2% men=25.4%, P=0.495). Overall rates of discontinuation due to any reason were higher in ARV-naïve women compared with ARV-naïve men (women=21.7%, men=15.4%, P=0.013); the individual reason of loss to follow-up was also higher in these women compared with these men (women=8.7%, men=4.1%, P=0.004). Overall rates of discontinuation were similar between ARV-experienced women and men (women=23.8%, men=21.9%, P=0.608). Rates of discontinuation due to AEs were higher in ARV-naive women compared with ARV-naïve men (women=8.7%, men=5.2%, P=0.034) and similar for those ARV-experienced (women=7.8[0]%, men=4.6%, P=0.136).

Conclusions: This meta-analysis of 7 randomized clinical trials of 492 women and 1530 men on LPV/r-containing regimens, both ARV-naïve and experienced, revealed no substantial overall gender differences regarding safety, tolerability, and efficacy.

P198

Effect of patient smoking status on CD4 count change after initiation of antiretroviral therapy

R Lodwick[1], M Johnson[2], C Smith[1], M Lipman[2], V Cambiano[1], M Tyrer[2], A Phillips[1] and F Lampe[1]

[1]UCL, London, UK, [2]Royal Free Hospital, London, UK

Background: Although it is known that in the general population CD4 counts are higher in smokers than in non-smokers, it is unclear whether CD4 count change after initiation of antiretroviral therapy (ART) is associated with smoking status in people with HIV.

Methods: Patients at a large urban clinic who started ART for the first time with at least three drugs during the period 1998–2008 were included if data were available on their smoking status. Patients who were known to have been smokers at any time were assumed to have always been smokers. Those without a CD4 count in the six months before starting ART were excluded. CD4 count one year after starting ART was defined as the CD4 count measurement closest to one year (±75 days) while on ART. The effect of smoking status on CD4 count change was evaluated using a linear regression model.

Results: 1139 patients started ART with at least three drugs during 1998–2008, of whom 961 (84%) had a baseline CD4 count. Most patients (547, 57%) were men who have sex with men (MSM), 213 (22%) were heterosexual women, and 175 (18%) were heterosexual men. Of the 961 included patients, 401 (42%) were smokers. A greater proportion of MSM were smokers than heterosexual men and women (53%, 38% and 14% respectively). Baseline CD4 counts were similar overall in both smoking groups (median 206 cells/mm^3), but within risk groups were lower in smokers (median cells/mm^3 for smokers and non-smokers respectively**:** MSM 222 and 242; heterosexual women 158 and 186; heterosexual men 132 and 150).

315 (79%) of smokers and 458 (82%) of non-smokers had a CD4 count measurement while on ART one year after starting ART. The median (IQR) change in CD4 count was 233 (138–330) cells/mm^3 in smokers and 199 (120–298) cells/mm^3 in non-smokers. The estimated mean change in CD4 count was 36 cells/mm^3 higher in smokers (95% confidence interval [CI] 13–59, *P*=0.002). After adjustment for baseline CD4 count, age, gender and risk group, the estimated mean change in CD4 count was 34 cells/mm^3 higher in smokers (95% CI 9–58, *P*=0.007).

Conclusion: Patients who smoke appear to have a greater CD4 count response one year after starting ART than patients who do not smoke. While this is plausible, given the higher CD4 count seen in smokers in the general uninfected population, it is not possible to rule out that this is due to confounding by some other factors. Smoking status should be accounted for when assessing a patient's immunological response to ART.

P199

Switch from Efavirenz to Etravirine improves neuropsychiatric side effects in a UK-HIV clinic cohort

J Zhou, Z Watson, M Fisher and L Waters

BSUH, Brighton, UK

Background: Current BHIVA guidelines recommend efavirenz (EFV) based regimens as first line therapy for HIV infected adults. Etravirine (ETR) has shown a favourable central nervous system (CNS) side effect profile compared with EFV in a first-line and a switch study. This study aims to describe the timing, clinical outcome and effects on lipid profile of switching from EFV to ETR in a clinical cohort.

Methods: Retrospective database analysis of all patients switching form an EFV based antiretroviral regimen (ARV) to ETR from 30 June 2008 to 10 Oct 2011 was performed. Demographic details, HIV surrogate markers, switch details, lipid profile and clinical outcome were extracted from our prospectively collected database and patient clinical records.

Results: Forty individuals (median age 43, 37 MSM, 38 white), switched from EFV to ETR; 34 (85%) & 6 (15%) were on Tenofovir/Emtricitabine & Abacavir/Lamivudine, respectively. Thirty-seven (92.5%) switched for CNS side effects including abnormal dreams, anhedonia, low mood, anxiety, insomnia, lethargy; most subjects reported more than one side effect. Two (5%) individuals switched for CNS toxicity and hypercholesterolemia, 1(2.5%) for raised lipids. At switch, patients had been on EFV for a median 651 (IQR 651–1397) days, and all had HIV-RNA <40 copies/ml. Median CD4 was 584 (IQR 467–702) & 572 (IQR 445–668) pre and two wks post switch respectively.

The table below shows the outcome of CNS side effects at 12 weeks.

Six (15%) switched off ETR: 3 back to EFV, 2 to Nevirapine and one whose CNS toxicity had improved was recruited onto a study; all were undetectable at time of switch off ETR. There was no difference in the pre & post switch lipids or estimated glomerular filtration rate. At an individual level, all patients with raised total cholesterol had a reduction and one who was on statins came off them. Of the 34 individuals remaining on ETR, all had HIV-RNA <40 copies/ml at last visit with a median time on ETR of 454 days.

Conclusion: ETR is well tolerated and an efficacious alternative in patients experiencing neuropsychiatric side effects on EFV.

Documented improvement	Yes	Partial improvement	No improvement	No record
Number (%)	30 (75%)	3 (7.5%)	6 (15%)	1 (2.5%) Remains on ETR

P200

An analysis of the reasons for switching combination antiretroviral (cART) regimens and associated drug wastage

D Ogden and M Pakianathan

St. George's Healthcare NHS Trust, London, UK

Background: Drug wastage in HIV clinic happens occasionally as a result of switching between regimens due to clinical need such as drug toxicity, intolerance, resistance and patient choice. It is difficult to know the true extent of this because unused drugs are not always returned to clinic. This analysis looks at the reasons for switching and the associated value of wastage from patients switching cART regimens.

Method: All adult patients switching cART regimens between 1st April 2011 and 5th January 2012 were identified and using pharmacy records the number of days of medication held at home at the time of switch was estimated. From this a cost value and wastage rate was calculated.

Results: Out of a total 1400 patients on treatment, 97 patients switched HAART regimen during the data collection period. Male 46 (47%) Female 51 (53%). Ethnicity**:** Black African 53 (55%), White 29 (30%) Black Caribbean 7 (7%) and Other 8 (8%). 72 (74%) were heterosexual and 25 (26%) MSM. There was no wastage in 47/97 (48%) switches, although in 2/97 (2%) patients it was

not possible to estimate if wastage or no wastage occurred. Wastage occurred in 48/97 of patients (50%). A median of 25 days were wasted per patient where wastage occurred. Grouping the categories of toxicity, intolerance, resistance and viral failure and comparing this with switches aimed at reducing pill burden; wastage/non wastage, 44/37 vs. 4/10 (p = 0.079, Fisher exact test) respectively. The total value of drugs wasted in 97 patients was £16,074. The majority of wastage value £15,114 (94%) occurred beyond the first four weeks of being on a regimen. Expressed as a percentage of total drug spend over the same time period this was 0.27% of a £5.88million spend.

Conclusions: Reason for switch was not associated with wastage. There was a trend for less urgent switches around reducing pill burden to be associated with less wastage than more urgent reasons such as toxicity and resistance. Wastage was a relatively small amount of total drug expenditure in the same period. Further work is needed to explore if there are other predictors for switch that might reduce wastage such as type of toxicity or drug involved.

P201
Does shared prescribing between HIV physicians and GPs lead to more unforeseen drug interactions?

N Gupta, V Goodall, H Loftus, C Bell, Q Younis and C Bowman

Department of Genitourinary Medicine, Royal Hallamshire Hospital, Sheffield, UK

Background: HIV patients are living longer and often have other co-morbidities that are more appropriately managed in primary care.

As part of a hospital wide policy launched in 2009 aimed at reducing out-patient prescribing, patients were informed that out-patient prescribing for conditions unrelated to HIV would now be only prescribed from their GP. This raised two main concerns:

1. Not all patient's GPs were aware of their HIV
2. GPs might be prescribing medication that would interact with HAART

The aim of this study was to determine whether the HIV clinic had an accurate record of GP prescribed medication and to identify whether any real or potential serious untoward incidents may have occurred because of unforeseen drug interactions.

Methods: A retrospective case note review was undertaken in 2011 of 100 consecutive HIV clinic patients (50 male and 50 female). Information was collected on the number of patients whose GP was aware of their HIV, number taking HAART, and of any non-HIV related medication documented in the HIV notes.

We requested a record of non-HIV medication from the patients GPs. We identified any drug interactions between HAART and GP drugs and colour coded them using the Liverpool HIV drug interactions database.

Results: The age range was 20–78 years. The GP was aware of HIV diagnosis in 83 patients. 83 patients were taking HAART. There were 50 known and 10 unknown 'orange' interactions (*potential interaction -may require close monitoring, alteration of drug dosage or timing of administration*). There were 2 red drug interactions (*drugs should not be co-administered*), one of which was known (Atazanavir and PPI), the other unknown (PI and simvastatin). The record of GP drugs in the HIV notes was incomplete in 17 patients, out of date in 5 patients, inaccurate in one patient and inaccurate / incomplete in 1 patient.

Conclusion: Reassuringly we only identified one unknown contraindicated combination (simvastatin and PI), and this was never taken by the patient. No serious drug interactions had occurred. This would suggest that non-HIV related conditions can be safely managed in primary care and that shared care improves communication between primary and secondary care. It remains vital to communicate all changes in medication prescribed either by the GP or the HIV specialist in a timely manner in order to avoid potentially dangerous drug interactions.

P202
Etravirine as a first-line switch option: real world experience in one UK centre

J Shaw and S Ahmad

Withington Community Hospital, Manchester, UK

Background: Etravirine (ETV) has been shown to be a viable first-line switch option for patients experiencing side effects with Efavirenz (EFV). It remains unlicensed for this indication, but evidence accumulates to support its use. Our UK unit has used ETV as a switch option for treatment-experienced patients for over 2 years and we present our experience.

Methods: All patients switched to ETV prior to 30/06/11 were identified via pharmacy records, providing at least 6 months follow up. Data on sex, age, orientation, ethnicity and hepatitis co-infection were collected. CD4 count, viral load (VL), liver enzymes and lipid data at baseline and 6 months were recorded.

Results: 25 patients were identified and evaluated (23 male, 2 female; 22 Caucasian, 2 Black African, 1 Asian; 23 MSM, 2 heterosexual) with a mean age of 41 years (range 23–56). 4 patients were co-infected with Hepatitis B (HBV), none with Hepatitis C.

The majority of patients (21/25, 84%) switched from EFV with the predominant reason for this switch being depressive symptoms (16/21, 76%). 2 switched from Nevirapine, and 2 from protease inhibitors (rash and gastrointestinal side effects). All received ETV 400mg once daily. Co-prescribed drugs were nucleoside backbones (Truvada [20/25, 80%], Kivexa [5/25, 20%]. One Truvada patient (HBV+, K65R) was also co-prescribed Raltegravir.

One HBV PCR+ patient who had had a treatment gap discontinued therapy (3.6%) due to rising serum transaminases.

22 patients (88%) had undetectable viral loads throughout the study period with 2 patients (8%) having single viral load blips (range 58–92 c/mL).

Conclusions: This data adds to other work supporting Etravirine as a first-line switch option for treatment-experienced HIV infected patients. Our experience suggests that ETV is well tolerated and effective with no adverse trend in serum biochemistry.

Table 1: Median baseline and six month data (range in brackets)

	Baseline	6 Months
CD4 cells/μL	479 (181–1050)	541 (157–1026)
Alanine transaminase (ALT) IU/L	32 (10–90)	22.5 (10–56)
Bilirubin μmol/L	6 (3–65)	7 (3–16)
Total cholesterol mmol/L	4.8 (2.8–6.2)	4.4 (3.5–6.4)
HDL mmol/L	1.2 (0.7–1.8)	1.15 (0.6–2)
Triglycerides mmol/L	1.4 (0.6–3.9)	0.95 (0.6–5.5)

P203
Switching to maraviroc in combination with 2 NRTIs: experience in clinical practice

N Marshall, K Liu, M Macartney, A Garcia, Z Cuthbertson, L Swaden, M Tyrer and M Johnson

Royal Free Hospital NHS Trust, London, UK

Background: The use of genotypic viral tropism assays to determine HIV co-receptor tropism using PBMCs for patients with undetectable HIV RNA viral load (VL) could allow use of the CCR5-receptor antagonist maraviroc (MVC) in a switch strategy.

Method: Retrospective review of patients switched to MVC + 2 NRTIs between January 2009 and January 2012. Data were collected on; reason for switch, nadir CD4, tropism determination, VL/CD4 at switch, and VL outcomes for those with >24 week follow up (FU) or failure. Values stated as mean (range) unless otherwise stated.

Results: 28 patients switched, with mean age 47 (31, 66), white (68%), MSM (71%). CCR5-tropism was determined prior to switch by genotypic assay, 93% (26/28) on PBMC samples. 1/28 repeatedly failed to amplify, and 1/28 predicted dual/mixed tropism. Pre-switch nadir CD4 was 264 mm^3 (40, 747) and at switch 695 mm^3 (176, 1456). 86% (24/28) had VL<50c/ml at switch, with 5.4 (1, 17) prior regimens.

25% (7/28) had prior VF on ART, 3/28 with confirmed/suspected NRTI resistance. 93% (26/28) switched from HAART, 1/28 from PI mono, 1/28 from PI-based dual therapy. 92% (24/26) continued NRTI backbone at switch. The most common indications for switch were dyslipidemia (8), GI disturbances (4), CNS side effects (5) and lipodystrophy (2).

Of the 85% (24/28) with FU >24 weeks, or who discontinued at any time, 33% (8/24) experienced VF leading to 6/8 discontinuing the regimen. 2/8 VFs remained on regimen, one re-suppressing VL<50c/ml and one with ongoing detectable VL (adherence and possible RT resistance). Of the discontinuations 4/6 stopped all ART due to non-adherence, 1 of which restarted the same regimen and re-suppressed VL at the point of switch to a PI/r. 2/6 had VF and

were intensified with PI/r. Median time to discontinuation was 57 (20, 68) weeks. Median FU of those remaining on regimen with >24 weeks was 66 (26, 104) weeks. The patient with D/M tropic virus at switch has maintained VL<50c/ml on regimen at last FU at 47 wks. 8 patients with baseline CCR5-tropic virus had FU tropism testing, all remaining CCR5-tropic with mean duration FU 13 (6, 24) months.

Conclusions: A switch strategy to maraviroc in combination with 2 NRTIs may be feasible for CCR5-tropic patients with undetectable VL without archived resistance. Viral failure was generally associated with poor adherence.

P204
A question of potency? reasons for switching from atazanavir to darunavir in a London HIV cohort

J Thornhill and I Reeves
Homerton University Hospital, London, UK

Background: Studies conducted with atazanavir (ATV) and darunavir (DRV) have demonstrated superior virological efficacy against lopinavir at 96 weeks. In London ATV is currently the Protease Inhibitor of choice, with DRV a common 2nd option. The aims of this analysis were to look at the reasons for switching from ATV to DRV, the effect on viral load, regimen tolerability and adherence.

Methods: All patients with a prescription for DRV in Dec 2012 in our cohort were identified. Those previously on ATV who were directly switched to DRV were selected for analysis. Data were collected from an electronic database and clinical notes. Data pertaining to adherence and tolerability were collected based on documentation in notes and GP correspondence.

Results: A total of 50 patients switched directly from ATV to DRV. 54% were female. The average age was 41.6 years. 80% were heterosexual, 15% MSM, and 4% IVDU. 60% were African.

10% started ATV from naive. The average length of time on ATV was 24.4 months (range 0.5 –70). At switch 44% had a viral load of <40 cpm.

The main reason for switch was virological failure or perceived need for a more potent regimen, accounting for 42% of switches (average time on ATV prior to switch in this group was 21.1 months). Four of those switched for potency had suppressed viral loads but sub-therapeutic ATV levels. Two patients had been on ATV for <6 months but were switched due to slow response and evidence of resistance.

Hyperbilirubinaemia was the reason for switching in 22%. The interaction between PPIs and ATV resulted in a switch in 12%.

Five patients (10%) changed to DRV monotherapy: all had suppressed viral loads.

Four patients (8%) switched for other side effects related to ATV and one due to a suspected drug reaction.

Improved virological suppression was seen in 82.1% who had detectable VL prior to switch (63.6% <50, 36.4% reduction in VL).

Improved tolerability was noted only in those switched for scleral icterus and GI side effects. No improved adherence was noted post switch.

Conclusion: Switching from ATV to DRV appeared to improve virological control in patients where there was a concern about potency of the regimen. Adherence was not formally assessed so we cannot rule out improved adherence as the underlying explanation. Toxicity and drug interactions were less common reasons for switching. Switching to DRV may be appropriate when there are concerns regarding potency. Upcoming RCTs comparing ATV to DRV are welcomed.

P205
The outcome of switching from ritonavir boosted lopinavir to ritonavir boosted atazanavir or darunavir

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

Background: Comparisons of ritonavir boosted lopinavir (LPV/r) with the ritonavir boosted protease inhibitors (PIs) atazanavir (ATZ/r) and darunavir (DRV/r) have shown an improvement in virological outcome and a more favourable toxicity profile with ATZ/r and DRV/r.

Methods: We performed a retrospective analysis comparing virological, immunological, lipid and renal outcomes in individuals who were virologically suppressed on LPV/r and who switched to either ATZ/r or DRV/r. Individuals were followed up for 96 weeks and longitudinal analysis of data was carried out using mixed procedure in SAS.

Results: From May 2004–May 2011,192 individuals switched from LPV/r to either DRV/r (n=89) or ATZ/r (n=103). At 96 weeks, 77.5% on ATZ/r and 88.6% on DRV/r had a viral load<50copies/ml (p=0.169). Over 96 weeks of follow up, 16 individuals had VL>500copies/ml (12 in the ATZ cohort and 4 in the DRV cohort) with 2 individuals in the ATZ/r cohort developing new major PI mutations. Both had a compromised nucleos(t)ide backbone and documented poor adherence. At 96 weeks, there was no significant difference in the change in CD4 count, the change in total cholesterol and triglycerides and change in eGFR comparing the ATZ/r and DRV/r cohorts. Over 96 weeks,14(13.6%) of the ATZ/r cohort and 3(3.4%) of the DRV/r cohort switched off ATZ/r and DRV/r respectively (p=0.026).Reasons for switch off ATZ/r included virological failure(7%), renal stones(15%),gallstones(7%),jaundice(36%), pharmacokinetic interaction(7%),patient request(14%),lipohypertrophy (7%) and PI monotherapy (7%). Reasons for switch off DRV/r included adverse lipid profile(25%), diarrhoea(25%), nausea(25%) and weight gain (25%).

Conclusion: Virological, immunological, lipid and renal outcomes were comparable between the ATZ/r and DRV/r cohorts. The significantly lower number switching off DRV/r compared with ATZ/r, suggest enhanced tolerability of this PI in these treatment experienced individuals.

P206
First line Etravirine use – can you swallow it?: real world data from one UK centre cohort

J Shaw and S Ahmad
Withington Community Hospital, Manchester, UK

Background: Existing evidence suggests Etravirine (ETV) is an effective switch option for patients intolerant of Efavirenz. Data on ETV as once daily first line therapy is scant. Our UK unit has offered ETV as an option to treatment naïve patients for the last 2 years and we present our experience with its use.

Methods: All treatment naïve patients prescribed ETV prior to 30/06/11 were identified via pharmacy records, providing at least 6 months follow up. Data on sex, age, orientation, ethnicity and hepatitis co-infection were collected. CD4 count, viral load (VL), liver enzymes and lipid data at baseline & 6 months were recorded.

Results: 23 patients were identified with one patient lost to follow up (transferred). 22 patients were evaluated (22 male, 0 female; 17 white British, 2 black African, 2 Pakistani, 1 white European; 18 MSM, 4 heterosexual) with a mean age of 39 years (range 26–57). No patients were hepatitis co-infected All patients received ETV 400mg once daily, with a nucleoside backbone (Truvada [21/22, 95.5%], Kivexa [1/22, 4.5%]).

During the study period 13.6% (3/22) patients discontinued therapy; 9.1% (2/22) discontinued due to an erythematous rash, 4.5% (1/22) found the preparation 'unpalatable'. 10 others reported unpalatability and chose to dissolve the ETV.

Median baseline viral load (VL) was 36000 c/mL (1900–1,400,000). At 6 months, 21 patients had VL <40, 1 patient had a VL of 53 c/ml and declining.

Conclusions: In our centre ETV has proven to be an acceptable, effective and well tolerated first-line treatment option. Our data confirms high anti-viral efficacy and no adverse trend in liver enzyme or serum lipid biomarkers. Side-effects and discontinuation rates were consistent with product literature. Difficulty swallowing ETV was the most common reported complaint.

Table 1: Median baseline and six month data (range in brackets)

	Baseline	6 Months
CD4 cells/μL	325 (66–523)	478 (195–932)
Alanine transaminase (ALT) IU/L	35 (18–80)	26 (10–78)
Bilirubin μmol/L	8 (2–29)	8 (5–25)
Total cholesterol mmol/L	4.4 (3–6.4)	4.7 (3.3–6.8)
HDL mmol/L	0.9 (0.2–1.4)	1.1 (0.6–1.8)
Triglycerides mmol/L	1.5 (0.7–5.5)	1.4 (0.8–3.6)

P207

Efficacy and tolerance of tenofovir–lamivudine–efavirenz combination therapy in HIV 1 patients in a resource limited setting

G Ndow, SA Diop, M Seydi, L Fortes-Déguénonvo, NM Manga, NM Dia, CD Basse, CT Ndour, M Soumare, BM Diop and PS Sow

Department of Infectious Diseases, FANN Teaching Hospital, Cheikh Anta DIOP University, Dakar, Senegal

Background: Due to the high prevalence of anaemia among HIV patients in developing countries, more patients are being started on Tenofovir-based antiretroviral (ARV) regimens. We conducted a study to evaluate the efficacy and tolerance of the Tenofovir (TDF), Lamivudine (3TC) and Efavirenz (EFV) combination regimen in HIV 1 patients.

Methods: A descriptive analytical retrospective study of all HIV 1 patients receiving TDF-3TC-EFV combination between 2007 and 2011. Collected data was analysed using Epi Info version 6.04.

Results: One hundred patients were included, with an average follow-up duration of twenty-seven months nineteen days (± twenty-one months fourteen days). We observed an average increment in body weight of about 8kg per annum, with an average rise in CD4 count of 100/mm^3 by the end of the second year. Median reduction in viral load was 43copies/mm^3 by twenty-four month of treatment. Ninety-two patients presented with at least one side effect, mostly being Grade 1 and 2 (96.36%). Neurological (24 patients) and digestive (20 patients) complaints comprised the commonest reported side effects. Four patients had adverse effects severe enough to warrant change in treatment regimen, principally due to renal insufficiency. Thirteen subjects died.

Conclusion: Patients receiving TDF-3TC-EFV combination therapy need rigorous surveillance because this combination although efficient, is not without significant adverse effects.

Management Issues in HIV

P208

HIV research trials versus standard clinics for antiretroviral (ARV) naïve patients: the outcomes differ but do the patients?

A Williams[1], A Uthayakumar[2], C De Souza[1], L Murthen[1], J Hand[1], V Apea[1] and C Orkin[1]

[1]Barts and The London NHS Trust, London, UK, [2]Barts and The London School of Medicine & Dentistry, London, UK

Background: BHIVA guidelines state "HIV positive patients should be informed about and encouraged to participate in available clinical trials at the initiation of antiretroviral therapy". Research trial outcomes are perceived to be better because of selection bias away from patients with pre-existing substance use, psychological problems or complex social needs. We report the findings of a comparison of patients initiating ARVs both through research trials and standard clinics.

Methods: Patients initiating ARVs from 01/06 to 12/11 were identified & stratified to those initiating ARVs in standard clinics (SC) versus in ARV naïve research trials (RT). Patient data was collected by review of notes, electronic records and in-house databases**:** 1202 SC & 69 RT patients were identified. All RT patients were included for analysis. Every 8th SC patient was included to give an SC:RT patient ratio of 2:1.

Conclusion: RT patients starting ARVs were more likely to be male and employed. There was no significant difference between RT and SC patients in terms of psychological, psychiatric and social work interventions ever requested. Against preconceptions RT patients were proportionally more likely to have documented depression and substance use. Despite these difficulties RT patients managed to attend their clinic appointments. Although immunological recovery was similar, RT patients achieved statistically more early undetectable viral loads (P=0.001). Similarly 96% on RT maintained VL<50 at 1 year (P=0.015). In a similarly complex group of patients the RT follow up group achieved better virological outcomes than the standard clinic.

Table1: Baseline characteristics and results

	SC patients	RT patients	*P*-value
Baseline Characteristics			
N	152	69	
Male n (%)	111 (73)	59 (86)	0.04*
MSM n (%)	75 (68)	56 (95)	1*
Psychology n (%)	57 (38)	25 (36)	0.86*
Psychiatry n (%)	20 (13)	9 (13)	1*
Social worker n (%)	16 (11)	7 (10)	1*
Av. DNAs	5	2	>0.05**
Av. number appts since diagnosis	47	41	>0.05**
Depression n (%)	39 (26)	25 (36)	0.108
Alcohol use n (%)	24 (16)	20 (29)	0.022
Recreational drugs n (%)	16 (11)	8 (12)	0.813
Employment n (%)	62 (41)	46 (67)	0.0003
Partner n (%)	58 (38)	35 (51)	0.08
Results			
Av CD4 baseline	193	269	>0.05**
Δ CD4 3/12	+130	+108	>0.05**
Δ CD4 12/12	+212	+152	>0.05**
Av VL baseline	486712 (5.69 log)	156003 (5.19 log)	>0.05**
3/12 n [%<50]	148 [40]	62 [65]	0.001*
6/12 n [%<50]	140 [71]	55 [91]	0.004*
12/12 n [%<50]	125 [82]	51 [96]	0.015*
2 yrs n [%<50]	98 [79]	37 [92]	0.08*
5 yrs n [%<50]	23 [83]	2 [100]	n/a

*Chi-Squared test **t-test

P209

Response to Hepatitis B immunisation in young adults with perinatally acquired HIV-1 infection

H Tam[1], D Porter[2], S Fidler[1] and C Foster[3]

[1]Imperial College London, London, UK, [2]John Radcliffe Hospital, Oxford, UK, [3]Imperial College Healthcare NHS Trust, London, UK

Background: Hepatitis B Virus (HBV) infection is a major public health problem worldwide however universal HBV immunisation is not recommended in the UK. HIV/HBV co-infection is associated with greater HBV replication, risk of transmission and liver disease. WHO and CHIVA guidelines recommend HBV immunisation of children with HIV, however it has not been routinely administered in all UK paediatric clinics. A single centre audit of HBV immunisation and response in young adults with perinatally acquired HIV-1 (PaHIV) following transfer to adult care was undertaken.

Methods: Case note reviews of all young adults with PaHIV were conducted. Patients with HBV infection (n=4) were excluded. Demographics, HIV data (CD4, viral load (VL), antiretroviral therapy (ART)) at time of immunisation and currently, and serology post-immunisations were recorded. Anti-HBs titres of >10IU/l were classified as a response (protective**:** >100, intermediate: <100 and >10IU/l).

Results: 66 patients with PaHIV were identified**:** 70% black African, 56% female, median age 20 years, 73% receiving ART. 43 (65%) received at least one dose of HBV vaccine, of whom 28 received at least 3 doses. Median CD4 count and VL at first immunisation was 520 cells/μl (IQR 325–710) and <50 copies/ml (IQR <50 –2944), respectively. Of 23 unimmunised (median CD4 370, IQR 140–610), 6 had CD4 counts <200 cells/μl, 2 declined, 6 transitioned within last three months, and 9 not documented.

23/28 (89%) who completed primary HBV immunisation had anti-HBs titres recorded: 9 (39%) protective, 8 (35%) intermediate and 6 (26%) non-responders. Anti-HBs titres after primary immunisation were significantly higher if VL<400 at first immunisation (p=0.04). There was no significant relationship with CD4 at first immunisation or CD4 nadir. 7 patients had follow-up serology at least one year later: 3 protective, 2 intermediate, and 2 non-responders.

12 patients with poor responses were re-immunised with a booster or repeat 3-dose course. Of these, only 2/4 previous intermediate responders and 0/6 non-responders developed protective titres, and 3 were still undergoing re-immunisation.

Conclusion: HBV immunisation is recommended in PaHIV-infected adolescents, however only a fifth of our cohort have serological protection. Earlier

immunisation in paediatrics, prior to CD4 decline and onset of sexual activity, with more aggressive monitoring and re-immunisation following suboptimal response may improve protection.

P210
The first 9 months: the lost to follow up (LTFU) clinic is born. A sustained approach to re-engaging patients

R Dhairyawan[1], S Lowe[1], B Ncube[1], A Jones[1], S Strachen[2], V Apea[1] and C Orkin[1]

[1]Barts and The London NHS Trust, London, UK, [2]Positively UK, London, UK

Background: Poor attendance and adherence to HIV medical care and ART correlates with poor clinical outcomes. To address this, a new model of care was set up in March 2011, in an urban HIV outpatient department. Patients who missed ≥2 appointments in the last year or had poor adherence, were referred to a virtual clinic run by a doctor and nurse. This involved attempts to contact patients by a dedicated mobile telephone, text, email, letter, next of kin, GP, and other HIV clinics. Once contacted, patients were offered an appointment in a weekly clinic with a doctor, nurse, social worker and third sector organisation working in parallel.

Methods: We evaluated the service over the first 9 months (March 2011 to January 2012). The clinical database and patient notes were interrogated for data on clinical and socio-demographic factors and attendance.

Results: Of the 57 patients referred to the virtual clinic, 24 re-engaged within the LTFU clinic. Of the 24 patients, 13(54%) were male; median age 40 years (range 20–60); 14(58%) were of black African ethnicity, 4(17%) black UK, 2 black Caribbean and 4 white UK/Other/Asian. Two needed an interpreter. The median time from HIV diagnosis to referral was 51 months; 16(67%) had significant medical co-morbidities with 7(29%) AIDS-defining, and 4 hepatitis B/C/D co-infection. 12(50%) were on ART; 3 with VL <50copies/ml; 9(38%) had resistance-associated mutations. 13(54%) had a mental health diagnosis; 14(58%) had ≥3 problems with immigration, housing, finance, employment, childcare, substance misuse, mental health, cognitive impairment, fear of stigma or alternative beliefs about HIV; median CD4 count was 226 cells/μL and VL was 9395 copies/ml; median attendance rate in the year prior to referral was 58%. By January 2012**:** 23(96%) had ≥1 and 12(50%) had ≥2 tangible interventions including referrals for peer support, social worker, psychiatry/psychology, community HIV specialist nurse, adherence nurse, substance misuse services, childcare and food providers; 17(71%) were on ART; median CD4 count was 322 cells/μL and VL was 1558 copies/ml. The attendance rate increased to 65%.

Conclusion: Over a period of 9 months, an intensive multidisciplinary approach to patients who are hard to engage increased attendance, ART uptake and improved clinical markers. We aim to study and further strengthen the interventions that correlated with re-engagement, while looking at new ways to engage the persistent non-engagers from the virtual clinic.

P211
Cervical cytological abnormalities in HIV positive women in the HAART era

O Davies[1], S Rajamanoharan[1], T Balachandran[2], M Kawsar[2] and T Robinson[1]

[1]West Hertfordshire Hospitals NHS Trust, Watford, UK, [2]Luton & Dunstable Hospital NHS Foundation Trust, Luton, UK

Background: BHIVA and the NHS Cervical screening programme recommend annual cervical cytology for all HIV-positive women. Studies have shown that the prevalence and rate of progression of cervical intra-epithelial neoplasia (CIN) is higher with HIV and spontaneous regression lower in significantly immunosuppressed women. There is limited research examining the association between cervical cytology and CD4 counts. This study aims to explore the correlation between CD4 counts and CIN and evaluate whether improvement in the CD4 count affects the outcome of CIN.

Methods: 100 consecutive HIV positive women aged 20 to 60 who underwent cervical cytology screening between December 2009 and September 2011 were studied from each of 2 genitourinary medicine clinic sites. A retrospective review of their case notes and the national database for cytology results was performed to identify any evidence of CIN since their diagnosis with HIV. Corresponding CD4 counts, viral loads, and HAART data were also elicited.

Results: 200 patients were included. 89% were Black African/Caribbean. 55% were aged 20–39, 44% were aged 40–55. 75% were on HAART. 80.5% had a CD4 count >350 cells/mm^3. At their most recent cervical screen 6.8% of women with CD4 counts >350/mm^3 had abnormal results, compared with 43.6% of women with CD4 ≤ 350/mm^3.

On review of previous cytology results for half of the women (1 GUM clinic site), 29/100 had an abnormal smear in the past, 24 have since experienced regression. In 19 of them this was accompanied by a corresponding increase in their CD4 counts.

Conclusion: The prevalence of abnormal cervical cytology in HIV positive women with CD4>350/mm^3 is in line with the national average of 6.6%. Most of the abnormal cytology was seen in women with CD4 counts of ≤350/mm^3 (43.6%). Women with previously abnormal cytology experienced regression with improvement in their CD4 count. We propose that annual cervical screening may not be necessary for HIV positive women who are established on HAART with CD4 counts of >350/mm^3. However more work is needed to support this.

Table 1. Breakdown of abnormal cytology results in patients with CD4>350/mm^3 (n=161)

Cytology result	No	%	(95%CI)
Mild dyskaryosis	4	2.5	(0.09–4.91)
Moderate dyskaryosis	0	0	
Severe dyskaryosis	1	0.6	(–0.59–1.79)
Borderline changes	6	3.7	(0.78–6.62)
Carcinoma	0	0	
Total abnormal	11	6.8	(2.91–10.69)

2010–11 National results: mild 1.9%, moderate 0.5%, severe 0.6%, borderline 3.5%, carcinoma 0%, negative 93.4%.

P212
Can EDTA samples be used to measure CD4 counts at the weekend?

E Elliot[1], A McCowan[1], A Cox[2], P Pantelidis[2], S Minter[2], S Vaughan[2] and P Kelleher[2]

[1]Chelsea and Westminster NHS Trust, London, UK, [2]Imperial College Healthcare NHS Trust, London, UK

Background: There is a push nationally towards Saturday opening for HIV clinics. However, viability of lymphocyte subset EDTA samples is thought to decrease with time. The more expensive Cyto-Chex tube may extend the 'shelf life' of the samples facilitating venepuncture when laboratories are closed.

Methods: Patient samples were taken into both EDTA and Cyto-Chex tubes and CD4 counts were determined on days 1, 3 and 7. Four groups were compared**:**

Group 1 EDTA v Cyto-Chex (Day 1), [n=13]
Group 2 Cyto-Chex (Day 1) v Cyto-Chex (Day 3) [n=11]
Group 3 Cyto-Chex (Day 1) v Cyto-Chex (Day 7), [n=6]
Group 4 EDTA (Day 1) v EDTA (Day 3) [n=39]

Results: On day 1 there was a small but statistically significant reduction in CD4 counts (7%) for samples taken into Cyto-Chex tubes compared to EDTA. Additionally, CD4 count differences between Cyto-Chex and comparative EDTA samples varied considerably between individual samples from –22.5% to +3.2%. Nevertheless, there was a good correlation between the two sets of data (R2= 0.954). Samples stored in Cyto-Chex tubes remained stable. There was no statistically significant difference between Cyto-Chex CD4 results analysed on Days 1, 3 and 7.

For samples stored in EDTA tubes, there was a small but statistically significant reduction in CD4 counts over time. The average count for the test group dropped from 563.31 on Day 1 to 531.74 on Day 3 (5%). Concurrently, CD4 percentage increased slightly from an average of 29.8% to 30.9% (1%). Importantly, there was a good correlation between the Day 1 and 3 CD4 counts and CD4%. In addition, Bland and Altman Plots for CD4 counts and CD4% indicated that there is no bias between measurements on day 1 and 3 for samples collected in EDTA tubes.

Conclusion: Collection in Cyto-Chex tubes results in an initial significant drop in CD4 counts but then remains stable for up to 7 days. Analysis of EDTA samples after 2 days also results in a small reduction in CD4 count. The deviation is unlikely to be clinically significant as it is within the natural variability of this assay.

Thus, for a period of 2 days (which covers samples collected on Saturday and tested on Monday), storage of blood samples in EDTA tubes should provide clinically acceptable CD4 counts. Based on these data, there is no advantage in using of Cyto-Chex tubes over this short period of time.

P213
How reliable are single versus dual visits for assessing treatment-naïve patients? analysis of the SENSE Trial

B Gazzard[1], A Hill[2], Y van Delft[3] and C Moecklinghoff[4]
[1]St Stephen's Centre, Chelsea and Westminster Hospital, London, UK, [2]Liverpool University, Liverpool, UK, [3]Janssen, Tilburg, The Netherlands, [4]Janssen, Neuss, Germany

Background: Decisions on whether to start antiretroviral treatment, and which drugs to use, depend partly on baseline assessments of CD4 count, HIV RNA and drug resistance. However there is variability inherent in the testing techniques. It is unclear whether single or repeated evaluations are required to categorise a treatment-naïve patient. Data from the SENSE trial at screening and baseline were analysed to assess this question.
Methods: 157 Patients with HIV RNA ≥5,000 copies/mL and no major genotypic resistance to NRTIs, NNRTIs or PIs were enrolled in the SENSE trial. Patients were assessed for CD4 count, HIV RNA and genotypic drug resistance at a screening visit and then a baseline visit, 4–6 weeks later. In this analysis, CD4 count was categorised as equal/above or below 350 cells/μL, HIV RNA as above or equal/below 100,000 copies/mL and genotypic resistance as presence or absence of NRTI, NNRTI or PI mutations.
Results: Of the 157 patients, 96 (61.1%) had CD4 counts below 350 cells/μL at both visits, 29 (18.5%) had CD4 counts equal or above 350 cells/μL at both visits, and 32 (20.4%) had CD4 equal or above 350 cells/ μL at screening and then below 350 cells/μL at baseline, or vice versa. There were 97 patients (62%) with HIV RNA<100,000 copies/mL at both visits, 45 (29%) with HIV RNA ≥100,000 copies/mL at both visits, and 15 (10%) with discordant results at the two visits. Of 156 patients with samples genotyped at both screening and baseline, 120 patients had no mutations to NRTIs, NNRTIs or PIs at both visits, 35 patients had identical mutations detected at both visits, and one patient had three NRTI mutations at screening versus two at baseline.
Conclusions: Between screening and baseline in the SENSE trial, 20.4% of patients had discordant CD4 results (equal/above versus below 350 cells/μL) and 10% had discordant HIV RNA results (above versus equal/below 100,000 copies/mL). Genotypes were generally consistent between the two visits. When basing treatment decisions mainly on CD4 counts or HIV RNA, multiple assessments may be needed for patients whose values are near clinical cut-offs.

P214
Lost to follow up among an Edinburgh cohort of patients in HIV care

J McDonald[1], C Leen[2], A Wilson[2], L Panton[2], G Codere[3] and V Delpech[4]
[1]University of Edinburgh, Edinburgh, UK, [2]RIDU, Western General Hospital, Edinburgh, UK, [3]Health Protection Scotland (HPA), Glasgow, UK, [4]Health Protection Agency, London, UK

Background: Long term follow up for HIV patients is key for good management of the condition. Many patients fail to attend for specialist follow up to the detriment of their health. We sought to find patients who were Lost to Follow Up (LFU) in Edinburgh, identify their current status and invite them back to the clinic.
Methods: We identified patients who had been followed up at the Regional Infectious Disease Unit but who had not attended in the previous 9 months. We made contact with those whose last point of care was within the Edinburgh area and who had not attended for specialist care in 12 months.We calculated the time spent in the clinic (from date of first visit to the date of the last) and used their last known address to assign a postcode deprivation score. For those identified as having not sought care out-with Edinburgh, we contacted their GPs enquiring if they were still registered with the practice or had moved on. We then sent out letters to individual patients inviting them back to the clinic.
Results: 204 (19%) patients being followed up were identified as being LFU (1989–2011). Of these; 4 (2%) had died, 132 (65%) had been seen for care at another site, 61 (30%) had not attended for HIV care in 12 months (deemed LFU) and 7 (3%) could not be identified by HPS/HPA. 19 of 61 LFU patients were identified as having moved by medical staff. 25 patients were LFU and not registered with a GP. 17 patients were still registered with a GP and will be contacted by letter to invite them back for FU. Mean FU time was longer for the LFU vs. whole group (1832 days vs.1408 days). Mean deprivation quintile was 9.78 suggesting these patients did not live in overly deprived areas [median score −10].
Conclusion: The results show, reassuringly, most patients deemed LFU were receiving care elsewhere. The study shows the assistance national databases can offer in assessing LFU. Success of recall to clinic using letters will be reported. Further research is needed to identify the best strategies to retain patients in clinical care.

P215
Screening for HIV related neurocognitive impairment (NCI) in clinical practice

T Barber[1], D Hughes[2], A Margetts[1], S Thornton[1], D Ratcliffe[1], D Asboe[1], A Pozniak[1], M Boffito[1], S Mandalia[1], J Catalan[1] and B Gazzard[1]
[1]St. Stephen's Centre, Chelsea and Westminster Hospital, London, UK, [2]Imperial College London, London, UK

Background: Controversies exist regarding how best to screen neurocognitive problems in HIV-infected individuals, impact on functional/subjective quality of life in those with asymptomatic/moderate impairment, and contribution of cortical and subcortical processes to observed deficits. Work in our Unit to date has focussed on screening those aged over 50. We have established an HIV neurocognitive screening clinic for those aged 18–50 years in collaboration with Psychological Medicine, at all three clinical sites within our Directorate.
Methods: HIV infected patients 18–50 years of age can be referred (or self refer), whether symptomatic of NCI or with any related concern. Patients undergo screening for anxiety (GAD-7), depression (PHQ-9) and subjective memory concerns (Everyday Memory Questionnaire (EMQ). We use the following tests to assess for NCI**:** International HIV Dementia Score (IHDS) and Brief NeuroCognitive Score (BNCS - Trailmaking A (TMA) and B (TMB), Digit Symbol Testing (DST)). Further investigations may be indicated including MRI scanning, lumbar puncture, psychology (formal neuropsychometric testing) or psychiatry referral.
Results: From February to end 2011 we screened 81 patients. Median age (median (25th, 75th centile) is 42 (37,46) years. Median PHQ9 score was 9 (3,15) with 37 scoring ≥10. Median GAD7 score was 8 (2,14) with 38 scoring ≥10. Median EMQ score was 1.38 (0.54, 2.38) with 26 scoring significantly (average ≥2.07). 26 scored IHDS ≤10 (median 11 (10,12)). 79 patients underwent BNCS investigation with a composite z score at least 1 SD from the mean (below for DST, above for TMA and TMB) in 25 subjects (17 in 1 test, 4 in two tests, 4 in three tests) and at least 2 SD in 17 (13,3,1). Eleven patients were referred for further assessment on the basis of a high GAD7 and PHQ9 score and 5 were referred for formal neuropsychometric testing given significant EMQ and IHDS scores; no patients were confirmed to have NCI. There is a significant correlation between high PHQ9 or GAD7 score and high total EMQ score (P=<0.001 for both).
Conclusion: Screening of HIV-related NCI has been shown to be useful in its diagnosis and in optimising investigation and management in HIV-infected individuals aged 18–50 years. Depression and anxiety are common features in our clinic and each showed a clear association with subjective memory impairment. No formal diagnosis of NCI has been made in any of the patients with impairment detected at screening in our clinic.

P216
Therapeutic tendering and its impact on antiretroviral prescribing in an inner-city HIV treatment centre

D Dickinson[1], D Ogden[2] and M Pakianathan[2]
[1]St George's, University of London, London, UK, [2]St George's Healthcare NHS Trust, London, UK

Background: Following a local therapeutic tendering process a new guideline was issued in April 2011. It supported increased use of Kivexa®, efavirenz and atazanavir (guideline ARVs) to achieve volume thresholds that deliver discounts and therefore savings. This would be achieved by 1.Kivexa® included in first line for all patients starting treatment unless contraindicated. 2. Efavirenz included in first line for all patients starting treatment unless contraindicated. 3. a) Atazanavir as first protease inhibitor (PI) unless

contraindicated b) Existing PI patients to switch to atazanavir unless contraindicated. 4. Establish an audit process to monitor implementation of guidelines.

Aims: 1. To evaluate compliance with guidelines. 2. To determine why non-guideline ARVs are chosen. 3. Ensure equity of provision across patient groups.

Methods: At an inner-city teaching hospital HIV service a prospective questionnaire is completed for all patients starting and switching ARVs. Data from April 2011 to December 2011 was analysed. Data included ethno-demographics, ARV regimen, reason for switching, contraindications. Data were uploaded to Microsoft Excel™. Statistical analysis was performed using Chi Squared and Fisher's Exact tests.

Results: 149 patients underwent 176 episodes of starting or switching treatment. Patients switching to non-PI regimens were excluded. 131 entries were analysed. 95% of all regimens were compliant with guidelines (98% of those starting and 91% of switch regimens). Guideline ARVs were used in only 45% of starting and switch regimens. The commonest contraindication to prescribing Kivexa® was a viral load of >5.0 log at 60% (n=34). The commonest contraindication to use of efavirenz was resistance at 36% (n=12). The commonest contraindications for use of atazanavir was patient choice 73% (n=27).There were no statistically significant differences (p>0.05) in prescribing of guideline ARVs versus non-guideline ARVs when comparing patient groups according to sexual orientation, ethnicity or gender.

Conclusion: For this inner-city patient cohort despite high compliance with the guideline, in 55% of cases a non-guideline ARV had to be chosen for clinical reasons. Equitable guideline application was observed across different patient groups.

P217

Factors associated with vitamin D deficiency in HIV/Hepatitis C co-infected patients and relationship between vitamin D levels and Hepatitis C treatment outcomes

S Surah[1], A Samarawickrama[2], A Hill[3], W Sawyer[3], B Peters[1], R Kulasegaram[1], M Fisher[2] and J Fox[1]

[1]GU/HIV medicine, St Thomas' Hospital, London, UK, [2]GU/HIV Medicine, Royal Sussex County Hospital, Brighton, UK, [3]King's College, London, UK

Background: HIV infected patients with vitamin D deficiency (VDD) have faster rates of disease progression & higher mortality rates. VDD has also been associated with impaired interferon response to hepatitis C (HCV) treatment.

Aim: To investigate the prevalence of VDD in HIV/HCV co-infection. To determine factors associated with VDD in HIV/HCV co-infection. To determine the relationship between vitamin D levels and HCV treatment outcomes.

Methods: Multi-centre cross-sectional study of 195 HIV/HCV co-infected & 128 HIV mono-infected patients matched for gender & ethnicity attending between Sept 2009 & July 2010. VDD defined <20mg/L. Database analysis & case note review was performed. Multivariate logistic regression incorporated gender, ethnicity & season of sample to examine associations between severe VDD, parathyroid hormone (PTH) & HCV status. Patients on vitamin D supplementation were excluded. A sub-study of 50 patients who received interferon treatment for HCV was performed to determine if baseline vitamin D level predicted treatment outcome. A responder was defined as an individual who cleared HCV RNA at 1 year post treatment.

Results: 90%male, 86%Caucasian, 7%Black, 82% HIV acquired sexually. Prevalence VDD in HIV/HCV & HIV was 12% & 21% respectively (p=0.876);no difference in vitamin D levels between the groups (p=0.9720). For HIV/HCV, vitamin D not associated with liver function, fibrosis, or HCV RNA level.

Mean (95% CI) baseline Vitamin D for HCV treatment non-responder 38 (26, 49) & for HCV responder 50 (40,59). Logistic regression of those treated for HCV (including gender, ethnicity & baseline Vitamin D) showed a trend towards vitamin D level & treatment outcome (p=0.0954). Neither gender nor ethnicity were significant. Non-parametric Wilcoxon test for superiority showed baseline Vitamin D was significantly higher in clearers than non-responders (p=0.0458). Logistic model investigating 12-week response to interferon showed no association with vitamin D level & treatment response (p=0.2537) accounting for gender and ethnicity. A non-parametric one-sided Wilcoxon test confirmed this (p=0.2116).

Conclusion: The prevalence of VDD in HIV mono-infection & HIV/ HCV co-infection are similar. In HIV/HCV co-infection VDD was not associated with liver disease or HCV viraemia. Higher baseline Vitamin D may improve HCV treatment response/clearance and 12-week response but the numbers are small and inconclusive. More data is needed to examine the question more closely.

P218

Gender difference in health-related quality of life of patients in a multi-ethnic HIV cohort

S George[1], S Keating[2], F Lyons[2], F Mulcahy[2], G Courtney[2], S Clarke[2], C Bergin[2], M Gibney[3] and M Codd[1]

[1]School of Public Health, Physiotherapy and Population Sciences, University College Dublin, Dublin, Ireland, [2]GUIDE Clinic, St James's Hospital, Dublin, Ireland, [3]Institute of Food and Nutrition, University College Dublin, Dublin, Ireland

Background: Major progresses in the management of HIV over the past three decades have improved the life expectancy of patients. Now regarded as a chronic disease, assessment of Health-Related Quality of Life (HRQoL) is important to understand the impact of HIV on patients' lives. Reports from previous studies have been variable. The purpose of this study is to investigate HRQoL of patients enrolled in the Dublin HIV Cohort study.

Methods: Using the Medical Outcomes Study HIV Health Survey (MOS-HIV) 515 patients have been studied. Patients completed the self-administered validated instruments during routine clinical appointments, with assistance as required from the investigator. Demographic and relevant clinical data were extracted.

Results: Mean (±SD) age was 41.1 (±9) years. 68.8% were male, 72.8% were Caucasians, 24.3% were Sub-Saharan Africans (SSA), and 89% were on antiretroviral therapy (ART). Based on MOS-HIV Survey, median Physical Health Summary score (PHS) was 56.4(range 15.4 – 64.7) and median Mental Health Summary Score (MHS) was 59.8 (range 8.9 – 76.4). Compared to SSA, Caucasians patients reported statistically significant lower PHS (57.9 vs 55.6; p=0.003). A gender comparison within the ethnic groups identified a statistically significant lower PHS (56.4 vs 49.0; p=0.002) and MHS (51.5 vs 44.1; p=0.005) among Caucasian females compared to males, but difference among SSA. Also compared with SSA females, Caucasian females reported lower PHS (58.0 vs 49.0; p=0.000) and MHS (50.1 vs 44.1; p=0.03).

Overall, HIV patients have almost average PHS and MHS; the MHS was lower than the PHS. However, Caucasian females had a below average PHS and MHS. MHS of 44.1 among Caucasian female patients points to the need to recognise the potential mental health issues in this group of patients. Lower HRQoL among indigenous female population compared to migrant population from SSA highlights the need for further exploration of data set in order to inform the management strategies.

P219

Local plasma separation results in more frequent HIV RNA undetectability when using the Roche TaqMan v2.0 assay

M Portman[1], S Griffiths[2], A Hale[1] and C Lacey[2]

[1]Leeds Teaching Hospitals NHS Trust, Leeds, UK, [2]Hull York Medical School, York, UK

Background: The issue of raised HIV viral loads in patients taking antiretroviral therapy (ART) currently affects many HIV centres. The aetiology of this is as yet fully understood, but appears to be more complex than due solely to poor adherence.

We noted that HIV viral load results for patients on ART from a peripheral centre were more frequently raised than those results from an HIV centre on the same site as the virology laboratory. On reviewing results from the peripheral centre it became apparent that samples were often processed at >=24hours. A service evaluation showed that if samples were centrifuged locally with the plasma separated at under 6 hours, prior to transportation, results were more likely to achieve undetectability. The clinic then switched to local centrifugation and separation of plasma in all samples for HIV-1 PCR testing.

Methods: We retrieved all HIV-1 PCR results for patients stable on ART for the 6 months prior to and following the change in sample processing described above. Patients 'stable on ART" commenced their treatment ≥ 6 months prior to the test. We excluded samples from patients in which there was a concern about their adherence. The assay used was Roche TaqMan v 2.0.

Results: There were 135 samples (A) fulfilling the criteria from the 6 months prior to the change to local centrifugation and 160 (B) in the following 6 months. Results from 42 samples obtained during the service evaluation were also included. The mean HIV-1 PCR result for samples A was 502. The mean result for samples B was 15. This gives a highly significant result (p<0.0001)

using the unpaired *t*-test. The range of values for samples A was 0 to 8000, for samples B it was 0 to 330.

Conclusions: We have shown that a delay in processing of whole blood samples is associated with inaccurate HIV-1 PCR results in patients stable on ART. We suspect that this may be due to natural cell lysis occurring over time, allowing more sensitive HIV assays to amplify proviral DNA. This data is of significance to other centres utilising the TaqMan v2.0 assay. More work in this important area is needed to ascertain the optimal time from sampling to centrifugation & plasma separation. Until then, when a sample is taken for research or during pregnancy, we suggest that the timing of plasma separation is crucial. Our data suggests that the sooner this occurs, the more accurate the result for HIV-1 PCR using the TaqMan v2.0 assay.

P220
Comparison of Qrisk 2 and DAD cardiovascular risk scores in HIV positive patients with an identified ten year Framingham risk of ≥10%

SY Chan[1], A Kaneshanathan[2], C McCormick[1], H Webb[1], M Pakianathan[1] and P Hay[1]

[1]St George's Healthcare NHS Trust, London, UK, [2]St George's University of London, London, UK

Background: Cardiovascular (CV) risk reduction is considered important for those with HIV infection. Interventions such as Statins are recommended for those with a risk of >20% and recent local guidance recommended against the use of Abacavir as a first line agent in those with >10% risk. Three risk calculators**:** Framingham, Qrisk2 and DAD (Data Collection on Adverse Effects of Anti-HIV Drugs) are commonly used. Our service uses the Framingham risk equation. A recent survey of 22 HIV providers revealed that 36% used other equations to calculate CV risk. We wanted to compare the results of risk calculation in patients identified with a ≥10% 10 year Framingham risk in our inner-city HIV cohort.

Methods: We identified 195/1153 (16.9%) patients with a Framingham risk of ≥10%. Using the same data, ten year CV risk was calculated for these patients using the Qrisk2 equation and five year risk calculated using the DAD equation to evaluate consistency.

Results: 181/195 (92.8%) were male and 113 (57.9%) were White British. Median age was 69.5, the median systolic blood pressure was 145.5mmHg with a median total cholesterol/ HDL ratio of 4.1. Twenty eight (14.4%) were on antihypertensive treatment, 25 (12.8%) had diabetes mellitus, 58 (29.7%) had a family history of ischemic heart disease and 66 (33.8%) were smokers. Ten patients (5.1%) had chronic renal impairment and 5 (2.6%) had rheumatoid arthritis.

Conclusion: The ten year Qrisk 2 and five year DAD cardiovascular risk scores varied in HIV positive patients with a ten year Framingham risk of ≥10%. This could lead to variability in the strategies used in reducing risk as well as decisions as to when to start ART and choice of agents.

Table showing comparison of the three risk equations:

	Framingham 10 year risk	QRISK2 10 year risk	DAD 5 year risk
No. of patients with a risk of ≥20.0%	25 (12.8%)	41 (21.0%)	4 (2.1%)
No. of patients with a risk of 10.0%– 19.9%	170 (87.2%)	83 (42.6%)	19 (9.7%)
No. of patients with a risk of 5.0% – 9.9%	0	50 (25.6%)	66 (33.8%)
No. of patients with a risk of < 5.0%	0	21 (10.8%)	106 (54.4%)

P221
Neurocognition, symptoms and efavirenz in the Dublin HIV cohort

M Phillips[1], J Svard[2], P Spiers[1], F Mulcahy[3] and M Hennessy[1]

[1]Trinity College, Dublin, Dublin, Ireland, [2]Karolinska Institute, Stockholm, Sweden, [3]St James' Hospital, Dublin, Ireland

Aim: We aimed to explore the neurocognitive and symptom state of individuals in our HIV cohort on efavirenz therapy, and investigate correlations between these measures as well as plasma efavirenz levels and CYP2B6 G516 single nucleotide polymorphism.

Methods: Demographic data and HIV markers were recorded. A validated symptom questionnaire was used. The hospital anxiety and depression scale (HADS), mini-mental state examination (MMSE), Modified HIV Dementia scale (MHDS) and trail making A and B tests were used to assess neurocognition and mood. Participants were identified from a cohort pre-consented for research participation. Participants attended assessment and had trough efavirenz levels taken.

Results: 50 participants were recruited. Basic demographics**:** Gender: Female 8, Male 42. Age: Mean: 43 (22–69).CD4 count: Mean: 644 (238–1116). VL: <40 copies/ml: 47, detectable: 3.

Spearman's correlation coefficient was determined using PASW 18. 2 patients were excluded from efavirenz level and genotype analysis due to missing data. The symptom questionnaire was divided into 3 categories: Sleep initiation & maintenance, dreaming, and dizziness & balance. Sleep symptoms correlated moderately with dizziness (Spearman's rho=0.449, *P*=0.002). There were weaker correlations between dreaming and balance (rho=0.394, *P*=0.007) and sleep symptoms and dreaming (rho=0.343, *P*=0.019). There were no significant correlations between symptoms and trough efavirenz level.

The trail making test B raw scores correlated moderately with MHDS score (rho=–0.416, p=0.003). Trail making test A raw scores correlated weakly with the depression score (rho=–0.302, *P*=0.037). HADS depression and anxiety scores correlated moderately with symptoms (Table 1).

Weak correlations were found between the time since the last dose of efavirenz and anxiety score (rho=0.312, *P*=0.031) as well as dream disturbance (rho=–0.307, *P*=0.04). No variable correlated with plasma efavirenz levels or CYP2B6 G516 polymorphisms.

Conclusion: The correlations between the HADS and symptoms, as well as between the Trail Making test B scores and the MHDS, warrant further study in larger cohorts to determine if screening for symptoms and neurocognitive change can be simplified for patient convenience and widespread routine testing.

	HADS Depression		HADS Anxiety	
	Spearman's rho	P value	Spearman's rho	P value
Sleep initiation & maintenance	0.559	<0.001	0.418	0.003
Balance & dizziness	0.390	0.007	0.412	0.004
Dreaming	0.435	0.003	0.468	0.001

P222
A novel virtual lost to follow up (LFU) clinic; the challenge of re-engaging patients in care

S Lowe

Barts and The London NHS Trust, London, UK

Background: Long term retention of persons living with HIV is a significant challenge with considerable impact on morbidity and mortality. In response, a virtual LFU clinic was established in an inner city HIV outpatient department to identify and re-engage patients who missed >2 appointments. We focus our description on those patients we were unable to re-engage despite contact via mobile phones, letter, email, next of kin, community nurse, GP and third sector involvement.

Methods: A retrospective case notes review of all patients referred to the clinic between March and December 2011 was undertaken. Intervention data was extracted and analysed from the clinic database.

Results: A total of 57 patients were referred over 9 months. 33 were contacted successfully through methods described. 24 were referred to a dedicated multidisciplinary LFU clinic, 7 referred to other clinics. 2/33 returned to their country of origin and 5 were not reviewed in virtual clinic as had re-engaged prior to the virtual appointment. 19/57 were not contacted successfully. 10/19 were male, median age 35 (range 20–55). 6(32%) were of Black African ethnicity, 5(26%) White UK. The median CD4 count at referral was 405cells/mm^3 and median HIV viral load 5136 copies/ml. 8(42%) had significant co-morbidities and 6(32%) had hepatitis B or C. Demographics of the lost patients were not significantly different from those who were re-engaged except that the median attendance rate in the year prior to referral for lost patients was 16% versus 54% in re-engaged. Lost patients were characterised into 3 groups according to time from diagnosis. Group 1**:** 4(21%) patients disengaged within 12 months of diagnosis, all these patients were antiretroviral (ART) naïve and all expressed documented concerns about

disclosure and stigma of diagnosis. Group 2: 9(47%) patients were within 15–60 months of diagnosis; 8(89%) of these patients had discontinued ART. Group 3: 6(32%) were > 7 years from diagnosis; 5(83%) were on ART and had a viral load of <40 copies/ml. These patients were attending for medication collection and intermittent blood tests only.

Conclusions: Our difficult to re-engage LFU patients are a diverse group but can be broadly characterised according to time from diagnosis A group of self-selected patients was identified that would be more appropriately managed in our virtual stable patient models. Recognition of the heterogenous needs of each group is essential for future attempts to reengage.

P223

How have the prosecution and sentencing of people convicted of reckless transmission of HIV changed over the last 10 years?

R James and Y Azad
NAT, London, UK

Background: Stephen Kelly was the first person arrested and charged with reckless transmission of HIV in the UK in 2001. Since then 17 people have been convicted and imprisoned for transmitting HIV in England, Wales and Scotland. The sentencing of people for the first trials was very severe in comparison to those convicted of reckless GBH in other circumstances and there appeared little understanding of the chronic nature of HIV infection. The Crown Prosecution Service for England and Wales published guidelines for prosecutors in 2008 for this 'exceptionally complex'[1] area of criminal law and a similar process has begun in Scotland.

Methods: Details about the cases were collected from trial transcripts and judgments. The sentences before and after 2008, when the CPS guidance was produced, were compared. The sentencing rationales outlined by the judge were also compared. Revisions of the CPS guidance and policy were reviewed.

Results: The CPS has produced two documents on intentional or reckless sexual transmission of infections**:** a policy on prosecutions and legal guidance for prosecutors. The legal guidance was recently amended to take account of the use of RITA tests and the impact of treatment on infectivity. All convictions still result in prison sentences but the mean length has reduced by 8 months. Sentencing has become highly variable ranging from one to four years imprisonment for each offence. The most recent cases have included legally binding 'Behaviour Orders' on the convicted person's future sexual behaviour when released. Initially these were Sexual Offences Prevention Orders (SOPOs) but changed in 2011 to Anti-Social Behaviour Orders (ASBOs). The first conviction for exposure of HIV occurred in Scotland in 2010.

Conclusion: The CPS guidance has been updated to acknowledge changes in understandings about HIV. However the policy and guidance are not always followed by prosecutors. There is an appearance of shorter sentences but they remain very severe in comparison to people convicted of other forms of reckless GBH and the lack of consistency in sentencing is concerning. The move from SOPOs to ASBOs is welcome because the offence is one of assault and not a sexual offence as defined in law.

1 CPS guidance available at: http://www.cps.gov.uk/legal/h_to_k/intentional_or_reckless_sexual_transmission_of_infection_guidance/

P224

How has HIV activism in England changed since effective treatment (ART) became available?

R James
Birkbeck College, London, UK

Background: HIV activism was intensely studied in the era before there was any effective treatment, particularly in the US. Academic work on HIV activism now focuses almost exclusively on those advocating for treatment availability in low income countries. No research on activism in England appears to have been done for over 20 years and there is almost nothing on HIV activism in any Western country in the era of effective treatment.

Methods: 14 health care professionals (6 doctors, 4 allied health professionals, 4 policy workers) and 14 activists in England were interviewed. 8 activists were living openly with HIV and 6 were HIV negative, untested or not open about their status. All of the people interviewed were involved in HIV guideline writing, policy work or lobbying at a national level. The interviews were transcribed and then analysed using qualitative thematic analysis with mix of pre-existing and content derived codes.

Results: All felt that activism has changed from earlier in the epidemic and was much less confrontational now. The reduction in conflict between activists and clinicians made working together easier but there was concern from clinicians that the 'spark' of activism had been lost. For activists, discussion and negotiation were seen as successful in terms of producing desired outcomes and examples were given. HIV patient reps exist at a number of clinics now and are involved in NHS governance.

Conclusion: English HIV activism is now almost entirely about engagement and not protest. Activists are 'knowledgeable negotiators' who operate inside the systems and processes of government and medicine. HIV activists have significant respect and there is an expectation of high competence in activists both in the clinical world and by state bodies. HIV peer support has become more clinic focussed with the formation of patient groups and the demise of many community based groups. The successful joint working between activists and clinicians has influenced both activists and clinicians, adding social understandings to clinicians work and medical ones to activists work. The closer working relationships provide a better shared understanding about issues and less conflict. Conflict whilst tiring to manage can also lead to new solutions in merging different frameworks of understanding and these alternative solutions may be lost.

P225

Process and psychological findings of implementing a behavioural change program for adherence in young people with perinatally acquired HIV infection (PaHIV) using financial incentives and Motivational Interviewing

G Frize, S McDonald, C Foster and S Fidler
Imperial College Healthcare NHS Trust, London, UK

Background: Evidence suggests when antiretroviral (ART) adherence is not established in childhood it reflects a range of self-management difficulties which impede intervention from the MDT to establish adherence in later adolescence. 20% of the transitioning cohort fell into this pattern, 2 of whom died aged 20 and 21. Consultation with clients suggested the potential importance of financial incentive (FI). This fits Behaviour Change theory which requires identification of concrete rewards for changing contingencies. Motivational Interviewing (MI) also has established credentials in this area, though study results are equivocal. An Incentive Scheme (IS) was developed with viral load (VL) endpoints combining FI and MI intervention.

Methods: Young people (16–24y) with PaHIV, low CD4 count and significant adherence problems were eligible. IS involved MI at 2 weekly follow up until a drop and then a VL<50 was achieved. Receiving FI was contingent on reaching each goal in the series and attending for MI. Further goals involved sustaining a VL<50 for increasing periods with further MI. An MI pro-forma recorded importance, confidence, adherence and stage of change at each visit, also identification of barriers and potential solutions. Outcome was measured (VL and CD4 count) at exit from IS. The max total FI was £200/patient (£25/£50 for specific goals). Exit interviews gathered additional qualitative data.

Results: 11 enrolled, 1 declined. Median age 19yr (range 16–23), 8 female. 9/11 reached VL<50 and 5/11 sustained to the IS endpoint (6 months VL<50). IS time range 3–20 months, MI range 2–13 sessions, VL<50 time range 0–13 months (10.2 completers, 1.3 noncompleters). There was a significant relationship between the number of MI sessions and success/failure of IS (P=.001), months of VL<50 (P=.001) and CD4 increment (P=.026). These data and qualitative interviews suggest that the mediating factor in success is engagement via reward, rather than reward for adherence directly.

Conclusion: Following this novel intervention, 46% of this highly challenging cohort achieved sustained virological suppression as a result of behavioural changes. Rewards appeared to encourage attendance. This in turn allowed psychological intervention to identify emotional and logistical solutions for this vulnerable group. The nature of the intervention needs further tailoring in line with behaviour change theory and further directions will be outlined.

P226
Dilated common bile duct and deranged liver function tests associated with ketamine use in two HIV positive MSM

J Zhou, S Shaw and Y Gilleece
Brighton and Sussex University Hospitals, Brighton, UK

Background: We describe two cases of common bile duct (CBD) dilatation and deranged liver function tests (LFTs) in HIV positive MSM following the excessive recreational use of ketamine.
Case Report: Case 1 is a 38yo Caucasian man with well controlled HIV on antiretroviral therapy (ART) with HIV viral load <40 copies/ml and CD4 count 788 cells/ml (27%). Case 2 is a 27yo Caucasian man with poor ART adherence with HIV VL 6356 copies/ml and CD4 count 154 cells/ml (16%). Both patients were regularly taking ketamine >1g /day over a 12 month period while concomitantly receiving ritonavir as part of their ART. Both patients presented acutely with nausea, vomiting and epigastric pain. ALT was raised at 3.2X and 10.1X the upper limit of normal (ULN) and an ALP raised 1.7X and 2.5X ULN for cases 1 and 2 respectively. ANA, anti-smooth muscle antibodies, antimitochondrial antibodies, anti-liver kidney microsomal antibodies, serum copper, serum caeruloplasmin, ferritin, transferrin, A1-antitrypsin HBV, HCV and CMV serology were all negative in both cases on more than one occasion. Magnetic resonance pancreatocholangiogram (MRCP) showed marked dilatation of the common bile duct (CBD) in both cases. Case 1 had a dilated CBD at 18mm (approx 6 X normal diameter) and case 2 had a CBD dilated to 14mm (4.5 X normal diameter). ERCP in each case showed no underlying ductal obstruction. Histological analysis of a liver biopsy from case 2 excluded HIV-associated sclerosing cholangitis. A diagnosis of ketamine-associated hepatobiliary toxicity was made. Symptoms quickly resolved with normalisation of LFTs and reduction in CBD diameter after the discontinuation of ketamine. Repeat MRCP showed 28% reduction in CBD diameter at 4 weeks (case 1), and 29% reduction at 12 weeks (case 2) respectively.
Discussion: Effects of ketamine on the urinary tract have been well documented. Cases of cholestasis with biliary dilatation have also been previously described in HIV negative patients who regularly misuse ketamine, but this is the first such report in HIV positive individuals. In addition the time to development of symptoms is shorter than previously reported (~12 months vs 4 years). Inhibition of the liver CYP450 enzymes necessary for ketamine metabolism by ritonavir may explain the shorter time to development of symptoms. HIV physicians should consider ketamine misuse as a possible cause of hepatobiliary abnormalities in HIV positive patients, especially those prescribed ritonavir.

P227
Cervical cytological abnormalities in the era of HAART

N Hettiarachchi and A Tariq
New Cross Hospital, Wolverhampton, UK

Background: BHIVA guidelines 2008 recommend annual cervical smears for HIV positive women and that the result be documented in the case notes. The effect of HAART on the evolution of cervical cytological changes in HIV-positive women is unclear. The aim of this case note survey was to ascertain compliance with BHIVA recommendations on cervical smear screening and to determine the prevalence of cervical smear abnormalities in a cohort of patients attending a West Midlands HIV centre during the last four years.
Methods: The case notes and the cytology reports of all females who had been registered before 2009 were reviewed. The prevalence of abnormal cervical smear in each year was calculated in a subgroup of patients who remained virologically suppressed in the year of test and had at least two cytology reports including 2009 and 2011. These were compared with the rates observed in GP and community clinics in England. For the observed rates of abnormal smears, 95% binomial confidence intervals were produced to allow comparisons with the respective England rates.
Results: The survey included 90 patients, 84 (93%) were Africans and 6 (7%) were British. Mean age was 39.8 years. From 2008; 44(48.9%), 83(92.2%), 80 (88.9%) and 90 (100%) out of 90 patients had clear documentation regarding smear history in their notes.
Observed rates of abnormal smears in those who remained virologically suppressed during the year of test were higher than the rates in England but not statistically significant (Table 1). 55 patients remained fully suppressed in all 3 years and in that group the prevalence in 2011 was 3.63%(95% CI; 0.4% – 12.5%)
Conclusion: The survey showed that documentation relating to cervical smears improved after implementation of BHIVA recommendations. There was no significant difference in the prevalence of cytological abnormalities between those who were virologically suppressed and the rates from GP and community clinics in England. The survey highlights the need for more data to determine the impact of HAART on cervical cytology and to inform screening policy.

Table 1 Prevalence of cytological abnormalities in optimally suppressed patients in the year of smear test.

Year of Test	Smear Abnormal	VL Fully Suppressed	Abnormal Rate (%) (95% Confidence Interval)	EnglandRate (%)
2009	5	58	8.6 (2.9 – 19.0)	2008/9–6.1%
2010	6	59	10.2 (3.8 – 20.8)	2009/10–7.0%
2011	5	67	7.5 (2.5 – 16.6)	2010/11–6.7%

P228
Audit of serological and molecular investigations in newly diagnosed HIV infections

F Jabeen
Nottingham University Hospitals, Nottingham, UK

Background: In August 2011, British HIV Association (BHIVA) published guidance on the routine investigation and monitoring of adult HIV-1-infected individuals. This outlined the serological markers for opportunistic infections and molecular investigations to be carried out at diagnosis. We investigated laboratory tests performed on samples from all newly diagnosed HIV positive individuals in a tertiary hospital, sourced from two different units, Infectious Diseases (ID) and Genito-urinary Medicine (GUM) to confirm accordance with the recommendations.
Methods: Data collected from laboratory records of patients who were newly diagnosed with HIV between November 2009 and November 2010. Clinical information was recorded from the respective clinical database and case notes review.
Results: A total of 72 new HIV diagnoses were recorded in the laboratory database of which 31 were sourced from ID and 41 from GUM. CD4 count at diagnosis was <350 in 63% of GUM and 68% of ID patients diagnosed with HIV. Avidity testing was carried out in all (100%) of the newly diagnosed cases from ID and 96% of those acquired the infection more than 6 months ago. Out of 78% samples that were forwarded for avidity testing from GUM, 15% had acquired infection within 6 months. HIV viral load was tested on all samples; Baseline resistance testing was requested in 77% of new diagnoses from ID and 88% from GUM. Serological investigations in each cohort are outlined below:
Conclusion: There are inconsistencies in routine initial investigation of HIV infected individuals between two different departments within the same hospital. This may be attributable to a larger number of symptomatic patients with opportunistic infections reviewed by ID. We created pre-printed labels which defines all the initial laboratory tests for all new diagnosis which would avoid errors in manual transcriptions. We hope this will ensure consistency in routine testing and we propose to re-audit this after 6 months. The current BHIVA guidance will be useful to achieve uniformity in routine testing and monitoring of HIV patients throughout the UK.

Parameters recorded	ID (n=31)	GUM (n=41)
Confirmatory HIV Serology(%)	30 (97%)	37 (90%)
HBV serology (%)	31 (100%)	35 (85%)
HCV serology (%)	31 (100%)	36 (88%)
HAV serology (%)	27 (87%)	14 (34%)
Toxoplasma serology (%)	31 (100%)	39 (95%)
Syphilis serology (%)	30 (97%)	36 (88%)
Cryptococcal antigen (%)	4 (13%)	35 (85%)
CMV serology (%)	30 (97%)	33 (80%)
VZV serology (%)	24 (77%)	5 (12%)

P229

Confidentiality: a continuing barrier to disclosure of HIV status to GPs? The experience and concerns of HIV patients in an integrated sexual health clinic

C Knapper, R Drayton, M Browning and N Lomax
Dept ISH, Cardiff Royal Infirmary, Cardiff, UK

Background: Existing data from large HIV centres exploring the relationship between HIV services and primary care demonstrate a high level of GP involvement. In 2008 we surveyed the patients attending our HIV service and found that a significant proportion had disclosed their status to their GP. Confidentiality was given as the commonest reason in those who had not. In 2011, following concerted efforts to encourage and support patients to disclose their status to their GPs, we repeated the survey with the aim of assessing ongoing barriers to communication with primary care.
Methods: Patients attending our HIV outpatient centre between the end of March and July 2011 were asked to complete a form documenting their consent for communication between the clinic and their GP and to complete a questionnaire detailing their experience of Primary Care services.
Results: 102/120 (85%) questionnaires distributed were completed. 79% of patients gave consent for the clinic to contact their GP and 75% stated that their GP was already aware of their HIV status (compared with 76% who stated they had already informed their GP in 2008). 14% were registered with a GP but had not disclosed their status, of whom, 72% gave confidentiality as the main reason for their non-disclosure (compared to 50% stating confidentiality was the main reason they had not disclosed in 2008).
Of all the patients who completed the questionnaire, 32% had concerns about attending their GP which related to their HIV status. Concerns expressed included confidentiality (39%), lack of GP HIV specialist knowledge (22%) and stigma (13%). 22% of those who completed the form stated they would be more confident in disclosing their status if they could be reassured that no one else in the practice beside their GP could access this information about their HIV status; however 10% stated that this would not dispel their concern.
Conclusion: This survey confirms that a continued high percentage of our HIV patients' GPs are involved in their care. However, despite concerted efforts, there remains a concerning proportion of patients who are reluctant to disclose their status to their GP and have ongoing concerns relating to confidentiality. Enhanced collaboration between patients, GPs and HIV centres in the form of working groups and patient forums could address these concerns.

P230

Alcohol misuse and consumption amongst HIV infected individuals

S Surah, S O'Dea, F Mulcahy and F Lyons
GUIDE Clinic, St James's Hospital, Dublin, Republic of Ireland

Background: Alcohol increases the risk of transmission of HIV and other sexually transmitted infections. It also increases HIV disease progression. The aim of this project was to evaluate alcohol consumption and misuse amongst HIV infected individuals.
Methods: This was a single centre study. All patients attending HIV outpatients over a two week period were asked to complete the Alcohol use disorders identification tool (AUDIT) to assess alcohol consumption. Scores were correlated with demographic and clinical data. The AUDIT is a WHO (world health organisation) developed tool to screen for excessive drinking. It is scored from 1–40; ≥ 8 indicates hazardous drinking, ≥13 in women & 15 in men highlights alcohol dependance, ≥ 20 indicates that patients warrant immediate medical assessment.
Results: 111 patients completed the AUDIT questionnaire. 73% male, 85% caucasian. Age range (years); 18–25= 8(7%), 26–35= 30(27%), 36–45= 37 (33%), > 45= 29 (26%).
Mode of acquisition HIV; heterosexual= 40 (36%), MSM= 37 (33%), IVDU=31 (28%). Hepatitis C PCR positive 24%. 77% in receipt of ART.
50% of HIV/HCV co-infected patients consumed alcohol. 30% HIV/HCV were consuming hazardous levels of alcohol. 11% HIV/HCV were alcohol dependant. See table below for AUDIT scores by sex.
Conclusion: Levels of alcohol misuse amongst HIV infected individuals are similar to the general population. However the median AUDIT score for women was higher than men & indicates hazardous drinking. A higher percentage of HIV infected women required urgent medical attention because of their alcohol consumption.

	Femalen=38	Malen=73
Median AUDIT score	8	6
Hazardous alcohol consumption	21%	35.6%
Alcohol dependance	13.9%	13.7%
Requiring urgent medical attention due to alcohol consumption	13.9%	4%

P231

The TRxCare™ adherence support system: a pilot study of its acceptability to patients on virologically successful HAART

J Walsh, Z Sheppard and R Weston
Imperial College Healthcare NHS Trust, London, UK

Background: Adherence is key to the success of HAART, but there is little evidence that simple interventions can help. The TRxCare™ system is a pill-box that sends a mobile 'phone signal to a remote server when opened. It monitors dose events & texts reminders for missed doses & positive feedback on adherence. We assessed its acceptability in a pilot study.
Methods: Eligible patients had been stable on HAART for at least 90 days with a last HIV viral load <50 copies/ml & could read English. Subjects consented to use the modified pill-box for all their doses for the 24 week study. From weeks 13–24 only, text reminders were sent to the subject's own mobile 'phone if a dose was late; weekly text messages were sent to reinforce adherent behaviour. At weeks 12 & 24 subjects received verbal feedback on their adherence from the study team using data held on the system's server. Subjects completed an adherence questionnaire at baseline, 12 & 24 weeks. At 12 & 24 weeks they also completed questionnaires on the acceptability of the system.
Results: Fourteen patients participated in the pilot; all were male, median age 43 years (IQR 37–46); 11 were on once daily medication, 3 twice daily. At baseline reported adherence over the previous month was high at 99.5% & remained at 98% at week 24. The median number of reminders per patient was 14 (range 1–43). Dose times were later after reminders were switched on (p=0.017), but overall the number of doses missed was low (4.8% wk 0–12; 6.3% wk 13–24) & did not change over time. On days when a dose was taken, 81% of doses were taken within 1 hour of the correct time in both phases. At week 24 64% were satisfied with the system but 36% were neither satisfied nor dissatisfied. 50% found the text reminders & overall system useful & 67% found the verbal feedback useful. However 54% found the pill -box inconvenient or that it made more difficult to take HAART regularly; 55% found reminders irritating.
Conclusion: This pilot found remarkably high, consistent adherence in patients on stable HAART. While open to possible bias towards those willing to be monitored, this suggest that future UK studies of adherence interventions may need to select patients at risk of low adherence e.g. based on virological failure. However given that even in this highly adherent group, TRxCare™ presented some barriers to adherence further study is required before it can be generally recommended. Adherence interventions should address individual needs.

P232

High prevalence of suicide attempts and significant mental health problems in an urban cohort of HIV positive inpatients: an observational study

S Singh, A Teague and R Kulasegaram
Guy's & St Thomas' NHS Trust, London, UK

Background: Suicide rates of HIV positive patients have declined since the advent of HAART (highly active antiretroviral therapy), but are still up to three times higher than suicide rates of the general population. Prevalence of mental health problems including alcohol and recreational drug dependence are also much higher in HIV positive patients, resulting in increased morbidity. We report on an observed increase in the number of patients with significant mental health issues being admitted to hospital, including several patients admitted following suicide attempts.
Methods: Details of inpatient admissions under the HIV team between August 2011 and January 2012 at our central London teaching hospital were identified from hospital records. Retrospective review of electronic patient

records was carried out to identify demographics, stage of HIV infection, history of adherence to HAART, presenting complaint, and details of any mental health issues (including psychiatric involvement) prior to or during this admission.

Results: A total of 106 patients were admitted under our care in this 6 month time period. Of these, 24.5% (26/106) had significant mental health issues either resulting in admission or impacting on their inpatient stay. 69% were men vs. 31% women. 6.6% (7/106) of admissions in this period were due to suicide attempts. In this group, 86% (6/7) were white British men; the remaining patient was a black African woman. Median age was 41 years (range was 29 – 58). All the male patients had been diagnosed with HIV for at least 3 years (range 3 – 17 years); the female patient was diagnosed with advanced HIV the day before attempting suicide. All patients survived; 6/7 with no physical morbidity from the attempt. 1 patient suffered severe hypoxic brain injury.

Conclusions: We have observed a high prevalence of significant mental health issues including attempted suicide in a diverse urban population of HIV positive patients. HIV is increasingly becoming a manageable chronic condition, but these results are very concerning as mental health issues are likely to have an impact on factors such as use of recreational drugs and alcohol, adherence to HAART and attendance at healthcare appointments. Our results highlight the importance of awareness of the high rates of mental health problems and suicide attempts among HIV positive patients, and emphasises the need for close links with specialist mental health services.

Pathogenesis, Transmission and Prevention

P233

Acceptability of HIV pre-exposure prophylaxis (PrEP) and associated risk compensation in men who have sex with men (MSM) accessing GU services

C Thng, S Thorpe and G Schembri
Manchester Centre for Sexual Health, Manchester, UK

Background: HIV prevention strategies amongst men who have sex with men (MSM) remain an important area of research. A large multinational, randomised, double blind, placebo controlled, clinical trial (iPrEx) of daily oral antiretrovirals (tenofovir [TDF] and emtricitabine[FTC]) has demonstrated the safety and efficacy of daily TDF/FTC in reducing HIV acquisition in a men who have sex with men (MSM) population exposed to HIV through sexual transmission. We gathered data regarding the acceptability of the treatment and frequency of monitoring, the likelihood of adherence and any possible risk compensation behaviours which may emerge from taking PrEP.

Methods: All MSM, aged 18 years or more, who attended the Manchester Centre for Sexual Health between 02/11/2011and 18/01/2012 and who reported practicing unprotected receptive anal intercourse were eligible to participate in this study. These were identified by the doctor or nurse during the consultation and given a patient information leaflet (PIL) and a questionnaire to complete.

Results: There were 3127 new GU attendees during this time of which 12.6% were MSM. 95/112 questionnaires were completed and returned.

The mean age of the participants was 28.2 years. 80% were White Caucasian. The most common number of sexual partners in 12 months was 4. 84.2% said that they used condoms at least 50% of the time. Having casual sex with another man of unknown HIV status was the main risk of HIV in 80% of responders. Staying HIV negative was important to 87.4%.

64.2% of MSM practicing receptive anal sex were willing to take PrEP. 20% would only take coital PrEP and 50.5% would take daily PrEP for more than 6 months. 90.5% of MSM taking PrEP would adhere to monitoring and 85.3% would accept the side effects described in the PIL.

66.3% claimed that taking PrEP would not change the frequency of condom use and none said that they would stop condom use altogether. 86.3% would have the same number of partners and 80% would still seek post-exposure prophylaxis after sexual exposure (PEPSE) despite taking PrEP.

Conclusion: PrEP has been proven to be an effective prevention strategy for at-risk MSM in a number of clinical trials. Our survey shows that the majority of MSM attending GU services in Manchester would accept an offer of PrEP, and that daily PrEP was the preferred regimen. Individuals on PrEP would not be expected to change their current sexual practice, although this would need to be assessed in larger prospective studies.

P234

Treatment as prevention: the views of high risk patients attending an outpatient GUM clinic

C Jones[1], K Kuldanek[2], K Phekoo[3], L Platt[4], A Smith[1] and S Fidler[2]
[1]Imperial College Healthcare NHS Trust, London, UK, [2]Imperial College London, London, UK, [3]NIHR CLAHRC for North-West London, London, UK, [4]London School of Hygiene and Tropical Medicine, London, UK

Background: Antiretroviral treatment (ART) has been demonstrated to dramatically reduce transmission within HIV serodiscordant couples. The acceptability of this approach to different populations is uncertain. We examined whether 'high risk' patients attending a genito-urinary medicine clinic would consider treatment as prevention (T4P) should they be diagnosed HIV positive.

Methods: Men who have sex with men (MSM), injecting drug users (IDU) and patients with endemic risk attending for HIV testing were asked to complete a cross-sectional survey prior to HIV results (October 2010 to May 2011). The survey examined STI history, post-exposure prophylaxis (PEP) history and HIV testing. Participants were asked "If you were diagnosed with HIV would you consider taking treatment to reduce the risk of passing on infection (even if you did not need to take treatment for your own health)" with response options 'Yes, No or Not sure. ' Linked demographic and STI data were collected. Data analysis was in STATA12.

Results: 606/647 participants who completed the survey responded with regard to T4P (response rate=93.6%) of whom 537 (88.6%) were men. 490 (80.9%) responded 'Yes', 104 (17.2%) were 'not sure' and 12 (2%) said 'no'. Past STI diagnosis and age over 40 were associated with decreased odds of 'yes' response. Participants who had taken PEP also had decreased odds of a 'yes' response however 72% would still consider T4P should they be diagnosed (see table).

Conclusion: For ART as prevention to confer a significant impact at a population level, very high rates of HIV testing and ART initiation are required. Although we noted high rates of potential interest in such a strategy amongst HIV negative high risk groups, the only way to test this is through a suitable clinical trial.

T4P responses

		Number of Participants	% of participants responding 'Yes'	Odds of a 'Yes' response (95% CI)	*P*-value
Sex	Female	69	85.5	1.00	
	Male	537	80.3	0.69 (0.34–1.39)	0.297
Age group	<30	282	84.04	1.00	
	30–40	178	82.58	0.90 (0.54–1.49)	0.682
	>40	106	72.6	0.50 (0.31–0.82)	0.005
Risk group	Endemic risk, IDU	90	83.3	1.00	
	MSM	511	80.2	0.81 (0.45–1.47)	0.493
PEP History	Never	488	83.0	1.00	
	PEP in the past	93	72.0	0.53 (0.32–0.88)	0.013
STI in the past	No	244	85.3	1.00	
	Yes	358	77.7	0.60 (0.39–0.93)	0.021
STI diagnosed at participation	No	528	80.3	1.00	
	Yes	63	87.3	1.69 (0.78–3.66)	0.181
Tested for HIV in the past	No	49	87.8	1.00	
	Yes	557	80.3	0.57 (0.23–1.37)	0.201

P235

Would you recommend HIV post-exposure prophylaxis (PEP)? Results from a nationwide PEP survey

C Thng and G Schembri
Manchester Centre for Sexual Health, Manchester, UK

Background: National guidelines for the recommendation of HIV post-exposure prophylaxis after sexual exposure and after occupational exposure were published in 2011 and 2008 respectively. Despite these guidelines, there is significant inter and intra-departmental variation in PEP prescribing by genitourinary physicians in the UK.

Methods: This survey was posted on the internet between January and May 2011. The link to the survey was circulated through the British Association for Sexual Health and HIV (BASHH) newsletters which has a circulation list of 1124 members. Eight scenarios were presented within the survey and

responders were asked whether they would prescribe PEP in each case. Responders were allowed to leave comments after each case.

Results: 74 surveys were received. All responders worked in centres within the UK. 67 (90%) of responders were doctors, 5 (7%) were nurses and 2 (3%) were sexual health advisers. 74% of responders had more than 5 years experience in the specialty.

Conclusion: This survey highlights the variation in practice when it comes to recommending PEP or PEPSE. Up to date knowledge of epidemiology, particularly the prevalence of HIV and STIs in the local population is important to the decision making process and in the formulation of local policies regarding the prescription of post-exposure prophylaxis.

Factors which may favour prescription of PEP are breaches in the mucosal barrier (eg. rape/ sexual assault), high HIV viraemia, high risk modes of transmission. However, factors such as delayed presentation, ongoing high risk sexual exposure and low risk exposure to HIV are considered when PEP is declined.

Clinical scenario	Number of 'yes' responders (%)	Number of 'no' responders (%)
Non-traumatic sexual assault by unknown assailant who 'looked Asian and spoke with and Indian accent'	33 (45%)	41 (55%)
Surgical trainee who had unprotected receptive anal sex with an anonymous casual male partner 5 days ago	28 (38%)	46 (62%)
Unprotected receptive anal sex (MSM) with ongoing risk of regular unprotected oral sex with ejaculation with casual male partners	63 (86%)	10 (14%)
Blood splash injury to the eye in a junior doctor performing a skin biopsy in HIV positive patient with a viral load of 400,000 copies/mL	66 (90%)	7 (10%)
Newly diagnosed HIV-discordant couple; regularly sexually active prior to diagnosis; negative partner has receptive anal sex last exposure 12 hours ago	48 (68%)	23 (32%)
Needle stick injury while taking blood from an intravenous drug user (IVDU) who refuses an HIV test	61 (87%)	9 (13%)
Disconcordant MSM couple where the negative partner received unprotected anal sex; the HIV positive partner is on treatment with a recent undetectable HIV viral load	56 (80%)	14 (20%)
Human bite to ear by unidentified African man; injury is bleeding profusely and may require reconstructive surgery	26 (37%)	44 (63%)

P236
Analysis of post-exposure prophylaxis history among high-risk GUM attendees

C Jones[1], K Kuldanek[2], K Phekoo[3], L Platt[4], A Smith[1] and S Fidler[2]

[1]Imperial College Hospitals, London, UK, [2]Imperial College London, London, UK, [3]NIHR CLAHRC for North West London, London, UK, [4]London School of Hygiene and Tropical Medicine, London, UK

Background: UK guidelines for post exposure prophylaxis (PEP) following sexual exposure have recently been updated. We assessed past PEP use among 'high risk' patients attending a genitourinary medicine clinic.

Methods: Men who have sex with men (MSM), injecting drug users (IDU) and patients with endemic risk attending for HIV testing were asked to complete a cross-sectional survey prior to their HIV results (October 2010 to May 2011). The survey examined STI history, PEP history, including date of last PEP episode and HIV testing. Linked demographic, HIV serology and STI data was collected at attendance. Data analysis was in STATA 12. Ethics approval was granted as a sub-study of a clinical trial assessing the validity of a HIV point of care test.

Results: 614/647 participants who completed the survey responded with regard to PEP history (542/614 were men, 88%), response rate (94.9%). Overall, 99 participants (16.1%) had taken PEP in the past. The mean age of participants at PEP episode was 33.1 years old (95%CI 31.4–34.8). Two participants reported PEP in 2004 and 4 in 2005. This increased to 26 in 2009 and 25 in 2010. 30.6% of PEP episodes occurred within 12 months of survey date. In univariable analysis male sex, age between 30–40 years at study participation, MSM risk group, past history of STI, and having tested for HIV before were associated with prior PEP use (see table 1).

Conclusion: PEP use was higher than expected, especially among MSM. PEP use appears to have increased dramatically over the last 10 years however we note that this may be may be confounded as participants were only asked to record the date of their most recent episode.

Table 1: Factors associated with prior PEP use

		Number of Participants	% that had taken PEP in the past	Crude OR for prior PEP (95% CI)	*P*-value
Sex	Female	72	6.9	1.00	
	Male	542	17.3	2.81 (1.10–7.20)	0.024
Age at study participation	<30	285	10.2	1.00	
	30–40	184	25.5	3.03 (1.80–5.09)	<0.001
	>40	145	15.9	1.66 (0.92–3.00)	0.088
Risk factor	Endemic risk, IDU and other	92	6.5	1.0	
	MSM	516	18.0	3.15 (1.33–7.47)	0.006
Past hx of STI	No	254	5.9	1.00	
	Yes	358	23.2	4.81 (2.66–8.70)	<0.001
STI diagnosed at study participation	No	534	15.4	1.00	
	Yes	64	21.9	1.54 (0.81–2.92)	0.180
Tested for HIV in the past	No	50	2.0	1.00	
	Yes	564	17.4	10.30 (1.39–76.65)	0.005
HIV test result at participation	Negative	601	16.3	1.00	
	Positive	13	7.7	0.43 (0.05–3.34)	0.404

P237
Awareness of post-exposure prophylaxis after sexual exposure (PEPSE) in patients attending an inner city HIV treatment centre

M Joshi[1], A Basra[1], H Webb[2], C McCormick[2] and M Pakianathan[2]

[1]St George's University of London, London, UK, [2]St George's Hospital, London, UK

Background: BASHH guidelines published in 2006 recommends that HIV positive patients are informed about PEPSE. Owing to a recent increase in PEPSE-related campaigns, and improved PEPSE information provision since 2006, it was hypothesised that there would be high levels of awareness overall, with greatest awareness in patients who were diagnosed since 2006, in men who have sex with men (MSM) and also in younger patients.

Methods: A prospective nurse completed questionnaire as part of the patient annual review. Consecutive patients attending an inner city HIV outpatient clinic between April and Nov 2011 were asked if they were aware of PEPSE. Those unaware were provided relevant health education. The annual assessment also collected data concerning consistency in condom usage, and on the last episode of sexual intercourse to determine if the individual was sexually active. The viral load closest to the date of the health assessment was also recorded. Data were uploaded onto MS Excel© along with patient demographics, year of diagnosis, and route of infection transmission. Fishers Exact Test was used to calculate significance.

Results: Data on 828 patients were available for analysis. Overall, 403 (48.7%) of patients were PEPSE aware. The ages ranged from 19–83 years (mean age 44.7 years).

In patients who were sexually active within the last year (n=534), awareness was 57.5%. 70% reported consistent use of condoms. In patients who occasionally or never use condoms (n=216), awareness was 42.6%. In 78 (9.4%) patients with a detectable viral load >400copies/mL, awareness was 64.1%.

Conclusion: PEPSE awareness was poorer than anticipated. MSM, younger patients, and those diagnosed since 2006 were significantly more likely to be PEPSE aware. Of note, more than 1 in 3 of those with detectable viraemia were PEPSE unaware. A re-audit is recommended next year to determine the effectiveness of the health education intervention in those who were PEPSE unaware.

Table 1: Characteristics of patients and PEPSE awareness

	Total No. Patients (%)	PEP Aware (%)
Year of Diagnosis: 1985–20052006–2011	543 (65.6)285 (34.4)	240 (44.2)163 (57.2) *P*= 0.0004
Sexual Orientation:MSM Heterosexuals	298 (36.0)530 (64.0)	196 (65.8)207 (39.1) *P*<0.0001
Age (years):19–34≥35	110 (13.3)718 (86.7)	75 (68.1)328 (45.7) *P*<0.0001

Author Index

INSTRUCTIONS TO AUTHORS

Electronic submission of manuscripts

Authors should submit manuscripts electronically via http://mc.manuscriptcentral.com/hiv. The review process will be entirely web-based to facilitate faster reviewing. Manuscripts should be submitted as a rich text (RTF format) or Word document, and any figures submitted as JPEG, GIF, TIF or EPS files.

During the online submission process, the submitting author will be required to state on behalf of all the authors that the work has not been published and is not being considered for publication elsewhere. It will also be necessary to state that the work meets all relevant ethical guidelines and legal requirements. All submitted manuscripts will be acknowledged by the Editor. All accepted papers become the copyright of the British HIV Association. The Journal is a member of the Committee on Publication Ethics (COPE) and abides by its principles.

For further instructions on electronic submission of manuscripts, please contact: The Editor (HIV Medicine) at editorial@mediscript.ltd.uk

Fast-track procedure

Exceptionally, and for manuscripts of particular merit or urgency, the Editorial Board will consider an accelerated review process. Please email the Editor at editorial@mediscript.ltd.uk if you wish your manuscript to be considered for the fast-track procedure.

Manuscript style

During submission it is necessary to designate the manuscript Original Article, Review, Short Report or Letter. (Please note that case reports are not accepted.)

An Original Article or Review has an Abstract, main text up to 3,500 words, a maximum of six tables or figures and 20–50 references.

A Short Report would typically have an Abstract, main text up to 2,000 words, a maximum of two tables or figures and up to 20 references.

A Letter would typically be up to 500 words, optionally one table or figure and up to five references.

The Abstract, of up to 250 words, should be divided into sections entitled Objectives, Methods, Results and Conclusions. It should describe the content of the paper and the important conclusions accurately, couched in terms which will be understood by the majority of readers of the Journal. The Abstract is entered separately in the submission process, but should also be prepended to the main article.

Longer articles may be accepted at the discretion of the Editor. Purely basic science papers are considered outside the scope of the journal.

Original Articles and Reviews should comprise the following sections:

Title page
This should contain a concise article title, a shortened version (no more than 50 characters including spaces) for the running head, initials and surnames of the authors, their affiliations, and the full postal address, fax and telephone number, and e-mail address of an author to whom correspondence can be addressed. A list of key words (maximum five please) is required as part of the submission.

Main text
This should start on a new page, and include Introduction, Methods, Results and Discussion sections. The suggested points of insertion for illustrations should be indicated. Authors should avoid abbreviations (except those commonly understood), long sentences, and many juxtaposed numbers in sentences.

References
These should be in the Vancouver style, i.e. numbered throughout the text in consecutive order using Arabic numerals in parentheses. The references should be listed in numerical order at the end of the paper using the following styles. List all authors when six or fewer and list the first three followed by *et al*. when there are more than six. Unpublished work should only be cited in the text. Only references genuinely in press should be listed in the reference list. We recommend the use of a tool such as *EndNote* or *Reference Manager* for reference management and formatting.

EndNote reference styles can be searched for here: http://www.endnote.com/support/enstyles.asp

Reference Manager reference styles can be searched for here: http://www.refman.com/support/rmstyles.asp

Examples of references:
1 Vanderpump MPJ. The epidemiology of thyroid disease. In: Braverman LE, Utiger RD, eds. *Werner and Ingbar's the Thyroid: A Fundamental and Clinical Text*. Philadelphia, PA: Lippincott Williams and Wilkins, 2005.

2 Benhamou Y, Fleury H, Trimoulet P *et al*. Anti-hepatitis B virus efficacy of tenofovir disoproxil fumarate in HIV-infected patients. *Hepatology* 2006; **43**: 548–555.

3 Meduri GU, Stein DS. Pulmonary manifestations of acquired immunodeficiency syndrome. *Clin Infect Dis* 1992; **14**: 98–113.

4 Maggi PPG, Panebianco A, D'Eramo C *et al*. Hyperhomocysteinemia in HIV-1 positive patients: the role of antiretroviral therapy.

16th International AIDS Conference. Toronto, Canada, August 2006 [Abstract #WEPE0170].

Tables, Figures and Illustrations

Tables should be numbered consecutively with Arabic numerals with a fully informative caption as a heading. Column headings should be brief, with units of measurement in parentheses. Vertical lines should not be used to separate columns. Electronic tables should be provided in an editable format (.rtf or .doc). All illustrations (including photographs) are classified as figures and should be numbered consecutively.

Authors should submit artwork electronically. **Photographs** should be saved at 300 d.p.i. in TIF format, or in JPG format with low compression. **Line figures** should preferably be submitted in vector graphics format, and either embedded as such in a Word document or saved in EPS format. If this is not possible, they should be saved separately as pixel-based graphics at 600 d.p.i. (at the required print size) and saved in TIF (not JPG) format, or embedded as such in a Word document. Combination figures (e.g. with photographic and line/text content) should be prepared as for line figures.

Note: Authors will have to pay the full cost of any colour reproduction of figures. Please see the instructions on the journal web pages for further information (http://www.blackwellpublishing.com/pdf/SN_Sub2000_P_CoW.pdf), or contact the production editor at hiv@wiley.com for a form.

Acknowledgements

These should be brief and must include references to sources of financial and logistical support.

Units

Measurements must be in SI units and authors should use solidus, e.g. mg/h. *Units, Symbols and Abbreviations* (Royal Society of Medicine, 1988) is a useful guide.

Permissions

It is the authors' responsibility to obtain and provide proof of permission to reproduce previously published material.

Page proofs

These must be returned to the Production Editor within 3 days of receipt. Only typographical errors and other essential small changes can be made at this stage. Major alterations to the text cannot be accepted.

Offprints

Free access to the final PDF offprint or your article will be available via author services only. Therefore, please sign up for author services if you would like to access your article PDF offprint and enjoy the many other benefits the service offers. Additional paper offprints may be purchased according to the scale of charges provided.

Note to NIH Grantees

Pursuant to NIH mandate, Wiley-Blackwell will post the accepted version of contributions authored by NIH grant-holders to PubMed Central upon acceptance. This accepted version will be made publicly available 12 months after publication. For further information, see www.wiley.com/go/nihmandate.

Membership

Join BHIVA or renew your membership online:

www.bhiva.org

British HIV Association
BHIVA

Conferences and Events

You can register for BHIVA conferences and events online:

www.bhiva.org

BHIVA Research Awards 2012

Apply online at www.bhiva.org

by Tuesday 8 May 2012

Originally launched in 2006, the **BHIVA Research Awards** are intended to provide funding for research projects that will improve the clinical care and management of people living with HIV in the UK. The *BHIVA Research Awards 2011* are now open until 23:59 on **Tuesday 8 May 2012** for applications. In 2012, a minimum of £40,000 is available to be distributed among the successful applicants according to the quality of the submitted proposals, with a maximum of £10,000 award per application.

Eligibility

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

What you will need to complete your application

Online applications only will be accepted using the BHIVA website at www.bhiva.org. Read the Guidance Notes on the BHIVA website before starting to complete the online form in the members' area of the BHIVA website (www.bhiva.org). Please also complete and sign a Declaration Form (download from the BHIVA website). BHIVA must receive both electronic and paper copies of the signed declaration form by the closing date on **Tuesday 8 May 2012**. Any declaration forms received after this date will result in your Research Awards application not being accepted. See the website for details of conditions and reporting requirements.

National Institute for Health Research (NIHR) non-commercial partner status

BHIVA is now an NIHR non-commercial partner in respect of its Research Awards funding stream. Appropriate research studies funded through this NIHR non-commercial partner funding stream are now automatically eligible for inclusion in the **NIHR Clinical Research Network** (CRN).

Please note that to gain inclusion on the NIHR CRN Portfolio any research study funded by BHIVA must also meet the standard study eligibility criteria (*see guidance notes*).

Please refer to the following websites for further information:

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

Judging

A panel of reviewers made up from the BHIVA Education and Scientific Subcommittee will judge the submissions. In addition, the Judging Panel will include External Reviewers to provide additional expertise for evaluating the applications. The Judging Panel will be led by an Independent Chair. An appeals process is in place, if required.

Joint BHIVA/BASHHone-day revision course for the Diploma in HIV Medicine

Monday 3 September 2012

St Thomas' Hospital, London

This course has been developed by both Associations in order to help prepare candidates for this important examination. It is open to those candidates sitting the examination in 2012.

A nominal fee of £60 will be charged to attend the Joint BHIVA/BASHH one-day revision course in order to contribute towards the costs of running the course.

If you are planning to sit this examination in autumn 2012, please look out for the online registration form which will be launched shortly on the BHIVA website:

www.bhiva.org

Key Dates

Joint BHIVA/BASHH One-day Revision Course for the Diploma in HIV Medicine candidates

Monday 3 September 2012
St Thomas' Hospital, London

5th Annual BHIVA Conference for the Management of HIV/Hepatitis Co-infection

Wednesday 3 October 2012
One Great George Street Conference Centre London

BHIVA Autumn Conference
including CHIVA Parallel Sessions

4–5 October 2012
Queen Elizabeth II Conference Centre London

BHIVA World AIDS Day Event

Thursday 29 November 2012
Royal College of Physicians, London

BHIVA Secretariat: Mediscript Ltd · 1 Mountview Court · 310 Friern Barnet Lane · London N20 0LD
Telephone: 020 8369 5380 · Facsimile: 020 8446 9194 · Email: bhiva@bhiva.org

Bristol-Myers Squibb Virology Partnership

Bristol-Myers Squibb (BMS) are supporting UK physicians through mentorship and exchange programmes to enable cooperative learning relationships both in the UK and internationally.

To read more about these exciting initiatives and register your interest, please visit: www.hivihub.com/partnership

Preceptorship programme

Learn from a specialist at a leading UK HIV treatment centre

Doctors can increase their understanding of the treatment and management of HIV by learning from an expert at a leading centre. Preceptorships focus on specific aspects of HIV treatment:

Pregnancy – *Dr Annemiek de Ruiter, St Thomas' Hospital, London*

Ageing – *Dr Graeme Moyle and Dr Marta Boffito, Chelsea and Westminster Hospital, London, in association with St Stephen's AIDS Trust*

Hepatitis co-infection – *Dr Sanjay Bhagani, Royal Free Hospital, London*

Chelsea and Westminster Hospital NHS Foundation Trust

Guys and St Thomas' NHS Foundation Trust

Royal Free Hampstead NHS Trust

SSAT St Stephen's AIDS Trust

BMS-sponsored exchange programmes

Learn at a leading international HIV treatment centre

These schemes have been sponsored in collaboration with the British HIV Association (BHIVA) and the St Stephen's AIDS Trust (SSAT) to facilitate learning opportunities abroad for UK clinicians. The SSAT have established a Venezuelan exchange programme.

Secure The Future

Learn whilst supporting vulnerable communities in sub-Saharan Africa

The Secure the Future project was established by the BMS Foundation with a commitment of over $150 million to support community-based HIV treatment, paediatric AIDS and building NGO management and leadership capacity.

In collaboration with Secure the Future, BMS UK is creating 3–6 month long placements for physicians at Ladysmith Provincial Hospital and Estcourt Hospital in South Africa. Physicians will experience treating HIV in resource-limited settings, as well as treating a wide range of opportunistic infections and have the opportunity to mentor local clinicians in research within their own clinics.

Bristol-Myers Squibb Foundation
SECURE THE FUTURE®
Care and Support for Communities Affected by HIV/AIDS in Africa

Please note that the above programmes are only available to UK-based physicians

Bristol-Myers Squibb

Date of preparation: January 2012. VIUK12NP014