Infectious Diseases Society of Ireland

8th Annual Scientific Meeting
Promising Therapies, New Challenges

Thurs. 7th – Sat. 9th May 2015

Ash & Cusack Suites, Croke Park Conference Centre, Dublin

PROGRAMME & BOOK of ABSTRACTS

UCD DUBLIN

St. Vincent's Healthcare GROUP LIMITED

Welcome

As president of the Infectious Diseases Society of Ireland and on behalf of my co-chair Dr Eoin Feeney and the Scientific Organising Committee it gives me great pleasure to welcome you to our 8th Annual Scientific Meeting. The treatment and prevention of common infectious diseases has changed dramatically in the past few years, primarily as a result of ground breaking research, introduction of novel therapeutics and the emergence of devastating epidemics.

This year, the IDSI ASM brings together international speakers who have led important advances in these areas, such as leading researchers and clinicians in the fields of HIV prevention and cure, treatment of viral hepatitis and management of Ebola Virus Disease. All of these challenging areas directly impact on practice of Infectious Diseases in Ireland and we hope, through this meeting, to provide a useful and timely update for all those involved, as well as a platform to display the ongoing and growing body of research into Infectious Diseases emanating from clinicians and researchers in Ireland.

This year the ASM returns to Dublin and the grand surroundings of Croke Park but we have maintained the general format of the meeting while providing additional time for presentation of original research. The meeting has been accredited for CPD credits by the Royal College of Physicians in Ireland, and promises to be one of the best ASMs to date.

The IDSI is extremely grateful for the generous support of all the corporate sponsors of this meeting.
We hope that you enjoy the meeting, the venue and the city.

Patrick WG Mallon,
President, IDSI

Organising Committee

Dr. Patrick Mallon, Mater Misericordiae University Hospital, Dublin/University College Dublin

Dr. Eoin Feeney, St. Vincent's University Hospital, Dublin/University College Dublin

Professor Colm Bergin, St. James's Hospital, Dublin/Trinity College Dublin

Dr. Susie Clarke, St. James's Hospital, Dublin/Trinity College Dublin

Dr. Catherine Fleming, University Hospital Galway

Professor Mary Horgan, Cork University Hospital/University College Cork

Dr. Arthur Jackson, Cork University Hospital/Mercy University Hospital

Dr. Busi Mooka, University Hospital Limerick

Dr. Helen Tuite, University Hospital Galway

Biographies

Dr. Timothy Henrich

Assistant Professor of Medicine, Harvard Medical School,
Assistant Professor, Brigham & Women's Hospital, Boston

Dr. Henrich graduated from Yale University School of Medicine in 2004, and did his post-grad degee in Harvard Medical School. He has worked in Medicine and Infectious Disease in Brigham and Women's Hospital, and Massachusetts General Hospital. His clinical interests are in HIV/AIDS, Infectious Disease and Sexually Transmitted Infections (STI).

Dr. Michael Jacobs

Royal Free Hospital, London

Michael Jacobs is Consultant and Clinical Lead in Infectious Diseases at the Royal Free Hospital in London. He trained at Oxford and London universities before completing a PhD in Virology. He is interested in all aspects of clinical infectious diseases with a special interest in serious viral infections. He is director of the UK High Level Isolation Unit and is a member of the UK Advisory Committee on Dangerous Pathogens. He has worked at the centre of the UK response to the West Africa Ebola outbreak, and serves on several national and international Ebola advisory committees.

Dr. Michael Miller

Senior Director of Clinical Virology, Gilead Sciences, Inc.

Michael Miller, Ph.D. is the Senior Director of Clinical Virology at Gilead Sciences, Inc. His responsibilities include overseeing the resistance analyses associated with the development of Gilead's antiviral drugs to HIV, HBV and HCV. His research interests include defining the molecular mechanisms of resistance to antiviral drugs and the clinical effects of drug resistance among different antiviral compounds and mutation patterns. In addition, he works in the Research group at Gilead investigating approaches for eradicating HIV with a goal of drug-free remission. Prior to joining Gilead, he completed his graduate studies in Immunology at Harvard University and then a postdoctoral fellowship in Virology at the Gladstone Institute in San Francisco.

Professor Sheena McCormack

Senior Clinical Scientist, MRC Clinical Trials Unit, University College London

Professor Sheena McCormack has been coordinating HIV prevention trials since 1994. From the outset she worked on HIV vaccine trials, all Phase I/II, in Europe and Africa.

Since 1998 she has been involved in microbicide trials and is co-PI of the Microbicides Development Programme (MDP), a multi-disciplinary public-private partnership. She was Chief Investigator of the Phase III clinical trial that enrolled 9,385 women through six research centres in Southern Africa and reported in 2009.

She is a partner in several vaccine and microbicide networks and working with colleagues in the UK to determine the role of PrEP in the national strategy, leading the PROUD pilot study.

(Photo Thomas Angus / Imperial College London)

Professor Yazdan Yazdanpanah M.D, Ph.D

**Professor of Infectious Disease, Bichat Hospital, ATIP-Avenir INSERM,
Paris Diderot University, France**

Yazdan Yazdanpanah obtained his MD from the Lille School of Medicine, France in 1996. He qualified from the same institution first as a hepato- gastro-enterologist in 1996, and then as an infectious disease specialist in 2002. He obtained a Master of Science degree in epidemiology from the Harvard School of Public Health, Boston in 2000, and a PhD in public health from the Bordeaux School of Public Health in 2002. In 2006, he became Professor of Infectious Disease.

He is currently the head of Infectious Disease Department of Bichat Claude-Bernard Hospital. He is the head of ATIP Avenir Inserm team (U1137) on decision analysis and cost-effectiveness in infectious disease at Paris VII Medical School. He is a member of several scientific committees at the French national Agency of research on HIV and viral hepatitis and the President of Comite Scientifique Sectoriel 3 (CSS3) (Clinical Research in HIV infection).

His research interests are in HIV, viral hepatitis, tuberculosis, clinical epidemiology, and pharmacoeconomics of antimicrobials.

IDSI Annual Scientific Meeting

7th-9th May 2015

Promising Therapies, New Challenges

Thursday, 7th May 2015

16.00 Registration

17.00-17.30 Tea/Coffee

17.30-17.50 Sponsored State of the Art Presentation in Medical Education:

Art in the Era of Integrase Inhibitor-based Treatment: Distinguishing Dolutegravir
Dr. Corklin Steinhart, Head of Global Medical Directors, Executive Director, Medical Affairs & Medical Strategy, GSK/ViiV, North America

17.50-18.30 Keynote Speaker

Ebola – the UK Experience
Dr. Michael Jacobs, Royal Free Hospital, London

18.30-20.00 **SpR Clinical Case Presentations**

Co-Chairs: Dr. Helen Tuite, University Hospital Galway, Galway
Dr. Gerard Sheehan, Mater Misericordiae University Hospital, Dublin.

Blame Rex
Dr. Caitriona Doyle, Galway University Hospital

More than meets the eye
Dr. Julia Enkelmann, Galway University Hospital

This Staph infection is driving me mad
Dr. Deirdre Morley, Mater Misericordiae University Hospital

Ditching Triple Therapy for Retroviruses - A How to Guide
Dr. Cathal O Broin, Cork University Hospital

A forgotten diagnosis
Dr. Sarmad Waqas, Mater Misericordiae University Hospital

Friday, 8th May 2015

08.00 Registration

08.30-09.30 Sponsored Symposium

HCV: Treatment, Cures and Registries: The Karolinska Experience
Prof. Soo Aleman, Dept of Gastroenterology and Hepatology and Dept of Infectious Diseases, Karolinska Institute/Karolinska University Hospital, Stockholm, Sweden

HIV Treatment Today and Tomorrow: Overview of the BMS HIV Development Programme
Dr Isabelle Klauck, MD, Worldwide Medical Director, HIV, BMS Pharmaceuticals

Chair: Professor Colm Bergin, Consultant in Infectious Diseases, St. James's Hospital, Dublin

09.30 Welcome Address
Dr. Paddy Mallon, Consultant in Infectious Diseases, Mater Misericordiae University Hospital, Associate Dean for Research & Innovation, University College Dublin

09.35-10.15 Keynote Speaker

Pre-Exposure Prophylaxis for HIV
Prof. Sheena McCormack, Senior Clinical Scientist, MRC Clinical Trials Unit, University College London

10.15-11.00 Clinical Abstract Oral Presentations

Co-Chairs: Prof. Mary Horgan, University College Cork, Cork
Dr. Eoin Feeney, St. Vincent's University Hospital, Dublin

10.15-10.30 ***Renal dysfunction is associated with increased bone turnover in HIV infected patients***
E Alvarez, AG Cotter, JJ Brady, C Galvin, A Macken, E Kavanagh, CA Sabin, S Rodriguez-Novoa, PWG Mallon
'Understanding the Pathology of Bone Disease in HIV Infected Subjects' (HIV UPBEAT) Study Group, UCD School of Medicine and Medical Sciences

10.30-10.45 ***Predictors of longitudinal change in bone mineral density in a cohort of HIV-positive and negative subjects***
PWG Mallon, W Tinago, A Cotter, C Sabin, A Macken, E Kavanagh, J Brady, G McCarthy, J Compston
Mater Misericordiae University Hospital, Dublin

10.45-11.00 ***Tenofovir Alafenamide (TAF) in a Single Tablet Regimen in Initial HIV-1 Therapy***
A Pozniak, D Wohl, M Thompson, E DeJesus, D Podzamczer, J M Molina, G Crofoot, P Benn, C Callebaut, H Martin, S McCallister
Gilead Sciences Ltd, London

11.00-11.15 Coffee/Tea, Poster Viewing and Exhibition

11.15-12.00 Keynote Speaker

The Economic Impact of New HCV Treatments
Professor Yazdan Yazdanpanah, Professor of Infectious Disease, Bichat Hospital, ATIP-Avenir INSERM, Paris Diderot University, France

12.00-12.45 Clinical Abstract Oral Presentations

Co-Chairs: Dr. Concepta Merry, St. James's Hospital, Dublin
Dr. Paddy Mallon, Mater Misericordiae University Hospital, Dublin.

12.00-12.15 ***Outcomes of HCV treatment in HIV co-infected patients in the pre-DAA era: 2001- 2012***
CL Bannan, M Coghlan, G Farrell, CJ Bergin
Department of Genitourinary Medicine and Infectious Diseases, St James's Hospital, Dublin

12.15-12.30 ***Hepatitis C virus NS3 and NS5A drug resistance mutations in treatment-naïve chronically-infected individuals in Ireland***
C De Gascun[1], L Nguyen[2], D Sheerin[3], E Gray[4]
1. National Virus Reference Laboratory,University College Dublin, 2. Centre for Research in Infectious Diseases, University College Dublin, 3. Department of Microbiology, Trinity College Dublin, 4.National Centre for Pharmacoeconomics on behalf of the Irish Hepatitis C Outcomes Research Network

12.30-12.45 ***Patient Characteristics associated with Non-Engagement in Hepatitis C (HCV) Care - Data emerging from an opt-out Emergency Department Blood-Borne Virus (BBV) Screening Programme***
J O'Neill[1], E Gilhooley[1], S O'Connell[1], A Cotter[1], D Lillis[2], S O'Dea[1], H Tuite[4], C Fleming[4], H Barry[5], L Dalby[5], D Shields[2], S Norris[3], B Crowley[5], P Plunkett[2], C Bergin[1,6]
1. Department of Genito-Urinary Medicine and Infectious Disease, St James's Hospital, Dublin; 2. Emergency Medicine Department, St James's Hospital, Dublin; 3. Hepatology Department, St James's Hospital, Dublin; 4. Infectious Disease Department, University College Hospital Galway; 5. Microbiology Department, St James's Hospital, Dublin; 6. Department of Clinical Medicine, Trinity College Dublin

12.45-13.15 Lunch, Poster Viewing, Exhibition

13.15-14.15 Sponsored Symposium

Ebola: What the future holds?
Dr. Benoit Callendret, (DVM, PhD), Compound Development Team Leader, Ebola Vaccine, Janssen Pharmaceuticals

Chair: Dr. Arthur Jackson,
Consultant in Infectious Diseases, Cork University Hospital/Mercy University Hospital

14.15-15.00 Keynote Speaker

Advances in Targeting Viral Reservoirs for HIV Cure/Remission
Dr. Michael Miller, Senior Director of Clinical Virology, Gilead Sciences, Inc.

15.00-15.45 Clinical Abstract Oral Presentations

Co-Chairs: Prof. Colm Bergin, St. James's Hospital, Dublin
Dr. Arthur Jackson, Mercy University Hospital, Cork

15.00-15.15 ***A randomized, controlled study exploring factors associated with decision to undergo HIV screening***
G O'Connor, A Ni Flaitheartaigh, A Lacey, S Tennant, J O'Halloran, E Brazil, Y Calderon, PWG Mallon
Mater Misericordiae University Hospital, Dublin

15.15-15.30 ***Late Diagnosis of HIV in Northern Ireland***
E Walker, SEJ Todd, P Rafferty, CR Emerson, WW Dinsmore , SP Quah, EJ McCarty, CM Donnelly
Department of Genito-Urinary Medicine, Belfast HSC Trust, Belfast

15.30-15.45 ***Results from the SIMPle study; a cluster randomised intervention to improve the quality of antimicrobial prescribing for UTI in general practice***
A Vellinga, S Duane, S Galvin, A Callan, AW Murphy, M Cormican
National University of Ireland, Galway

15.45-16.00 Tea/Coffee, Poster viewing and Exhibition

16.00-16.30 Clinical Abstract Oral Presentations

Co-Chairs: Dr. Susie Clarke, St. James's Hospital, Dublin/Trinity College Dublin
Dr. Busi Mooka, University Hospital Limerick, Limerick

16.00-16.15 ***Mobile phones - A serious threat to infection control? Microbial analysis of personal mobile telephone devices within a major Trauma and Orthopaedic unit.***
A.Dolan, S. Dolan
Royal Victoria Infirmary, Newcastle upon Tyne

16.15-16.30 ***Anti-NMDA Receptor Antibody Production Complicating HSV 1 Encephalitis – A Case Series***
S. Geoghegan[1], A. Walsh[2], R.Leahy[1,2], K.Butler[1,2], P.Gavin[1,2]
1.Department of Paediatric Infectious Disease, Children's University Hospital, Temple Street. Dublin.
2. Department of Paediatric Infectious Disease, Our Lady's Children's Hospital Crumlin. Dublin

16.30-17.30 Sponsored Symposium

Moving towards new gold standards with integrase inhibitors
Dr. Mas Chaponda, Royal Liverpool University Hospital

Treating Co-Infected patients for their HCV: the Data & the Real-World
Dr. Stefan Mauss, Center for HIV and Hepatogastroenterology, Dusseldorf

17.30 Drinks Reception and Prize-Giving in Cusack Suite

Saturday, 9th May 2015

09.00 Registration

09.30-10.00 Clinical Abstract Oral Presentations

Co-Chairs: Dr. Catherine Fleming, University Hospital Galway, Galway
Dr. David Gallagher, University Hospital Galway, Galway

09.30-09.45 ***Detection of Staphylococcus aureus, Meticillin Resistant Staphylococcus aureus and Coagulase-Negative Staphylococci directly from Positive Blood Cultures by Real Time PCR.***
M. Molloy, E. McGrath, J. King, M. Cormican
Microbiology Department, University Hospital Galway

09.45-10.00 ***Detection of ESBL-producing E. coli and carbapenemase encoding genes in drinking-water sources***
D Morris, S Kavanagh, E McGrath, S Tansey, AM Murphy, M Hetherington, W Brennan, K Carney, B MacDomhnaill, M Cormican
Discipline of Bacteriology, National University of Ireland, Galway

10.00-10.40 Keynote Speaker

Stem Cell Transplantation to Eradicate HIV
Dr. Timothy Henrich, Assistant Professor of Medicine, Harvard Medical School, Assistant Professor, Brigham & Women's Hospital, Boston

10.40-11.00 Coffee/tea, Poster Viewing and Exhibition

11.00-12.00 Sponsored Symposium

Chair: Dr. Eoin Feeney, St. Vincent's University Hospital, Dublin

Are HCV/HIV co-infected patients still difficult to treat?
Prof. Yazdan Yazdanpanah, Professor of Infectious Disease, Bichat Hospital

A case-based approach: treating cirrhotic patients
Dr. Ciaran Bannan, St. James's Hospital, Dublin

Panel Discussion and Q&A

12.00-13.15 Clinical Abstract Oral Presentations

Co-Chairs: Dr. Eoin Feeney, St. Vincent's University Hospital, Dublin
Prof. Samuel McConkey, Royal College of Surgeons Ireland.

12.00-12.15 ***Factor associated with invasive pneumococcal disease in HIV-infected adults in the era of HAART***
C Sadlier, C Rock, M Kelleher, C Bergin
St. James's Hospital, Dublin

12.15-12.30 ***The effect of initiation of antiretroviral therapy on monocyte, endothelial and platelet function in HIV-1 infection***
J.A. O'Halloran[1], E. Dunne[2], M.M.P. Gurwith[1], J.S. Lambert[1], G.J. Sheehan[1], E.R. Feeney[1], A. Pozniak [3], P. Reiss [4], D. Kenny [2], P.W.G. Mallon[1]
1 HIV Molecular Research Group, School of Medicine and Medical Science, University College Dublin, Dublin, Ireland; 2 Cardiovascular Biology Group, Royal College of Surgeons in Ireland, Dublin, Ireland; 3 HIV Directorate, Chelsea and Westminster Hospital NHS Foundation Trust, London SW10 9NH, United Kingdom; 4 University of Amsterdam, Academic Medical Center, Department of Global Health and Stichting HIV Monitoring, Amsterdam, Netherlands

12.30-12.45 ***Environmental Determinants and Distribution of Verotoxigenic Escherichia coli (VTEC) Infection in Ireland, 2008–2013 – A Geostatistical Investigation***
C ÓhAiseadha[1], J O'Dwyer[2], PD Hynds[3], UB Fallon[4], H Johnson[5]
1. Department of Public Health, Health Service Executive (HSE), Dr. Steevens' Hospital, Dublin; 2. Department of Environmental and Chemical Science, University of Limerick, Limerick; 3. School of Engineering, Dublin Institute of Technology, Dublin; 4. Department of Public Health, HSE, Tullamore; 5. Health Intelligence (Knowledge Management), HSE, Dublin

12.45-13.00 ***One Health: a review of human and porcine Hepatitis E seroepidemiology in Ireland***
J O'Gorman[1], SJ Roche [2], M O'Connor[2], D Sammin[2], J Dean[1], C De Gascun[1]
1. National Virus Reference Laboratory (NVRL); 2. Central Veterinary Research Laboratory (CVRL)

13.00-13.15 ***Antifungal Stewardship in the Intensive Care Unit at a UK tertiary referral teaching hospital***
E Muldoon, R Richardson
National Aspergillosis Centre, University Hospital of South Manchester, UK

13.15 **Close of 2015 Annual Scientific Meeting**
Dr. Eoin Feeney, Consultant Physician in Infectious Diseases, St. Vincent's University Hospital, Dublin

ORAL PRESENTATIONS

O1
Detection of *Staphylococcus aureus*, Meticillin Resistant *Staphylococcus aureus* and Coagulase-Negative *Staphylococci* directly from Positive Blood Cultures by Real Time PCR.

M. Molloy, E. McGrath, J. King, M. Cormican
Microbiology Department, University Hospital Galway

Background: *Staphylococcus spp.* are the most common blood culture isolate. By conventional methods 24 hours or more may elapse between time of detection of *Staphylococcus spp.* on blood culture to determination of species and meticillin susceptibility. During this interval unnecessary or inappropriate therapy may be administered. Rapid molecular characterisation may support earlier targeted treatment.

Method: Routine blood cultures from a 650 bed teaching hospital were incubated in the Bactec FX system according to manufacturer's instructions. Positive cultures were Gram stained and subcultured for identification by MALDI-tof MS (Brucker) and susceptibility testing (EUCAST disc diffusion). Real Time-PCR (rt-PCR) assays for detection of *tuf, coA* and *mecA* as previously described were optimised and applied to the first positive culture from each patient as follows. An aliquot of 1ml of broth was centrifuged (850g for 2minutes) to remove PCR inhibitors and 100µl of supernatant diluted in 900µl sterile water. 5µl of this was added to rtPCR mastermix in a final volume of 25µl with amplification performed on Applied Biosystems AB7500 Sequence Detection System. The following controls were used, *S.aureus* 43300 (spiked, extracted) blood culture (positive control) and negative (extracted) blood culture (negative control).

Results: Processing time by rtPCR was 8 minutes hands on time and 100 minutes to obtain a result. Of 80 cultures processed 50 *tuf* detected, *coA* not detected and confirmed as Coagulase Negative Staphylococci (CNS) including *S.epidermidis*(28), *S.hominis*(9), *S.simulans*(1), *S.capitis*(4), *S.haemolyticus*(2), *S.auricularis*(1), *S.warneri*(1), mixed CNS (4). 30 cultures were *tuf* and *coA* detected and confirmed as *S.aureus*. 48 cultures were *mecA* positive, 14 were MRSA, 33 were CNS and one was identified as a mixed culture of meticillin susceptible *S.aureus* (MSSA) and *S.epidermidis* with the *mecA* gene.

Conclusion: rtPCR allows rapid characterisation of *Staphylococcus spp.* from positive Bactec cultures. 79 of 80 cultures were correctly characterised however a mixed culture of MSSA and meticillin-resistant *S. epidermidis* was interpreted as MRSA by rtPCR.

O2
The effect of initiation of antiretroviral therapy on monocyte, endothelial and platelet function in HIV-1 infection

J.A. O'Halloran[1], E. Dunne[2], M.M.P. Gurwith[1], J.S. Lambert[1], G.J. Sheehan[1], E.R. Feeney[1], A. Pozniak [3], P. Reiss [4], D. Kenny [2], P.W.G. Mallon[1]
[1] HIV Molecular Research Group, School of Medicine and Medical Science, University College Dublin, Dublin, Ireland; [2] Cardiovascular Biology Group, Royal College of Surgeons in Ireland, Dublin, Ireland;
[3] HIV Directorate, Chelsea and Westminster Hospital NHS Foundation Trust, London SW10 9NH, United Kingdom; [4] University of Amsterdam, Academic Medical Center, Department of Global Health and Stichting HIV Monitoring, Amsterdam, Netherlands

Background: Higher rates of cardiovascular disease are reported in persons living with HIV, with immune activation, endothelial dysfunction and platelet activation all potentially contributing. We aimed to examine effects of ART initiation on markers of these processes.

Methods: Markers of monocyte activation (sCD14, sCD163), endothelial dysfunction (vWF, ICAM-1, VCAM-1) and platelet activation (sP-Selectin, sCD40L, sGPVI) were measured at baseline, 4 and 12 weeks post ART initiation in HIV positive subjects and HIV negative controls matched for age, gender, race and smoking status. Data are median [IQR].

Results: Twenty-five HIV-1 positive subjects not on ART (baseline CD4+ T cell count 318 (235, 433) cells/cm^3; log HIVRNA 4.39 (4.16, 4.70)) and 15 controls were recruited. In untreated HIV positive subjects, sCD14 and sCD163 were significantly higher than in controls (1570 [1287, 2102] vs 878 [695, 1091] ng/ml, p<0.0001; 1486 [1184, 1910] vs 621 [406, 700] ng/ml, p<0.0001 respectively). ART initiation resulted in a significant decrease in sCD163 at week 12 (1005 [791, 1577] ng/ml, p=0.001), although levels remained significantly higher than in controls (p<0.0001) whereas levels of sCD14 remained unchanged. All markers of endothelial dysfunction were significantly higher in HIV positive subjects than in controls (vWF 731 [458, 1227] vs 343 [314, 385] mU/ml, p=0.0003; ICAM-1 770 [569, 928] vs 408 [333, 606] ng/ml, p<0.0001; VCAM-1 854 [714, 1,114] vs 456 [286, 507] ng/ml, p<0.0001) and decreased by week 12 but remained significantly higher compared to controls. Platelet activation markers were significantly higher than controls (sGPVI 6.6 [4.8, 8.3] vs 4.0 [2.2, 4.9] ng/ml, p=0.003; sCD40L 273 [148, 350] vs 77 [62, 121] ng/ml, p<0.0001; sP-selectin 50 [37, 61] vs 40 [29, 49] ng/ml, p=0.04) and also reduced significantly after ART initiation (4.9 [4.0, 7.0] ng/ml, p=0.03; 121 [88, 229] ng/ml, p=0.002; 34 [27, 53] ng/ml, p=0.001 respectively) reaching levels comparable to the control

group at 12 weeks post ART initiation. Change in log HIVRNA strongly correlated with change in markers of platelet activation (sGPVI r=0.52, p=0.01; sCD40L r=0.59, p=0.004; sP-selectin r=0.67, p= 0.001)

Conclusions: Markers of monocyte activation, endothelial dysfunction and platelet activation are significantly higher in subjects with untreated HIV compared to matched HIV negative controls. Initiation of ART results in reductions of these markers. However, endothelial dysfunction and monocyte activation markers do not normalise and sCD14 in particular is not appreciably impacted by ART initiation. This points to a persistent pro-atherogenic biomarker pattern despite effective control of HIV viraemia.

O3
Mobile phones - A serious threat to infection control? Microbial analysis of personal mobile telephone devices within a major Trauma and Orthopaedic unit.

A. Dolan, S. Dolan
Royal Victoria Infirmary, Newcastle upon Tyne

Background: Health Care Associated Infections are a growing concern, both in the hospital and the community setting. Mobile telephone device use is now more prevalent in the daily working lives of healthcare staff, both for work and personal purposes. Convincing evidence exists supporting the spread of pathogenic microorganisms among health care workers, patients and in the community by mobile telephone devices. This audit aimed to establish the extent of micro-organism contamination of mobile phone devices within one clinical area at the Royal Victoria Infirmary, Newcastle Upon Tyne. The audit also aimed to evaluate the knowledge and practices of clinical staff in relation to local mobile phone disinfecting policies.

Methods: We carried out a prospective audit of mobile telephone devices of all available staff members on the trauma and orthopaedic unit within a 12 hour period. The mobile telephone owners completed a questionnaire at the time of sampling. Each mobile phone device was swabbed, front and back with a Polywipe™ using a standardised technique. All samples were confidentially labelled and analysed by the Microbiology Department at the Freeman hospital, Newcastle upon Tyne Hospitals NHS Foundation Trust.

Results: 33 mobile telephone devices were included in the audit. Every participant completed a questionnaire. Of the 33 samples, 100% demonstrated mixed skin flora growth including mixed Coagulase Negative Staphylococci. 30.3% were colonised with pathogens related to healthcare associated infection. 24.2% demonstrated faecal flora growth including Enterococcus species, Pseudomonas species and Bacillus species. A total of 9% demonstrated growth of Staphylococcus Aureus.

100% of participants reported using their mobile telephone device at work. 75.8% of the participants were unaware of a policy to regularly clean their mobile telephone devices. Of the participants who were aware that a policy existed, only 25% reported cleaning their mobile phone device the recommended amount of times per week.

93.9% of the participants indicated that they never clean their mobile telephone devices. No pathogenic bacteria were identified in 100% of the samples taken from participants who disinfected their mobile telephone devices as per policy.

Conclusion: The mobile telephone devices demonstrated a high rate of pathogenic bacterial growth. This was reduced to zero with the protocol cleaning methods. This audit has highlighted the need for a national consensus on mobile phone devices in the health care setting in order to protect our patients, encourage antimicrobial stewardship and to reduce the risk of multidrug resistant organisms.

O4
A randomized, controlled study exploring factors associated with decision to undergo HIV screening

G O'Connor, A Ni Flaitheartaigh, A Lacey, S Tennant, J O'Halloran, E Brazil, Y Calderon, PWG Mallon
Mater Misericordiae University Hospital, Dublin

Background: Little is known of the factors associated with a decision to test for HIV, particularly among varied gender and cultural groups. The Mater-Bronx Rapid HIV Testing (M-BRiHT) project explored if choice of pre-test counselor affected the decision to undergo HIV testing and hypothesized that offering expanded choice of counselor would lead to higher testing completion rates.

Methods: The M-BRiHT project is a single-site, prospective randomized study of adult Emergency Department attendees offered automated video-based pre-and post-test counseling combined with rapid HIV testing (buccal swab). Subjects were randomly assigned to receive identical, standardized video-based pre- and post-test counseling from a single pre-assigned counselor (Caucasian female) or to choose one of four counselors (male or female from Caucasian or African origin). Primary endpoint was the proportion of subjects completing HIV testing in each randomization group.

Results: Of 6,000 subjects recruited from September 2012 to 2013, 2950 (49.1%) were randomized to choice of counselor. Mean (SD) age was 40.9 (16.4) yrs, 48.8% were female and 91.0%, 2.5% and 3.1% were of Caucasian, African or Asian ethnicity respectively.
4,919 (82.0%) completed HIV testing, with significantly higher completion rates in those randomized to choice

of counselor (83.1 versus 80.9%, P<0.001). Other factors associated with higher HIV test completion rates included younger age (median 36 (SD 15.6) versus 46 (SD 18.6) yrs, P<0.001); and male gender (84.1 % v 79.8%, P< 0.001).

Fourteen subjects tested HIV positive (prevalence 2.8/1000), with 10 new HIV diagnoses and four re-confirmed HIV positive and re-linked to care. None had symptomatic HIV. Median (IQR) CD4+ T-cell count of new diagnoses was 515 (332, 595) cells/mm3 and all subjects were successfully linked to care.

Conclusions: The M-BRiHT study demonstrates the feasibility of implementing large scale HIV screening within the Emergency Department and highlights the importance of offering choice of counselor when automated systems are employed to optimize HIV testing rates.

O5

Detection of ESBL-producing *E.* coli and carbapenemase encoding genes in drinking-water sources

D Morris, S Kavanagh, E McGrath, S Tansey, AM Murphy, M Hetherington, W Brennan, K Carney, B MacDomhnaill, M Cormican
Discipline of Bacteriology, National University of Ireland, Galway

Background: The increasing prevalence and dissemination of antimicrobial resistant bacteria is of concern worldwide. Contaminated drinking water may contribute to dissemination of antimicrobial-resistance and rapid, convenient methods are required to facilitate detection of low level contamination. A filtration enrichment protocol for detection of Verotoxigenic *E. coli* (VTEC) was adapted for this purpose.

Methods: Up to 30L of water were filtered and filters were enriched in buffered peptone water containing ertapemen (10 µg) or cefotaxime (25 µg) disks. DNA extracts of enrichments were examined for *bla*CTX-M groups 1, 2 and 9 and carbapenemase-encoding genes (*bla*KPC, *bla*GES, *bla*IMI, *bla*OXA-48, *bla*VIM, *bla*IMP, *bla*NDM-1, *bla*OXA-23, *bla*OXA-51, *bla*OXA-24/40, *bla*OXA-58). Positive enrichments were cultured on chromogenic agar for isolation of ESBL *E. coli* and *carbapenem resistant Enterobacteriaceae (CRE).* Experiments were performed on water spiked with control strains at 102 CFU/L and raw water from 2 rural water supplies.

Results: Target genes were detected from spiked water and the control strains were recovered on chromogenic agar. In rural drinking water sources the *bla*CTX-M group 1 gene was detected and *E. coli* containing *bla*CTX-M group 1 was recovered (in addition to STEC O26). OXA 48 and OXA 51 targets were detected only from antibiotic-free enrichments.

Conclusions: We describe a convenient method for rapid detection and isolation of antimicrobial resistant bacteria from large water volumes simultaneously with detection of VTEC. The *bla*CTX-M group 1 gene was detected in rural drinking water sources. *bla*OXA-48 and *bla*OXA-51 were also detected but organisms were not recovered suggesting the genes reflected environmental organisms inhibited by the concentration of ertapenem used. Application of this method will support evaluation of drinking water sources for low level contamination with specific pathogens (e.g. VTEC) and antimicrobial resistance in indicator organisms such as *E. coli*.

O6

Patient Characteristics associated with Non-Engagement in Hepatitis C (HCV) Care - Data emerging from an opt-out Emergency Department Blood-Borne Virus (BBV) Screening Programme

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Background: HCV is a global public health problem resulting in a significant impact on healthcare resource utilisation and cost. HCV can disproportionately affect socially marginalised groups. Many patients with HCV default from care without treatment, leading to HCV progression, poor health outcomes and onward transmission. Results of a pilot opt-out testing study for BBVs at St James's ED showed a large proportion of HCV positive patients who were previously engaged in care and had defaulted. We sought to explore the demographics of these individuals to inform further targeted HCV intervention strategies and re-link those disengaged back to care.

Methods: Retrospective paper and electronic chart review of those disengaged from care was undertaken. Patient demographics including gender, age, ethnicity, risk factor for acquisition, housing status, current drug use status and linkage to MRT (methadone replacement therapy) were recorded. Active drug use status was defined by case history. Linkage to care was defined as a visit to an Infectious Disease Specialist or Hepatologist in the preceeding year. Data is presented as n(%) unless otherwise stated.

Results: Over a 44 week period, 10,000 panel tests for HIV, HBV and HCV were performed at St James's ED. 110, 47 and 558 patients tested positive for HIV, HBV and HCV

respectively. A total of 161 patients were identified as already known positive for HCV that had defaulted from care. Study data at week 20 interim analysis identified 96 patients in this group.
Of these, the median age was 49.5 years, ranging from 25-66 years and 31(31.3%) were female. 95(99%) were Irish, 1 was Russian.
30(31.2%) had no fixed abode and 65(67.7%) were living in the Dublin area; the majority(26%) of these were living in Dublin 8.
Risk demographics included 75(78%) were people with history of injecting drugs (PWID). 19(19.7%) had unknown risk and 2(2%) had no identifiable risk.
Description of PWID is presented in Table 1. Of those 42 patients on MRT, 23(54.7%) attended a methadone clinic, 10(23.8%) attended GP and 9(21.4%) were not known.
Interim analysis of this group shows 48(50%) had no identifiable reason for disengaging from care, 37(49%) were active PWID and 30(31.2%) have no fixed abode.

Conclusion: A significant number of these patients were PWID, actively inject drugs and had no fixed abode. These factors are potential barriers to active engagement in care. Further research is required where these demographics will be compared to the known HCV group engaged in care.

Table 1: Description of People Who Inject Drugs (PWID)

N=75	N(%)
Current drug use status	
Active drug use	37 (49)
No active drug use	35 (46.6)
Unknown current drug use status	3 (4)
Methadone replacement therapy (MRT)	
Receiving MRT	42 (56)
Not receiving MRT	19 (25)
Unknown	14 (18.6)

O7
One Health: a review of human and porcine Hepatitis E seroepidemiology in Ireland

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Background: Hepatitis E virus (HEV) is not a notifiable disease in Ireland and little is known about the epidemiology of HEV in this country. In the UK an estimated 60,000 acute HEV infections occur each year and across Europe, HEV is emerging as a signficant cause of morbidity particularly in the immuncompromised. Increasing rates of authchthonous HEV (commonly HEV Genotype 3) have led to suggestions that zoonotic tranmission from infected pigs (which do not show clinical signs) or other animal reservoirs may play an important role. We present preliminary findings of a collaborative review by the Central Veterinary Research Laboratory (CVRL) and the National Virus Reference Laboratory (NVRL) incorporating a seroprevalence study of the Irish pig population and an 8 year review of laboratory HEV test results.

Methods: Porcine HEV IgG seroprevalence was established by examining stored sera received for Aujeszky's Disease surveillance in 2010/2011. HEV antibody was detected by the CVRL using the PrioCHECK HEV Ab porcine ELISA. Human cases of HEV infection were identified by retrospective review of NVRL laboratory records (2007-2014). Results were classified as confirmed, probable or possible acute HEV on the basis of clinical/demographic information, and follow up serology or HEV RNA results where available.

Results: In total 330 pigs from 16 herds were tested. Eighty nine pigs (27%) in 13 herds (81%) were seropositive. NVRL requests for HEV serology have increased five-fold since 2007 with 1,772 tests performed in total. The overall incidence of confirmed or probable HEV infection is low at 1.9% (n=33). On the basis of clinical/demographic data 76% (n=25) are believed to represent travel-related infection. In 2014, 4 cases of HEV infection with no recent travel history were identified. Molecular sequencing was possible in two cases (one of whom was immunosuppressed) and the isolates confirmed as HEV Genotype 3.

Conclusions: This collaborative review demonstrates a high seroprevalence of HEV in Irish pig herds consistent with that reported in other European countries: however, the incidence of laboratory diagnosed human HEV cases in Ireland is extremely low. Further research into the epidemiology of clinical and asymptomatic HEV infection in humans, and the zoonotic risk from potential animal reervoirs in Ireland is warranted. To increase clinician awareness of this emerging infection and to promote the investigation of other possible transmission links/sources we propopse HEV be included on the list of notifiable diseases.

O8

Environmental Determinants and Distribution of Verotoxigenic *Escherichia coli* (VTEC) Infection in Ireland, 2008–2013 – A Geostatistical Investigation

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Background: Verotoxigenic *Escherichia coli* (VTEC) is an enteric pathogen capable of causing gastroenteritis in humans, frequently accompanied by severe abdominal pain and bloody diarrhoea. Multiple transmission routes exist, including waterborne, foodborne and person-to-person (secondary) spread; multiple point and diffuse environmental pathogen sources have been shown to be associated with previous cases of endemic and epidemic infection, both nationally and internationally. VTEC O157 is the most frequently encountered of the >150 identified serotypes, with a threshold dose of <50 organisms. Approximately 5% of VTEC O157 cases develop haemolytic uraemic syndrome (HUS), characterised by acute renal failure, particularly among children aged under 5 years. The incidence of VTEC infection in Ireland has steadily increased over the past decade, with incidence rates now among the highest in Europe. In 2013, 704 confirmed cases were recorded (crude incidence rate 12.1/100,000), with 30 of these subsequently developing HUS. The current study explored the existence of spatial associations between VTEC infections in 2008–2013 and environmental pathogen source density.

Methods: A novel, spatially linked database was developed, comprising 989 primary notified VTEC cases during the 6-year period 2008–2013 and geo-referenced by Health Atlas Ireland. Each geo-referenced case was assigned to one of 18,488 Irish census enumeration areas and linked with local pathogen source data including private well usage per head of population and septic tank density (per km^2) derived from the 2011 population census, and cattle and sheep densities derived from the 2010 agricultural survey.

Results: The most frequent VTEC serotypes during the study period were O157 (n = 521, 52.7%) and O26 (n = 233, 23.6%). The calculated 6-year cumulative incidence rate for rural VTEC O157 (19/100,000) was approximately three times that of categorically urban areas (6.3/100,000) (p <0.001). Calculated cumulative incidence rates for both VTEC O26 and all VTEC strains were also significantly higher in rural areas. Multivariate modelling indicates that private well usage (p <0.001) and cattle density (p = 0.007) are significant spatial predictors for VTEC O157 infection (Table).

Conclusion: Results suggest that VTEC infection in Ireland is a predominantly rural hazard, closely associated with cattle density and private well usage. Findings may be used to minimise public exposure to VTEC through an increased understanding of environmental pathogen source and transport mechanisms. Geological, hydrological and climatological data are currently being amalgamated with the existing database in order to further elucidate the processes underlying environmental transmission of VTEC infection in Ireland.

Logistic regression model of VTEC O157 infection in Ireland 2008–2013

Variable	B	p	H/L sig.	R^2
Wells per head of population	2.93	0	0.567	0.018
Cattle density	0.001	0.007	0.567	0.018
Population density	<0.001	0.835	–	–
Septic tank density	-0.012	0.244	–	–
Sheep density	<0.001	0.578	–	–
HPI deprivation score	-0.002	0.771	–	–

O9

Factor associated with invasive pneumococcal disease in HIV-infected adults in the era of HAART

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Background: Invasive pneumococcal disease (IPD) remains a significant cause of morbidity and mortality in HIV-infected individuals in the era of HAART despite the availability of pneumococcal vaccination. The aim of this study was to examine risk factors associated with IPD in HIV-infected individuals presenting to a tertiary referral hospital in Dublin, Ireland.

Methods: All episodes of IPD occurring in HIV-infected individuals presenting to St James's Hospital (SJH) in Dublin from January 2006 to December 2013 were reviewed retrospectively from laboratory surveillance data. If an individual presented with more than one IPD episode during the study period, demographic data from the first episode only was included in analysis. Chi 2 tests and Fishers exact test were used to compare variables as appropriate.

Results: 186 cases of IPD presented to SJH during the study period. 45 (24%) episodes occurred in 41 HIV-infected adults.
Mean [SD] age of HIV-infected individuals presenting with IPD was 38 [6] years, 29 (71%) were male, 37 (90%) were Caucasian. Median CD4 count was 89 cells/mm^3 (range 3-468cells/mm^3).
There were 44 (98%) cases of pneumococcal bacteraemia with an identified respiratory source and 1

case of pneumococcal meningitis.
35 (85%) had intravenous drug use (IDU) documented as risk of acquisition of HIV. 30 (73%) were co-infection with Hepatitis C. 95% had multiple risk factors for IPD (Table 1).
4 of 41 (10%) presenting with IPD were engaged in HIV care. 3 were virally suppressed on HAART.
12 (29%) had received the 23-valent polysaccharide pneumococcal vaccine (PPV23) prior to presentation with IPD. Median time from receipt of PPV23 to IPD episode was 3 years (range 1-6 years). 7 (58%) of those who had received PPV23 were infected with a serotype that was contained in PPV23.
Overall mortality post IPD episode was 6 (15%).

Conclusion: IPD causes a significant burden of disease in HIV-infected individuals. IDUs represent a high risk group accounting for 85% of episodes of IPD in our study. Efficacy of pneumococcal vaccine in HIV-infected individuals remains debated. 58% of patients in our study who had received PPV23 were infected with a PPV23 pneumococcal serotype. Early studies of the 13-valent conjugate pneumococcal vaccine (PCV13) indicate a more immunogenic and durable response in HIV-infected individuals.

Until barriers to engagement and retention in HIV care of IDUs are addressed health inequalities including risk of IPD will remain. HIV-infected IDUs represent a group that should be prioritised for conjugate pneumococcal vaccination.

Table 1. Characteristics of HIV-infected patients presenting with IPD
Reported as total number (%) unless otherwise stated

Total cohort	n=41 (%)
Age, mean [SD]	38 [6]
Male	29 (71)
Race/Ethnicity	
Caucasian	37 (90)
Non-Caucasian	4 (10)
Total number of episodes of IPD	45
Bacteraemia	44
Meningitis	1
Number with recurrent episode of IPD	4 (10)
Risk factors for IPD	
Age>65 years	0 (0)
Cigarette smoker	33 (80)
Intravenous drug use	35 (85)
Chronic liver Disease	33 (80)
Hepatitis C	31 (76)
Alcohol dependence	24 (59)
Chronic obstructive pulmonary disease	11 (27)
Malignancy	1 (2)
Asthma	1 (2)
Diabetes Mellitus	5 (12)
End stage renal failure	0 (0)
Median number of IPD risk factors [95% CI]	6 [3.5-4.7]
Overall mortality post IPD episode	6 (15)

O10
Results from the SIMPle study; a cluster randomised intervention to improve the quality of antimicrobial prescribing for UTI in general practice

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Background: Antibiotic resistance poses a threat to our healthcare system. Improving antibiotic prescribing can contribute to addressing this problem. A multidisciplinary team from epidemiology, social marketing, health economy and microbiology developed an intervention in primary care to improve the quality and quantity of antibiotic prescribing for urinary tract infections (UTIs).

Methods: The SIMPle study offers GPs interactive workshops, audit and feedback reports and automated electronic prompts summarising recommended first line antibiotic treatment and, in a third intervention arm, provide GPs with tools to improve communication to promote delayed antibiotic prescribing. Novel data collection methods include text messaging, a smart phone app and remote data extraction from the GP practice software.

Results: In an adjusted mixed model the effect of the intervention was an overall increase of 2.3 (1.7-3.2) in prescribing a firstline antimicrobial in the intervention compared to the control. The odds ratio was slightly higher in arm A (2.7 (1.8-4.1)) than in arm B (1.9 (1.3-2.9)). Considering the relatively high prevalence of trimethoprim resistance in the area, nitrofurantoin was highlighted as the preferred firstline treatment during the workshop and the odds of a prescription for nitrofurantoin was 4.5 (2.7-7.3) in arm A and 3.5 (1.9-6.3) in arm B. Prescribing of nitrofurantoin for UTI was at the expense of trimethoprim and to a lesser extent, co-amoxyclav and quinolones. However, an unintended increase in antimicrobial prescribing for UTI was observed in the intervention arms compared to control (OR 2.2 (1.2-4.0) in arm A and 1.4 (0.9-2.1) in arm B. The effect of the intervention showed to be sustained 5 months after the end of the intervention.

Conclusions: The SIMPle study, a complex intervention including audit and feedback reports combined with reminders increase the quality of prescribing for UTI in Irish general practice.

O11
Renal dysfunction is associated with increased bone turnover in HIV infected patients

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Background: Both HIV infection and exposure to antiretroviral therapy is associated with an increased prevalence of renal disease, low bone mineral density (BMD) and increased bone turnover. However, the association, if any, between renal dysfunction, BMD and bone turnover is poorly understood. We aimed to determine relationships between markers of renal tubular function, bone turnover markers (BTMs) and BMD.

Methods: In a cross-sectional sub study of HIV-positive and HIV-negative subjects from similar demographic backgrounds, we collected demographic and clinical/medication history, BMD by dual-xray absorptiometry (DXA) at femoral neck (FN), total hip (TH) and lumbar spine (LS). From fasting blood and urine samples we measured BTMs: osteocalcin (OC), procollagen type 1 amino-terminal propeptide (P1NP) and C-terminal cross-linking telopeptide of type 1 collagen (CTX-1), urine protein/creatinine ratio (P/Cr), the fractional excretion of phosphate (FEPO4) and the renal threshold phosphate concentration (TmPO4/GFR). We assessed baseline, between-group differences in renal function and associations between renal parameters, BTMs and BMD using t-tests/non-parametric equivalents or Fisher´s exact test as required and univariable/multivariable regression analysis (SPSS package version 17.0 (SPSS Inc., Chicago, IL).

Results: A total of 169 HIV-positive subjects and 250 HIV-negative controls were included. In the HIV-positive group there was a significantly higher percentage of males (61% vs 44%, p=0.001), Africans (37% vs 25%, p=0.01), current smokers (40% vs 15%, p<0.0001) and hepatitis C virus co-infected subjects (9% vs 1%, p<0.0001). The P/Cr ratio was significantly higher in HIV-positive versus HIV-negative group (median [IQR] 8.6[6.71-14.17] vs 6.3[5-9.54] mg/mmol, p<0.0001), with 17% of HIV-positive subjects versus 3% of controls with P/Cr value >15 mg/mmol, p<0.0001. In multivariable analysis including age, gender, ethnicity, BMI, hepatitis co-infection, hypertension, serum creatinine and HIV-infection, HIV infection and age were independently associated with P/Cr>15mg/mmol (OR (95%CI) 6.9 (2.9-15.8), p<0.0001 and 1.05 (1.01-1.08), p=0.007, respectively). Furthermore, P/Cr>15 mg/mmol and HIV infection were independently associated with higher BTM and lower LS-BMD after adjusting for age, gender, ethnicity, BMI, current smoking, PTH and Vitamin D (Table 1).

Conclusion: In HIV-positive subjects, P/Cr ratio is the only renal tubular marker that is significantly different than in HIV-negative subjects. The association between P/Cr and lower BMD and higher BTM suggests a link between renal dysfunction and bone demineralization. Further analyses are required to explore the relevant contribution of ART to differences in P/Cr.

	B (95% CI)	*p*
OC (µg/L)		
HIV+ vs HIV- status	5.24 (3.16, 7.32)	*<0.0001*
P/Cr>15mg/mmol	3.76 (0.53, 6.99)	*0.022*
P1NP (µg/L)		
HIV+ vs HIV- status	6.17 (1.71, 12.37)	*0.05*
P/Cr>15mg/mmol	12.90 (2.8, 23.01)	*0.012*
CTX-1 (µg/L)		
HIV+ vs HIV- status	0.09 (0.05, 0.14)	*<0.0001*
P/Cr>15mg/mmol	0.11 (0.04, 0.18)	*0.002*
BMD_LS (g/cm^2)		
HIV+ vs HIV- status	-0.048 (-0.08, -0.02)	*0.001*
P/Cr>15mg/mmol	-0.082 (-0.14, -0.03)	*0.018*

Table 1. Estimates of effect (coefficients B) and 95% confidence interval of HIV status and P/Cr>15mg/mmol on i) OC, ii) P1NP, iii) CTX and iv) BMD_LS from multivariable linear regression model adjusted for age, gender, ethnicity, BMI, current smoking, PTH and Vitamin D.

O12
Outcomes of HCV treatment in HIV co-infected patients in the pre-DAA era: 2001-2012

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Introduction: Hepatitis C virus (HCV) co-infection is common in patients with HIV. Co-infection is associated with accelerated progression of liver disease resulting in increased morbidity and mortality. Until recently the mainstay of treatment for HCV in co-infected patients was the use of pegylated-interferon (PEG-IFN) and ribavirin (RBV). Patients with co-infection are reported to have lower rates of sustained virological response (SVR) when compared to patients with HCV mono-infection. We aimed to assess baseline characteristics and outcomes for all co-infected patients treated for HCV in the GUIDE unit from 2001 to 2012.

Methods: Using patient charts, the electronic patient record (EPR) and the HCV treatment database, patient data was retrospectively reviewed for the period 2001 and 2012. SPSS was used for calculations. Patients received weekly PEG-IFN and weight based RBV for 24 or 48 weeks based on genotype and the presence of pre-existing cirrhosis. Patients were considered for HCV treatment once they were established on an effective antiretroviral regimen or had evidence of a satisfactory CD4 count prior to initiation of treatment.

Results: From 2001 to 2012, 157 co-infected patients of a cohort of 380 were treated for HCV. 78% of patients were male and the mean age commencing treatment was 37 years (range 22-55 years). Mean CD4 count was 496 cells/mm^3 (range 158-1315mm^3). 20% of the cohort was cirrhotic. 73% of patients had a history of

intravenous drug use. 67% of patients were on antiretroviral therapy, of which 92% were virally suppressed.
Overall SVR rate was 58%. A breakdown of results is listed in Table 1. 11% of patients relapsed and 31% of patients discontinued due to adverse events or non-response. 1 patient was lost to follow up. SVR rates for Genotype 1, 2, 3 and 4 were 37%, 88%, 72% and 60% respectively. Predictors of response included HCV genotype, a rapid virological response (RVR) and absence of cirrhosis. There was no association with the use of antiretroviral therapy, sex, route of acquisition or CD4 count.
2 patients died during treatment. 25% of patients developed anaemia (Hb<10g/dL). Erythropoietin was used in 23% of patients and GCSF for neutropenia in 5% of patients. Kaplan Meier curves will be presented for morbidity and mortality.

Conclusion: A treatment regimen dual therapy with weekly PEG-IFN and weight based RBV for co-infected patients can achieve equivalent rates of SVR reported in HCV mono-infection. IFN-free regimens should improve efficacy, tolerability and safety of HCV management in the co-infected cohort.

Group	SVR%
Genotype 1	37%
Genotype 2	88%
Genotype 3	72%
Genotype 4	60%
Non-cirrhotic (All genotypes)	66%
Cirrhotic (All genotypes)	25%

O13
Hepatitis C virus *NS3* and *NS5A* drug resistance mutations in treatment-naïve chronically-infected individuals in Ireland

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Background: Chronic Hepatitis C virus (HCV) infection is now curable. However, novel antiviral agents targeting viral proteins (NS3, NS5A, and NS5B) are costly, and naturally occurring polymorphisms may reduce treatment efficacy. Ascertaining the prevalence of these drug resistance mutations (DRMs) is essential to inform national treatment strategies.

Methods: HCV RNA was extracted from the sera of genotype (GT) 1 infected individuals enrolled in the Irish Hepatitis C Outcomes Research Network (ICORN) registry. The *NS3* gene was analysed at baseline (n=164) and at viral breakthrough (n=18) following first generation protease inhibitor (PI) treatment. The *NS5A* gene was analysed at baseline (n=105). Mutations were scored according to the relevant literature (http://hcv.geno2pheno.org/).

Results: NS3 subtype analysis showed 65.2% (107/164) GT1a and 34.8% (57/164) GT1b. Naturally-occurring DRMs in NS3 (V36L, T54S, V55A, Q80K/R and I132V) were identified in 57.3% (94/164) cases at baseline. The NS3 Q80K polymorphism was found in 43/107 (40.2 %) of GT1a, and exclusively in clade 1 (43/82; 52.4%) versus clade 2 viruses (0/25; 0%, $P<10^{-6}$). The pre-treatment I132V variant was found in 78.9% (45/57) of GT1b. Of 18 samples associated with viral breakthrough, the majority was subtype-1a (77.8%, 14/18).
Seventeen (17) NS5A DRMs were identified. Of these, 10 (58.8%) were found in GT1a (n=65) and 7 (41.2%) in GT1b (n=33). Of 10 GT1a mutations, 5 were found in clade I samples (n=51) and 5 were found in clade II samples (n=14). The frequency of DRMs was significantly (p=0.03) higher in clade II (35.7%) than clade I samples (9.8%). Low-level DRMs H58P (2/65, 3.1%) and E62D (2/65, 3.1%) were identified in GT1a samples. Mutations at scored positions M28 (V, 3/65; 4.6%), Q30 (A, 2/65; 3.1%), and H58 (R, 1/65; 1.5%) were also observed in GT1a. Primary DRMs Y93H (1/33; 3.0%) and I280V (4/33; 12.1%) were identified in GT1b samples. The secondary mutation R30Q (1/33; 3.0%) and the compensatory P58S mutation (1/33; 3.0%) were also observed.
Sixty-five fragments of 738 nucleotides of the HCV NS5A gene were compared with representative reference sequences, and a midpoint rooted distance phylogenetic tree was constructed.

Conclusions: Baseline reporting of clade & resistance mutations for HCV GT1 chronically infected individuals is warranted to ensure the most cost-effective use of novel HCV drugs, as *NS3* and *NS5A* DRMs are present in HCV GT 1a and 1b in treatment-naive individuals in Ireland. To our knowledge, this is the largest GT1a sample size analysed for NS5A DRMs to date.

O14
Predictors of longitudinal change in bone mineral density in a cohort of HIV-positive and negative subjects

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Introduction: Although HIV infection is associated with low bone mineral density (BMD) in cross-sectional studies, whether it is associated with greater declines in BMD over time remains unclear. This study aimed to compare rates of, and factors associated with, change in

BMD over time between HIV-positive and -negative subjects, and to determine HIV-related predictors of change in BMD.

Methods: A prospective, 3-year, cohort enrolled HIV positive and negative subjects; demographic, clinical, and medication data were collected, with annual dual xray absorptiometry (DXA) at femoral neck (FN), total hip (TH) and lumbar spine (LS) and fasting bloods. Of the 384 subjects (176 (45.8%) HIV positive), 120 subjects contributed two and 264 contributed 3 BDM annual measurements. Longitudinal mixed models were used to compare and determine predictors of rate of absolute change in BMD in the whole cohort and within the HIV sub-group.

Results: Compared to HIV-negative group, those with HIV were younger, more likely to be male and less likely to be Caucasian. Those with HIV had lower baseline BMD at FN, TH and LS. Although BMD declined at all three sites in both groups, there was no significant between-group difference in rate of absolute change in BMD at LS (+0.002 g/cm^2/year, p=0.51), TH (-0.001 g/cm^2/year, p=0.69) and FN (-0.004 g/cm^2/year, p=0.08) after adjustment for age, gender, ethnicity, smoking status and body mass index (BMI).
In a HIV-specific sub-analyses, having started ART <3 months prior to or during study follow-up was independently associated with a greater decline in BMD at all three sites (all p<0.0001). Age >30 years, Caucasian ethnicity, and not being on ART during study follow-up were independently associated with greater decline in BMD but only at FN, while higher PTH was independently associated with a reduced decline in BMD at FN. We found no association between change in BMD and current or cumulative exposure to tenofovir disoproxil fumarate (TDF), protease inhibitor (PI) or other HIV-associated factors such as CD4+T-cell count, or traditional risk factors of low BMD such as gender, current smoking status, 25-hydroxy-vitamin D and BMI.

Conclusions: Although those with HIV have lower BMD, we observed no difference in rate of BMD decline between groups over time. Greater BMD decline was observed in subjects recently started on ART, age >30 years and in Caucasians. There was no evidence of greater BMD decline in those on established ART or with exposure to specific ART-drugs such as TDF or PI.

Table 1: Characteristics of HIV-positive and HIV negative participants

	HIV pos (176)	HIV neg (208)	*P*		HIV pos	HIV neg	*P*
Age (years)	39 (34-46)	43 (35-50)	0.039	FN BMD - BL (g/cm^2)	1.024 (0.927,1.135)	1.055 (0.964,1.159)	0.0025
% male	61%	46%	0.003	- Change (g/cm^2/yr)	-0.0063	-0.003	0.08
% Caucasian	58%	80%	<0.001		(-0.01, -0.003)	(-0.005, -0.0004)	
% Heterosexual, MSM, IDU	51%, 31%, 17%	-		TH BD - BL (g/cm^2)	1.061 (0.942, 1.157)	1.107 (1.00,1.196)	0.003
Years since HIV diagnosis	4.0 (2.0-9.0)	-		- Change (g/cm^2/yr)	-0.0044	-0.0036	0.69
Currently on ART	155 (88%)	-			(-0.007, -0.002)	(-0.006, -0.0012)	
ART exposure (years)	2.9 (0.7-5.4)	-		LS BMD – BL g/cm^2)	1.164 (1.061,1.304)	1.238(1.135,1.348)	0.001
% on TDF	83%	-		- Change (g/cm^2/yr)	-0.0024	-0.0041	0.51
exposure (years)	1.3 (0.1-2.9)	-			(-0.007, 0.002)	(-0.008, 0.0005)	
Nadir CD4+ (cells/mm^3)	218 (134-309)	-					
Current CD4+ (cells/mm^3)	508 (370-650)	-					

Data are median (IQR) unless specified. ART = antiretroviral therapy, MSM = men who have sex with men. IDU = intravenous drug user. TDF = tenofovir disoproxil fumarate. BMD = bone mineral density. TH = total hip. FN = femoral neck. LS = lumbar spine. BL = baseline.

O15
Late Diagnosis of HIV in Northern Ireland

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Background: In the UK, the proportion and number of adults diagnosed with HIV who have a CD4 count < 350 cells/mm^3 at diagnosis has declined from 57% in 2004 to 42% in 2013. However there is a lot of regional variation. Northern Ireland has the highest proportion of late diagnoses (56%) of any region.

Methods: We present a retrospective chart analysis of all new HIV diagnoses attending our clinic over a 1 year period (July 2013 - June 2014).

Results: Of 76 newly diagnosed patients, 45 (59.2 %) patients had a late diagnosis, with CD4 T lymphocyte count below 350 cells/mm^3. Of those diagnosed late, 31 (68%) patients had a CD4 count below 200 cells/mm^3. Only 15 (20%) of these cases were diagnosed through GUM clinic attendance. The remainder were diagnosed in a range of other specialities, most commonly GI and acute medicine. Mode of acquisition was as follows, 48.9% MSM, 46.7% heterosexual, 6.7% IVDU. 71% of patients were born in the UK. Clinical indicator diseases were present in 84.4%, with the most common

conditions being blood dyscrasias, weight loss and diarrhoea; 28.9% had Pneumocystis jirovecii pneumonia. 56.8% had previous investigation for unexplained symptoms and signs, most commonly coeliac serology, autoimmune screen, OGD and colonoscopy. 4 out of 76 patients died which is significantly higher than overall HIV mortality rate for the UK (3.5-4.8 per 1,000). 31 (41%) had prolonged inpatient stays.

Conclusion: The introduction of highly active anti-retroviral therapy has resulted in greatly improved prognosis, with normal life expectancy if HIV is diagnosed early. In contrast, late diagnosis carries significant morbidity and mortality. In 2008 British HIV Association (BHIVA) introduced HIV testing guidelines to prompt earlier diagnosis in other clinical settings. Our findings suggest late diagnosis of HIV remains high and further intensification of HIV testing is needed.

O16
Anti- NMDA Receptor Antibody Production Complicating HSV 1 Encephalitis – A Case Series

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Background: Relapse of Herpes Simplex Encephalitis (HSE) is well described. There are two neurological entities. The first, representing new viral replication typically presents with fever, seizures or focal neurological signs, new necrosis on imaging and a good response to acyclovir. Choreoathetoid movements and absence of new necrosis on imaging is typical of the second neurological entity which has a presumed autoimmune aetiology. Since 2012 a link has emerged between Herpes simplex encephalitis and N-Methyl-D-Aspartate receptor (NMDAR) antibody production in both children and adults. We present three cases of anti NMDAR encephalitis post HSE and discuss the diagnostic and management dilemmas in these patients.

Case 1: A 16 month old with proven HSE treated with high dose acyclovir (ACV) and leviteracetam for seizures developed status epilepticus on D12. Suspecting progression of HSE, IV ACV was increased with escalation of anti-seizure medications partially controlling her seizures. Marked irritability, hemiballismus and profound encephalopathy subsequently evolved with anti-NMDAR antibodies detected in CSF. She failed to improve with intravenous immunoglobulin (IVIG), high dose steroids and plasmapheresis; ultimately responding to rituximab.

Case 2: A 5 ½ month old receiving high dose ACV for proven HSE had orofacial dyskinesia on D10. Prednisolone was commenced but weaned when repeat CSF for HSV-PCR and anti-NMDAR antibody was negative. On D31 he developed seizures, hemiballismus and orofacial dyskinesia with anti-NMDAR antibodies detected in CSF. Administration of IVIG and prednisolone resulted in resolution of hyperkinesia and improved oro-motor coordination.

Case 3: A 15 month old completed 21 days high dose ACV for proven HSE. Discharged home on Valaciclovir, she represented on D24 with severe agitation, dyskinesia and oro-motor dysfunction. IV ACV, IV methylprednisolone and IVIG were commenced for presumed NMDAR encephalitis and CSF confirmed this. Despite high dose steroids, IVIG and plasmapheresis her choreoathetosis worsened with associated autonomic instability. Slow improvement has been observed after initial dose of Rituximab.

Conclusion: Anti- NMDAR encephalitis is a new phenomenon complicating HSV encephalitis (HSE) that probably remains under recognised. NMDAR antibodies should be checked in patients presenting with movement disorder post HSE or a prolonged disease course with features of anti- NMDAR encephalitis. We present the largest prospective case series to date of NMDAR antibody production post HSE and illustrate the diagnostic and management complexities in these patients.

O17
Antifungal Stewardship in the Intensive Care Unit at a UK tertiary referral teaching hospital

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Background: Invasive candidosis is a serious complication in critically ill patients, associated with high mortality. Candidaemia guidelines for the ICU at the University Hospital of South Manchester (UHSM), UK recommend early initiation of antifungal therapy based on clinical suspicion and risk factors. Serum β-D-glucan (BG) has a high negative predictive value and can be used to guide discontinuation of therapy in the absence of other evidence of candidaemia. The aim of this study was to evaluate the compliance of the 3 ICUs with the local guidelines.

Methods: Micafungin usage at UHSM between April and July 2014 was reviewed using pharmacy data, and by reviewing patient records.

Results: A total of 72 patients admitted to ICU were started on micafungin during the study period. Of these, 45 were treated for suspected or proven candidaemia. Seven (16%) had *Candida spp.* isolated from blood cultures. Two were ECMO patients. In 14 cases (31%) the guideline was not fully followed. In 8 cases the reason

for micafungin was isolation of *Candida spp.* in a single superficial sample such as sputum or urine. In four cases microbiological tests had not been taken as per guideline, in 2 cases negative BG result was not acted upon. Of the 38 cases without evidence of invasive candidosis when the patients were reviewed by a member of the Infectious Diseases team, micafungin was discontinued in 19 cases (50%). In two further cases, a recommendation was made to discontinue micafungin therapy, but the advice was not followed. There were no deaths due to candidaemia during the study period.

Conclusion: With the active presence of Infectious Diseases Consultants on ICU, and the appropriate use of diagnostics, it is possible to safely discontinue echinocandin therapy when not indicated. This has important implications for antifungal stewardship and cost saving in the intensive care.

O18
Tenofovir Alafenamide (TAF) in a Single Tablet Regimen in Initial HIV-1 Therapy

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Background: Tenofovir alafenamide (TAF) is a novel tenofovir (TFV) prodrug that, when administered in the single tablet regimen E/C/F/TAF, has >90% lower plasma TFV levels compared to tenofovir disoproxil fumarate (TDF).

Methods: Treatment naïve HIV-1 positive adults were randomized 1:1 to receive a regimen of E/C/F/TAF or E/C/F/TDF in two Phase 3 double blind studies. Primary endpoint was Week 48 virologic response by FDA Snapshot algorithm in a pre-specified combined analysis.

Results: 1,733 subjects were randomized and treated: 15% women, 43% non-White, 23% viral load ≥100,000 copies/mL. The primary objective was met, E/C/F/TAF was non-inferior to E/C/F/TDF with 92% and 90%, respectively having HIV RNA <50 copies/mL at week 48 (difference +2%, 95% CI -0.7% to +4.7%, p=0.13). Virologic failure with resistance occurred in 0.8% in the E/C/F/TAF arm and 0.6% on E/C/F/TDF. Treatment related SAEs were rare: E/C/F/TAF 0.3% (n=3), E/C/F/TDF 0.2% (n=2). There were no reports of proximal renal tubulopathy in either arm. No single AE led to discontinuation of more than 1 subject on E/C/F/TAF. Grade 2, to 4 AEs occurring in ≥ 2% were: diarrhoea (3.3% vs. 2.5%), nausea (2.2% vs. 2.0%), headache (2.9% vs. 2.1%), and URI (3.6% vs. 3.1%) in the E/C/F/TAF vs. E/C/F/TDF arms.

Conclusion: Through 48 weeks of treatment, high virologic response rates were seen in patients receiving E/C/F/TAF or E/C/F/TDF. Both regimens were well tolerated, and no unique AEs associated with TAF occurred. These data support the use of E/C/F/TAF, as a potential regimen for initial treatment of patients with HIV-1 infection.

Poster Presentations

Basic Science

P19
The Initiation of HIV Protease Inhibitor-only Therapy Leads to the Increased Expression of Adipogenic Factors and Reduced Expression of Mitochondrial Stress Markers in Subcutaneous Adipose Tissue

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Background: Decreased expression of key transcription factors; PPARG and SREBF1 as well as inhibited glucose uptake in adipocytes have been proposed as mechanisms of HIV protease inhibitor (PI)-associated adipose tissue toxicity and insulin resistance. However, few studies have examined the effect of PIs in isolation on adipose tissue function in HIV-positive patients. We assessed expression of genes related to insulin signalling, lipid metabolism and mitochondrial function in the subcutaneous adipose tissue (SAT) of HIV-patients initiating PI-only therapy.

Methods: In the HIVNAT 019 study, Thai antiretroviral-naïve adults commenced antiretroviral therapy (ART) comprising lopinavir/ritonavir/saquinavir taken twice daily. Subjects underwent flank SAT biopsies at weeks 0, 2 and 24. Using quantitative PCR arrays, changes in the expression of 56 genes related to insulin signalling, lipid metabolism and mitochondrial function were measured. Differentially expressed (DE) genes from baseline were identified by Wilcoxon signed-rank test (P≤ 0.05).

Results: Samples from 15 subjects contributed to gene expression analysis: 47% male, median age 35 [30.3-43.7], BMI 21.5 [18.7-23.3], CD4 125 cells/ml [87-251], log viral load 4.8 [4.5-5.1]. 13 and 3 DE genes were identified in the baseline vs week 2 and baseline vs week 24 comparisons respectively. 4 of 11 lipid metabolism and adipogenesis targets were significantly increased at week 2, including increases in PPARG and two of its transcriptional targets LPL and FABP4. Of 4 mitochondrial targets, NRF1 and CRTC3 were down-regulated at week 2, indicating a potential reduction in mitochondrial stress with PI initiation. Gene expression changes detected in insulin signalling genes also suggest an inhibition of insulin signalling in SAT with week 2 decreases AKT2 and IGF2. Additionally, increases were observed in the expression of the negative insulin signalling regulators PTPN1 and FOXO1 at week 24.

Conclusions: This is the first study to demonstrate that

initiating PI therapy in HIV infection leads to increased PPARG expression in SAT, suggesting increased adipogenesis. Decreases in NRF1 and CRTC3 suggest a potential recovery from mitochondrial stress in ART-naïve patients with initiation of PI-only ART. Expression changes observed in genes of the insulin signalling pathway indicate a downregulation of insulin signalling. The clinical significance of these changes remains to be elucidated.

Baseline vs Week 2

Gene Symbol	Gene name	*P*-value	% Change
AKT2	V-akt murine thymoma viral oncogene homolog 2	0.0024	-28.6
IGF2	Insulin-like growth factor 2	0.0105	-39.2
PPARG	Peroxisome proliferator-activated receptor gamma	0.0034	+58.1
FABP4	Fatty acid binding protein 4	0.0007	+58.8
LPL	Lipoprotein lipase	0.0479	+36.3
NRF1	Nuclear Respiratory Factor 1	0.0002	-33.7
CRTC3	CREB regulated transcription coactivator 3	0.0007	-32.3

Baseline vs Week 24

PTPN1	Protein tyrosine phosphatase, non-receptor type 1	0.0161	+50.3
FOXO1	Forkhead box O1	0.0283	+29.1
CRTC3	CREB regulated transcription coactivator 3	0.0269	-22

P20
Direct detection of *Staphylococcus aureus*, Meticillin Resistant *Staphylococcus aureus* from EDTA blood samples of Bacteremic Patients

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Background: *S.aureus* Blood Stream Infections(BSI) have significant mortality and the mortality is higher for meticillin-resistant *S.aureus* (MRSA) BSI. Culture dependent diagnosis of BSI has inherent time delays and so may lead to a delay in commencing targeted therapy. Direct application of real time PCR (rtPCR) for detection of *tuf, coA* and *mecA* in EDTA blood samples may support rapid detection of *S.aureus* BSI and determination of meticillin-resistance thus improving outcomes.

Methods: Limits of detection in whole blood were determined by seeding blood samples with cultures of *S.aureus* ATCC 43300; 1ml of EDTA whole blood was centrifuged at 1000rpm for 10 minutes to remove red cells. Plasma was centrifuged at 14000rpm for 2 minutes with most of supernatant discarded. The pellet was resuspended in residual plasma. Lysozyme 20µl(50mg/ml) was added and incubated at 37°C for 30 minutes. DNA was extracted using Qiagen EZ1 Advanced XL with elution in 50µl. Amplification was performed on Applied Biosystems AB7500 Sequence Detection System. Twelve residual EDTA samples, taken at or close to the time of blood culture draw, were recovered from the haematology laboratory from patients with culture confirmed *S.aureus* BSI. Ethical approval was granted by the hospital ethics committee.

Results: The limit of detection for *S.aureus* ATCC 43300 was 39 CFU/ml. This was detectable only at high Ct values of 39.43 to 42.16. Of the 12 cases of *S.aureus* BSI, 6 were positive for *coA* (Ct values 33.13-41.24) and *mecA* was detected in 2 of the 7 which were MRSA (Ct values 25.88-44.14). rtPCR analysis of EDTA samples from negative blood (n=3) was non-reactive.

Conclusion: Direct detection of *S.aureus* in EDTA blood was achieved with an analytical limit of detection 39 CFU/ml and a diagnostic sensitivity of 50% in a small series of residual EDTA samples. The assay in current form is not of value in excluding *S.aureus* BSI but early detection of *S.aureus* in 50% of cases may be of clinical value particularly if patients with more intense bacteraemia are rtPCR positive. A more extensive evaluation using fresh rather than stored EDTA samples is required. Technical solutions to improve limit of detection are also required.

P21
Enhanced, not inhibited monocyte cholesterol efflux characterises untreated HIV

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Background: Dyslipidaemia in untreated HIV infection is characterised by reduced high density lipoprotein cholesterol (HDL) and increased risk of cardiovascular disease (CVD). In vitro, HIV impairs monocyte cholesterol efflux (MCE) onto apolipoprotein A1 (ApoA1) via the ATP-binding cassette transporter A1 (ABCA1) potentially explaining lower HDL. We aimed to determine if MCE was inhibited in untreated HIV in vivo.
Methods: Using a novel, dynamic ex vivo assay we compared MCE in HIV positive (HIVpos) subjects not on antiretroviral therapy (ART) and HIV negative (HIVneg) controls matched for age, gender, race, smoking and hepatitis C status. Monocytes were isolated from fasting

blood and monocyte intracellular cholesterol (MIC) was measured by florescence and corrected for total cell count before and after cholesterol loading (T=0, 2, 4, 6, 24 hours post loading). MCE was calculated as a ratio of extracellular (supernatant) cholesterol to MIC (ECT: MICT) with an additional 24 hr measure in the presence of ApoA1 (ECa: MICa). Changes in MCE were correlated with lipids and carotid intima-media thickness (C-IMT). Data are median [IQR]. Comparisons were made using non-parametric analyses.

Results: We recruited 50 HIVpos subjects (52% homosexual, 36% heterosexual; CD4+ 410[268, 588] cells/mm3; log HIV RNA 4.01[3.52, 4.78] copies/ml) and 50 matched controls. The HIVpos group had significantly lower total, low density lipoprotein (LDL) and HDL cholesterol but similar triglycerides and C-IMT (table 1). There was no significant between-group difference in fasting MIC (HIVpos 2.0[1.6, 2.4] versus HIVneg 1.8[1.6, 2.4] pg/cell, p=0.53) or post cholesterol loaded MIC (HIVpos 7.1[5.5, 9.6] versus HIVneg 6.7[5.1, 9.7], p=0.39). However, MCE was significantly and consistently greater in the HIVpos group over time (table 1). The addition of ApoA1 increased EC24/MIC24 in both groups, with no between-group difference observed. Higher HDL correlated with lower ECT: MICT ratio (T2 r=-0.41, T4 r=-0.34, T6 r=-0.28, T24 r=-0.29, all $p\leq0.005$). Neither C-IMT nor HIV RNA correlated with MCE.

Conclusions: These data suggests that untreated HIV is characterised by enhanced rather than decreased MCE, with higher MCE correlating with lower HDL. This unexpected finding may reflect up-regulation of MCE pathways compensating for any potential negative effect of HIV on ABCA1-medicated cholesterol efflux. Further research is required to clarify if increased MCE contributes to the increased levels of dysfunctional HDL observed in HIV and to explore the pathways involved, the effects of ART and the impact of these findings on CVD pathogenesis.

Table 1. Baseline Characteristics and Monocyte Cholesterol Efflux by HIV status

	HIV negative (n=50)	HIV positive (n=50)	p=		HIV negative (n=50)	HIV positive (n=50)	p=
Age (years)	34.5 (30, 43)	35 (29, 41)	0.99	EC_0: MIC_0	-0.04 (-0.05, -0.03)	-0.04 (-0.05, -0.03)	0.48
Male gender (n, %)	39 (78)	40 (80)	0.81	EC_2: MIC_2	0.02 (-0.01, 0.05)	0.07 (0.02, 0.11)	0.001
Caucasian (n, %)	38 (76)	38 (76)	1.0	EC_4: MIC_4	0.06 (0.01, 0.10)	0.09 (0.04, 0.16)	0.004
Current smoker (n, %)	14 (28)	12 (24)	0.65	EC_6: MIC_6	0.11 (0.06, 0.15)	0.16 (0.10, 0.25)	0.003
Cholesterol (mg/dL)	5.0 (4.6, 5.7)	4.3 (3.5, 4.7)	0.000	EC_{24}: MIC_{24}	0.42 (0.32, 0..56)	0.53 (0.40, 0.69)	0.012
HDL (mg/dL)	1.29 (1.15, 1.52)	0.96 (0.82, 1.21)	0.000	EC_{ApoA1}: MIC_{ApoA1}	1.13 (0.92, 1.35)	1.27 (1.06, 1.50)	0.054
LDL (mg/dL)	3.2 (2.6, 3.8)	2.5 (2.1, 3.0)	0.000	C-IMT (mm)	0.77 (0.70, 0.87)	0.78 (0.69, 0.90)	0.94
Triglycerides (mg/dL)	1.08 (0.78, 1.33)	1.25 (0.87, 1.70)	0.09				
Total: HDL ratio	3.8 (3.3, 4.4)	4.4 (3.6, 5.3)	0.01				

Data are median (IQR) unless stated; HDL, high density lipoprotein; LDL, low density lipoprotein; EC, extracellular cholesterol; MIC, monocyte intracellular cholesterol; C-IMT, carotid intima media thickness; ApoA1, Apolipoprotein A1

Epidemiology

P22
Cytomegalovirus infection in Ireland: Seroprevalence, HLA Class I alleles and implications.

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Background: Cytomegalovirus (CMV) infections occur worldwide and are usually asymptomatic in healthy individuals. However, in immunocompromised individuals and following *in utero* infection, CMV can cause significant morbidity.

Objective: To determine the CMV seroprevalence and association, if any, of HLA Class I alleles with CMV infection in Ireland.

Methods: A cohort of 1849 solid organ transplant donors from 1990-2013 was studied. Serological testing for CMV IgG was performed to determine CMV serostatus.

Results: The CMV seroprevalence in solid organ transplant donors ranged from 22-48% over the time period 1990-2013. The results of logistic regression showed a significant and positive relationship between age and CMV seropositivity (OR=1.013, p<0.001, CI(1.007, 1.019)). Chi-square analysis revealed that female gender was independently associated with CMV seropositivity (p<0.01). Seroprevalence in women of

reproductive age (20-39 years) was significantly higher than males of the same age (37% vs 26%, p<0.01). The frequencies of HLA-A1, HLA-A2 and HLA-A3 in our cohort were 40.8%, 48.8% and 25.9% respectively. Logistic regression analysis showed that the presence of HLA-A1 but not HLA-A2 or HLA-A3 was independently associated with CMV seronegativity (p<0.01). Interestingly, individuals who co-expressed HLA-A2 and HLA-A3 alleles were significantly more likely to be CMV seropositive (p<0.02). The frequencies of HLA-B5, HLA-B7 and HLA-B8 in our cohort were 6.1%, 31.2% and 30.8% respectively. The presence of the most common inherited haplotype in the Irish population, HLA-A1, B8 was significantly associated with CMV seronegativity (OR=1.278, p<0.001, CI(1.049, 1.556)).

Conclusions: CMV seroprevalence is significantly lower in Ireland compared to other countries. The high frequency of HLA-A1 in the Irish population may, in part, have a role in the reduced susceptibility to CMV infection. The higher seroprevalence in women is especially important for women of reproductive age.

P23
Assessing Parental Knowledge and Attitudes towards Disclosure of HIV

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Background: The first child to be diagnosed in Ireland with Human Immunodeficiency Virus was in 1985. In the first half of 2014, there were 2 new HIV diagnoses in Ireland in those aged between 0 and 14 years. While there have been great advances in the treatment of HIV, resulting in improved outcomes and preventing progression to AIDS, those with HIV still face difficulties. They encounter challenges regarding disclosure of HIV. Research exists with respect to disclosure of HIV status in adults but very little regarding the interaction of HIV positive children with school and crèche facilities. This study was designed to evaluate knowledge of parents in the general population on the transmission of HIV and their attitudes towards disclosure of a child's HIV status.

Methods: A cross-sectional study was conducted in University Hospital Galway paediatric outpatient department over the course of four days in 2014. A paper-based, anonymous questionnaire was distributed to all parents (n=80) of children attending a general paediatric clinic. They were not parents of children with HIV.

Results: The majority (92.5%) of participants felt that the parent of a child with HIV should disclose the diagnosis to the school. The parents surveyed felt that the principal was the most important person to disclosure HIV positive status to. A high percentage (21.6%) felt that all parents in the school should be informed. The majority of parents (56.6%) acknowledged that disclosure would have a negative impact on a child's life. Regarding disclosure of a child's HIV status to the child the parents surveyed felt that on average 10.5years was the most appropriate age. The study showed that almost all parents overestimated the risk of transmission in childcare/school settings.

Conclusion: Parents are not obliged to disclose their child's HIV status to a childcare centre. Anecdotally a significant number of parents of children with HIV choose not to disclose. This contrasts with this study where the majority of parents would favour disclosure. If parents choose to inform a childcare centre of their child's HIV status, the number of persons should be kept to a minimum. This is discordant with parental views of parents surveyed as they gain favoured more disclosure. To date there has been no documented case of HIV transmission in childcare setting. The authors hypothesize that the demand for disclosure by the general population is due to a lack of knowledge of the low risks of transmission in childcare settings.

P24
Pre-exposure prophylaxis (PrEP) option for HIV negative gay men and transgender women in Ireland: online feasibility survey

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Background: Antiretroviral therapy is not currently licensed for use as PrEP in Europe and research into the efficacy and acceptability of PrEP in European populations is ongoing. We aimed to assess the knowledge and attitude among the Irish gay and transgender community regarding PrEP for HIV prevention.

Methods: In a prospective study, we recruited unselected HIV negative gay and bisexual men and transgender women through the social media networking service Twitter® to complete an online survey that explored knowledge and attitudes to PrEP. Tweets were composed and sent through a dedicated study twitter account, with referral sampling encouraged. The survey comprised 27 questions, exploring sexual activity, knowledge of PrEP, attitudes to use and research into PrEP. Data are median (IQR). Between group differences were compared using Mann-Whitney U or Chi-squared(x^2) tests where appropriate.

Results: Over a 4 month period 92 participants completed the survey. 70 (81.4%) respondents were born in Ireland, median (IQR) age was 29 (24, 35) with 63 (79.7%) reporting attainment of 3rd level education. Despite 51 (65%) respondents having a HIV test in the last year 37 (47%) were unsure of their current HIV

status. 44 (56%) participants were not in a steady relationship with 68 (90%) reporting current sexual activity and 61 (78%) reporting casual sex in the last year. 23 (30%) reported no knowledge of PrEP with only 20 (26%) of those reporting any knowledge of PrEP considering themselves well informed. Overall, 33 (47%) were interested in taking part in a PrEP study with those who reported no knowledge of PrEP significantly less interested in taking part (interested 6 (29%); not interested 15 (71%) p0.04) while those who reported condomless anal sex with casual partners in the last year more likely to take part in PrEP research (interested 20 (66.7%); not interested 10 (33.3%)p 0.009). There were no differences in age, country of birth, relationship status or sexual activity in the last year between those interested and not interested in participating in PrEP research.

Conclusion: Knowledge of PrEP for HIV prevention is poor among the gay men and transgender women community in Ireland. Despite the openness in disclosing high risk sexual activity there is a deficit in knowledge of the potential effectiveness of PrEP in HIV prevention. Knowledge and awareness of PrEP as a HIV prevention strategy need to be addressed.

P25
Water - do you drink a drop?

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Background: The quality of Ireland's drinking water is continually improving. The aim of this survey was to assess what impact incidents such as the outbreak of waterborne cryptosporidiosis in Galway, 2007 have on the public's confidence in their water supply.

Methods: A quantitative survey was designed and administered for 4 weeks (June 26th to July 23rd 2014). The survey was restricted to people living in a specific region of Ireland (Galway City and County). Data was analyzed using SPSS and Stata.

Results: Overall, 487 responses were recorded: 387(79.5%) drank water from their tap, 264(54.2%) were aware of what type of drinking water supply they were served by, and the predominant reason for not drinking water from the tap was concern about water safety, 158(32.4%) knew whether their water was monitored routinely for microbial contamination and 240(49.3%) of people reported having been previously subject to a boil water notice/restriction, 414(85%) remembered the 2007 waterborne outbreak of Cryptosporidiosis, 244(59.8%) reported having been directly affected in some way with the primary affect reported being "subject to a boil water notice" (212(43.5%)). Fifteen (3%) respondents reported a loss of earnings as a result of this outbreak and 128(26.2%) changed the way they used water as a direct result of this outbreak. **Conclusions:** Overall, there is a high level of trust in drinking water supplies in this region of Ireland. However, knowledge of where drinking water comes from and its monitoring appears to be lacking. Water quality incidents, such as the waterborne outbreak of cryptosporidiosis in Galway, 2007, impact on water use.

P26
Retail meats - a source of antibiotic resistant *E. coli*?

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Background: Antimicrobial resistance has emerged as a major public health problem. The role that food plays in the dissemination of bacteria carrying antimicrobial resistance is an area of increasing concern. The aim of this study was to examine retail meats on sale on the island of Ireland for the presence of antimicrobial resistant *Escherichia coli*.

Methods: Between November 2013 and September 2014, 600 samples of raw meats were purchased from retail outlets across the island of Ireland, comprising equal numbers of beef, chicken, and pork. These were screened to detect the presence of antimicrobial resistant *E. coli* (AREC) using broth supplemented with cefotaxime (0.5mg/L), ciprofloxacin (0.06 mg/L) or meropenem (0.25mg/L), which were then streaked onto TBX agar. All AREC isolated were subsequently screened for susceptibility to 13 antimicrobial agents by disk diffusion.

Results: In total, 600 meat samples yielded 496 isolates of *E. coli* of which 467 (94%) were resistant to one or more antimicrobial tested whilst 143 (27%) were ESBL producers (chicken 130, pork 12, beef 1). Ciprofloxacin resistance was seen in 110 (22%) AREC, of which 16 were also ESBL producers. Two isolates were resistant to ertapenem. Based on resistance to 2 or more classes of antimicrobial agents, 442 (89%) isolates were multi-drug resistant (MDR).

Conclusion: Our data demonstrated that most chicken sold in retail outlets in Ireland harbours antimicrobial resistant *E. coli*. It is noteworthy that significant proportions of the AREC isolated were ESBL producers (27%) and/or resistant (22%) to ciprofloxacin. Given the significance of these resistances to human health, further research into the source of these organisms is warranted.

P27
The changing epidemiology of newly diagnosed HIV infections in Clare, Limerick & Tipperary North, 2010 to 2014

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Background: To study the current epidemiology of newly diagnosed HIV infections in Clare, Limerick & Tipperary North (HSE MW) and describes the trends over time.

Methods: Data were collected from 1st January 2010 to 31st December 2014 from enhanced surveillance records in DPH for HSE MW. A total of 91 cases were identified. A descriptive analysis of demographic and clinical information was performed.

Results: In 2014, 18 new cases of HIV were diagnosed in HSE MW, representing a 29% increase compared with 2010. Between 2010 and 2014, the average age of cases declined from 35 years to 32 years and the male: female ratio remained unchanged. The proportion of cases born outside of Ireland increased from 21% to 44%. This was associated with an increase in cases of Black ethnicity from 7% to 17%. MSM transmission was the most common in 2014, showing an increase from 43% to 67% over the 5 year interval. The median CD4 count remained unchanged. The median viral load increased from 12012 to 21776 copies/ml. The proportion of cases presenting asymptomatically decreased from 67% in 2010 to 50% in 2014. The proportion of cases presenting with co-infections with syphilis and Hepatitis C both increased (0% to 17% and 0% to 6% respectively), while other STI co-infections patterns remained unchanged.
Conclusions: There has been an increase in the annual number of cases of diagnosed HIV infections seen since 2010. Changes in the epidemiology of newly diagnosed HIV were seen by age, mode of transmission, country of birth and co-infections with STIs. These changes and increases have implications for the prevention, planning and financing of HIV services in HSE MW.

Clinical Care: HIV, Hepatitis

P28
Interferon Free Hepatitis C Treatments: Experience to date in the co-infected setting

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Background: HCV treatment outcomes have significantly improved since the introduction of direct acting anti-virals (DAAs). To date the GUIDE patient cohort has achieved an SVR 12 of 84% following telaprevir based therapy. This represents a significant increase compared with interferon and ribavirin where the SVR rate in genotype 1 was 37%. However, the continued requirement for interferon has prevented many patients from accessing treatment. A national early access programme (EAP) which facilitated access to non-interferon therapy offered the first opportunity to treat patients with significant hepatic cirrhosis with these new classes of DAAs.

Aim: To describe the management and outcomes to date, of HIV co-infected patients receiving treatment for HCV with an all oral DAA regimen.

Methods: We collected data on baseline characteristics, on-treatment virological response, liver disease status, medication adherence, adverse effects and resource utilization in patients undergoing all oral HCV treatment at the Department of GU Medicine and Infectious Diseases (GUIDE), St James's Hospital. Patients had cirrhotic liver disease (Child Pugh B/C) or a history of prior liver decompensation. HIV co-infected patients were virologically suppressed on ARV therapy. Patients were treated by a MDT including clinicians, nurses and pharmacists.
This patient group had significant liver related morbidity, multiple co-morbidities and were prescribed an average of 5 concomitant medicines. Patients were closely monitored throughout treatment with regular clinic visits (an average of 7 visits in 12 weeks), significant laboratory monitoring and medication counselling. Drug interactions such as tenofovir toxicity necessitated significant monitoring and medication changes. 64% of patients required an alteration to their HIV ARV regimen. A study examining tenofovir levels was completed in this patient group with results pending. This will help to guide preferred ARV prescribing with this DAA regimen in the future.

Results: The most common adverse event was nausea and vomiting (35%). Other common adverse events included tiredness, headache, itch, anaemia and anxiety. There were six hospitalisations in the study group during treatment. To date, fourteen patients have been initiated on treatment. There has been one discontinuation and two patients have passed away. Nine patients have completed treatment. 78% of those who have completed 12 weeks treatment are virally non-detected. EOTR in the total group to date is 64%. SVR 4 data is pending.

Conclusions: Early outcomes indicate that the regimen of sofosbuvir, ledipasvir and ribavirin offers co-infected patients with cirrhotic disease a suitable treatment option to prevent further liver-related, decompensation

and associated morbidity. MDT input contributed significantly to patient retention in care and successful virological outcomes.

P29
From Clinical Trial to Real World: Treatment outcomes for DAA based Hepatitis C triple therapy in a HIV co-infection and Methadone Maintenance Therapy population

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Background: Telaprevir and boceprevir-based triple therapy has been the standard of care in Ireland for treatment of genotype 1 chronic HCV infection since 2013. Therapy with these protease inhibitors represents a milestone in the history of HCV therapy. Protease inhibitors have been shown in clinical trials to increase the sustained virological response (SVR) rate to greater than 80% for selected genotype 1 patients. Aim: To assess treatment outcomes in the initial cohort of HCV mono-infected (n = 18), and HIV co-infected (n= 19) patients receiving DAA based HCV therapy.

Methods: We collected data on baseline characteristics, treatment outcomes, adherence, adverse effects and healthcare resource utilization in patients undergoing HCV treatment at the Department of GU Medicine and Infectious Diseases, St James's Hospital.

Results: 37 patients received first phase DAA based therapy during the study period. End of treatment response (EOTR) in the cohort as a whole was 84% and SVR 12 is 84% to date. Co-infected patients achieved EOTR and SVR 12 results (84%) equivalent to the mono-infected population. This represents a significant advance in the management of co-infected patients. Published trial data in co-infected patients receiving telaprevir based therapy reports an SVR of 74%. Prior therapy with interferon and ribavirin yielded an SVR rate of 37% in HCV genotype 1 co-infected patients in our patient population. These results confirm that HIV co-infection does not impact HCV treatment outcomes in this new era of DAA based therapy. There were 6 discontinuations of treatment in the study cohort. Two patients met virological stopping rules at week 4 of treatment, 2 discontinued secondary to adverse effects and 2 patients experienced viral breakthrough on treatment. Common side effects observed were rash, anaemia, anorectal symptoms, nausea and vomiting. Anaemia (46%) was the only side effect found to occur more frequently than had been reported in clinical trials, where 34% of telaprevir patients experienced anaemia. Patients within the study group had on average two co-morbid conditions and were prescribed at least three other medications. Drug interactions necessitated changes in concomitant medicines for >50% of patients. 78% of HIV co-infected patients required changes to their anti-retrovirals.
Patients had an average of 14 clinic visits during treatment, highlighting the important role of multidisciplinary care in the management and support of patients through the treatment regimen.

Conclusions: The study results show that response rates to HCV treatment among real world patients, with varied medical and social co-morbidities including HIV co-infection and methadone maintenance therapy, can be better than those observed in international clinical trials.

P30
EPOCH Chemotherapy ± Rituximab for Treatment of HIV Lymphoma: A Single Institution Review

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Introduction: Patients who are seropositive for HIV have a substantially increased risk of developing lymphoma. The survival of HIV-associated lymphoma has significantly improved over the past twenty years, initially secondary to improvements in antiretroviral therapy. More recently, etoposide, prednisolone, vincristine, cyclophosphamide and doxorubicin (EPOCH), with or without rituximab, has been demonstrated to be a highly effective regimen that increases the rates of progression-free and overall survival. (1,2) Crucially for this cohort of patients, this regimen has demonstrated reduced treatment- related toxicity when compared to other regimens, in the treatment of HIV associated lymphoma. (3)

Methods: This was a retrospective review over a five year period from 2009 to 2014, of patient databases, electronic patient records, and medical charts to capture all patients with HIV associated B-cell Non- Hodgkin lymphoma treated with EPOCH with or without rituximab.

Results: 15 patients with retroviral associated lymphoma treated with EPOCH ± Rituximab were identified, with a median age of 47 (range 35-60 years). Histological subtypes included Diffuse large B-cell lymphoma (n=9), Burkitt's lymphoma (n=2) and Plasmablastic lymphoma (n=4). Those with plasmablastic lymphoma did not receive rituximab. 6 patients were antiretroviral therapy (ARV) naïve at diagnosis. Of these, 5 patients were newly diagnosed with retroviral disease, after diagnosis of lymphoma. ARV therapy was recommended to all patients during chemotherapy, however 2 patients declined same. With a median follow-up of 36 months (range 6-68 months), the overall survival was 73%. One patient died as a result

of oesophageal squamous cell carcinoma. CD4 count was identified as a predictor of outcome. Those with a CD4 count of less than 100 cells/mm³ had a poorer overall survival (60%), compared to those with a CD4 count of greater than 100 cells/mm³ (80%).Treatment-related toxicity consisted mostly of haematological effects. Of note, no patients developed opportunistic infections during treatment. There were no treatment related deaths.

Conclusion: Our results demonstrate that within our cohort of patients, EPOCH chemotherapy ± Rituximab is efficacious and demonstrates a good safety profile for the treatment of HIV associated lymphoma.

P31
Factors influencing the provision of HIV Testing in General Practice in Ireland

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Background: Rates of HIV testing in primary care have been increasing worldwide but remain low compared to other test settings. There is little published data on HIV testing in general practice in Ireland despite significant numbers of late presentations of HIV here. This study sought to explore factors that promote or reduce the provision of HIV testing during general practitioner [GP] consultations.

Methods: An anonymous survey was distributed online to GPs seeking information on their experience with HIV patients and potential barriers to HIV testing. Appropriate statistical analyses were undertaken.

Results: 164 GPs took part in the survey, 120 qualified GPs and 44 GP trainees. 74% had HIV positive patients in their practice. Urban practices had greater numbers of HIV positive patients than mixed or rural practices. 71% of GPs had submitted an HIV test within the past month. GPs identified lack of time for pre or post-test counselling, language and cultural barriers and patient perceived to being in a low risk group as barriers to offering a HIV test.

Conclusion: Missed opportunities for HIV diagnoses in general practice remain. Lengthy pre or post-test counselling, communication barriers and perceiving the patient to be in a low risk group all deter GPs from offering HIV tests. A standardised risk assessment tool and streamlined pre-test counselling for patients could increase rates of HIV testing in general practice and reduce late presentations of HIV.

P32
Analysis of an HIV cohort cascade in the context of the UNAIDS 90:90:90 strategy

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Background: Recognition that effective antiretroviral therapy (ART) can prevent transmission of HIV, has led to an international strategy from UNAIDS, increasing the targets of HIV detection and care linkage, ART coverage and ART efficacy to >90%. We aimed to determine alignment with this strategy through analysis of the treatment cascade in the cohort attending our tertiary referral HIV service.

Methods: Analysis of retrospective data from our cohort, comprising all patients with HIV linked into care, with ≥1 attendance to the Infectious Diseases service, then determined the proportion retained in care (defined as those with either 2 documented clinic attendances and/or diagnostic tests ≥3 months apart or ≥2 ART drug dispensations ≥3 months apart within the preceding year). We then calculated the proportion of those retained in care who were on ART and the proportion of those who were virally suppressed, defined as HIVRNA ≤40 cps/ml for at least 3 months, comparing characteristics between these groups using parametric analyses.

Results: Of 1001 patients linked to care, 59.3% were male, mean (SD) age was 40.4 (9.5) years and 37% were of African origin. HIV transmission risk included heterosexual sex (50%), intravenous drug use (IVDU) (22.2%) and homosexual sex (20.9%). Of those linked to care, 78.7% were retained in care, of whom 91.5% were on ART, with 89.9% of those on ART virally suppressed. Those on ART who were virologically suppressed were significantly older (42.0 (9.5) vs 39.0 (8.7) years, $P<0.01$)] and less likely to be IVDU (19.2% vs 41.3%, $P<0.001$) but did not differ in gender or race/ethnicity.

Conclusions: Target goals set out by UNAIDS in 2014 include increasing to 90% the proportion of people living with HIV who know their diagnosis, 90% the proportion of people with HIV receiving ART and 90% the proportion of people on ART virally suppressed (the 90:90:90 concept). These data suggest that at least 2 of these 3 targets are achievable within a contemporary European cohort of HIV patients. The largest deviation from the proposed target is in linkage to care, with 21.3% patients linked but not retained and suggest that greater research and focus of resources is required within this group in order to attain international targets for management of HIV infection.

P33
An audit of prescriptions for prophylaxis of opportunistic infections in HIV patients attending outpatient clinics in St. James's Hospital

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Background: Advances in the treatment of HIV with anti-retrovirals have led to dramatic reductions in opportunistic infections. Patients presenting late and with a CD4 of less than 200 have a greater risk of opportunistic infections. An audit was undertaken to quantify this patient cohort, assess risk factors for opportunistic infections and determine adherence to treatment guidelines. The aim of this audit was to quantify the number of HIV patients currently on prophylaxis for opportunistic infections and to assess adherence to treatment guidelines.

Methods: All HIV-positive patients currently on ARVs and prophylactic medications between 20/10/14 and 26/11/2014 were entered on a database. Information including patient demographics, HIV acquisition risk, documented reasons for initiation of prophylaxis and laboratory results were recorded using information from the GUIDe electronic prescribing system and pharmacy records

Results: Patient demographics 616 patient attendances to pharmacy for ARVs during this period including 64 attendances for prophylactic medications.
- 62 patients on prophylactic medications:
- 35 Males 27 Females
- Acquisition Risk: 23 heterosexual, 14 MSM, 23 IVDU, 1 vertical, 1 blood transfusion
- 18(29%) Hepatitis C co-infected
- 28(45.4%) had documented poor compliance
- 14(22.7%) recently diagnosed HIV positive (within 12 months)

Opportunistic infection being treated
- PCP: 50(81.2%) patients: 36 septrin, 12 dapsone, 1 atovoaquone/pyrimethamine/folinic acid and 1 pentamidine
- HSV: 15(2.4%)
- Toxo: 1(0.16%)
- MAC: 2(0.32%)

Indications:
PCP: CD4 <200cells/µL or CD% <14 in 46(74.1%) patients on PCP prophylaxis
HSV: 7 on treatment for < 1 year or recent episodes

Conclusion: The majority of patients were initiated on prophylaxis for opportunistic infections as per guidelines. PCP was the most common opportunistic infection. Poor compliance was the biggest risk factor for patients requiring prophylaxis. Patients who had been recently diagnosed also represented a significant proportion. This audit will provide information on the reasons and risk factors associated with opportunistic

P34
The HIV Care Cascade: 'Gap' analysis of those linked to, but not retained in care

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Background: The HIV Care Cascade model, increasingly utilised to assess efficacy of care within HIV positive populations, has identified significant gaps between the proportions linked to, versus retained in care. We aimed to apply this model to explore differences in characteristics of those linked to, but not retained in care (NRIC).

Methods: In a prospective cohort of patients attending a tertiary referral HIV service, we defined patients NRIC as those without a clinic visit or routine diagnostic test within the previous 6 months. We attempted direct and indirect (through GPs / next of kin) contact with those NRIC, classifying their current status as emigrated, transfer-of-care, deceased, stopped attending but contactable and lost to follow up (LTFU) (un-contactable with no further information available). Using parametric and non-parametric analyses, we compared demographic and disease-related characteristics of those NRIC and LTFU, to those retained in care (RIC).

Results: Of 1000 patients linked to care, 213 (21.3%) were NRIC. Compared to those retained in care, those NRIC were more likely younger and of African origin (P=0.045). There was no significant difference in transmission risk between groups. Of those NRIC, 56 (26.3%) emigrated, 27 (12.7%) transferred care, 15 (7.0%) stopped attending and 38 (17.8%) had died, with non-AIDS conditions (17(44.7%)) unnatural death/misadventure (7 (18.4%)) and AIDS (7(18.4%)) the commonest causes of death. As a result of direct contact, 6/15 (40%) of those not attending reengaged with care. Recalculating the cascade, excluding those who died, emigrated or transferred care, the percentage of those linked to and who are retained in care rises to 89.5% (787/879).

Conclusion: There is a significantly higher proportion of people of African origin not retained in care. Interestingly there is no significant difference in the number of injecting drug users in the NRIC group. That 40% of those not attending re-engaged in care as a result of direct contact suggests that regular 'gap' analyses can contribute to better overall patient retention.

Table 1

	RIC	NRIC	p	LTFU	p
Age (Mean(SD))	41.0(5)	38.3(9)	0.001	37.6(9.6)	0.003
Male gender	466(59.2%)	127(59.6%)	0.9	45(58.4%)	0.9
Transmission risk					
Injecting Drug Use	167(21.2%)	54(25.4%)	0.09	12(15.6%)	0.4
Heterosexual contact	397(50.4%)	98(46%)		44(57.1%)	
Homosexual contact	166(21.1%)	37(17.4%)		12(16.9%)	
African Race	281(35.7%)	92 (43.2%)	0.045	43(55.8%)	0.1

P35
High Prevalence of Cognitive Impairment in Irish HIV Population with Amnestic Features and Grey Matter Atrophy: Implications for Future Care

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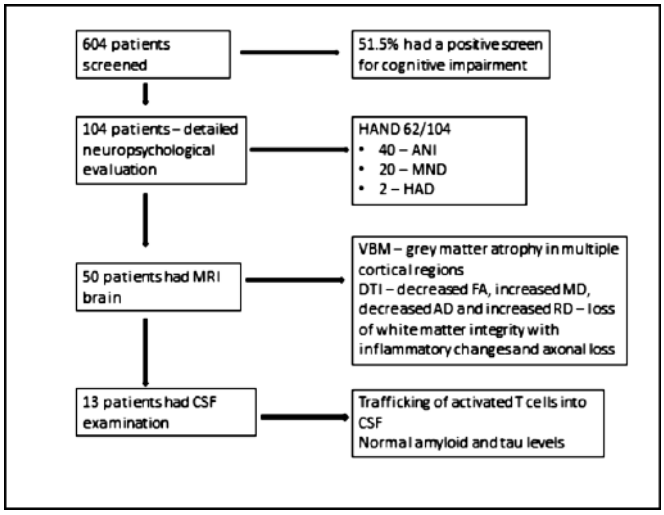
Background: HIV associated neurocognitive disorders (HAND) affect up to 50% of people living with HIV. The exact aetiology of HAND remains to be fully elucidated but both inflammatory and degenerative mechanisms are involved. The primary aim of the study was to explore the inflammatory degenerative continuum in HAND.

Methods: Patients attending clinics at St. James's Hospital were screened for cognitive impairment using the Brief NeuroCognitive Screen (BNCS) (n=604). Subsequently 104 patients underwent detailed neuropsychological testing with the Repeatable Battery for the Assessment of Neuropsychological Status (RBANS), Addenbrooke's Cognitive Exam Revised (ACE-R), Montreal Cognitive Assessment (MoCA) and Frontal Assessment Batter (FAB). Fifty patients had MRI brain scans performed. MRI data was analysed with voxel based morphometry (VBM) to assess grey matter and diffusion tensor imaging (DTI) to assess white matter integrity. Cerebrospinal fluid (CSF) analysis was carried out on 13 patients using flow cytometry to assess immune activation. Analysis of CSF tau and beta-amyloid levels was performed.

Results: A high prevalence rate was demonstrated of a positive screen for cognitive impairment. The cognitive profile was shown to be predominantly an amnestic, dysexecutive profile with cortical features. MRI showed both inflammatory and degenerative features on VBM and DTI with cortical atrophy and abnormalities across multiple DTI measures. CSF examination demonstrated that there was trafficking of activated T cells into the CSF of these patients with HAND despite viral suppression. All of these features highlight the roles that inflammation, immune activation and neurodegeneration play in this condition. The key findings of this study add to the ever burgeoning literature on HAND and help to improve our understanding of this condition. This study was cross-sectional and a longitudinal follow-up has commenced as has a physiotherapy intervention study.

Conclusion: HAND is likely initially immune and inflammatory mediated with neuronal loss occurring secondary to neurodegeneration. We would recommend screening all patients for HAND and neurological referral for all patients with a positive screen for detailed assessment, MRI brain and CSF examination. Longitudinal follow up will elucidate the natural history of HAND and enable us to determine the progression of HAND and the stability of the neurodegenerative insult. There are functional consequences associated with HAND including poor medication adherence, unemployment and poor financial management. This highlights the importance of identifying patients with HAND. Future therapies will need to focus on preventing or decreasing the initial inflammatory response in order to prevent deficits occurring due to neurodegeneration.

Figure 1 – Breakdown of studies



HAND = HIV associated neurocognitive disorders, ANI = asymptomatic neurocognitive impairment, MND = mild neurocognitive disorder, HAD = HIV associated dementia, VBM = voxel based morphometry, DTI = diffusion tensor imaging, FA = fractional anisotropy, MD = mean diffusivity, AD = axonal diffusivity, RD = radial diffusivity.

P36
A case of atypical seroconversion and rapid viraemic control in a patient with acute HIV

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Background: We describe an atypical HIV seroconversion in a female patient whose HIV-RNA viraemia spontaneously and rapidly fell below the limit of detection on repeated sampling.

Methods: Our case has been closely clinically monitored since diagnosis. A detailed retrospective review of virological and immunological analyses was performed.

Results: A 42-year old woman was referred to our clinic with a weak positive HIV 1+2 Antigen-Antibody test. Forth generation screening assays were positive at a low-level with an Architect HIV Ag/Ab Combo test (Abbot diagnostics) of 11.1 (threshold for positivity 1), and a positive Vidas antibody (Biomerieux diagnostics) at 13.72 (assay cut off 0.12). HIV INNO-LIA line immunoassay (Fujirebio) was positive at bands gp41 (3+), p31 (1+), p24 (3+), p17 (1+); consistent with HIV-1 infection. HIV RNA on this sample was detected at a low level (<200 copies/ ml). Initial CD4 was 340 cells/ul (47%). A follow up sample performed two weeks later demonstrated minimal progression on the Architect immunoassay with a result of 11.54. HIV RNA PCR on this sample was non detectable. A third plasma HIV-RNA level performed 2 months following diagnosis again was non detectable. CD4 at this time was 616 cells/ul (31%). This patient had a syndrome suggestive of HIV seroconversion approximately 5 months before presentation following a high-risk sexual exposure. A HIV test that was performed approximately a month following this exposure appeared negative at the time with an Architect value of 1 (at the threshold of detection) and a negative Vidas Agn/Ab and Genescreen Ultra HIV Ag-Ab test (Bio-Rad). A retrospective HIV PCR was performed on this sample demonstrating a viral load of 71550 copies (4.85 logs) per ml.

Conclusion: This case report describes a patient who controlled her viraemia during the first few months of diagnosis. In addition, it outlines an atypical seroconversion with initial testing ambiguities.The fourth generation HIV Architect Combo assay is among the most sensitive for detection of p24 antigen and has a high specificity. It has been shown to identify acutely infected individuals in the majority of cases where antibody tests fail to do so with a reduction in the window period to a median of 7 days. In addition, studies suggest that the limit of detection for the HIV Combo assay with regard to virus detection is between 14,000 and 30,000 RNA copies/ml. In this case the Architect HIV Combo assay was initially equivocal despite a viral load of 71,550 copies/ml and demonstrated a poor progression on repeated sampling. This patient will likely fit the phenotype of an Elite Controller, a group that comprise 1% of the untreated HIV infected population. Unveiling mechanisms associated with HIV control in patients such as this are essential for development of HIV treatment and vaccine strategies.

P37
Longitudinal Clinical, Neuropsychological and Biomarker Follow-up of Established HIV Population Cohort. Preliminary Results

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Background: HIV associated neurocognitive disorders (HAND) occur in approximately 50% of HIV positive patients despite the introduction of effective highly active antiretroviral therapy (HAART. Still little is known about HAND's natural course of disease.

Methods: An already well characterised cohort of 104 HIV positive patients with cognitive impairment, attending St. James's Hospital HIV services, are currently having follow up assessments carried out. These assessments involve neuropsychological follow-up testing including Repeatable Battery for the Assessment of Neuropsychological Status (RBANS), Addenbrooke's Cognitive Examination Revised (ACE-R), Montreal Cognitive Assessment (MoCA) and Frontal Assessment Battery (FAB), to evaluate for changes of neuropsychological status and longitudinal course of disease. Results of follow up neuropsychological assessments are correlated with CD4 counts and HIV viral load.

Results: A cohort of 104 patients who screened positive of cognitive impairment on brief neurocognitive screening test, had detailed cognitive testing carried out to examine the pattern of cognitive impairment in HIV. Of them, 62 patients met criteria for HIV Associated Neurocognitive Disorder (Asymtomatic Neurocognitive Impairment (ANI) - 40/104, 38.5%; Mild Neurocognitive Disorder (MND) 20/104, 19.2%; HIV Associated Dementia (HAD) 2/104, 1.9%). 9 patients were lost to follow up (7-RIP and 2 did not consent for follow up) in the longitudinal study. 32 patients have already undergone follow up assessments at 18 months. Of them 3 patents (9%) showed progression of cognitive impairment on MoCA testing. Seven patients (22%) performed worse on follow up FAB assessment and 9 patients (28%) had stable total FAB scores, whereas the remaining 16 patients (50%) showed improvement in their total FAB scores. Only 3 patients (9%) showed worsening of cognitive impairment on ACE-R testing, 7 patients (22%) had stable total ACE-R scores and the remaining 22 patients (69%) showed improvement in

total ACE-R scores. Greater improvements were observed in the orientation, attention and verbal fluency domains.

Conclusion: Initiation of antiretroviral therapy and patient's engagement with services and compliance with treatment can stabilise cognitive impairment in HIV positive individuals and delay progression to HAD. With effective treatment HAND may even have bidirectional transitions as opposed to obligatory forwards progression seen in the pre-HAART era. Though, method (i.e. test administration, tester, small follow up sample size), learning effect and environment biases are possible. Remaining 63 patients from the original cohort will have their 18 months follow up assessments and furthermore, all participants will have a further 24 months follow up assessment to address the possible biases issue.

Clinical Care: Infectious Diseases

P38

Community Versus Hospital Acquired *Clostridium Difficile* Infection at a Tertiary Referral Centre.

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Background: *Clostridium difficile* infection (CDI) is responsible for colitis of varying severity. CDI recently replaced MRSA as the most common hospital-acquired infection (HAI) in the United States. CDI has increasingly been reported as arising in the community setting and in populations previously thought to be low at risk. Guidelines for the classification of CDI were established in 2007. Irish guidelines on the surveillance, diagnosis and management were established in 2008. This reporting has given important preliminary information on the burden of CDI in Ireland; however it does not capture enhanced information on the origin, onset or severity of cases. Therefore the true burden of CDI is unknown.

Methods: A retrospective chart review was carried out on patients who had a positive lab diagnosis of *C.difficile* infection following stool analysis.

Results: 120 cases were retrospectively reviewed. 30 cases (25%) were Community Acquired (CA)-CDI, with 3 (2.5%) being indeterminate and 71 (59.16%) were Hospital acquired (HA). Patients who had CA-CDI had no significant mean age (p=0.76), gender difference (female (66% vs. 48% p=0.11) compared to HA-CDI. Patients with CA-CDI were less likely to have had antibiotic exposure (p<0.001) in the 90 days preceding onset of disease. HA-CDI was significantly associated with the use of fluoroquinolones (p = 0.02) and piperacillin/tazobactam (p <0.001). No significant differences existed between the past medical histories of the two groups. There was no difference in length of stay (LOS), severity, outcomes or treatment received between the 2 groups.

Conclusions: CDI is continuing to evolve with increasing prevalence in the community setting.Those presenting to hospital with CA-CDI have a similar profile to HA-CDI with regards to demographics, comorbidities, treatments received and outcomes. The increasing burden and potential severity of CDI in the community needs to be highlighted to those who prescribe antibiotics in that setting.

P39

A 7-Week Review of Antimicrobial Prescribing Practices in Cork University Maternity Hospital

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Background: Cork University Maternity Hospital (CUMH) is a tertiary referral centre, with responsibility for the care of obstetric, gynaecology and neonatal patients. In 2013, 8,166 mothers delivered 8,339 babies in CUMH; there were 1,359 women admitted for gynaecological procedures.[1]
An antimicrobial pharmacist was appointed to CUMH in January 2015, with the purpose of monitoring and optimising antimicrobial prescribing practices. Over a seven week period, data were recorded for adult patients prescribed antimicrobials.
Aim of Review

- To document antimicrobials prescribed in CUMH over a seven week period
- To compare prescribing practices with existing antimicrobial guidelines in CUMH
- To identify opportunities to improve antimicrobial prescribing practices at CUMH.

Method: A data collection form was devised to document: the indication for antimicrobial use, the antimicrobials prescribed, culture & swab results, CRP, WCC
The antimicrobial pharmacist:
Attended the five in-patient wards Monday to Friday
Consulted with midwifery staff to ascertain which patients were prescribed antimicrobials
Reviewed medical notes, patient prescriptions and laboratory results. Data were compared with local antimicrobial guidelines to determine compliance. In the absence of local guidelines, the Infectious Diseases (ID) Consultant provided advice on appropriateness.

Results: Data from 109 adult patients were analysed

- 64 patients were prescribed antimicrobials in accordance with local guidelines or based on advice provided by the Microbiology Department/ ID. (*Compliant* – 73%)

- 24 patients received antimicrobials which were either considered non-compliant with guidelines or not indicated (*Non-compliant* – 27%). 15 of the 24 women received antimicrobials for longer than specified in CUMH guidelines.

Indication	Total Number of Patients	Compliant	Non-compliant
Urinary Tract Infections	20	95%	5%
Respiratory Infections/ Influenza	8	100%	0%
3rd Degree Tear	7	71%	29%
Prophylaxis	7	0%	100%
Manual removal of placenta	7	14%	86%

Table 1: Antimicrobial Indication and Percentage of Prescribing Compliance

21 patients received antimicrobials due to intrapartum pyrexia.

- In 57% of these cases, treatment was as per CUMH Empiric Antimicrobial Guidelines for Puerperal Sepsis.
- 33% of women, without sepsis, were treated according to CUMH guidelines for the management of intrapartum pyrexia.
- All 21 microbiology blood culture samples were negative.

Conclusion: The CUMH adherence to guidelines rate, of 73%, is in keeping with Irish point prevalence study data (73%). [2] There are however opportunities to improve prescribing practices:

- Antimicrobials are being prescribing for durations longer than indicated.
- In the majority of instances, intrapartum pyrexia is being treated as per CUMH Puerperal Sepsis Guidelines. Further examination of antimicrobial management of intrapartum pyrexia is required. It is anticipated that the results of this baseline study will help generate discussion and consensus which will lead to improvements in antimicrobial use in CUMH.

References 1. Cork University Maternity Hospital Annual Report 2013 2. Antimicrobial Use in Republic of Ireland (ROI) 2012: Data from the Point Prevalence Survey of Hospital-Acquired Infections and Antimicrobial Use in European Acute care Hospitals 2012. Barrett S, Burns K, Foley M, Cunney R, Philbin M.

P40
Development of Recombinase Polymerase Amplification Assays for the Detection of Bacterial Meningitis in Whole Blood

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Background: Bacterial meningitis (BM) causes an estimated 1.2 million infections worldwide each year, with an approximate mortality rate of 20%. *Streptococcus pneumoniae* and *Haemophilus influenzae* are leading causes of BM infection. Early BM diagnosis using molecular techniques instead of conventional culture methods, can improve primary treatment response and help reduce BM mortality and disease burden. Recombinase polymerase amplification (RPA) is an emerging rapid isothermal nucleic acid diagnostic technology. We have developed RPA assays for the detection of *S. pneumoniae* and *H. influenzae*, using leader peptidase A and fuculose kinase diagnostic markers, respectively.

Methods: Bacterial strains were cultured using BHI broth and DNA was extracted using standard Qiagen spin column methods. Specificity of both assays was evaluated by testing *S. pneumoniae* and *H. influenzae* reference strains, *non-S. pneumoniae* and *non-H. influenzae* reference strains, and clinical isolates. Sensitivity of both assays was determined using Probit statistical analysis. Blood spiking experiments were performed by spiking 98µL of whole blood with 2µL of serially diluted bacterial suspensions. Robustness of both was evaluated by using increasing volumes of exogenous human DNA. Clinical sample testing was performed by extracting DNA from 100µL of each sample, eluted DNA in 20µL of dH_20 and testing 1µL of this elution in each RPA reaction. The performance of both assays was compared to real-time PCR in terms of sensitivity and specificity.

Results: Analytically, the RPA assays were found to be as sensitive as PCR and capable of detecting as low as 1 colony forming unit of *S. pneumoniae* and *H. influenzae* spiked into whole blood. Both RPA assays were 100% specific; differentiating *S. pneumoniae* species from closely related viridans group streptococci, including *S. pseudopneumoniae*, and differentiating *H. influenzae* from closely related human commensal bacteria, including *H. haemolyticus*. The limit of detection of both

assays was unaffected in the presence of 200ng of exogenous human DNA (typical levels present in clinical blood samples). Finally, both RPA assays demonstrated successful detection of *S. pneumoniae* and *H. influenzae* from culture positive clinical blood samples, indicating their potential for application in point-of-care diagnostic tests.

Conclusions: We have developed rapid real-time RPA assays, which are as specific and sensitive as PCR. These assays may find utility as point-of-care diagnostic test for the detection of *S. pneumoniae* and *H. influenzae*. Future work will focus on the development of internal amplification controls for each assay followed by increased clinical sample testing for further validation.

P41
Observation Study of prescribing practices in ICU following the outbreak of Carbapenem Resistant Organisms

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Background: Following the outbreak of Carbapenem Resistant Organisms in the Intensive Care Unit in 2014, actions were taken to improve antibiotic stewardship through; shorter antibiotic durations, de-escalation and introduction antibiotic diversity.

Method: The project aims: 1. Quantify and classify antibacterial ; 2. Observe antimicrobial prescribing : a. Compliance to guidelines; b. Reasons for changing initial regimen; c. Resistance patterns of microbiological samples.

Results: The volume of antibiotics used in the Intensive Care Unit did not reduce during this period. The diversity of antibiotics was altered in the 6 months after the intervention. The proportion of meropenem was almost was halved with a greater diversity of antimicrobial including Co-trimoxazole, co-amoxiclav & ciprofloxacin. Infective episodes were observed in 100 patients admitted to the ICU between October and December 2014, 47 % (47/100) were female. The age range was 14 - 86 years, (average 57.6 years). The most common initial diagnosis was hospital acquired pneumonia 19% (19), followed by chest sepsis 16% (16) and community acquired pneumonia 14% (14). Forty two per cent of patients included in the study met sepsis criteria. Empirical antimicrobial prescribing was compliant with trust antibiotic guidelines 75 % (75/100) of infections. The deviation from guidelines was mainly attributed to the use of Piperacillin/Tazobactam, 80 % (20/25) to treat community acquired pneumonia (including aspiration pneumonia).
The average duration of antibacterial therapy was 10 days with a range of 3-42 days. 38% of patient received ≤ 7days antibiotic duration with only 7 of these stopping on day 5. Around half of those observed 54% (54/100) received 8-14 days. Greater than 14 days therapy was witnessed in 8% (8/100) in complicated conditions such as endocarditis and osteomyelitis.
The sensitivity patterns of the gram negative organisms isolated from blood culture, 89 % (8/9) of the organisms were sensitive to Piperacillin/Tazobactam. 100 % (9/9) of gram negative organisms isolated in blood cultures were sensitive to Meropenem, Ciprofloxacin, Gentamicin, and Aztreonam and Tigycycline although the latter would not be used for bacteraemia. 78% (7/9) of gram negative organisms were sensitive to Co-amoxiclav and 78 % (7/9) were sensitive to Co-Trimoxazole.

P42
Prescribing Trends from the National OPAT Program 2013-2015

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Background: The National OPAT program was set up in Jan 2013 and put in place a formal national structure for clinical governance and standards of care for OPAT. The ultimate aim of the program being to ensure that no patient receiving IV antimicrobials who could be treated out of hospital remains an inpatient. Secondary quality and governance objectives are to ensure that each patient referred receives appropriate antimicrobial stewardship as part of their care. The objective of this study is to describe the trends in antimicrobial prescribing within the national OPAT program from Jan 2013-Dec 2014.

Methods: Data was collected prospectively on all patients admitted to the OPAT program from Jan 2013-Dec 2014. Trends in prescribing practices are described for OPAT referrals overall and per method of OPAT delivery (H-OPAT vs S-OPAT). CF data was excluded from analysis for this study. Data was analysed using Excel.

Results: There were a total of 2943 prescriptions for parenteral antibiotics. H-OPAT accounted for 2210 (75%) and S-OPAT 734 (25%) of referrals. The top 10 prescribed antibiotics accounted for 82% of all prescriptions. There were notable differences in prescribing trends depending on type of OPAT delivery. Flucloxacillin accounted for 22% of S-OPAT vs 1% of H-OPAT prescriptions, the S-OPAT referrals accounting for 88% of all flucloxacillin prescribed. Flucloxacillin dosing varied in the H-OPAT group with only 25% of patients getting QDS dosing compared with 100% of those in the S-OPAT arm. Vancomycin prescribing was more common in the S-OPAT group (9.1% vs 2.9%). Cefazolin was more likely to be prescribed in H-OPAT setting (17.6% vs 2%). Trends in Tazocin, Ceftriaxone, Daptomycin and Meropenem precribing were comparable between the 2 groups (See table 1.)

Conclusion: This study describes the prescribing trends in the National OPAT program. Comparable published data on OPAT prescribing trends is limited. Knowledge of this data is important for antimicrobial stewardship as well as delivery of care within the OPAT program. An objective going forward is to equilibriate the rate of S-OPAT antibiotic delivery with H-OPAT rates. Meropenem prescribing rate while high reflects local rates of ESBL isolates and Tazocin resistant Pseudomonal infections (10.8% and 21% respectively). Flucloxacillin prescribing should be reserved for S-OPAT as H-OPAT dosing schedules are inadequate. Differences in cephalosporin prescribing (Ceftriaxone vs Cefazolin) likely reflects increased patient acceptability and ease of OD vs TDS dosing regimes in S-OPAT program.

Antibiotic	Combinbed Prescriptions No. (%)	H-OPAT Prescription No. (% of H-OPAT)	S-OPAT Prescription No. (% of S-OPAT)
Ceftriaxone	497 (16.8%)	363 (16.4%)	134 (18.2%)
Piperacillin/Tazobactam	425 (14.4%)	347 (15.7%)	78 (10.6%)
Cefazolin	404 (13.7%)	389 (17.6%)	15 (2%)
Meropenem	273 (9.2%)	206 (9.3%)	67 (9.1%)
Daptomycin	259 (8.8%)	195 (8.8%)	64 (8.7%)
Flucloxacillin	186 (6.3%)	22 (1%)	164 (22.3%)
Vancomycin	132 (4.5%)	65 (2.9%)	67 (9.1%)
Co-Amoxiclav	118 (4%)	118 (5.3%)	0
Ertapenem	67 (2.3%)	67 (3%)	0
Ceftazidime	47 (1.6%)	23 (1%)	24 (3.2%)
Aztreonam	45 (1.5%)	21 (1%)	24 (3.2%)
Teicoplanin	38 (1.3%)	33 (1.5%)	5 (0.6%)
Amikacin	29 (1%)	16 (0.7%)	13 (1.7%)
Daptomycin/Meropenem	34 (1.1%)	23 (1%)	11(1.2%)
AmBisome	21 (0.7%)	20 (0.9%)	1 (0.1%)

P43
Seasonal Influenza A Outbreak at a Tertiary Hospital, 2015

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Introduction: Although seasonal influenza is a common condition, few nosocomial outbreaks have been well characterised. Recognition of nosocomial acquisition and outbreak in February 2015 led to substantial escalation of infection prevention and control measures. In this context, we sought to evaluate the clinical burden of infection, associated complications and antimicrobial treatments, and patient comorbidity profile correlation with current vaccination recommendations.

Methods: Case identification of all patients who had attended Emergency Department, outpatients and/or in-patient, at the time of positive influenza A or B PCR of either nasopharyngeal aspirate or nasopharyngeal swab. Retrospective review of medical notes of Weeks 1-7 of influenza activity; prospective data collection is on-going.

Results: We identified 85 patients in Weeks 1-7 with mean age of 63 years, and range 22 – 94. They were 58% male, 42% female. Influenza was predominantly Influenza A (83/85; 97%). Laboratory investigations show mean WCC 7.2 x10^9/L, neutrophil 5.44 x 10^9/L, lymphocyte 1.09 x 10^9/L and mean C-reactive protein 74 (range 5.09-336). Chest X-ray was performed in 63 (77%) of patients. Of these, 35 (55%) showed no acute changes. Findings in 24 (38%) included acute infection/inflammation (9%), acute unilateral consolidation (9%), bilateral infiltrates (7.9%) and 3% with new pleural effusion. Five patients required ICU admission, for respiratory and renal support. Preliminary analysis of 45 clinical records shows acute onset of symptoms in 62%, documented fever in 48%, cough in 64%, dyspnoea in 46% and myalgia in 28%. 45 patients received antivirals, mostly therapeutic oseltamivir (86%). Concomitant antibiotic prescriptions included piperacillin/tazobactam (42%), co-amoxiclav (22%), meropenem (8%) and fluoroquinolones (6%). Community complications of influenza included respiratory (pneumonia, respiratory failure), cardiac (arrhythmias, myocarditis), neurologic (syncopal events, transient ischaemic attacks). Nosocomial infections occurred at median 8 days of admission; complications arrhythmias, pneumonia, disruption of treatment of co-morbidities, *C. difficile* and acute respiratory distress syndrome. Examination of patient co-morbidities shows median of 3 vaccine indications per patient. Most common indications were age (66%), chronic respiratory disease (37%), cardiac disease (31%), immunosuppressive disease (28%), diabetes mellitus (22%) and immunosuppressive medication (22%).

Conclusion: Common symptoms of Influenza A were fever, cough and dyspnoea. Typical laboratory investigations included a 'normal' white cell count, trending towards lymphopaenia. Of preliminary analysis, most patients received appropriate antiviral therapy, although opportunities remain for antimicrobial stewardship. Findings suggest a less severe illness in most nosocomial cases. Patient co-morbidities are consistent with current seasonal vaccination recommendations; further opportunities to increase uptake will be addressed within hospital

P44
Clinical Predictors of Radiological Colitis in *C. difficile* infection

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Background: *Clostridium difficile* infection (CDI) causes a spectrum of illness, ranging from diarrhoea to severe complications of pseudomembranous colitis, and SIRS/ complications, with 30% attributable mortality. Severity

assessment relies on clinical findings and laboratory markers. There is little evidence available to guide use of computed tomography as adjunctive investigation.

Methods: Prospective observation of clinical risk factors, markers of severe infection, treatment and outcomes of patients with *C. difficile* identified by positive faecal toxinB PCR assay, are recorded within on-going epidemiology research. This database was used to identify patients who had a CT abdomen performed as part of their evaluation, at the discretion of the supervising physician. between September 2013 – February 2014.

Results: Within database of 141 patients and 180 episodes, CT abdomen was obtained in 30 episodes (16%). Findings ranged from normal bowel (4; 13%), to colitis (14; 46%) and pancolitis (3; 10%). **Demographics:** mean age was 59 years, with range 29-99 years and gender was 59% male. **Epidemiology**: 26% of episodes were recurrent CDI. 40% had community onset of symptoms, with average of 48 days since hospital discharge. 18 nosocomial episodes occurred at 29 days from admission. **Risks:** Median antibiotic exposure was 2 prescriptions per episode, exposure to proton pump inhibitor 66%, immunosuppressants 53% and 16% enteral feeding. 13% had recent GI procedures or surgery, and 6% had inflammatory bowel disease. **Clinical findings**: 46% experienced abdominal pain and 5% had documented fever. 30% had WCC >15 x 10^9/L, of which 88%, and 52% of those with WCC <15 x 10^9/L had CT findings of colitis or pancolitis. 6% had creatinine >133, and >50% baseline: all had pertinent CT findings. However 65% of episodes without such creatinine elevations had CT findings of colitis. CDI complications included hypotension (16%), ileus (13%) and rising lactate (3%). **Outcomes**: 2 patients required ICU admissions. 63% patients were discharged home, 20% died, 10% remain as hospital inpatients and 3% were discharged to long-term care. Mean length of stay was 42 days; range 5 – 254 days.

Conclusions: In this group of patients, investigation by CT abdomen had relevant findings of spectrum of illness. Immunosuppressants present relevant, common, CDI risk, with impairment of host response including blunted response of biomarkers of severity. In this group, acute kidney injury occurred with systemic CDI complications beyond radiological colitis. Overall, findings of CT abdomen were useful for clinical severity stratification of *C. difficile* infection

P45
An unusual cause of neonatal infection in an Irish setting

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Background: Congenital malaria is defined as the presence of malaria parasites in cord blood or the presence of asexual parasites in the neonatal peripheral blood within the first seven days of life. It occurs by transplacental spread and is most commonly associated with Plasmodium vivax and Plasmodium falciparum species. We describe a case of congenital malaria diagnosed in a neonate born in an Irish Maternity Hospital.

Methods: We collected information on a female patient who was transferred from a nearby maternity hospital with severe falciparum malaria following an emergency cesarean section. Placental, cord and peripheral blood from the neonate were tested for malaria antigen. A placental specimen was sent for histology.

Results: A 33 year old para 0 Nigerian woman presented to an Irish maternity hospital at 36 weeks gestation with fever, muscular aches and abdominal pain, She travelled to Ireland one week prior to presentation from the Edo province of Nigeria. Observations revealed a heart rate of 120 beats per minute, temperature of 38.4 degrees Celsius and oxygen saturations of 93% on room air. An urgent malaria antigen test and thick and think film were performed demonstrating Plasmodium falciparum with a parasite load of 6.8%. Initial laboratory investigations revealed a Haemoglobin 8.9g/dl, platelets 83 x 10^9/L, creatinine 62mmol/L, CRP 115mg/L, Albumin 19g/L, bilirubin 30mmol/L. A bedside cardiotogophraphy revealed fetal tachycardia with shallow decelerations. A 3.2kg male infant was delivered by emergency lower segment Caesarean section. The baby was transferred to a neonatal ICU and treated for congenital malaria with quinine and clindamycin. The mother was transferred to intensive care at our facility. She responded well to treatment with a marked reduction in her parasitaemia level within 24 hours to 0.23%. Placental, cord and peripheral blood from the infant demonstrated a positive, weakly positive and negative malaria antigen respectively. Placental histology confirmed malarial intervillositis.

Conclusion: This case highlights the importance of considering malaria when assessing a febrile pregnant patient recently returned from an area of endemicity. Pregnant women experience a more severe illness with hypoglycaemia pulmonary complications, severe anaemia and death when compared to non-pregnant women. The rate of congenital malaria is higher in non-immune mothers than immune (1-4% v 7-10%).

Diagnosis of congenital malaria is often confounded in endemic areas by the possibility of post partum infection of the neonate. It is rarely described in non-endemic areas. To our knowledge this is the first case of congenital malaria described in an Irish hospital.

P46
Ireland's Evolving Plan for Ebola Viral Disease (EVD)

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Background: The current Ebola outbreak is unprecedented in scale with over 24,000 reported cases and 10,000 deaths. Of these, 26 cases were treated outside of West Africa, many of whom were treated in European countries (Spain, Germany, France, UK, Switzerland, Netherlands and Italy). With this in mind Ireland's EVD strategy has evolved considerably over the last year.

Results: The Health Protection Surveillance Centre (HPSC) and the National Isolation Unit (NIU) located at the Mater hospital are at the epicenter of Ireland's EVD preparation strategy. Throughout the epidemic the EVD Scientific Advisory Committee convened regularly and issued directives on the management of high-risk cases in particular regarding patient Retrieval and Repatriation, Public Health Strategies for contact tracing, risk-assessment algorithms for use in the Acute Hospital and community setting, guidance on the use of Personal Protective Equipment (PPE), waste management, and laboratory specimen handling. The NIU is equipped with two high specification negative pressure rooms with HEPA filtrated individualised Air-Handling systems and appropriate anteroom for decontamination as outlined by the European Network of Highly Infectious Diseases (EuroNHID). While the unit is not equipped with tent-isolators, the staff are protected through careful donning and doffing of high-level PPE. There is a clearly defined pathway for referral and immediate transfer of any high-risk cases to the NIU. Ambulance transfer occurs direct to the Unit through an on-street entrance. All routine bloods are processed on site through the use of point of care testing. Blood samples for Ebola diagnostics are packaged in category – A containers and couriered as biohazard to the National Virus Reference Laboratory located in University College Dublin. Intensified staff training in the NIU included a number of staged scenarios focusing on patient transport and retrieval involving staff at the NIU, Dublin Ambulance and Fire Brigade, and the Gardai. Efforts are underway to secure access to experimental Ebola drugs (Favipiravir, brincidofovir, Zmapp) and convalescent plasma and whole blood if required.

Conclusion: Initial concerns regarding the risk of an imported case of Ebola were centered on Ireland's predominantly Nigerian African migrant population. Towards the latter part of the epidemic it was the flow of Irish Humanitarian Aid Workers to and from West Africa that intensified Irish EVD preparation. While the rate of new diagnosis in West Africa has slowed with 136 new cases this week, events of the past year have reinforced the importance of an effective EVD strategy in Ireland going forward.

P47
Antimicrobial knowledge among prescribers at a UK tertiary referral teaching hospital

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Background: It is widely recognised that many antimicrobial prescriptions in the hospital setting are inappropriate. Education is a cornerstone of any antibiotic stewardship program, however training must be pitched at an appropriate level to ensure maximum impact.

Methods: The University Hospital of South Manchester weekly email bulletin was used to invite prescribers to complete an on-line antibiotic quiz at surveymonkey.com over a two week period (25th February to 11th March 2015). Answers from non-prescribers and uncompleted quizzes were excluded (n=15).

Results: 49 prescribers completed the quiz and their answers were included in the analyses. Of these, 22/49 (45%) were consultants, the majority work in medical specialities. When asked about MSSA bacteraemia, 18/49 (37%) would use IV flucloxacillin, 22/49 (45%) chose IV vancomycin, 3/49 (0.06%) did not know, 2/49 (0.04%) chose IV teicoplanin a further 2/49 (0.04%) chose oral flucloxacillin and one respondent (0.02%) chose oral vancomycin. When asked about yeasts in blood cultures, 11/49 (22%) responded it was likely a contaminant, 3/49 (0.06%) did not know, 12/49 (25%) correctly opted to start micafungin, while the remaining 23 (47%) chose fluconazole. In severe community acquired pneumonia, 4/49 (0.08%) opted to start antipseudomonal agents such as pipericillin/tazobactam or meropenem. In aspiration pneumonia, 19/49 (39%) would unnecessarily give metronidazole in conjunction with coamoxiclav or pipericillin/tazobactam. Only 9/49 (18%) knew that daptomycin could not be used for pulmonary infection and 8/49 (16%) correctly identified that metronidazole, ciprofloxacin, isoniazid, chloramphenicol and nitrofurantoin can all cause peripheral neuropathy. 43/49 (88%) agreed that they would like more or ongoing antibiotic and infection education.

Conclusion: The level of antibiotic and infection

knowledge was disappointing, although prescribers recognised the need for further infection education. Future education initiatives will target the identified areas of knowledge deficit.

P48
Decreased NK cell expression of CD57 in chronic high viral load carriers of EBV infection in post renal transplant patients

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Background: Epstein-Barr Virus (EBV) infection may result in complications following solid organ transplant. Some recipients remain asymptomatic despite maintaining chronic high EBV viral loads (CHL). However, these individuals are at increased risk of development of post-transplant lymphoproliferative disease. Factors which determine the CHL state remain poorly understood but are likely to involve immunological control of the viral infection. We hypothesised that NK cells contribute to the immune response to EBV infection through the KIR3DL2 receptor as KIR3DL2 has been shown to bind EBV peptide presented by HLA-A*03 and HLA-A*11 molecules.

Methods: Assays were carried out to test for differential binding of peptide:HLA-A*03 complexes to allelic variants of the KIR3DL2 receptor. Fourteen renal transplant recipients (all HLA-A*03+ and/or HLA-A*11+) were studied: 10 patients who resolved EBV infection (undetectable EBV DNA, REI) and 4 CHL patients. Flow cytometric analysis was performed to study the expression of NK cell receptors, including KIR3DL2, and CD57, a maturation marker.

Results: Tetramer assays identified differential binding of a HLA-A*03 restricted EBV peptide to Baf/3 cell lines expressing allelic variants of the KIR3DL2 receptor. The overall percentage of NK cells was similar in resolvers of EBV infection and the CHL group. The average frequency of NK cell expression of the KIR3DL2 receptor was also similar in both patient cohorts (21.6±12.8% and 19.2±9.4% KIR3DL2$^+$ NK cells respectively). In contrast, the frequency of NK cell expression of CD57 was significantly decreased in chronically infected patients in comparison with those who resolved infection (44.6±14.7% and 65.7±14.2% CD57$^+$ NK cells respectively ($p=0.03$).

Conclusions: These findings suggest that a subset of CD57$^+$ NK cells may play a role in the protective immune response to EBV infection while the tetramer studies suggest that KIR3DL2 polymorphism may impact EBV outcome, a finding that should be further investigated in a larger patient cohort.

P49
HSV 1 encephalitis – not so simple(x). A case series.

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Anti NMDA Receptor antibody encephalitis complicating HSV 1 encephalitis – a case series

Background: Anti-N-methyl-D-aspartate receptor (NMDAR) encephalitis is a new phenomenon complicating HSV encephalitis (HSE) that remains under-recognised. Although many features are common to both; dyskinesias including oro-lingual-facial, hemiballismus, choreoathethosis and autonomic dysfunction should prompt consideration of NMDAR encephalitis. We outline three cases describing this entity.
Case 1: 16 month old with proven HSE treated with high-dose acyclovir (HD-ACV) and leviteracetam for seizures developed status epilepticus on D12. Suspecting progression of HSE, IV HD-ACV was increased with escalation of anti-seizure medications partially controlling her seizures. Marked irritability, hemiballismus and profound encephalopathy subsequently evolved with anti-NMDAR antibodies detected in CSF. She failed to improve with intravenous immunoglobulin (IVIG), high-dose steroids and plasmapheresis; ultimately responding to rituximab.
Case 2: 4 ½ month old receiving HD-ACV for proven HSE began lip-smacking on D10. Prednisolone was commenced but weaned when repeat CSF for HSV-PCR and anti-NMDAR antibody was negative. On D31 he developed seizures, hemiballismus and oro-motor dyskinesia with anti-NMDAR antibodies detected in CSF. Administration of IVIG and prednisolone resulted in resolution of hyperkinesia and improved oro-motor coordination.
Case 3: 15 month old completed 21 days HD-ACV for proven HSE. Discharged home on Valaciclovir, she represented on D24 with severe agitation, dyskinesia and oro-motor dysfunction. IV ACV, IV methylprednisolone and IVIG were commenced for presumed NMDAR encephalitis and CSF confirmed this. Despite high-dose steroids, IVIG and plasmapheresis her choreoathetosis worsened with associated autonomic instability. Slow improvement has been observed after initial dose of Rituximab.

Conclusion: Three cases over 6 months demonstrated the frequency that anti-NMDAR encephalitis can complicate HSE and how high index of suspicion can lead to early recognition and treatment.

P50
An Antimicrobial Point Prevalence Audit at Rotunda Hospital

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Background: Clinical microbiology guidelines are available for guidance in prescribing antimicrobials at the Rotunda Hospital. Our objective was to audit the prescribing of antimicrobials and to assess compliance with guidelines.

Methods: Patient charts were reviewed on 5.12.14. Inpatient adults and neonatal ICU patients were included. In addition to patient characteristics, data was collected on choice, dosage, route and duration of antimicrobials. Suitability for oral switch, indication and adherence to guidelines was also recorded. Data was analyzed using SPSS v17.

Results: 134 patients were included in the study comprising 96 adults and 38 babies. 11.4% of admitted adults (n=11) and 13.1 % of babies (n=5) were receiving prescribed antimicrobials on that day. 45.5% (n=5) of adults and 20% (n=1) of babies had no indication documented in notes. 72.7% (n=8) of adults and 100% babies (n=5) were on (I/V) intravenous antimicrobials. 100% (n=16) patients had correct antimicrobial dosage charted. Appropriate microbiological specimens were collected in 81.3% (n=13) patients.43.8 % (n=7) patients had planned duration/ renewal date documented in the notes/Kardex. Amongst those receiving I/V antimicrobials 50% adults (n=4) and none (n=5) of the babies were suitable for oral switch. 75% (n=12) of the prescribed antimicrobials were chosen according to hospital guidelines. 87.5% antimicrobials (n=14) were prescribed without involvement of the microbiology or infectious disease consultation service. No patients (n=16) on antimicrobials had Clostridium difficile associated diarrhea.

Conclusion: A low percentage of patients were on antimicrobials and there was good adherence with guidelines regarding recommended choice of antimicrobials. Appropriate microbiological specimens were collected in the majority of patients. Antimicrobial indication was not documented in a large fraction of adult patients. Documentation of anticipated duration of therapy in patient charts was low. Continuous cycle of re-audit is required to ensure guidelines are followed and deficiencies addressed.

References: 1.Cafferkey M, Corcoran S. Clinical Microbiology Guidelines-The Rotunda Hospital Dublin; 2012

Pharmacology & Therapeutics
P51
Antimicrobial Stewardship Intervention to Reduce Meropenem Use; Feasability and Outcomes.

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Background: Meropenem use in Galway University Hospital has doubled in the past 7 years. Prior review revealed empiric initiation of meropenem was appropriate in most cases when audited using current sepsis and antimicrobial guidelines, however, treatment was continued for a mean duration of 19 days. Based on this, an antimicrobial stewardship intervention to facilitate the appropriate de-escalation of meropenem therapy was undertaken.

Methods: A guideline for meropenem de-escalation was agreed by the antibiotic stewardship team (AST). Patients on meropenem assessed to be suitable for de-escalation were; 1. Those with a current diagnosis of infection with an identified organism for which there was an appropriate alternative antibiotic or 2. Those with a current diagnosis of infection with no causative organism identified and no organism isolated from any specimen in the previous 12 months for which meropenem therapy is specifically indicated. Patients on meropenem were referred to the AST. Medical, drug records, laboratory and radiology results were reviewed after the patient had received > 72 hours of Meropenem. A written recommendation to stop, de-escalate or continue meropenem was recorded in the medical notes. Response to the recommendation was recorded at 48 hours.

Results: From 17th November to 12th December 2014, 33 patients on meropenem were identified and reviewed. Advice from microbiology or infectious disease services supporting initial meropenem use was documented in 26/33 (79%). Empiric commencement in 19/33 (58%) patients and culture directed (based on culture results from the previous 12 months) in 14(42%). Recommendation by the review team to de-escalate according to the guideline was made for 18/33 (55%) patients. The advice was followed for 12/18 (66%) patients, representing 36% of all patients on meropenem. The mean duration of therapy was 7 days (range 3-19) when de-escalation was performed versus 18 days (range 6-84) when meropenem was continued. De-escalation was recommended in 16/19 (84%) patients where initial meropenem use was empiric compared to 2/14 (14%) patients where initial therapy was culture directed. ($P < 0.05$ Fischers exact). There were five deaths (24%) in those continued on meropenem compared to four deaths (33%) in those de-escalated, none of which were infection related. ($p > 0.05$)

Conclusions: Meropenem de-escalation following locally agreed criteria is an effective and safe intervention and reduces unnecessary meropenem use. However, realising the time commitment required to sustain this, these results suggest that focusing meropenem de-escalation to those patients with no current or prior cultures that mandate meropenem would have a similar impact.

P52
Perioperative Antibiotic Use in Plastic Surgery in Cork University Hospital

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Background: Surgical antibiotic prophylaxis (SAP) can decrease surgical site infection which may be of particular importance in plastic surgery, with fine function and cosmetic outcome a primary concern. Clinical scenario, timing of administration, choice of agent and duration of treatment are important parameters to consider. Avoidance of excessive administration of antibiotics is important to reduce the risk of adverse drug reactions and antimicrobial resistance, and save unnecessary cost. This study was undertaken as part of aSAP guideline review process for plastic surgery in this institution.

Methods: During January of 2015, a total of 32 consecutive patients undergoing elective and emergency procedures under the care of the Plastic Surgery Team in Theatre 9 were enrolled in the study. Data collected included procedure performed, infection or indication documented, antibiotic prescribed including dose, route of administration and duration of therapy (pre, intra and post operatively). Culture results were documented. Data was collected using iPad hardware with numbers software and analysed using excel.

Results: The procedures performed were either scheduled or unscheduled and ranged from repair of facial lacerations to excisions of malignancies with skin grafts fashioned. 22 of the 32 subjects received antibiotic therapy (69%). Based on the clinical information provided in 16 (72%) of the cases the indication was deemed to be prophylaxis while in the remaining cases they were thought to be therapeutic (28%). Of the former group eight (50%) received at least 24 hours of antibiotics prior to incision and 13 received follow up antibiotics on discharge (81%). Culture results were also documented.

Conclusion: The indication for prescribing antibiotics post operatively must be more clearly defined. The timing of administration of antibiotic prophylaxis demonstrates considerable variation. There appears to be no consensus in practice on the duration of antibiotic therapy when used as a form of prophylaxis. The goal of this study will be to drive discussion between surgeons and infection management specialists to allow consensus to be achieved and a standardized management practice to emerge.

P53
The Cost-Effectiveness of Treatment for Hepatitis C Genotype 1 in Ireland: A Multi-Technology Assessment C Walsh

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Introduction: Hepatitis C (HCV) treatment is likely to have a high budget impact in the coming decade. With the introduction of 1st generation HCV protease inhibitor (PI) based therapy, a cost-utility analysis of HCV treatment was undertaken to establish whether it is cost-effective to treat HCV in Ireland and if so, which treatment regimen is the most cost-effective.

Methods: A hybrid Decision tree-Markov model was constructed in TreeAge. Deterministic and probabilistic analysis was undertaken and a fully incremental analysis was performed considering three different populations: (1) basecase -20% cirrhotic patients, 80% non-cirrhotic patients, (2) 100% non-cirrhotic (3) 100% cirrhosis. Four strategies were considered: (1) No Treatment (NT), (2) treatment with Peg+RBV, (3) treatment with boceprevir + PEG+RBV (BOC), (4) treatment with telaprevir + Peg+RBV (TEL). Results are presented as probabilistic incremental cost-effectiveness ratios (ICERs).

Results: In the basecase population, the ICER for Peg+RBV versus NT was €23,383, for BOC versus Peg+RBV was €34,210 and for TEL versus BOC was €135,482. In population 2 the ICER for Peg+RBV versus NT was €24,820, for BOC versus Peg+RBV was €21,559 and for TEL versus BOC was €167,729. In population 3 the ICER for Peg+RBV versus NT was €14,418 and for TEL versus Peg+RBV was €41,802. BOC was dominated by TEL in this population.

Conclusion Given the current willingness-to-pay threshold of €45,000/Quality-Adjusted Life Year, treatment of HCV in Ireland with Peg+RBV is a cost-effective option. Treatment with either PI-based therapy is cost-effective when compared to Peg+RBV. The most cost-effective PI-based regimen depends on the population under consideration. In the basecase scenario, BOC is the most cost-effective option and it is also preferred in a population with mild to moderate HCV. TEL is preferred in a population with cirrhosis.

P54
Development of a regional medication chart for use with adult patients in an acute setting with separate antimicrobial section

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Background: In 2014 a regional group was established to consolidate the design and specification of a medicines kardex for adult in-patients across the five Trusts. The prescribing guidance for antimicrobials requires a measured thought process which is different from the regular medication. The group invited representatives from the region's antimicrobial stewardship team to critique the evidence and gather expert opinion on introducing a separate antimicrobial section.

Method: Two antimicrobial pharmacists led a sub-group with trust-wide Microbiology & Infectious Diseases medical teams, pharmacists and Infection Prevention & Control teams to design a separate antimicrobial section. This section is tailored to specifically safeguard the use of antimicrobial agents by leading the prescriber through the decision process of starting an antimicrobial The prescriber must endorse the prescription with indication, asking," What Infection Are You Treating?" The Chart prompts for cultures, this will promote cultures before initiating antimicrobial therapy and remind that results are sought and acted upon. The medication chart incorporated an antimicrobial review at the point of prescribing and at 48/72 hour review. There is additional space allocated for "special instructions" and "monitoring information". The design was agreed and the consultation process was disseminated across the region for feedback

Results & Conclusions: The Regional group completed the consultation in the trusts, including a focus on the antimicrobial section. There were 305 responses from the consultation process; the majority of responses were from doctor, (47%), pharmacists (27%) and nurses (27%). The six questions with responses demonstrated overarching support for the inclusion of a separate antimicrobial section, 76% supportive. The overall response was 70% supportive of the inclusion and design of the antimicrobial section. The Regional Group accepted the results from the consultation process. The draft design with separate antimicrobial section was accepted. The roll out of the regional kardex is Spring 2015.

P55
An Audit of Antibacterial Prophylaxis used in Surgery at Cork University Hospital

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Background: Surgical- site infections (SSIs) are the most common nosocomial infections among surgical patients. They contribute significantly to morbidity and mortality. Surgical antibiotic prophylaxis (SAP) can decrease the incidence of SSIs. The objective of this project was to assess patients receiving SAP in terms of the antibiotics used, doses and duration of treatment, and in doing so to qualify and quantify the antibiotics used. This information is used to monitor compliance with published guidelines. The objective is to identify any areas for improvement in order to enhance overall patient care.

Method: An audit of all surgical procedures carried out in the ten operation theatres at Cork University Hospital (CUH) was conducted over a period of two weeks in January 2015. Ophthalmic, gynaecological and plastics trauma procedures were excluded. Patients receiving perioperative antibiotics were followed up until SAP was discontinued or the patient was discharged. The data was collected using the Numbers app on an iPAD, analysed using Microsoft Excel and assessed for appropriateness using local and international guidelines.

Results: Of the 286 patients who were followed up post surgery, 208 (73%) received perioperative antibiotics. The mean age of patients was 48 years with an equal ratio of males to females (144:142). Cefuroxime (40%) was the antibiotic most commonly prescribed followed by co- amoxiclav (36%), as per guidelines. It was found that 62% of SAP was single dose, 24% was for 24 hours and 14% was for longer than 24 hours. Inappropriate prescribing was documented for 53 patients (18%). This includes 3 patients colonised with MRSA that did not receive vancomycin as per guideline. SAP for penicillin allergic patients was erythromycin or ciprofloxacin where vancomycin plus or minus gentamicin would be recommended in the guidelines. In 10 cases SAP was given post-incision. A second dose of co-amoxiclav was not given in 2 cases where surgery exceeded 4 hours. Low dose gentamicin (3mg/kg) for urological procedures was another issue identified. One mastectomy case had no SAP documented where the guidelines would recommend SAP.

Conclusion: The majority of SAP complied with guidelines (80%). The main areas for improvement are:

choice of antibiotic, particularly in those with a penicillin allergy and for patients colonised with MRSA; duration of surgical prophylaxis; dose of gentamicin and time interval between drug administration and incision. Feedback of the audit results to surgeons and anaesthetists and a quality improvement plan will be developed.

P56
Renal and Bone Safety of Tenofovir Alafenamide vs Tenofovir Disoproxil Fumarate

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Background: Off-target renal and bone side effects may occur with tenofovir disoproxil fumarate (TDF) use. Compared with TDF, tenofovir alafenamide (TAF) results in significantly reduced plasma tenofovir (TFV) and may have less renal and bone toxicity.

Methods: Treatment naïve HIV-1+ adults were randomized 1:1 to a single tablet regimen of E/C/F/TAF or E/C/F/TDF once daily in two double blind studies. Assessments for all subjects included measures of glomerular and proximal renal tubular function, and bone mineral density (BMD). Four pre-specified secondary safety endpoints were tested: serum creatinine, treatment-emergent proteinuria, spine and hip BMD. Week 48 off-target side effects data are described.

Results: 1,733 subjects were randomized and treated. Plasma TFV was >90% lower (mean AUC_{tau} 297 vs. 3,410 ng·hr/mL) in the E/C/F/TAF arm, compared to the E/C/F/TDF arm. Serum creatinine (mean change: +0.08 vs +0.11 mg/dL, p<0.001), quantified proteinuria (UPCR, median % change; -3 vs +20, p<0.001), and fractional excretion of phosphate (median % change; +0.9 vs +1.7), all favored E/C/F/TAF. There were no cases of proximal tubulopathy in either arm. Mean % decrease in BMD was significantly less in the E/C/F/TAF arm for both lumbar spine (-1.30 vs -2.86, p<0.001) and total hip (-0.66 vs -2.95, p<0.001).

Conclusions: Through 48 weeks, subjects receiving E/C/F/TAF had significantly better outcomes related to renal and bone health than those treated with E/C/F/TDF;. These data demonstrate important safety benefits of TAF relative to TDF, especially given the aging of the HIV population and the need for long-term treatment.

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