IDSI Infectious Diseases Society of Ireland

9th Annual Scientific Meeting
Time to Focus on the *Negatives*

Thurs. 12th – Sat. 14th May 2016

Ash & Cusack Suites, Croke Park Conference Centre, Dublin

PROGRAMME & BOOK of ABSTRACTS

UCD DUBLIN

Misericordia

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 9th Annual Scientific Meeting, with a theme of '*Time to Focus on the Negatives!*'

This year, the IDSI ASM brings together a distinguished panel of international speakers who have been at the forefront of important advances in Infectious Diseases, including HIV prevention, management of Tuberculosis, antimicrobial resistance and management of viral hepatitis. Our focus on the 'Negatives' reflects new and diverse challenges facing the practice of Infectious Diseases, from the need to engage with HIV negative populations in implementing HIV prevention strategies to the alarming rise in resistance in Gram negative organisms.

In addition to our distinguished invited speakers, the 9th Annual Scientific Meeting is also an opportunity for our active research community to showcase the quality, diversity and volume of research ongoing in the field of Infectious Diseases in Ireland. This year we have seen an unprecedented number of abstracts submitted, reflecting the growth of our specialty and the Society in the nine years since its foundation.

In this very special year, we are privileged to be returning to the fantastic facilities at Croke Park and hope that items introduced for the first time into the agenda, including the new Saturday morning debate, will prove both educational and popular. The meeting has been accredited for 13 CPD credits by the Royal College of Physicians in Ireland, and promises to be rich in content and education.

I would like to take this opportunity to once again thank our corporate sponsors for their very generous ongoing support of the IDSI Annual Scientific Meeting .

We hope that you enjoy the meeting and all that Dublin has to offer in this centenary year.

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

Professor Mary Horgan, Cork University Hospital/University College Cork

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

Dr. Helen Tuite, University Hospital Galway

Biographies

Dr Damian Conway
MB BCh MMed PhD FAChSHM

Dr Damian Conway is a Sexual Health Physician and Conjoint Lecturer at The Kirby Institute, University of New South Wales, where he was awarded his PhD in 2015. He received his medical degree from Queen's University in Belfast, his Master of Medicine degree from the University of Sydney and is a Fellow of the Australasian Chapter of Sexual Health Medicine.
In 2011, he established and was principal investigator in the Sydney Rapid HIV Test Study which was the first clinical multi-site evaluation of point-of-care HIV testing in Australia. His research interests are the epidemiology, diagnosis and treatment of HIV and sexually transmitted infections; with a focus on the implementation and evaluation of novel approaches to testing in a range of clinical and community settings.

Dr Emma Devitt
MB BCh BAO BA MD DFSRH FRCPI

Dr. Devitt is a Consultant Physician at the Chelsea and Westminster Hospital NHS Foundation Trust in London, UK. She graduated from the University of Dublin, Trinity College in 2000. She completed her specialist training in Infectious Diseases and General Internal Medicine in Ireland in 2009. She was awarded her MD in Hepatitis C from University College Dublin.
She has been working at Chelsea and Westminster since 2009 where she has a specific interest in the medical complications of HIV and management of viral hepatitis. She does outpatient clinics at 56 Dean Street Clinic in Central London which is Europe's busiest Sexual Health clinic with large numbers of new HIV, Hepatitis C and bacterial STI diagnoses annually. Her outpatient work includes HIV and viral hepatitis management along with HIV prevention (PreP) and outreach clinics to high risk patients in the local community including Homeless individuals. Her inpatient work is on a dedicated 19 bed HIV and HIV Oncology ward at the Chelsea and Westminster Hospital.

Dr. Fidelma Fitzpatrick

Dr Fitzpatrick is a Senior Lecturer at the Royal College of Surgeons in Ireland and a Consultant Microbiologist at Beaumont Hospital, Dublin. As the first National clinical lead for the prevention of healthcare-associated infection (HCAI) and antimicrobial resistance (AMR) from 2010-2014, she established the national clinical programme and oversaw the transition of governance of the functions of the SARI (Strategy for the Control of Antimicrobial Resistance in Ireland) national committee to the Royal College of Physicians of Ireland (RCPI) and the HSE. As clinical lead Dr. Fitzpatrick coordinated the national HCAI and AMR workplan, led the national public information campaign on antibiotics, in conjunction with the ICGP AMR lead and oversaw the establishment of the National AMR Intersectoral Coordinating Committee.
Dr. Fitzpatrick is the Chair of the National Sepsis Governance Committee and the National C. difficile guidelines committee and is also a member of the national clinical advisory group of the HCAI and AMR clinical programme

Professor David Livermore

David Livermore gained his BSc in 1978 and his PhD in 1983. He worked at the London Hospital Medical College from 1980 until 1997 when he joined the Health Protection Agency (now Public Health England), becoming Director of its Antibiotic Resistance Monitoring and Reference Laboratory in 1998.
In October 2011 he became Professor of Medical Microbiology at the University of East Anglia but with 30% of this time supplied back to Public Health England as its Lead on Antibiotic Resistance. He has broad interests on the evolution and dissemination of antibiotic resistance and its relationship to antibiotic prescribing.
Prof Livermore sits on the British Society for Antimicrobial Chemotherapy's working parties on resistance surveillance, multi-resistant pathogens and susceptibility testing and its Antibiotic Action advisory board and is a member of the UK Government's Antimicrobial Resistance & Healthcare Infections Advisory Committee. He publishes and speaks widely on resistance and has edited for several journals including Journal of Antimicrobial Chemotherapy, Journal of Medical Microbiology and, currently, International Journal of Antimicrobial Agents.

Sanjay Pujari
MD

Dr. Pujari obtained his M.B.B.S. and M.D. (internal Medicine) at B.J. Medical College, Pune, India.
He is presently Director and Chief Consultant, Institute of Infectious Diseases, Pune
He is Consultant in HIV Medicine and Infectious Diseases at Poona Hospital Research Centre and is Principal Investigator for Therapeutics, Research, Education in AIDS Treatment (TREATAsia), Pune site and the Strategic Timing of Antiretroviral treatment (START) study, Pune site.

Dr. Pujari is a Founder and Board Member of the HIV Medicine Association of India and was a Temporary Consultant to World Health Organization, 2001. He has presented and published numerous papers, nationally and internationally (49 pubmed indexed)
He has attended more than 1000 meetings including: the European AIDS Clinical Society Advanced Course (2014), American College of Physicians, India Conference (2014), Advanced Course in HIV Medicine with Royal Free hospital, London (2011,2012).

His Awards include the Oration Award from the Association of Physicians of India, Kolhapur branch, in 2014; the Prataprao Pawar Award for work in HIV, Nashik 2012; the Pune Ki Aasha, 2002; the Shankarao Kirolaskar award for community service in AIDS, 2001 and the Rotary club of Poona Downtown, Vocational excellence award, 2001.

IDSI Annual Scientific Meeting
12th-14th May 2016

Time to Focus on the *NEGATIVES*

Thursday 12 May 2016

16.00 **Registration**

17.00 – 17.30 **Tea/Coffee, Poster Viewing, Exhibition**

17.30 – 17.50 Sponsor's State of the Art Presentation in Medical Education

Boosting of Antiretrovirals/CYP 3A4 Inhibition: Role in ART Today

Prof. Harold Kessler, Professor of Medicine and Immunology/Microbiology, Rush University Medical Center, Chicago, Head, Scientific Communications, Global Medical Sciences, ViiV Healthcare

17.50 – 18.30 Keynote Speaker

HIV and Mycobacterial Tuberculosis: Deadly Synergy

Dr. Sanjay Pujari, Director and Chief Consultant, Institute of Infectious Diseases, Pune, India

18.30 – 20.00 **SpR Clinical Case Presentations**

Co-Chairs: Prof. Mary Horgan, Cork University Hospital/UCC
Dr. David Gallagher, University Hospital, Galway

Blindsided
Dr. Zakaria Al Balushi, Cork University Hospital

Back to the Bible
Dr. Niamh Allen, Galway University Hospital

The TIPS of the Iceberg
Dr. Caitriona Doyle, St. Vincent's University Hospital

The Patient Clinician Catches the Worm
Dr. Colm Kerr, St. Luke's Hospital, Kilkenny

The wily ways of a Natural Killer... sepsis or mimic?
Dr. Deirdre Morley, Mater Misericordiae University Hospital

A Curious Case of Yellow Belly
Dr. James Woo, Mater Misericordiae University Hospital

Friday 13 May 2016

08.00 Registration

08.30 - 09.30 Sponsored Symposium

Ageing with HIV, Co-morbidities and associated DDIs

Prof. Esteban Martinez Chamorro, Consultant & Associate Professor of Medicine, Infectious Diseases Unit Hospital Clinic – IDIBAPS University of Barcelona

09.30 – 09.35 Annual Scientific Meeting Opening – **Dr. Patrick Mallon, President, Infectious Diseases Society of Ireland**

09.35 – 10.15 Keynote Speaker

Gram-negatives – a hydra of resistance

Prof. David Livermore, Professor of Medical Microbiology, University of East Anglia; Lead on Antibiotic Resistance, Public Health England

10.15 – 11.00 Clinical Abstract Oral Presentations

Co-Chairs: Dr. Catherine Fleming, University Hospital Galway
Dr. Cliona Ni Cheallaigh, St. James's Hospital

10.15 – 10.30 **Diversity among Antimicrobial Resistant Escherichia coli Isolated from Irish Retail Meats Revealed through Whole Genome Sequence Analysis**

C. Brehony[1], B. Mahon[1], M. Cormican, R.H. Madden[2], C. Kelly[2], L. Moran[2], S. Kavanagh[1], C. Carroll[3], J. Bray, K. A. Jolley[4], M. C. J. Maiden[4], and D. Morris[1]

1. Antimicrobial Resistance and Microbial Ecology Group, School of Medicine, National University of Ireland, Galway
2. Food Science Branch, Agri-Food & Biosciences Institute, Belfast
3. Discipline of Microbiology, School of Natural Sciences, National University of Ireland, Galway
4. Dept. of Zoology, University of Oxford

10.30 – 10.45 **Review of Spinal Infections Presenting to a Tertiary referral Hospital in Ireland 2005-2015**

Z Al Balushi, A Doherty, M Horgan
Cork University Hospital

10.45 – 11.00 **Spread of mupirocin-resistant meticillin-resistant Staphylococcus aureus (MR-MRSA) and high dependency: lessons to be learned**

P. Garvey[1,5], M Skally[2], H Humphreys[2,4], K O'Connell[1,2], K Burns[1,2], F Fitzpatrick[2,4], M Fitzpatrick[2], S Donlon[3], F Duffy[3], T P Devassy[3], C Finn[3], H Good[3] B O'Connell[6], G. Brennan[6] and E Smyth[2,4]

1. Health Service Executive - Health Protection Surveillance Centre (HPSC), Dublin
2. Department of Clinical Microbiology, Beaumont Hospital Dublin
3. Department of Infection Prevention and Control, Beaumont Hospital, Dublin
4. Department of Clinical Microbiology, The Royal College of Surgeons in Ireland
5. European Programme for Intervention Epidemiology Training (EPIET), European Centre for Disease Prevention and Control (ECDC), Stockholm, Sweden
6. National MRSA Reference Laboratory, St James's Hospital, Dublin

11.00 – 11.15 Coffee/Tea, Poster Viewing, Exhibition

11.15 - 12.00 Keynote Speaker:

Antibiotic Resistance in Ireland – can we turn green?

Dr. Fidelma Fitzpatrick, Senior Lecturer, Royal College of Surgeons in Ireland/ Consultant Microbiologist, Beaumont Hospital, Dublin

12.00 – 12.45 Clinical Abstract Oral Presentations

Co-Chairs: Dr. Susie Clarke, St. James's Hospital
Dr. Aoife Cotter, Mater Misericordiae University Hospital

12.00 – 12.15 **Beyond the Surface: Seroprevalence and prevalence of high-risk human papillomavirus (HPV) infection at multiple sites in young HIV-positive men who have sex with men**
C Sadlier, P Smyth, S O'Dea, S Delamere, N Meyers, G Blackshields, O Sheils, C Bergin
St. James's Hospital, Dublin and Trinity College, Dublin

12.15 – 12.30 **Geomapping HIV Outcomes**
A O'Rourke, C Soraghan, G Boyle, D Robinson, C Bergin, C Ni Cheallaigh
St James's Hospital, Dublin and Trinity College, Dublin

12.30 – 12.45 **Influenza in the Critically Ill**
J Scott, D Morley, J O'Flynn, P Stapleton, M Lynch, C O'Loughlin, B Marsh, E Carton, D Phelan
Mater Misericordiae University Hospital

12.45 – 13.15 Lunch, Poster Viewing, Exhibition

13.15 – 14.15 Sponsored Symposium:

Important Considerations when treating HIV & HCV

Chair: Prof. Colm Bergin, Consultant in Infectious Diseases
St. James's Hospital/Trinity College Dublin

Kidney Issues in PLWHIV – Prof. Bruce Hendry, Consultant Nephrologist, King's College London

Hepatitis C Treatment: Do we need to worry about resistance? - Prof. Anna-Maria Geretti, Consultant in Infectious Diseases, University of Liverpool

14.15 – 15.00 Keynote Speaker

HIV Testing and Prevention Interventions in New South Wales

Dr Damian Conway, Sexual Health Physician and Conjoint Lecturer, The Kirby Institute, University of New South Wales

15.00 – 15.45 Clinical Abstract Oral Presentations

Co-Chairs: Dr. Arthur Jackson, Cork University Hospital/Mercy University Hospital
Dr. Gerard Sheehan, Mater Misericordiae University Hospital

15.00 – 15.15 **Acute Medical Assessment Unit Blood Borne Viral Screening Study: high rates of patient and staff acceptability and interim results**
Allen N.,[1] Faherty C.,[2] O'Regan J.,[3] Davies A.,[3] Lyons A.,[1,4] Scarry M.,[1,4] Bohan-Keane M.,[4] Boyle N.,[1] O'Connell S.,[5] Bergin C.,[5] Lee J.,[4] Keady D.,[2] Mc Carthy E.,[2] Cormican M.,[2] Fleming C.,[1] Gallagher D.,[3] Tuite H.[1]

1. Dept. of Infectious Diseases, Galway University Hospital, Saolta Hospital group, Galway.
2. Dept. of Virology and Microbiology, Galway University Hospital, Saolta Hospital group, Galway.
3. Acute Medical Assessment Unit, Galway University Hospital, Saolta Hospital group, Galway
4. Dept. of Hepatology, Galway University Hospital, Saolta Hospital group, Galway
5. Dept. of Genito-Urinary and Infectious Disease, St James's Hospital, Dublin

15.15 – 15.30 **Renal Safety of Tenofovir Alafenamide in Patients at High Risk of Kidney Disease**
D. Wohl, A. Thalme, S. Oka, M. Das, S. Antonucci, M. Fordyce

15.30 – 15.45 **Assessment of associations between markers of renal function and bone mineral density in HIV-positive and HIV-negative subjects**
E. Alvarez, A.M. Barry, A.G. Cotter, C. Sabin, A. Macken, J.J. Brady, E. Kavanagh, G. McCarthy, J. Compston, P.W.G. Mallon
'Understanding the Pathology of Bone Disease in HIV Infected Subjects' (HIV UPBEAT) Study Group

15.45 – 16.00 Tea/Coffee, Poster Viewing, Exhibition

16.00 – 16.30 Clinical Abstract Oral Presentations

Co-Chairs: Dr. Jennifer Kieran, St. James's Hospital
Dr. Justin Low, Our Lady of Lourdes Hospital, Drogheda

16.00 – 16.15 **Trabecular Bone Score: the Impact of HIV and other factors on bone Microarchitecture**
T. McGinty[1], A. Cotter[1], C. Sabin[2], Alan Macken[1], E. Kavanagh[3], G. Sheehan[3], J. Lambert[3], P. Mallon[1]
1. University College Dublin
2. Department of Infection & Population Health, UCL
3. Mater Misericordiae University Hospital

16.15 – 16.30 **Greater adipose tissue mitochondrial toxicity with initiation of AZT/NNRTI based antiretroviral therapy in comparison to AZT/PI**
Maughan RT, E Alvarez, Kelleher A, Cooper DA, Carr A, Mallon PWG
Catherine McAuley Centre, Mater Misericordiae University Hospital

16.30 – 17.30 Sponsored Symposium

EASL Highlights: Hepatitis C
Dr. Eoin Feeney, St. Vincent's University Hospital, University College Dublin

Saturday 14 May 2016

09.30 – 10.10 Keynote Speaker

Sex, Drugs and MSM in Soho
Dr. Emma Devitt, Consultant Physician, Chelsea and Westminster Hospital NHS Foundation Trust, London

10.10– 11.10 Clinical Abstract Oral Presentations

Co-Chairs: Dr. Paddy Mallon, Mater Misericordiae University Hospital/UCD
Prof. Samuel McConkey, Royal College of Surgeons in Ireland

10.10 – 10.25 **Estimated current burden of ambulatory HIV care in Ireland**
A Brennan[1], C Bergin[2], J P Browne[1], M Horgan[3]
1.Department of Epidemiology and Public Health, University College Cork
2. St. James's Hospital, Dublin
3. Cork University Hospital and University College Cork

10.25 – 10.40 **Late HIV Presentation - Factors associated with a Changing Pattern over Time**
S O'Connell[1], J Enkelmann[1], C Sadlier[1], C Bergin[1,2]
1.Department of Genito-Urinary Medicine and Infectious Diseases, St James's Hospital. Dublin 2. Department of Medicine, Trinity College Dublin

10.40 – 10.55 **The Prevalence, Drivers and Outcomes of Switches in Highly Active Antiretroviral Therapy in HIV Positive Patients Attending Outpatient Clinics at St James's Hospital, Dublin**
G Hughes, C Bergin, S Kelly, T Barbosa
St. James's Hospital, Dublin

10.55 – 11.10 **Community based testing of HCV by point of care OraQuick® HCV saliva test in homeless populations**
Cliona Ni Cheallaigh[2], John S. Lambert [1,2], Carol Murphy [2,3], Austin O'Carroll[3,4], Jeremy Farrell [2], Anjali Patel [2], Gordana Avramovic [2], Geoff McCombe [1,2], Walter Cullen[1,2]
1. UCD School of Medicine;
2. Centre for Infectious Diseases Research, Catherine McAuley Centre, Mater Misericordiae University Hospital; 3. SafetyNet Ireland,
4. Mountjoy Medical Practice, Dublin

11.10 – 11.30 **Tea/Coffee, Poster Viewing, Exhibition**

11.30 – 12.30 Sponsored Symposium

Prioritization and Treatment Considerations in HIV/HCV coinfected Patients

Chair: Prof. Colm Bergin, St. James's Hospital/TCD

Speakers: Dr Sanjay Bhagani – Royal Free Hospital London
Dr Steve Ryder – University Hospital Nottingham

Update on drug-drug interaction considerations in HIV/HCV
Prof. David Back, University of Liverpool

12.30 – 13.30 **HEPATITIS C SESSION**

12.30 – 12.45 **ICORN Update**
Prof. Colm Bergin, St. James's Hospital and Trinity College Dublin

12.45 – 13.30 **Debate: Should HepC Treatment Move into the Community?**

Chair: Dr. Patrick Mallon, Mater Misericordiae University Hospital
Speakers: Dr. Steve Stewart, Dr. Des Crowley
Questions & Answers

13.30 – 13.35 **Close of Meeting: Dr. Eoin Feeney, Secretary, Infectious Diseases Society of Ireland**

ORAL ABSTRACTS

O1. Diversity among Antimicrobial Resistant *Escherichia coli* Isolated from Irish Retail Meats Revealed through Whole Genome Sequence Analysis

C. Brehony[1], B. Mahon[1], M. Cormican, R.H. Madden[2], C. Kelly[2], L. Moran[2], S. Kavanagh[1], C. Carroll[3], J. Bray, K. A. Jolley[4], M. C. J. Maiden[4], and D. Morris[1]
1. Antimicrobial Resistance and Microbial Ecology Group, School of Medicine, National University of Ireland, Galway 2. Food Science Branch, Agri-Food & Biosciences Institute, Belfast 3. Discipline of Microbiology, School of Natural Sciences, National University of Ireland, Galway 4. Dept. of Zoology, University of Oxford

Background: The appropriate and inappropriate use of antimicrobial agents in human and veterinary medicine, and agriculture, for several decades has resulted in the emergence and dissemination of antimicrobial resistant bacteria. Such antimicrobial resistance is recognized globally as a major public health concern, and consequently this study examined the role of food in the dissemination of antimicrobial resistant bacteria.

Methods: A total of 602 raw meat samples were purchased from retail outlets throughout the island of Ireland between November 2013 and September 2014. All samples were tested for antimicrobial resistant *E. coli* (AREC) and 496 AREC isolates were obtained. All AREC isolates were characterized by a series of phenotypic and genotypic tests and based on these results 96 isolates were selected for whole genome sequencing. Isolate genomes were hosted in and analysis was performed using a local installation of BIGSdb. The O25b:H4-ST131 EC958 reference genome was used for whole genome pairwise comparisons amongst the genomes.

Results: In total, 54 isolates were extended spectrum beta lactamase (ESBL) producers. 33 of these had bla_{CTX-M}, 19 bla_{TEM}, 18 bla_{SHV}, and none had bla_{OXA}. There were 46 7 locus sequence types (STs) and 12 clonal complexes. There were 61 ribosomal sequence types (rSTs) with the most common, rST-1544, accounting for 15% of isolates. There was an association with this rST and source as 92.9% were from chicken samples (13/14). The majority of rSTs were diverse but there were some groupings and, the largest of which, rST-1544, consisted of two groups: ST162 (469 Cplx) and ST1431 (Unassigned). Overall, 4981 loci were compared for all genomes and the fewest differences (n=39) were found in 2 chicken meat isolates within the rST-1544 grouping. None of the rST-1544 group were ESBL producers.

Conclusions: AREC found in Irish retail meats were relatively diverse. Although bla_{CTX-M} predominated amongst ESBL *E. coli* other ESBL genes were also common. Interrogation of whole genome databases for emerging antimicrobial resistance determinants provided a rapid low cost approach to evaluate the extent of dissemination prior to recognition and will become a more powerful tool as databases expand.

O2 Review of Spinal Infections Presenting to a Tertiary Referral Hospital in Ireland 2005-2015

Z Al Balushi, A Doherty, M Horgan
Cork University Hospital

Background: Spinal infection is a challenging infection in terms of diagnosis and management. Presentation is usually insidious and typically presents with back pain involving the vertebrae, surrounding tissue and occasionally the neural space.
Study design: An 11 year (2005-2015) descriptive retrospective review of patients admitted to a tertiary referral center with a diagnosis of pyogenic spinal infections.
Objective: To describe the demographics, clinical presentation, risk factors, microbiology, investigations and management of spinal infections and their impact patient outcome.

Methods: A retrospective chart review, laboratory, radiological imaging and microbiological data of patients admitted with spinal infections were obtained following ethical approval. Data on 107 patients was entered into an Excel database analyzed using SPSS 20.0.

Results: The majority were male (N=73, 67%) and the mean age of patients was 60 years old. Back pain or neck pain (N= 95, 87 %) and fever (N=57, 53%) were the most common presenting features .The commonest risk factors associated with spinal infection was trauma/invasive procedures (28 %), preexisting joint disease (21%) and recent surgery < 6 months (19%). The majority (92%) had elevated CRP with WBC elevated in only 46%. Abnormal spinal MRI findings are present in 95% of the cases. No microorganisms could be identified in 45 patients (42%). MSSA (58%) and MRSA (14%) are the most common organisms found in this study. Most patients (N= 61, 55%) were managed conservatively while surgical interventions were required in the remainder. Introduction of OPAT services in 2013 decrease the length of hospital stay from 40 days to 15 days.

Discussion: This is a large series of spinal infection compared to those previously reported. Patients typically present with fever and back pain. Overreliance on white cell count should be avoided. MRI of the spine is the single best initial radiological investigation for diagnosis. The most common organism isolated in this study is *Staphylococcus aureus* which may help inform choice of empiric therapy. OPAT significantly decreases the length of hospital stay so early referral to this service is

important.

O3 Spread of mupirocin-resistant meticillin-resistant Staphylococcus aureus (MR-MRSA) and high dependency: lessons to be learned

P Garvey[1,5], M Skally[2], H Humphreys[2,4], K O'Connell[1,2], K Burns[1,2], F Fitzpatrick[2,4], M Fitzpatrick[2], S Donlon[3], F Duffy[3], T P Devassy[3], C Finn[3], H Good[3] B O'Connell[6], G. Brennan[6] and E Smyth[2,4]
1. Health Service Executive (HSE) - Health Protection Surveillance Centre (HPSC), Dublin 2. Department of Clinical Microbiology, Beaumont Hospital Dublin 3. Department of Infection Prevention and Control, Beaumont Hospital, Dublin 4. Department of Clinical Microbiology, The Royal College of Surgeons in Ireland, Dublin 5. European Programme for Intervention Epidemiology Training (EPIET), European Centre for Disease Prevention and Control (ECDC), Stockholm, Sweden 6. National MRSA Reference Laboratory, St James's Hospital, Dublin

Background: Mupirocin is the optimal agent for topical nasal MRSA decolonisation, and resistance reduces options for control. In July 2014, an outbreak of MR-MRSA *spa* type t127 (and closely-related t922) was identified in a large tertiary hospital in Ireland. We investigated the extent of the outbreak and risk factors for infection/colonisation.

Material/methods: Cases were diagnosed by the hospital microbiology laboratory following routine and active screening. We compared cases with controls who were randomly-selected hospital in-patients within affected wards and who were confirmed MRSA negative within 10 days of the matched case. We collected information from hospital databases and patient charts. We calculated adjusted matched odds ratios (amOR) using multivariable conditional logistic regression.

Results: Overall, there were 41 cases, November 2013-June 2015; the median age was 73 (range 47-96) years; 78% were male. Case numbers peaked in July 2014 and then declined, before disseminating more widely from October 2014, despite extensive control measures. Before October 2014, 18/22 (82%) cases occurred on Ward W compared to 3/19 (16%) cases afterwards; however, a further 6/19 (32%) had historical exposure to Ward W, and 3/19 (16%) were linked to Ward W cases. Male sex (amOR=21; 95%CI 0.99-454), urinary catheterisation (amOR=12; 95%CI 0.98-154), occupational therapy (amOR=9.9; 95%CI 1.6-61), vascular consultation (amOR=5.1; 95%CI 0.89-29), and each additional in-patient day within two months (amOR=1.1; 95%CI 1.0-1.1) were associated with MR-MRSA.

Conclusions: Underlying high-dependency, including prolonged hospitalisation, urinary catheterisation, vascular surgery and occupational therapy consultation, were associated with MR-MRSA. Prospectively recording the dependency of patients and better bed management policies are essential to prevent or control future outbreaks.

O4 Beyond the Surface: Seroprevalence and prevalence of high-risk human papillomavirus (HPV) infection at multiple sites in young HIV-positive men who have sex with men

C Sadlier, P Smyth, S O'Dea, S Delamere, N Meyers, G Blackshields, O Sheils, C Bergin
St. James's Hospital, Dublin and Trinity College, Dublin

Background: HIV-positive MSM are a high risk group for HPV associated anal cancer and are at increased risk of HPV associated oropharyngeal cancer. HPV types 16 and 18 are causatively associated with over 70% of anal and over 60% of oropharyngael cancers. This aim of this study was to characterise baseline seroprevalence of high risk (hr) oncogenic HPV types 16 and 18, and prevalence of hrHPV DNA detection at anal, genital and oropharyngeal sites in young HIV-positive MSM in whom HPV vaccine is indicated.

Methods: HIV-positive, HPV vaccine naïve MSM ≥18 and ≤26 years were recruited. Serum samples along with anal, penile and oropharyngeal swabs were collected.
The virus-like particle (VLP) multiplex immunoassay was used to detect HPV-specific antibodies against L1 VLPs of hrHPV types 16 and 18.
HPV DNA was detected from swabs by multiplex PCR using PGMY09/11 consensus primers. Positive samples were subtyped using next generation sequencing on the Ion Torrent platform for 12 hrHPV genotypes (16, 18, 31, 33, 35, 39, 45, 51, 52, 56, 58, 59).
Concordance between HPV 16/18 seropositivity and type specific HPV 16/18 DNA detection was assessed. Variables associated with seropositivity/HPV DNA detection were assessed using Fishers exact test and the Chi squared test. This study was approved by the St James's Hospital/Tallaght Hospital Research Ethics Committee.

Results: In 50 HIV-positive MSM, median [IQR] age was 25 [23-26] years, median CD4+T cell count was 580 [440-696] cells/mm^3, 86% were on HAART, 76% had an undetectable viral load.
Seropositivity was 44% (n=22) for hrHPV16, 26% (n=13) for hrHPV 18 and 24% (n=12) for both hrHPV16 and 18.
HPV DNA was detected from one or more site in 68% (n=34). The prevalence of HPV DNA detection was higher in the anal canal (66%) versus genital (8%) and oropharyngeal sites (4%), ($p<0.01$).
The prevalence of anal, genital and oropharyngeal hrHPV was 46%, 4% and 0% respectively.
Quadrivalent HPV vaccine hr types 16 and 18 were detected (on swabs, serum or both) in 58% and 25% of participants respectively.

Additional nonavalent HPV vaccine hr types 31, 33, 45 and 52 were detected on swabs in 2%, 4%, 17% and 6%. Non-vaccine hrHPV types 51, 56 and 59 were detected in 6%, 8% and 17%.

Conclusion: Our findings indicate that a significant proportion of young HIV-infected MSM may be susceptible to hrHPV 16 (42%) and hrHPV18 (75%) indicating potential preventative benefit of the recommended HPV-4v. Additionally, a high level of non-HPV-4v oncogenic HPV types was observed in study participants.

Vaccine based preventative strategies for HPV infection must monitor HPV type distribution among HIV-infected MSM. Surveillance data can inform optimal vaccine preventative programmes, particularly given the availability of extended valency HPV vaccines.

O5 Geomapping HIV Outcomes

A O'Rourke, C Soraghan, G Boyle, D Robinson, C Bergin, C Ni Cheallaigh
St James's Hospital, Dublin and Trinity College, Dublin

Background: Social determinants of poor HIV outcomes (e.g. failure of viral suppression) have been inadequately explained. Neighbourhood socioeconomic factors have been postulated to influence HIV outcomes. We explored social determinants of poor HIV outcomes in Dublin, Ireland using geomapping.

Material/methods: Patients attending HIV clinics in St James's Hospital between 01/01/2013 and 31/12/2014 were identified. Demographic and laboratory data were extracted from hospital databases. Failure of virological suppression was defined as one or more HIV-1 viral load of >50 copies/ml at least 48 weeks after registration with the HIV service. Patient addresses were geocoded to 2011 electoral districts (EDs) in *ArcGIS for Desktop 10.3* software. Choropleth maps were created using *ArcMap.*

Results: Data was available on 2043 HIV-infected individuals, of whom 1406 (68.8%) were male. 1063 (52%) were of Irish origin and 470 (23%) reported origin from Sub-Saharan Africa. 381 (18.6%) reported current or previous injection drug use (IDU). The median CD4 count was 539, with a range of 4-1993. 360 (18%) were co-infected with hepatitis C (HCV). We identifed a cluster of patients with failure to engage in scheduled care: 301/2043 patients (18%) had virological failure in the presence of an indication for ART (i.e. a CD4 count of <500). These individuals had a mean of 0.82 ED attendances during the study period compared to 0.29 in those without virological failure ($p<0.001$) and a mean of 2.2 missed outpatient appointments (vs 0.6 in others ($p<0.001$)). Multivariate regression analysis was used to assess independent predictors of failure of virological suppression, which included current or previous IDU, male gender and living in an area of relative social deprivation (Pobal Index of Social Deprivation <-10). IDU status was strongly correlated with living in areas of social deprivation.
The prevalence of individuals attending the HIV clinic per electoral district (ED) ranged from 1/1000. to 10/1000, and was higher in areas of relative social deprivation. Geomapping also demonstrated strong geographic clustering of HIV virological failure (range of rate 1-100 % of attenders/ ED) and HCV co-infection in areas of social deprivation.

Conclusions: In Ireland, social deprivation is a strong predictor of non-engagement with scheduled care resulting in virological failure and frequent ED use. These behaviours are strongly associated with injection drug use. Geographical clusters of patients with these characteristics demonstrate social factors underlying these behaviours. Efforts to improve HIV outcomes need to specifically target these factors.

O6 Influenza in the Critically Ill

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Background: Viral influenza, especially influenza A (H1N1) pandemic influenza, is associated with a significant increase in morbidity and Intensive Care Unit (ICU) admissions. The aim of this study is to characterise the burden of illness and secondary infection among critically unwell patients admitted to our ICU this year.

Methods: A retrospective, observational, cohort study of critically ill adult patients with influenza admitted to a Level 3 ICU Dublin, between Decemeber 2015 and March 2016. IntelliVue Clinical Information Portfolio (ICIP) was used to obtain data.

Results: Critical illness occurred in fifteen patients with confirmed influenza; 8 A(H1N1) (53.3%), 4 A(non-subtyped) (26.7%) and 3 B (20%). The median age was 47 years (33-76); 12 patients (80%) were under 65; 8 (53.3%) were male. Eleven (73.3%) had comorbidities, including respiratory disease (26.7%), morbid obesity (13.3%) and malignancy or immunosuppression (13.3%). One was pregnant (6.7%) and 7 (46.7%) had a smoking history. Six (40%) were retrieved from outside the Dublin East Hospital Group. The mean APACHE (Acute Physiology and Chronic Health Evaluation) II Score and the mean SOFA (Sequential Organ Failure Assessment) score were notably high. Fourteen (93.3%) were mechanically ventilated, for a median of 19 days (0-53). Thirteen (86.7%) received vasopressors, 10 (66.7%) required renal replacement therapy and 3 (20%) necessitated extracorporeal membrane oxygenation (ECMO). The median ICU length of stay

was 20 days (7-53) and as of 13th March 2016, two (13.3%) had died. Four (26.7%) had documented early secondary infection, at less than 48 hours; *streptococcus pneumoniae* was the sole isolate (100%). Nine (60%) were treated for presumed late (greater than 48 hours) secondary infection; *candida albicans* (66.7%), *aspergillus fumigatus* (33.3%) and pansensitive *staphylococcus aureus* (33.3%) were the most prevalent. All patients received oseltamivir, for an average of 8.3 ± 2.7 days, with 3 (20%) patients receiving the higher, 150mg twice daily, dosing regime.

Conclusion: Seasonal influenza is a major public health concern. It is associated with severe morbidity, resulting in significant economic consequences, as well as a substantial burden on tertiary ICUs. In keeping with national trends, the predominant circulating virus was influenza A(H1N1) and secondary coinfection was common. Although traditional teaching emphasises *S.aureus* as a common coinfection in viral illness, our results highlight the importance of considering a broad spectrum of bacterial, viral and fungal microorganisms when prescribing empirically in the critically ill patient.

O7 Acute Medical Assessment Unit Blood Borne Viral Screening Study: high rates of patient and staff acceptability and interim results

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Background: Previous studies have reported that at least 1 per 1000 people in Ireland are living with HIV. The prevalence of hepatitis C viral infection (HCV) in Ireland is estimated at 0.5-1.2% and the prevalence of Hepatitis B viral infection (HBV) in Ireland is unknown. Given recent improvements in treatment for HIV and HCV and the devastating consequences of late presentation of HIV, we adopted an opt out blood borne virus (BBV) screening programme for all three viruses for patients presenting to the Acute Medical Assessment Unit (AMU) in Galway University Hospital. Previous work has shown the value of such an approach in an Emergency department in a high diagnosed prevalence area. This study is, to our knowledge, the first to assess the feasibility and acceptability of this screening approach in an AMU in a low diagnosed prevalence area and is the first to describe the incidence and prevalence of HIV, HBV and HCV in this population.

Methods: After ethical approval was granted, an opt-out AMU pilot screening programme for HIV, HBV and HCV began on January 18th 2016. All patients undergoing blood sampling as part of routine clinical care were offered screening testing for HIV, HBV and HCV; verbal consent alone was sought. Targets for uptake of BBV screening were set at 50% for month 1 and 2 and 80% for month 3 onwards. Linkage to care was co-ordinated by the study team when appropriate.

Results: Over the first 7 weeks of testing 398/654 (60.1%) patients assessed consented to BBV panel testing. To date there has been 1 HIV, 1 HBV and 1 HCV postiive result all of whom were previously diagnosed. There have been no new diagnoses confirmed to date.

Conclusion: These interim results at 7 weeks show that opt-out BBV screening is feasible and acceptable to both patients and staff in an Acute Medical Assessment Unit. These results suggest that a widespread AMU BBV screening programme throughout Ireland may also be acceptable and feasible. Further research is required to determine the cost-effectiveness of such a strategy and to evaluate the incidence and prevalence of BBVs in other catchment areas and healthcare settings. This study continues and further detailed results from January until the end of April 2016 will be presented.

O8 Renal Safety of Tenofovir Alafenamide in Patients at High Risk of Kidney Disease

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Background: Compared with TDF, tenofovir alafenamide (TAF) results in significantly reduced plasma tenofovir (TFV) and has demonstrated less impact on surrogate markers of renal and bone health in multiple populations, but renal outcomes in treatment-naïve subjects at risk for chronic kidney disease (CKD) have not been characterized.

Methods: Treatment naïve HIV-1^+ adults were randomized 1:1 to a single tablet regimen of elvitegravir, cobicistat, emtricitabine, with tenofovir alafenamide (E/C/F/TAF) or tenofovir disoproxil fumarate (E/C/F/TDF) once daily in two double blind studies. Assessments of renal function included serum creatinine and estimated GFR by Cockcroft-Gault ($eGFR_{CG}$), and 4 measures of proteinuria: urine protein:creatinine (UPCR), urine albumin:creatinine (UACR), retinol binding protein:creatinine (uRBP:Cr), and beta-2-microglobulin:creatinine (uB2M:Cr). A

post-hoc analysis of renal function by group with high risk vs low risk for development of CKD is described. High risk is defined as ≥2 renal risk factors: female gender, age >=50 years, black race, use of NSAIDs, CD4 < 200 cells/uL, history of dyslipidemia, hypertension, diabetes, and clinical or subclinical renal events. Low CKD risk is defined as ≤1 risk factor.

Results: Combined, the two studies randomized and treated 1,733 participants. The proportion of participants with high CKD risk was similar by treatment arm (E/C/F/TAF 28%, E/C/F/TDF 32%). Among high CKD risk participants, significantly fewer subjects on E/C/F/TAF experienced a decline in eGFR to below 60 mL/min compared to E/C/F/TDF: 4.9% vs 9.6% (p=0.044). Participants with high CKD risk who initiated E/C/F/TAF also had significant declines in multiple measures of quantitative proteinuria (Table). Within the low CKD risk group, significantly fewer participants receiving E/C/F/TAF experienced a decline in eGFR by ≥25% (11.5% vs 24.9%, p<0.001). High rates of virologic suppression at week 48 were observed in both treatment groups in the high CKD risk category.
Conclusions: Among participants with both low and high CKD risk, participants receiving E/C/F/TAF had more favorable renal outcomes compared with those treated with E/C/F/TDF. These data provide further support for the improved renal safety profile of TAF.

	E/C/F/TAF High CKD Risk N=245	**E/C/F/TDF** High CKD Risk N=273	P value
Median BL $eGFR_{CG}$, mL/min	114.8	110.0	0.053
$eGFR_{CG}$ changes, mL/min	-6.6	-9.6	0.013
$eGFR_{CG}$ drop to <60 mL/min, % (n)	4.9% (12)	9.6% (26)	0.044
$eGFR_{CG}$ drop by ≥25%, % (n)*	14.8% (36)	27.3% (74)	<0.001
UPCR, % change from BL	-15.2	5.0	0.001
UACR, % change from BL	-10.3	-8.5	0.51
uRBP:Cr, % change from BL	-0.5	45.4	<0.001
uB2M:Cr, % change from BL	-39.7	-0.1	<0.001
Discontinuation due to Renal AEs, n	0	4**	
% with HIV RNA <50 copies/mL	90.6%	87.2%	

O9 Assessment of associations between markers of renal function and bone mineral density in HIV-positive and HIV-negative subjects

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'Understanding the Pathology of Bone Disease in HIV Infected Subjects' (HIV UPBEAT) Study Group

Background: Whilst both renal and bone disease are more common in HIV-positive persons compared to the general population, the relationship between these pathologies remains poorly understood. We aimed to determine relationships between specific markers of renal function and bone parameters.

Methods: In a cross-sectional analysis of the HIV UPBEAT cohort, comparing 169 HIV-positive and 250 HIV-negative subjects from similar demographic backgrounds, we measured BMD utilising dual-energy xray absorptiometry at femoral neck (FN), total hip (TH) and lumbar spine (LS). Renal/bone profiles and bone turnover markers (BTMs) of resorption (C-terminal cross-linking telopeptide of type 1 collagen (CTX-1)) and formation (osteocalcin (OC), procollagen type 1 amino-terminal propeptide (P1NP)) were determined from fasting bloods samples. Urinary excretion of proteins, creatinine, phosphate and glucose was measured in fresh-frozen urine samples. The renal function was further estimated using the following equations: Creatinine-based estimated glomerular filtration rate (eGFR-MDRD-4), protein/creatinine ratio (P/Cr), retinol binding protein/creatinine ratio (RBP/Cr), and renal threshold phosphate concentration (TmPO4/GFR). Baseline between group differences and associations between renal and bone parameters were assessed using Mann-Whitney/Student's t test and multivariable linear regression models adjusted for demographic/lifestyle factors, HIV status and laboratory variables (Models 1-4)

Results: The HIV-positive group was younger (median [IQR] 39 [33, 47] vs 42 [35, 49], p=0.02), more likely to be male (61% vs 44%, p=0.001), African (37% vs 25%, p=0.01), current smokers (40% vs 15%, p<0.0001) and hepatitis C co-infected (9% vs 1%, p<0.0001). The P/Cr and RBP/Cr ratios were significantly higher in HIV-positive versus HIV-negative persons, 8.6 [6.7, 14.2] vs 6.3 [5.0, 9.5] mg/mmol and 105.3 [68.1, 192.4] vs 71.5 [50.7, 108.4] µg/g (all p<0.0001). In multivariable analysis, RBP/Cr but not P/Cr (model 1, Table 1) was independently associated with lower BMD at FN, LS and TH with the association remaining robust with further adjustments for laboratory parameters and BTMs (model 2-3, Table 1). In contrast, the effect of HIV status was largely reduced across the models (model 1-3, Table 1).

Conclusion: Tubular proteinuria, measured by RBP/Cr, but not total proteinuria, is associated with reduced BMD at the 3 anatomical sites. This association persists even correcting for by HIV infection and BTMs. Further studies are needed to understand the mechanisms underlying this association and the contribution of specific HIV-related factors to alterations in renal and bone parameters.

BMD_FN (g/cm²)	Model 1 B	95% CI	p	Model 2 B	95% CI	p	Model 3 B	95% CI	p
RBP/Cr (per20 µg/g↑)	-0.003	-0.005, -0.001	0.002	-0.002	-0.004, 0.000	0.03	-0.002	-0.004, 0.000	0.04
P/Cr (per5mg/mmol↑)	-0.002	-0.005, 0.001	0.13	-	-	-	-	-	-
HIV-positive status	-0.067	-0.096, -0.037	<0.0001	-0.034	-0.064, -0.003	0.03	-0.017	-0.049, 0.015	0.30
BMD_LS (g/cm²)	**B**	**95% CI**	***p***	**B**	**95% CI**	***p***	**B**	**95% CI**	***p***
RBP/Cr (per20 µg/g↑)	-0.002	-0.004, 0.000	0.04	-0.001	-0.003, 0.001	0.20	-0.001	-0.003, 0.001	0.17
P/Cr (per5mg/mmol↑)	-0.002	-0.005, 0.001	0.14	-	-	-	-	-	-
HIV-positive status	-0.054	-0.089, -0.019	0.002	-0.026	-0.089, 0.019	0.18	-0.010	-0.049, 0.030	0.63
BMD_TH (g/cm²)	**B**	**95% CI**	***p***	**B**	**95% CI**	***p***	**B**	**95% CI**	***p***
RBP/Cr (per20 µg/g↑)	-0.003	-0.004, -0.001	0.007	-0.001	-0.004, 0.001	0.12	-0.002	-0.003, 0.000	0.07
P/Cr (per5mg/mmol↑)	-0.002	-0.005, 0.001	0.16	-	-	-	-	-	-
HIV-positive status	-0.079	-0.109, -0.049	<0.0001	-0.049	-0.081, -0.017	0.003	-0.033	-0.067, 0.001	0.06

Table 1. *Estimates of effect (coefficients B) and 95% confidence interval (95%CI) of RBP/Cr, P/Cr and HIV infection on i) BMD_FN, ii) BMD_LS and iii) BMD_TH from multivariate linear regression models.*

O10 Trabecular Bone Score: the Impact of HIV and other factors on bone Microarchitecture

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Background: Trabecular Bone Score (TBS), a novel surrogate measure of bone microarchitecture that may reflect differences in bone quality in individuals with similar bone mineral density (BMD), has not been extensively examined in HIV. In this study we examined the effect of HIV infection on TBS after adjustment for lumbar spine BMD (LSBMD) and potential confounders.

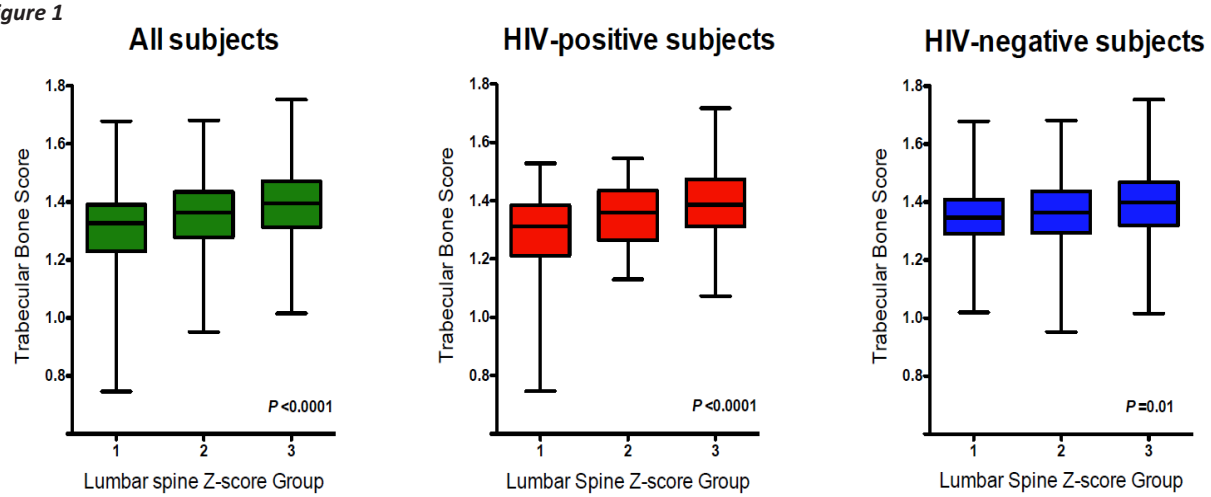
Methods: HIV UPBEAT is a prospective cohort study of HIV +ve and HIV -ve subjects from similar demographic backgrounds which collects clinical, medication and laboratory data. BMD was measured by dual Xray absorptiometry (DXA). TBS was derived from baseline lumbar spine DXA images using TBS Insight software (v2.2.1). Associations between continuous variables were determined with Spearman's correlation. Between-group differences were assessed using Chi² tests, Wilcoxon tests and analysis-of-variance, as appropriate; independent associations with TBS were identified using multivariable linear regression models. Values are median [IQR] unless stated.

Results: 463 subjects had baseline DXA for analysis. The HIV+ group (n=201) was 40% male, 39% African, aged 39 [33, 46] years. The HIV- group (n=262) was 43% male, 24% African and aged 42 [34, 49] years. 35.8% of the HIV+ and 16.8% of the HIV- were current smokers. Compared to the HIV- group, TBS was lower in the HIV+ group (1.349 [1.263, 1.436] vs 1.380 [1.301, 1.453], *P*=0.01). Current smokers in comparison to non smokers also had a significantly lower TBS (1.335 [1.230, 1.409] vs 1.380 [1.304, 1.456], *p*<0.0001). In the cohort as a whole, lower BMD correlated with lower TBS at all sites (r for LS=0.32, femoral neck=0.32, total hip=0.34, all *P*<0.0001), with significant differences in TBS across LSBMD Z-score categories: Z-score < -1 (TBS=1.327 [1.230,1.391]), Z-score -0.9 to 0 (TBS=1.364 [1.279,1.435]) and Z-score> 0.1 (TBS=1.395 [1.314,1.4705]), *P*<0.0001 (see figure 1).

In analyses adjusted for LS BMD, age, gender, ethnicity and body mass index (BMI), HIV infection was associated with a reduction in TBS of 0.030 (*P*=0.01). However, further adjustment for smoking attenuated this effect (TBS reduction of -0.018, *P*=0.13).

Conclusions: Whilst bone quality, as measured by TBS is lower in those with HIV infection, particularly in those with lower BMD, this is likely due to differences in bone microarchitecture linked to smoking rather than HIV itself. These data highlight the complex relationships between disease and lifestyle factors in contributing to overall bone health

Figure 1



O11 Greater adipose tissue mitochondrial toxicity with initiation of AZT/NNRTI based antiretroviral therapy in comparison to AZT/PI

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Background: It is well-established that thymidine analogue nucleoside reverse transcriptase inhibitors (tNRTIs) including azidothymidine (AZT) are associated with the development of mitochondrial toxicity in subcutaneous adipose tissue (SAT) leading to lipoatrophy. However, the relative contribution of the choice of third agent, conventionally either a protease inhibitor (PI) or non-nucleoside reverse transcriptase inhibitor (NNRTI), to tNRTI-mediated SAT toxicity is poorly defined.

Methods: In a prospective cohort study, ART-naïve HIV+ subjects initiating ART containing AZT/PI, AZT/NNRTI or non-AZT/non-PI underwent assessments of fasting metabolic parameters as well as limb and trunk fat by DXA at weeks 0, 12, 24 and 48. Changes in mitochondrial DNA (mtDNA) content and the expression of 55 key adipocyte genes were quantified by qPCR in fasting SAT biopsies from weeks 0, 2 and 48. Changes in adipocyte size in SAT biopsies were assessed in histological analyses. In vitro experiments were also carried out in which differentiated adipocytes were exposed to AZT alone, AZT/PI, AZT/NNRTI, PI alone and to NNRTI alone in order to determine the effect of drug combinations on mtDNA content.

Results: 23 subjects were recruited in which limb fat increased as expected with non-AZT/non-PI ART with significantly lower gains in the AZT/PI and AZT/NNRTI groups over 48 weeks. The largest mtDNA decreases occurred in the AZT/NNRTI group with a significantly greater decline than the changes observed in both AZT/PI and non-AZT/non-PI groups. Consistent with mitochondrial toxicity, AZT/NNRTI but not AZT/PI led to upregulated expression of the mitochondrial biogenesis gene TFAM and decreases in the mitochondrially encoded MT-CO1 as well as the key adipocyte genes SREBF1 and LEP by week 48. In keeping with the larger increases in limb fat detected with non-AZT/non-PI ART, expression of the adipocyte metabolism genes CD36, FASN and PIK3CA increased significantly more in this group in comparison to AZT groups.

Conclusions: These data suggest greater SAT mitochondrial toxicity with AZT/NNRTI in comparison to AZT/PI based ART, and thus supports emerging data on the contribution of NNRTIs to tNRTI-mediated toxicity. These findings also confirm the significant role played by AZT in the development of SAT toxicity due to mitochondrial dysfunction.

O12 Estimated current burden of ambulatory HIV care in Ireland

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Background: It is anticipated that demands on ambulatory HIV services will increase in coming years due to increases in both the number and age profile of the patient population. Data on current service delivery patterns and costs would allow evaluation of the impact of the changing epidemiology and/or international clinical guidelines and facilitate health technology assessments of new drugs and models of care. Differences in delivery of care and economies of scale make national extrapolation of single centre cost data problematic. The aim of this research is to generate a national estimate of the annual cost of outpatient HIV care taking into account local variation in service delivery.

Methods: The annual number of public patients in care from 1985 to 2020 was estimated using a basic model taking into account age at diagnosis, mortality (HIV-related and unrelated), and loss to follow-up. Visit costs were based on results of a single centre micro-costing study. In order to account for variation in delivery of care across centres, expert interviews with key staff were performed and the information used to adjust the staff portion of visits costs by centre. A decision tree was developed based on groups of patients with different visit rates (antenatal patients, new patient patients, patients who started or switched HAART regimens) and populated using data from the micro-costing study and average annual staff costs weighted by centre. Uncertainty was explored using one-way and probabilistic sensitivity analysis.

Results: The estimated total number of HIV patients accessing HIV care in 2012 is 3820, and that this will have increased to 4607 by 2020. The proportion of patients aged ≥50 years estimated to access services will increase from 18% in 2012 to 30% by 2020. The average base-case annual non-drug cost of care in 2012 is estimated to be €1,127 per patient (IQR on PSA €1,008-€1,230). On one-way sensitivity analysis, uncertainty associated with staff costs and diagnostic tests resulted in the greatest variation in estimated costs (±9% and ±34% respectively). The estimated annual non-drug cost for individual centres varied by up to 20% from the base-case estimate. In total the estimated cost of providing ambulatory HIV care in Ireland in 2012 was €50 million.

Conclusion: The results of this research show the importance of taking variation in service delivery into account when generating cost of illness estimates at a national level.

O13 Late HIV Presentation - Factors associated with a Changing Pattern over Time

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Background: Delayed diagnosis of HIV infection has negative clinical, economic and public health implications. The primary aim of this study was to identify changes in prevalence of late presentation to an urban ambulatory HIV clinic in Dublin Ireland from 2004-2014.The secondary aim was to identify factors associated with late presentation (LPS, CD4 count<350 cells/mm3), moderate (MI, CD4 200-350 cells/mm3) and advanced immunodeficiency (AI, CD4 <200 cells/mm3).

Methods: A retrospective cohort study was performed. Demographic data and CD4 count of new HIV diagnoses were recorded. Proportion of LPS and factors associated with late presentation were compared using the X^2 test**.**

Results: The proportion of LPS has decreased during the study period (66.4% (2002), 63.7% (2007), 59% (2012) and 32.6% (2014), p = <0.0001). However, the proportion of those with AI remains unchanged (21% (2002), 21% (2007), 20% (2012) and 19% (2014), p = 0.69)

The overall proportion of male LPS has increased (63% (2002) vs 74% (2014), p=<0.001). The number of MSM LPS has increased (9% (2002) vs 47% (2014), p=<0.001) however the proportion of LPS in the MSM cohort has decreased over time (50% in 2002 vs 23% in 2014, p<0.001) reflecting increased frequency of HIV diagnoses in MSM in recent years. The proportion of heterosexual LPS has not changed significantly in the same time period (75% (2002) vs 57% (2014), p<0.098). LPS were older in 2014 versus 2002. (Mean age: 34 vs 39.8, p=<0.001) (Table 1)
In 2014, 231 new patients attended for HIV care. 75(32.6%) were LPS. Of these, 32(43%) had MI and 43(57%) had AI as defined by CD4 count. 17(53.1%) patients with MI (n=32) had a previous negative HIV test, 50% in the prior 2 years. 27(84.4%) patients with MI were diagnosed in GP/out-patient settings. 17(39.5%) patients with AI (n=43) had a previous negative HIV test, 65% in the prior 2 years. 25(58%) patient with AI were diagnosed in GP/out-patient settings.

Table 1: *Demographics of new HIV diagnoses 2002 - 2014*

	2002			2007			2012			2014		
	Total Patients	Total Late Presenters N=146			Total Late Presenters N=137			Total Late Presenters N=118			Total Late Presenters N=75	
	n	MI	AI	n	MI	AI	n	MI	AI	n	MI	AI
Total No Patients (%)	220	99(45)	47(21.36)	215	92(42.79)	45(20.93)	200	78(39)	40(20)	231	32(13.8)	43(18.5)
Gender												
Male (%)	112(50.9)	46(46.46)	24(51.06)	140(65.12)	49(53.26)	26(57.78)	159(79.5)	58(74.36)	23(57.5)	187(81)	26(81.2)	29(67.4)
Female (%)	108(49.1)	53(53.53)	23(48.94)	75(35.88)	43(46.74)	19(42.22)	41(20.5)	20(25.64)	17(22.5)	44(19)	6(18.8)	14(32.5)
Age mean [SD]	31.73[8.6]	32.56[8.78]	35.27[9.8]	34[9]	33.03[9.15]	34.86[9.15]	35.32[9.59]	36.96[10.03]	36.32[10.2]	35.8[9.8]	38[12]	40.8[9.8]
Region of origin n (%)												
Ireland	89(40.45)	39(39.39)	19(40.42)	117(54.42)	45(48.91)	25(55.56)	98(49)	39(50)	19(47.5)	91(39.4)	15(46.8)	18(41.8)
SSA	113(51.36)	51(51.51)	20(42.55)	64(29.77)	39(42.39)	17(37.78)	33(16.5)	18(23.08)	13(32.5)	29(12.5)	5(15.6)	8(18.6)
South America	2(0.9)	1(1.01)	0	2(0.93)	0	0	20(10)	2(2.56)	0	47(20.3)	6(18.75)	5(11.6)
Other	15(6.8)	9(9.09)	8(17.02)	32(14.88)	8(8.69)	3(6.67)	49(24.5)	19(24.36)	8(10)	64(27.7)	5(15.6)	12(28)
Acquisition Risk Group n (%)												
HS	137(62.27)	68(68.68)	35(74.47)	92(42.79)	48(52.17)	23(51.1)	71(35.5)	47(60.26)	24(60)	61(26.4)	11(34.3)	24(55.8)
MSM	40(18.18)	14(14.14)	6(12.76)	65(30.23)	14(15.22)	4(8.89)	119(59.5)	25(32.05)	12(30)	153(66.2)	19(59.3)	16(37.2)
IVDU	40(18.18)	15(15.15)	5(10.64)	55(25.58)	29(31.52)	17(37.78)	9(4.5)	6(7.69)	4(10)	14(6)	2(6.25)	2(4.65)
Other	3(1.36)	2(2)	1(2.13)	3(1.39)	1(1.08)	1(2.22)	1(0.5)	0(0)	0(0)	3(1.29)	0	1(2.3)
CD4 count cells/mm3 mean [SD]	428.2[279.1]	189.4[104.41]	95.4[62.37]	427.4[310.99]	186.1[105.61]	94.3[65.93]	415[239.66]	187.82[111.26]	94.6[66.83]	463[281.2]	275[38.3]	84.8[64.6]

HS:Heterosexual, MSM:men who have sex with men, IVDU:intravenous drug use, SSA: Sub Saharan Africa

Conclusions: The proportion of LPS defined by CD4 count remains high. Over 50% of LPS as defined by CD4 count had a negative HIV test in the preceding 24 months suggesting the LPS definition needs to be revised.
MSM are now less likely to present at a late stage, likely due to higher testing rates.
Further targets for HIV testing include non-traditional risk groups including older patient cohorts and those attending GP practices/out-patient settings. To address this widespread routine HIV testing needs to be considered as a HIV prevention strategy.

O14 The Prevalence, Drivers and Outcomes of Switches in Highly Active Antiretroviral Therapy in HIV Positive Patients Attending Outpatient Clinics at St James's Hospital, Dublin

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St. James's Hospital, Dublin

Background: Antiretroviral (ARV) therapy has significantly improved health outcomes of human immunodeficiency virus (HIV) infected patients. ARV prescribing is monitored closely to avoid resistance or drug toxicity and support patient compliance. Switching between agents requires extra patient support such as drug counselling, thereby placing an extra demand on healthcare resources. In 2014, a study was conducted at the Genitourinary and Infectious Diseases (GUIDe) outpatient service at St. James's Hospital Dublin to investigate the number, nature, reasons and outcomes of ARV switches.

Methods: A convenience sample of 399 patients with HIV and HIV/hepatitis C co-infection was selected. Their clinical and prescription records were analysed for ARV switches occurring within the previous twelve months.

Results: Of the 399 included patients, 71 (17.8%) switched ARV regimen within the previous twelve months. The proportion of viraemic patients was higher in the switch (25.4%), compared to the non-switch

(11.9%), cohort at the time of data collection. However, viraemic patients who switched had a higher proportion of newly treatment-initiated patients than the non-switch cohort and may have had an insufficient time to achieve a virological response.
Overall, the majority of patients were prescribed an ARV regimen based on a non-nucleoside reverse transcriptase inhibitor (NNRTI), 41.4%, followed by a boosted protease inhibitor (PI), 34.8%, and an integrase inhibitor (INTI), 14.3%.
The proportion of PI based regimens in the post-switch group was lower than the non-switch group; 25.4% vs 36.9%, respectively. Additionally, the prevalence of PI based therapy was 52.5% lower after switch compared to before switch. INTI regimens were more prevalent in the post-switch vs non-switch cohort: 33.8% vs 10.1%, respectively. NNRTI based regimens were prescribed to 28.2% of post-switch vs 44.2% of non-switch patients. Boosted PIs were more likely to be associated with a requirement for switch, followed by NNRTIs, nucleoside reverse transcriptase inhibitors (NRTIs) and INTIs.
The leading driver of ARV modification was toxicity, followed by simplification, drug-drug interactions (DDIs), resistance, non-compliance and pregnancy while the majority of ARV switches (85.9%) were successful.
INTI regimens were marginally more expensive than PI and NNRTI regimens.

Conclusion: Further research is required to investigate if viraemia is a significant predictor of ARV switch. As described in the literature, toxicity remains the leading driver for regimen switch. Continual prescribing surveillance is required to increase the availability of resistance data. Monitoring of drug expenditure figures will also aid in planning savings with the imminent introduction of generic ARV agents.

O15 Community based testing of HCV by point of care OraQuick® HCV saliva test in homeless populations

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Background: In Ireland and the EU, chronic hepatitis C (HCV) infection is responsible for a considerable health and economic burden. As part of a larger HEPCARE project aimed at improving HCV diagnosis and treatment for at risk populations, this strand of the research aims to establish the effectiveness of intensified screening and support for HCV in individuals attending homeless services in Dublin.

Methods: Target Population: a cohort of homeless people accessing the Safetynet primary healthcare services in Dublin.
- Testing of this target population using the OraQuick®
- Quantitative: audit of treatment outcomes in HCV positive patients identified during the screening process
- Qualitative: interviews with selected patients exploring the reasons they were lost to follow up after initial diagnosis
- Providing referral to specialty service with enhanced support including a community key worker linkage to secondary care

Results: To date 460 have been screened for Hepatitis C, of whom 26% (n=124) tested HCV positive, 9.60 % (n=12) represented new diagnoses, and 112 previously diagnosed but lost to follow up and/or not successfully referred to specialty services. 72% were male, 28% female, 23% reported previous injecting drug use (IDU), 15% current IDU. 40 patients were referred for assessment to ID/hepatology services to assess suitability for HCV treatment. To date only 6 have attended despite key worker support. 45% (n=18) of those referred have not attended. Reasons include - active IDU
-33 % (n=6), fear of biopsy and side effects of interferon treatment 16.6% (n=3), inability to keep appointments because of chaotic lives from homelessness and staying in emergency accommodation
16.6% (n=3), alcohol use 16.6% (n=3), mental health issues 5.5% (n=1), and incarceration 11% (n=2).

Conclusions: Opportunistic community based screening interventions such as oral HCV testing in Dublin have identified that 26% of the homeless population are HCV positive, most (90%) previously diagnosed but not accessing further evaluation and treatment. An immediate referral, even with enhanced services, failed to get this population to attend secondary services. A new paradigm of education, community assessment and community based 'shared care' treatment must be developed if we aim to allow this 'vulnerable population' of homeless people to access curative treatments with the new interferon free direct acting HCV antivirals.

Poster Presentations

Basic Science

P1
Incidence of Parasites in Gastroenteritis

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Background: Gastroenteritis is a major health problem both in developing and developed countries with parasites long being recognised as one of the causative agents. The purpose of this study is to establish the incidence of parasites in patients with symptoms of gastroenteritis. Secondary to that aim is the determination of the optimum parasite testing algorithm that can be used in the routine laboratory.

Method: 290 stool samples submitted to the Microbiology Department at Our lady's Children's Hospital Crumlin with clinical details of gastroenteritis were analysed. The samples were received between June and August, 2015 from children under the age of 18 years old. The samples were received from the accident and emergency department, GP referrals and hospital wards.
Two detection methods were used. The Entericbio Gastropanel 2 kit (Serosep, Limerick, Ireland) was used to detect *Cryptosporidium* and *Giardia* DNA. A modified ZN (Kinyoun) staining technique was used on faecal smears to detect *Cryptosporidium* while for other parasites; a stool concentration technique was used. All samples were analysed contemporaneously with routine gastroenteritis investigation. Where there was insufficient sample for parasite concentration method, only *Cryptosporidium* investigation was carried out.
The results were expressed as incidence rates of *Cryptosporidium*, *Giardia* and other parasites.

Results: 290 stools samples with clinical details of gastroenteritis were examined for *Cryptosporidium* resulting in 3 positive samples being detected. The incidence rate of *Cryptosporidium* calculated as 0.0103 (95%CI: 0.0035-0.0299).
210 stools samples with clinical details of gastroenteritis were examined for parasites, resulting in 7 *Giardia* positive samples being detected giving an incidence rate of 0.0321 (95%CI: 0.0156-0.0648).
No other parasites were detected.

Conclusion: The incidence of parasites causing gastroenteritis is low. All gastroenteritis stool samples should be screened using the Entericbio Gastropanel 2 kit (Serosep, Limerick, Ireland) for *Cryptosporidium* and *Giardia*. Six additional *Giardia* positive samples and two additional *Cryptosporidium* samples were detected using this new testing algorithm. By implementing this screening method, the yield of positive samples would be increased with little or no additional work. Full parasite examination can be restricted to when certain criteria are met such as long term persistent diarrhoea or foreign travel

P2
Dysregulated Monocyte Cholesterol Metabolism Gene Expression with ART Initiation

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Background: *In vitro* and *ex vivo*, untreated HIV is associated with accumulation of intracellular cholesterol in monocyte/macrophages (M/M) and impaired cholesterol efflux, both of which may impact on atherogenesis and cardiovascular disease (CVD) risk. We aimed to prospectively examine the effect of antiretroviral therapy (ART) initiation on monocyte cholesterol metabolism *in vivo*.

Methods: In a multi-centre, prospective study, 28 genes involved in regulation of monocyte cholesterol metabolism (sensing, uptake, endogenous cholesterol synthesis and efflux), inflammation and mitochondrial function were measured using quantitative PCR arrays in RNA extracted from monocytes derived from ART-naïve adults at baseline and at 4 and 12 weeks post ART initiation. Data are presented as median (IQR), with genes expressed as a ratio to three housekeeping genes (*ACTB, TBP, RPL13*). Within- and between-group (PI/non-PI) differences were compared using Wilcoxon signed rank and Mann-Whitney U tests respectively.

Results: Of 85 HIV-positive subjects, (median (IQR) age 37 (31, 44) years, 70 (82%) male, 62 (73%) Caucasian, CD4+ T cell count 369 (297,547) cells/mm^3, HIV RNA 42,181 (19,474, 107,593) copies/ml), 30 (35%) initiated protease inhibitor (PI) based regimens. ART initiation was accompanied by a coordinated downregulation of cholesterol sensing (*SREBF1, SREBF2*), uptake (*LDLR*) and endogenous cholesterol synthesis (*HMGCR, PMVK, ACAT2)* genes at weeks 4 and 12 consistent with appropriate intracellular responses to increased availability of intracellular cholesterol (table 1). However, cholesterol efflux pathways were dysregulated, with expression of *ABCA1* and its regulators (*NR1H3* and *PPARα)* downregulated while *SR-B1* gene expression, indicative of an alternative efflux pathway, was upregulated (table 1). ART initiation was accompanied by an expected downregulation of inflammatory pathway genes (*TLR4, NFκB1 and NLRP3*, all $p<0.05$*)* and increased expression of mitochondrial RNA *(MT-CTB,* $p<0.01$). There was no significant difference in the pattern of gene expression changes with initiation of PI versus non-PI based ART.

Conclusions: This, the first study to prospectively examine M/M gene expression, demonstrates a molecular signature consistent with further increased availability of intracellular cholesterol and disrupted cholesterol efflux pathways with ART initiation despite expected appropriate downregulation of inflammatory pathways. How these changes impact on CVD risk remains to be determined.

Function	Gene	Week 4		Week 12	
		% change	*P* value	% change	*P* value
Cholesterol sensing	***SREPF2***	-18.1 (-43.3, +21.4)	**0.0003**	-14.7 (-40.0, +8.4)	**<0.0001**
	SCAP	-1.2 (-14.0, +16.8)	**0.85**	+2.8 (-7.5, 16.1)	**0.17**
Cholesterol regulation	***PPARα***	-20.0 (-1.4, -32.6)	**<0.0001**	-15.0 (-27.0, -0.6)	**<0.0001**
	NR1H3	-21.2 (-43.7, +21.8)	**0.0002**	-30.1 (-48.0, +8.4)	**<0.0001**
Cholesterol uptake	***LDLR***	-35.4 (-54.2, +10.5)	**<0.0001**	-37.4 (-61.9, -7.2)	**<0.0001**
	CD36	-2.6 (-20.5, +23.8	**0.90**	+2.4 (-11.5, +36.2)	**0.26**
Cholesterol synthesis	***HMGCR***	-3.6 (-24.0, +16.5)	**0.049**	+5.2 (-17.0, +17.3)	**0.68**
	PMVK	-10.0 (-22.6, +4.6)	**<0.0001**	-13.2 (-30.0, +2.5)	**<0.0001**
	ACAT2	-19.5 (-28.2, -4.3)	**<0.0001**	-20.0 (-29.5, +5.7)	**<0.0001**
Cholesterol efflux	***ABCA1***	-14.1 (-37.2, +19.7)	**0.007**	-25.2 (-43.2, +10.8)	**0.0002**
	SR-B1	+23.2 (+6.9, +45.3)	**<0.0001**	+26.7 (-10.0, +45.6)	**<0.0001**

P3
Lopinavir alone and ritonavir-boosted lopinavir induce adipocyte toxicity at physiologically relevant concentrations *in vitro*

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Background: Use of Protease Inhibitors (PIs) in HIV-infected patients is not associated with loss of subcutaneous adipose tissue despite a number of *in vitro* studies demonstrating inhibition of differentiation, metabolic function and apoptosis in adipocytes exposed to PIs. However, the effects on adipocyte function during exposure to PIs at concentrations equivalent to that circulating freely in plasma has yet to be explored *in vitro*. In this study, I aimed to explore the effects of PIs on adipocytes using concentrations of drug which are corrected for plasma protein binding.

Methods: Differentiated human adipocytes were exposed to clinically relevant, plasma protein binding corrected concentrations of lopinavir (163 nM) or lopinavir/ritonavir (163/29 nM) for 14 days. Changes in adipocyte function were assessed by transcriptional profiling of a chosen panel of 55 genes using quantitative PCR arrays while the effect on adipogenesis was determined by quantitative Oil Red O staining.

Results: Exposure to lopinavir and lopinavir/ritonavir resulted in significant changes in the expression of 13 and 24 genes respectively. Expression of key transcriptional regulators of adipocyte differentiation and metabolic function *SREBF1* and *PPARG* were significantly decreased in both exposures, accompanied by significant decreases in the downstream targets *FABP4*, *PLIN2*, *AZGP1* and *ADIPOQ* involved in both lipid metabolism and insulin sensitivity. Exposure to lopinavir/ritonavir induced a greater degree of adipocyte toxicity compared to lopinavir as suggested by additional changes in genes related to insulin signalling, adipocyte differentiation and mitochondrial function.

Conclusion: Our findings confirm the adverse effects of PIs on adipocyte function *in vitro* at physiologically relevant concentrations, including an impairment of PPARG transcriptional activity in conjunction with the reduced expression of key metabolic effectors. Further studies are required to confirm these findings *in vivo*.

Epidemiology and Public Health

P4
Sexually Transmitted Infections and Older Adults; the Forgotten Generation.

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Background: The prevalence of sexually transmitted infections (STIs) in Ireland is rising. However, there are limited data on prevalence of STIs in older Irish adults, despite our ageing population.

Objective: To investigate the sexual health and behaviours of older Irish adults attending a sexual health clinic in Cork city, and identify whether risk-taking behaviour in this age bracket warrants the implementation of a targeted prevention education campaign.

Method: Retrospective chart review of all patients over the age of 40 attending a genitourinary medicine clinic (GUM) in Cork city between the years 2004-2014. A database was constructed and descriptive statistics calculated.

Results: Total number of visits in the period 2004-2014 in adults over 40 was 3,089. Average age was 47.43 years. Male: Female ratio was 2:1. 11.14% (n=344) reported consistent condom use and 4.95% (n=153) presented upon G.P. referral. The average number of sexual partners in the past 12 months was 6.34. There were 1,082 incidences of STI. The most common STIs were External Genital Warts (n=490) and Non-Specific Urethritis (n=277). Those with a positive STI diagnosis were more likely to be male (64.8%, n=701), single (62.5%, n=676), of a lower socioeconomic class (62.5%, n=676), symptomatic (63%, n=682) and report inconsistent condom use (76%, n=822). Cigarettes and alcohol consumption were associated with increased risk (73%, n=790).

Conclusion: STIs are reported among older patients, and they are engaging in behaviour that increases their risk of contracting an STI. They may present to a GUM clinic for the first time in later life and are unlikely to present via their G.P.

P5
An Outbreak of Tuberculosis on an Irish Island

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Background: Despite a decline in incidence, mycobacterium tuberculosis (MTB) remains a significant public health concern. The current incidence of MTB in Irish born people is 6/100,000/year. The most common presentation of primary MTB in adults is pulmonary, with one case infecting up to 15 close contacts. Early treatment of active cases and screening of close contacts are the mainstay of TB control. Barriers such as social isolation and lack of resources complicate outbreak management. These barriers persist in certain contexts in Ireland.

Methods: We describe an outbreak of MTB on an Irish island (population 250). A retrospective chart review was conducted of all MTB cases. Public health records were reviewed to quantify uptake and outcomes for screening for latent TB (LTB). Barriers to care were assessed.

Results: Six cases of MTB infection were identified between December 2012- November 2014 (incidence 6/250 (2.4%)). Cases were genotypically identical, all occurring in Irish HIV negative men with 5/6 cases (including the index case) frequenting the same pub. The index case was symptomatic for 3 months prior to diagnosis. A household contact also presented with pulmonary TB. The remaining 4/5 (80%) secondary cases had extra-pulmonary TB (2/5 pleural TB, 1/5 TB lymphadenitis, 1/5 disseminated TB). After the third case presented, Mantoux screening was extended to the entire island, with 97% uptake (260/268). 48/260 (18.5%) were diagnosed with LTB. 15/48 (31.3%) agreed to LTB treatment, 30/48 (62.5%) opted for serial chest x-ray, 3/48 (6.25%) declined follow up. 2/5 secondary cases were diagnosed by active case finding. 2/5 secondary cases were initially diagnosed with LTB, refused/delayed treatment, and presented with active disease within 6 months. A third case initially had a borderline Mantoux (5mm) and presented 2 years later with disseminated TB. No new cases have been identified since November 2014. Barriers to care included isolation, limited medical resources on the island and community resistance.

Conclusions: This outbreak in a semi-closed community illustrates the potential impact of a single case of tuberculosis on the local population. The high net reproductive number with early secondary cases emphasizes the need to remain vigilant to the varying presentations of tuberculosis, in particular extra-pulmonary disease. Despite high acceptance of screening, community-related barriers likely accounted for the low uptake of LTB treatment. This outbreak highlights the need for dedicated resources and expertise in TB despite falling national rates.

P6
Attitudes towards Seasonal Influenza Immunisation amongst Hospital Staff

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Background: St Vincent's University Hospital cares for a large population, many of whom are particularly vulnerable to seasonal influenza. Despite annual staff vaccination campaigns, the uptake of influenza immunisation remains below 40%. We investigated attitudes which underlie poor uptake, and tried to elicit ways which may encourage immunisation.

Methods: Surveys were circulated among staff, to coincide with the annual influenza immunisation campaign. The data was collated using Sphinx data software and analysed using SPSS. Differences between groups were compared using Fisher's two-tailed exact test, p-values less than 0.05 were considered statistically significant.

Results: There were 320 questionnaires completed; 238 females and 79 males responded. Twenty-five percent of surveys were completed by nurses, 22% by allied health professionals, 15% by doctors, and 35% by non-clinical staff.

Sixty-five of 140 respondents (46%) were immunised against influenza the previous season. Twenty of 36 men (56%) received the vaccination, compared to 43% of women (43/101). This was not statistically significant. Significantly more doctors 81% (17/21), than nurses 38% (15/39), reported receiving immunisation, Fishers two-tailed test $p<0.01$. The most common reasons selected for being vaccinated were; 'to protect myself from becoming unwell' 27% (46/173), followed by, 'it's what's recommended' 20% (n=35).
Eighteen of 36 (50%) nurses, and (12/19) 63% of doctors believe that health-care workers should be immunised against influenza. Twenty-six percent of nurses (10/38) agreed or strongly agreed that immunisation should be mandatory, compared to 24% (5/21) of doctors. Thirty-eight percent (8/21) doctors disagree or strongly disagree with mandatory immunisation compared to 34% (13/38) nurses. None of these observations were statistically significant. Nineteen percent of doctors (4/21), and 45% of nurses (17/38), do not intend to get immunised this year. This was not statistically significant. 'Concern about side effects' 31%, followed by being 'able to manage the flu myself' 26%, were the most commonly selected reasons for not intending to be immunised this season. Three doctors did not intend on immunisation as they

don't consider it efficacious.
Respondents suggest that 'providing more information about influenza', 27% (61/213), is the best way of increasing uptake, followed by 'mobile immunisation clinics coming to the wards' 24% (n=52), and non-needle based immunisation 11% (n=24). Only 7.5% (n=16), selected incentivisation for those who get immunised.

Conclusions: Education about influenza and influenza immunisation are the most commonly suggested improvement interventions. Targeted approaches to increase uptake for selected groups of health-care workers may be of use as there are differing uptake rates amongst the professions.

P7
The Management and Outcome of Verocytotoxin-Producing *Escherichia coli* (VTEC) Positive Paediatric Patients in Cork, 2010-2013

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Background: Haemolytic Uraemic Syndrome (HUS) is a rare, but serious, complication of Verocytotoxin-producing *Escherichia coli* (VTEC) infections. Previous research has identified risk factors associated with development of HUS. Presently, there is no consensus on the management of VTEC-positive patients who lack clinical evidence of HUS. The objectives of this study were to describe the epidemiological and clinical features of children with VTEC in Cork; to evaluate factors associated with progression of VTEC infection to HUS; to determine the rate of progression to HUS; and to identify current management of VTEC-positive paediatric patients amongst Irish paediatricians.

Methods: A retrospective medical record review of confirmed paediatric cases of VTEC between 2010 and 2013, inclusive, was undertaken. Positive cases were obtained from the microbiology departments of three hospitals in Cork, Ireland (Cork University Hospital, Mercy University Hospital, and Bon Secours Cork). Fisher's exact test was used to analyze relationships between the development of HUS and a number of variables. Additionally, a questionnaire was distributed via email to a portion of currently-practicing Paediatricians in Ireland to assess how VTEC-positive patients are monitored and/or managed.

Results: One-hundred thirty four paediatric patients had a laboratory-confirmed VTEC-positive stool sample, 47 of which had hospital documentation of their illness. The average age of the 134 individuals was 3.54 years, and the most common serotype isolated was *E. coli* O157. Three of the 47 developed HUS (6.4%). There were statistically significant associations between use of antibiotics and HUS ($p < 0.05$), as well as use of anti-motility agents and HUS ($p<0.01$).

In VTEC-positive paediatric patients, an FBC and U&E are done most routinely by Paediatricians. Follow-up of these patients varies significantly.

Conclusion: The progression rate from VTEC to HUS is lower than previously published rates. No relationship was found between HUS and age, vomiting, or bloody diarrhoea; however, there were statistically significant associations between development of HUS and use of anti-motility agents or antibiotics. Clinical characteristics were not assessed in all 134 cases of VTEC. Studies in the future should include nation-wide cases, with documentation of clinical characteristics.

P8
An audit of patients presenting with infection and sepsis to St. Luke's Hospital, Kilkenny

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Background: Sepsis is defined as a life-threatening organ dysfunction caused by a dysregulated host response to infection. In the U.S. there are 300 cases per 100,000 population per annum, more than stroke and myocardial infarction. Sepsis costs up to £2.5 billion per year in the UK and patients treated for sepsis have length of stays on average more than twice that of other patients. Up to 60% of all hospital deaths in Ireland have a sepsis or infection diagnosis. The HSE has introduced national clinical guidelines in the management of sepsis, involving the taking of lactate levels and blood cultures on presentation as well as the speedy administration of antibiotics.

Methods: All adult inpatients were audited on one day in October 2015. Any patient who had been admitted and treated for an infection, sepsis or septic shock was deemed to meet the inclusion criteria. Patients were assessed to see if lactate levels and blood cultures and antibiotics were taken/administered within 3 hours of presentation to the hospital.

Results: 154 adult patients audited. 44 patients (29% of all adult inpatients) met the inclusion criteria. 23 of these (52%) were treated for an infection, 16 (36%) for sepsis and 5 (11%) for septic shock. The average age was 73 years. Ages ranged between 22 and 93 years. The sources of infection/sepsis were as follows; Respiratory (49%), Genitourinary (22%), Gastrointestinal (14%), bone and soft tissue (12%), other (2%). Lactate levels were taken in 22 patients (50%), within 3 hours of presentation in 15 patients (34%). Blood cultures were taken in 17 patients (39%), within 3 hours in 11 patients (25%). Antibiotics were administered initially to 43 patients (98%), within 3 hours in 18 patients (41%). 22 patients (50%) presented during on-call hours. 6 of the 17 blood cultures taken were positive (1 coagulase negative *S.*

aureus, 4 *E. coli* and 1 *S. aureus*). The average length of stay was 22.7 days. 2 patients died during their admission (5%). 14 patients (32%) were readmitted within 1 month of discharge.

Conclusion: The source of sepsis and length of stays of patients in our audit are similar to national figures. Improvements can be made in the early recognition and management of patients presenting to our hospital with infection and sepsis in the future. We aim to re-audit after full implementation of the national clinical sepsis guidelines in our ED and MAU.

P9

Escherichia coli Isolated from Humans and Retail Meats in Ireland do not harbour the plasmid mediated Colistin Resistance encoding gene *mcr-1*

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Background: Colistin is one of the very few antimicrobial agents available for treatment of infection associated with carbapenemase producing *Enterobacteriaceae*. Resistance to this antimicrobial agent is therefore a major cause for concern. Initially, colistin resistance was reported to be mediated by mutations in chromosomally encoded genes and the dissemination of such resistance required the spread of carrier organisms. The first report of the plasmid-mediated colistin resistance gene, *mcr-1*, was in November 2015 by Liu *et al.* in *E. coli* isolated from humans, animals and food. Since then, others have detected the presence of *mcr-1* in *E. coli* isolated from meat and human specimens, as well as in *Salmonella typhimurium* isolated from food samples. Plasmids can readily be transferred among bacteria and between different genera of bacteria. Thus, the detection of plasmid mediated *mcr-1*, raises concerns about the potential for the rapid and widespread dissemination of colistin resistance.

Methods: Whole genome sequences of 96 *E. coli* isolates collected from retail meats in Ireland and Northern Ireland (November 2013 - September 2014) and 96 *E.coli* isolates collected (2005 – 2011) primarily from residents of long term care facilities were examined. Genomes were hosted in and analysis was performed using a local installation of BIGSdb. The *mcr-1* sequence of Liu *et al.* was used to conduct a BLASTN search against all 192 Irish human and food *E. coli* genomes.

Results: No significant matches were returned indicating the absence of the gene in this set of genomes.

Conclusion: The absence of *mcr-1* in this limited collection of food and human genomes from Ireland suggests that it has not yet been disseminated widely in food animals or humans in this region, although further testing including retrospective will be required to confirm this. Use of colistin and related compounds in human health care on the island of Ireland is very limited. The recent finding of a transferable colistin resistance mechanism in China and more recently in Europe and North America is of major concern and underlines the necessity of continuous surveillance.

P10

Sexual Transmission of Shigellosis in Dublin

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Background: Sexual transmission of enteric infections (STEIs) among men who have sex with men (MSM) is recognised as a growing problem and is associated with changes in sexual behaviour among HIV positive MSM. This is the first reported outbreak of shigellosis among MSM in Ireland. The outbreak period was from 29th September 2015 to 7th April 2016. A multidisciplinary outbreak control team (OCT) undertook to investigate and take measure to control the outbreak.

Methods: Investigating the outbreak included collecting epidemiological and laboratory data with a view to better understand the population at risk and identify venues or events contributing to transmission. Antimicrobial susceptibility testing and typing of Shigella isolates from confirmed cases were undertaken by the National Salmonella, Shigella & Listeria Reference Laboratory to better understand links between cases and possible links to outbreaks in other countries.

Control measures included 1) direct communication with cases, providing information about the sexual transmission of shigellosis 2) communication with the health services regarding the importance of providing antibiotic treatment as an outbreak control measure and 3) engaging a communication campaign including posters and fliers in selected venues and using traditional and social media to inform at risk populations.

Results: Provisional results of the outbreak include laboratory confirmed cases (n=29), probable cases with an epidemiological link to confirmed cases (n=3) and cases of interest that did not meet the case definition but warranted follow-up and investigation (n=3).

39% (n=14) of the cases were known HIV positive, 27% (n=10) of the cases were HIV negative and 30% (n=12) were of unknown HIV status. 14% (n=5) of the cases were hospitalised.

50% (n=17) of the isolates were S. *sonnei*, 44% (n=10+1+2+2) were S. *flexneri (mixed serotypes including 2a, 1a, X variant and other)* and 6% (n=2) Shigella species.

20% (n=7) of the cases were linked by PFGE and 18%(n=6) of cases were linked by genotyping. Links with a similar outbreak in the UK were investigated but no substantial link was found.

Conclusion: STEIs represent a growing public health problem. Creating awareness among populations at risk and healthcare professionals about prevention and control of STEIs is an important public health response to this emerging issue.

P11
Retention in HIV Care in the Era of Highly Active Anti-retroviral Therapy for all HIV-1 infected Individuals

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Background: Retention in HIV care is essential to meet targets outlined in the UNAIDS 90-90-90 plan. In an era of ART for all HIV-1 infected patients, a primary aim of this study was to describe prevalence and characteristics of patients disengaged from care at an urban ambulatory HIV clinic. A secondary aim was to measure the outcome of an intervention employed to re-link disengaged patients to care.

Methods: We conducted a retrospective cohort study. All patients who disengaged from care (defined as loss to follow up for at least one year) from 2007 to 2014 inclusive were identified. Patient charts were reviewed to collect demographics. Patients identified as disengaging from care were contacted by telephone by healthcare providers. Where contact was made, patients were counselled regarding importance of re-engaging in care and appointments made.

Results: 11% (n=254/2289) patients disengaged from care during the study period (60% male, 40% Irish, 36% from Sub Saharan Africa, 9% from South America). In those who disengaged, risk of acquisition of HIV was HS in 129(51%) MSM in 82(32%) and IDU in 41(16%). 88.4% of HS risk group were non-Irish.

CD4 count at time of disengagement was <200 in 18(7%), 200-350 in 42 (16.5%), 350-500 in 58(22.8%), >500 in 131 (51.6%). 128(50.4%) patients were taking ART at the time of disengagement. 12 (4.7%) who disengaged for greater than a 1 year period re-linked with care during the study period. At least 3(1.2%) patients died.

Telephone follow up of 243/254 (96%) patients was undertaken. Successful contact was made with 47(19.3%) of patients. When interviewed over the phone, 34(72.3%) stated they were willing to return and 13(39%) have re-engaged in care at our centre to date. A further 11(23.4%) patients are now attending another centre and 2(4.3%) did not disclose why they will not follow up for care.

Conclusion: From 2007 to 2014, 89% (n=2035/2289) of those who attended our ambulatory HIV clinic have retained in care. Over 50% of patients were on ART at the time of disengagement, 24% of these had disengaged post-partum. An intervention to re-engage has proved successful for 72% of those with whom contact was made and 39% have re-attended to date. It is possible that many other patients are attending elsewhere. These findings add to our call for national disease registry for all HIV-infected patients. We are currently performing a nested case-control study to further characterize predictors of disengagement in HIV care.

P12
A study on knowledge of *Clostridium difficile* amongst health care providers and trainees at an acute Irish hospital

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Background: Clostridium difficile (C. difficile) is the leading cause of infectious health care associated diarrhoea in developed countries [1]. Gaps exist in health care professionals' knowledge of C. difficile infection [2]. We surveyed medical students, doctors and allied health care professionals at our hospital on clinical knowledge of C. difficile.

Methods: A questionnaire was designed based on current national guidelines [1] and randomly distributed in hospital. It contained 7 multiple choice questions where respondents were asked to pick one best answer for each. Results were analysed with SPSS v17.

Results: A total of 50 questionnaires on C. difficile were completed. Of the total respondents 48% comprised junior doctors, 10% consultants, 18% medical students and 12% each nurses and allied health professionals. 66% were aware that handwashing with soap and water is required after patient contact. 62% knew that isolation is required for 48 hours after diarrhoea stops. 84% correctly picked oral metronidazole as first line treatment. 52% correctly chose not to do test of cure after symptoms settle. 96% correctly identified at risk population for C.

difficile and the same percentage picked faeces as the correct specimen for lab diagnosis. 98% correctly chose that rationalising antibiotics from empiric to definitive is an effective way to reduce the risk of C. difficile.

Conclusion: Knowledge of prevention, diagnosis and treatment of C. difficile was moderate. Lack of knowledge existed on duration of isolation after treatment and on the fact that repeat testing of asymptomatic patients after completion of treatment is unnecessary.

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P13
Understanding of MRSA amongst health care providers and trainees at an acute Irish hospital

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Background: Meticillin-resistant *Staphylococcus aureus* (MRSA) is a major cause of healthcare-associated infections in Europe[1]. A survey based on national guidelines on MRSA was carried out amongst medical students, doctors and allied health professionals at our hospital [2].

Methods: A questionnaire based on guidelines was randomly distributed in the hospital. It contained 8 questions in multiple choice format where respondents were asked to pick one best answer for each question. Results were analysed with SPSS v17.

Results: Of the total 50 respondents; 48% comprised junior doctors, 10% consultants, 18% medical students and 12% each nurses and allied health professionals. All respondents knew what MRSA stands for. 90% correctly identified that systemic antimicrobials are only required with evidence of systemic MRSA infection. 78% showed understanding of responsibility of a patient's medical team to tell patient of a positive MRSA result. 92% correctly picked contact precautions as correct precaution method. The correct decolonization protocol duration of 5 days was chosen by 64%. 80% chose that MRSA colonized patients can be discharged home as soon as they are medically fit. 86% knew that family members do not need to take any special precautions when an MRSA colonized patient is at home. Hands as the commonest way of spreading MRSA was chosen by 96%.

Conclusion: Overall there was a reasonable level of knowledge about MRSA. Weaker domains in understanding of MRSA included duration of decolonization protocol, role of doctors in disclosing positive result to the patients, discharge time from hospital and type of precautions required by family.

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P14
Trends in hospital admissions in patients with any listed diagnosis of HIV in Irish Hospitals: 2010-2014

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Introduction: The number of HIV notifications in Ireland increased in 2014 to 8.2 per 100,000 population having previously been stable at 7-7.5 per 100,000 from 2010 to 2013. This study aims to evaluate trends in Irish hospital admissions in adult and paediatric patients with any listed diagnosis of HIV from 2010-2014.

Methods: The Hospital Inpatient Enquiry System (HIPE) was evaluated from 57 Irish public hospitals from 2010 to 2014 for patients admitted with any listed diagnosis of HIV. Data recorded included principle diagnosis, average length of stay, age distribution, principle procedure, and discharge outcome. Results are shown as totals and mean. Statistical analysis was carried out using Prism 6 software. Trends were examined using logistic regression analysis. A p-value of <0.05 was considered statistically significant.

Results: From 2010 to 2014 there were 3901 total hospital admissions with a principle discharge diagnosis of HIV with an average of 780.2 admissions per year. The total number of admissions did not increase significantly from 2010 to 2014 ($r2= 0.05$, $p=0.69$). Of the total admissions 2857 (73.2%) were inpatient admissions with an average of 571 per year. The number of inpatient admissions significantly decreased from 2010 to 2014 from 658 to 493 ($r2=0.9$, $p=0.008$). The remaining 1044 (26.8%) were day case admissions. Day case admissions increased numerically from 69 to 229 however this was not found to be statistically significant ($r2= 0.3$, $p=0.2$)

The most commonly encountered discharge diagnoses

included HIV (n=1574), dialysis (n=525), infectious/parasitic disease (n=418), unspecified LRTI/pneumonia (n=315) followed by unspecified medical (n=241). 1.2% of all admissions were in the paediatric population (n=50) and the number of paediatric admissions did not significantly increase from 2010 to 2014 (r2=0.3, p=0.3). The average length of stay was 19.7 days and there was no significant increase or decrease from 2010 to 2014 (p=0.4) There were 89 in-hospital deaths among patients with any discharge diagnosis of HIV from 2010-2014. The number of in-hospital deaths reduced numerically from 19 in 2010 to 11 in 2014 however this was not found to be statistically significant (r2=0.4, p=0.19)

Conclusion: The number of admissions among HIV affected patients has not significantly increased in Ireland from 2010-2014. The relative contribution of inpatient admissions to total admissions from 2010-2014 has decreased as day case admissions have numerically increased. Trends in discharge diagnosis reflect European trends in that HIV related illnesses, renal, infectious and respiratory diseases are among the most common discharge diagnoses.

Clinical Care, HIV, Hepatitis

P15

Quality of Life Assessment in People Living with and without HIV: The UPBEAT Study

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Background: Health-Related Quality of Life (HRQOL) has previously been found to be impaired in people living with HIV (PLWH) and increasingly contributes to evolving policy around the management of PLWH. We aimed to explore differences and predictors of HRQOL in HIV-positive and HIV-negative subjects.

Methods: HRQOL was assessed in the HIV UPBEAT Study (Understanding the Pathology of Bone Disease in HIV Infected Subjects), a prospective cohort of HIV-positive and HIV-negative subjects from similar demographic backgrounds, at study entry and weeks 48 and 96 using MOS-HIV Survey. Responses were summarized into overall QOL plus component summary scores for physical (PCS) and mental health (MCS), with higher scores indicating better health. Socio-demographic, medical and laboratory data and bone mineral density (BMD) were obtained at each visit. Comparisons between groups were assessed using Mann-Whitney/Student's t test and Chi-square test and multivariable linear regression models to explore factors associated with HRQOL.

Results: Of 490 subjects, 449 (190 HIV-positive and 259 HIV-negative) who completed HRQOL assessments were included in the analysis. Baseline median (IQR) age was 40.4 (33.7, 47.5) years, 50.1% were male, 65.5% Caucasian and 31% African. HIV-positive subjects had poorer socioeconomic status than HIV-negative subjects (48.1% lower than 3rd level education vs 31.6%, p=0.001, 70% with household income below a national average (€575/ week) vs 34 %, p<0.0001), were more likely to be current smokers (38% vs 16%, p<0.0001), IVDU (17% vs 0.4%. p<0.0001) and more likely to have had a previous fracture (52% vs 23%, p<0.0001). Although there was a small improvement in HRQOL in the HIV-positive group at week 48 this did not persist to week 96 and HRQOL remained significantly lower compared to HIV-negatives at all three time points (baseline (mean (SD): 77.3 (14.9) vs 85.3 (10.1); week 48: 81.1 (14.2) vs 85.2 (9.0); week 96: 75.9 (16.9) vs 84.12 (8.0), all p<0.05). In multivariable analysis adjusted for age, gender, ethnicity and BMI, lower overall HRQOL was associated with current smoking status and lower 25(OH) vitamin D. Smoking status, lower CD4+ count and lower 25(OH)D were associated with lower PCS while smoking status and lower household income were associated with lower MCS (Table 1).

Conclusion: Lower HRQO is reported in those with HIV in both physical and mental domains. While smoking status is related to poorer HRQOL across all components, social variables mainly impact the mental domain while clinical variables affect the physical component score.

P16

Table 1. *Adjusted association from multivariable linear regression models for factors associated with MOS scores in the HIV-positive group*

	Overall MOS *B* (±SE)	*p*	Physical Score *B* (±SE)	*p*	Mental Score *B* (±SE)	*p*
Education level (3rd level vs 1st/2nd level)	2.87± 2.31	0.21	6.23±2.83	0.03	2.88± 2.56	0.26
Household weekly income (>€575 vs €<575)	5.37±3.05	0.08	5.60±3.81	0.14	6.70±3.86	0.05
Current smoking (vs noncurrent smoker)	-6.36±2.6	0.02	-11.63±3.2	<0.0001	-6.97±2.86	0.016
Previous fractures (vs no history of fractures)	2.72±1.55	0.08	0.49±1.48	0.80	3.15±1.74	0.07
CD4 T-cell count (per 100 cells/µL)	0.81± 0.45	0.07	1.60± 0.55	0.004	0.51±0.50	0.35
Undetectable HIV RNA (<40copies/mL)	0.67 ±2.40	0.78	2.75 ±3.00	0.36	-0.090 ±0.27	0.97
Low BMD_FN (g/cm^2)	-1.10 ±3.45	0.75	-4.76± 3.86	0.22	-1.10 ±3.47	0.75
25(OH)D (per 5 nmol/L increase)	0.32± 0.16	0.05	0.51±0.02	0.01	0.18 ±0.28	0.11

Barriers to Routine Blood Borne Virus Screening – Is Lack of Education in Medical School a Factor?

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Background: Lack of knowledge or education amongst doctors may be a rate limiting step in the implementation of routine blood-borne virus (BBV) screening for HIV, Hepatitis B and C in healthcare settings.The United Kingdom National Guidelines for HIV testing (2008) advocate routine HIV testing in healthcare settings where HIV diagnosed prevalence rates exceed 2/1000. Irish diagnosed HIV prevalence rates have previously been reported as 1.09/1000 nationally and as high as 2.25/1000 in the Dublin area. The aim of this study was to evaluate the knowledge of newly graduated doctors in BBV infection testing guidelines.

Methods: A 10-item survey was distributed online and via paper to 131 newly graduated doctors during intern induction in the West Northwest intern training network. Responses were analysed using SPSS.

Results: 87/131 participants completed the survey – a response rate of 66.4%. The sample represented graduates of all 6 medical schools in Ireland. Despite the respondents having never encountered either a HIV or Hepatitis C infected patient and only 5 having encountered at least 1 patient infected with Hepatitis B, 70.1% said they would be comfortable in offering HIV/Hepatitis B/Hepatitis C testing as part of a routine panel of bloods. Furthermore 70.1% knew that verbal consent is adequate prior to HIV/Hepatitis B/Hepatitis C testing. 77% responded incorrectly that pre-test counseling is still required prior to HIV testing. Finally, 73.3% knew that the life expectancy for HIV infected patients, who engage in care, was normal.

Conclusions: These are encouraging findings. Despite their limited exposure to patients with BBV infections, newly graduated doctors demonstrated a good knowledge of BBV testing guidelines. Further education in relation to pre-test counseling is needed as this is not standard practice, however it appears that lack of education and awareness of the guidelines at point of entry to clinical practice is not the main the barrier to implementing routine BBV testing. Targeting more senior doctors and patients with an education programme may be of value to promote screening for all three of these viruses which not only offers a health benefit for individual patients, but also a public health benefit in reducing onwards transmission.

P17
HIV Super-Utilisers: Voices behind the Numbers

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Background: A minority of HIV patients account for a disproportionate amount of inpatient management. We sought to (1) define characteristics of patients with high hospitalisation rates (super-utilisers), (2) quantify the resources used by super-utilisers and (3) determine patient-reported barriers to engagement with routine outpatient care.

Methods: We used hospital databases to identify patients with a cumulative length of stay (LOS) of >30 days/annum under the HIV service in St James's Hospital from 1st October 2014 to 30th September 2015. We analysed the patient electronic records to determine patient characteristics, procedures, investigations and blood products used.

Semi-structured interviews were undertaken with these patients covering experiences of outpatient and inpatient care. Inductive analysis was used to identify common themes.

Results: Approximately 2,500 patients attended HIV outpatient services in SJH within the study period. 208 patients had inpatient admissions under the HIV service during the study period generating a total of 4320 bed days.

22 HIV-infected patients had a cumulative LOS of >30 days within the study period. 21/22 had been diagnosed as being infected with HIV at least 9 years prior to the study period. 16/22 had a history of prior or current injection drug use. Ages ranged from 27 to 57. Nine were female. 19 of 22 were of Irish origin. CD4+ T-cell counts ranged from 4-801 cells/mm^3, 13/22 had CD4+ T-cell counts of <200 cells/ mm^3. 8/22 had HIV viral loads below the limit of detection throughout the study period.

These 22 patients generated a total of 99 ED attendances, 1699 bed days and 74 critical care bed days and required a total of 35 units of red cells, 25 units of platelets and 39 units of fresh frozen plasma during the study period. 7/22 are known to have died by the date of abstract submission.

To date, semi-structured interviews have been conducted on the 2/15 surviving patients. Both reported frequently missing appointments due to difficulties with transport. Reasons for non-adherence to ART included GI side effects and missing appointments (and therefore prescriptions).

Conclusion: Less than one percent of HIV-infected individuals attending SJH account for more than one-third of HIV inpatient bed days, with associated high rates of radiological investigation and blood product usage. The majority of these individuals had HIV-related immunosuppression as evidenced by a CD4+ cell count of <200 cells/ mm^3. Only one of these individuals had been newly diagnosed with HIV. These individuals frequently have poor rates of attendance to outpatient clinics and adherence to ART which may be due to psychosocial co-morbidity.

P18
HIV Incidence assays: Evaluation of three HIV Avidity enzyme immunoassays

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Background: The development of assays for detection of recent HIV infections is crucial for analysing trends in infection in different populations for surveillance and prevention measures. Several HIV Avidity assays have been developed to distinguish between recent HIV infections and long term established infections.

Objectives: To identify and validate a suitable method for determining recent HIV infections in Ireland and to incorporate this assay as a routine diagnostic tool in the NVRL.

Study Design: We compared three currently available manual HIV avidity enzyme immunoassays: Sedia HIV Limiting Antigen Avidity assay (LAg), Sedia BED HIV-1 Incidence immunoassay (BED) and a modified Bio-Rad Genetic Systems HIV-1/HIV-2 plus O enzyme immunoassay. A total of 50 samples from the Consortium for the Evaluation and Performance of HIV Incidence Assays (CEPHIA) which included 15 recent and 35 long term HIV-1 infections were tested. All assays were performed in both screening (tested in singlet) and confirmatory (tested in triplicate) modes. The normalised cut-off in the screening assay was OD=2 and in the confirmatory assay was OD=1.5.

Results: All patients were HIV subtype B. The age range was 23-64 years and included 47 males. HIV viral loads ranged from 709-9.44 x 10^6 copies/ml. None of the patients were on antiretroviral therapy at the time of sampling. In the screening mode, the positive predictive value for the LAg, BED and Bio-Rad assays were 98%, 90% and 93.3% respectively, sensitivity was 100% for all assays however, specificity was 100%, 100% and 97.2% respectively. The modified Bio-Rad assay incorrectly identified 1 sample as recent infection. HIV viral loads were significantly higher in recent infections ($p<0.001$) and seroconversion intervals were longer in long term infected individuals ($p<0.001$). Chi-square analysis revealed that more long term infected patients had Fiebig stage of V+ compared to recently infected individuals ($p<0.001$). Significant correlation was observed when 24 samples from Irish patients were tested at the NVRL and Public Health England laboratory, $r^2=0.96$, $p<0.001$.

Conclusions: The method identified for use in the NVRL is the Sedia HIV-1 Limiting Antigen Avidity enzyme immunoassay. This method is recommended by the WHO and is used by Public Health England to distinguish recent HIV infection from long-term infection. This assay will be used in the NVRL to test all new HIV diagnoses from January 2016 onwards and the results from January- April 2016 will be presented.

P19
Sexual Health in HIV

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Background: HIV incidence is rising in Ireland, with sexual contact being the main route of transmission. Effective sexual health management is important for the HIV positive population as they are more likely to acquire, and suffer the sequelae of STIs. It is also important for public health because STIs facilitate the transmission of HIV. Therefore sexual health management is of paramount importance in preventing further spread of HIV.

Methods: BHIVA has 11 points that must be met for adequate sexual health management. To properly assess all 11 points, a mixed methods study design was chosen. This involves a retrospective file audit of 100 patients, one-on-one interviews with specialist nurses, and phone interviews with 23 of the patients.

Results: Sexual histories were documented at first presentation for 52% of patients. Screening rates for hepatitis A, B and C were 47%, 93% and 86% respectively. Vaccination rates among susceptible patients for hepatitis A and B were 22% and 71%. The patients have good access to STI screening, diagnosis and treatment. The HIV clinic provides anonymous partner notification. Syphilis serology was done at first presentation for 57% of patients. Annual cervical cytology was recorded for 30% of women. Serodiscordant couples had access to counselling and PEP. Information on superinfection is provided to patients. There is a limited supply of condoms available from the clinic, but all patients are advised about the need for condoms. Support around disclosure is provided by the clinic, and there are pathways for access to conception, pregnancy and fertility care. Only 4% had annual STI screening recorded in their notes.

Conclusion: The HIV clinic in Cork is adhering fully to five of the BHIVA guidelines. However sexual histories, syphilis serology and condom provision are suboptimal and could be improved. Although hepatitis B screening and vaccination rates are very high, prevention of hepatitis A could be improved upon. Currently, it is not possible to assess STI clinic attendance and cervical cytology uptake from the notes in the HIV clinic. Possible areas of improvement include closer

collaboration between the STI clinic and the HIV clinic, and more communication between GPs, who are organising the smear tests, and the HIV clinic.

P20
Integrating Primary and Secondary Care to Optimise Hepatitis C Treatment: Implementation and Evaluation of a Multidisciplinary Educational Symposium

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Background: In Ireland and the EU, chronic hepatitis C (HCV) infection is responsible for a considerable health and economic burden. It is increasingly being recognised that addressing this global challenge requires effective cooperation between primary and secondary care and multidisciplinary approaches to care. As part of a project to integrate primary and secondary care for patients at risk of, or infected with HCV ('Heplink'), we developed an educational symposium for healthcare professional. This paper aims to evaluate an educational symposium to integrate primary and secondary care and to identify how this model might be achieved in practice.

Methods: From local practices and HSE Addition Treatment Services, GPs and other healthcare professionals working in primary care were invited to a one-day symposium (Hepatitis C Masterclass) which examined how to prevent new infections, why / how to screen, new approaches to diagnosis and treatment, treating coexisting problem alcohol use.

Results: 36 healthcare professionals attended. 100% of participants indicated they 'agreed' or 'strongly agreed' the Masterclass had helped them to: 'Appreciate the role of primary care in the management of patients with HCV', 'Appreciate the role of secondary care in the management of patients with HCV', 'Describe new approaches to assessment for patients with HCV', and 'Describe new approaches to treatment for patients with HCV'. With regard to making an integrated model of care happen in practice, participants indicated 'Audit & feedback' (92%), 'Educational programmes' (92%), and a 'Designated nurse to liaise with hospital services' (100%) would be of assistance.

Discussion: This paper highlights the potential importance of integrated approaches to healthcare in optimising hepatitis C care in the community and identifies strategies that can enhance effective implementation.

P21
HCV prevalence and treatment among patients attending primary care for opioid agonist treatment

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Background: While the advent of second-generation direct acting anti-viral medicines for HCV provides an opportunity to treat more patients with greater efficacy, it is anticipated the additional cost and demand for the new medicines may challenge health systems. In Ireland, problem alcohol use (PAU) is common among people who inject drugs, and this increases the risk of complications related to chronic HCV infection.

Aims: To examine the prevalence and treatment of HCV and problem alcohol use among patients attending primary care for opioid agonist treatment.

Methods: Secondary analysis of data collected during a feasibility study of alcohol brief intervention in primary care.

Results: Of 106 patients attending participating practices for opioid agonist treatment, 54 were HCV positive (51% known seroprevalence), of whom 37% of patients who were HCV positive also screened positive for PAU. While known HCV seroprevalence was comparable to that published in previously published studies (51% v 55%), the proportion with problem alcohol use was considerably higher (46% v 35%).

Discussion: Though HCV seroprevalence remains comparable with that reported previously, coexisting problem alcohol use is a cause for concern. This data further highlights the key role of general practice in the ongoing holistic care of patients who use illicit drugs.

P22
Incremental Association between CD4:CD8 Ratio and Incidence of non-AIDS Events

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Background: Despite effective antiretroviral therapy (ART), people living with HIV (PLWH) still experience excess morbidity and mortality, with a growing awareness of the impact of non-AIDS defining events (NADE) and the factors potentially associated with the occurrence of these events including failure to

normalise the CD4:CD8 ratio.

Method: Adult PLWH enrolled in the Mater ID Cohort Study who commenced ART after January 1st 2001 were included in an analysis determining prevalence of and associations with AIDS events and NADE. Demographic, laboratory (including HIV RNA, CD4+ and CD8+ T-cell counts, CD4:CD8 ratio) and clinical events (AIDS and NADE) were collated. Multivariable Cox proportional hazards regression models explored factors independently associated with the progression to NADE. Data are reported as median (IQR).

Results: Of 550 PLWH, 317 (58%) were male, 299 (54%) Caucasian, 220 (40%) African, 114 (21%) Men who have sex with Men and 131 (24%) Injecting drug users (IDU). 128 (23%) were co-infected with Hepatitis C. At ART initiation median age was 34 (29, 40) yrs, and nadir CD4+ count 187 (80, 284) cells/mm^3. Of 135 NADE in 2557 person years of follow (crude incidence 5.3 per 100 PYFU), the commonest were pneumonia (n=39), liver disease (n=17), cardiovascular disease (CVD) (n=14) and non AIDS malignancies (n=12). Of 23 deaths, 5 were AIDS related and 11 were NADE (malignancy (n=7), liver disease (n=2), CVD (stroke) (n=1), abdominal sepsis (n=1)). In multivariable Cox models, older age at ART initiation, IDU risk and lower quintiles of pre-event CD4:CD8 ratio were independently associated with an increased risk of non-AIDS defining events (see figure 1), with male gender and non-Caucasian ethnicity independently associated with reduced risk of NADE (see figure 1). A sensitivity analysis in those virally suppressed revealed similar associations with age at ART initiation (HR=1.59, 95% CI 1.23-2.05), gender (HR=0.33, 95% CI 0.20-0.56) and lower pre-event CD4:CD8 ratio (CD4:CD8 ratio≤0.26; HR=3.11 (95% CI 1.44-6.71),CD4:CD8 ratio 0.27-0.43; HR=1.64 (0.74—3.66), CD4:CD8 ratio 0.44-0.59; HR= 1.67 (0.77-3.66), CD4:CD8 ratio 0.60-0.86; HR=1.26 (0.54-2.93)).

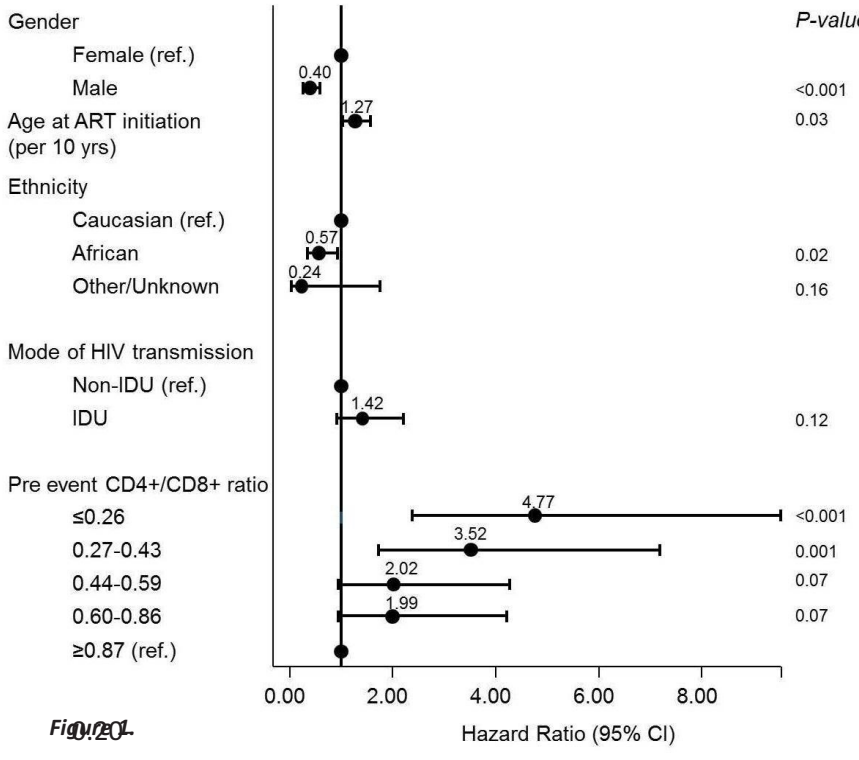

Figure 1.

Conclusion: This is the first study to show an incremental association between pre-event CD4:CD8 ratio and NADE. It is yet to be determined what impact, if any, strategies to improve CD4:CD8 ratio will have on prevalence of NADE.

P23
Clinical characteristics of the 'Buffalo- Hump' phenotype in HIV-infected patients – a Case-Control Study

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Background: HIV associated Lipodystrophy (HIVLD) has been well described although data on the subgroup who develop dorsocervical fat accumulation of 'buffalo hump' (BH) remains limited, particularly the role of exposure to specific antiretroviral (ARV) drug classes in its development. This study aims to describe the clinical characteristics of those with BH in a contemporary patient population

Methods: In a single-centre, cross-sectional study HIV infected patients with clinician diagnosed BH phenotype were prospectively recruited alongside controls without BH matched for age, gender and ethnicity. We recorded patient demographics, medical and treatment history, fasting bloods for lipids, glucose, insulin (from which HOMA-IR was derived) CD4 T-cell count and HIVRNA and regional and whole body DXA scans for body composition and bone mineral density (BMD). Between group differences were assessed using mann whitney U test (continuous variables) and chi^2 test (categorical variables) with P<0.05 considered significant.

Results: Between Sept 2011 and Sept 2012, 39 subjects were enrolled comprising 12 with BH and 27 matched controls. 30.8% were male, 53.9% of African origin and 92.3% were on suppressive ART (table 1). Although there were no differences in duration since HIV diagnosis or total years of exposure to ART, cases were more likely to have been exposed to NNRTI (91.6%

vs 51.8%, P<0.05).
Compared to those without BH, those with BH had significantly higher median body weight (87.7kg v 71.6kg, p< 0.05), BMI (31.8kg/m^2 v 25.3kg/m^2, p<0.05). and percentage total and regional body fat (limb (47.7% vs 34.1%, p<0.05), trunk (51.0% v 35.1%, p<0.05) and central (51.3% v 36.0%, p<0.05).
Although the ratio of % limb fat to % central fat (LF/CF) did not differ between groups a sub-group analysis by gender did reveal lower LF/CF ratios in males (0.31 [0.22-0.33] v 0.38 [0.31-0.43], p<0.05) but no significant difference in LF/CF ratios in women.
Those with BH were more likely to have a diagnosis of hypertension (50% v 14.8% p <0.05) dyslipidaemia (75% v 37% p <0.05) and higher fasting glucose, although there was no difference in HOMA-IR between groups. Bone mineral density was not significantly different between groups.

Conclusion: In this study, those with BH display a constellation of clinical features similar to those seen in the metabolic syndrome. Although use of DXA to determine LF/CF ratios is of limited value in its diagnosis, particularly in women, those with BH have higher frequencies of CVD risk factors, which should be a target for intervention. The role of ART exposure or host factors in BH development requires further investigation.

P24
A Pilot of Project ECHO in Ireland

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Background: Although effective treatment for Hepatitis C virus (HCV) is available, less than 5% of those infected in the US, UK and Ireland have been treated. The Extension of Community Healthcare Outcomes (ECHO) project is a novel educational intervention designed to transfer subspecialty knowledge about HCV to primary care providers, thereby increasing patient access to HCV care.
We sought to evaluate the feasibility, acceptability and implementation of the ECHO model in Ireland using a pilot study.

Material/methods: The ICORN ECHO HCV pilot consisted of a fortnightly videoconference of case-based discussions about patients with HCV. During the conference, a multidisciplinary teaching team interacted with learning partners. Semi-structured interviews were carried out with potential participants at baseline and with participants at completion of the study intervention.

Results: Implementation of an ECHO model-based programme in Ireland was achievable, with a six-month pilot completed as planned. Most of the time utilised in the pilot was in the setup of the programme. Didactic and case-based methods stimulated discussion of a large number of topics. 23 patient cases were discussed, and action points were generated from 20/23 cases.

On completion of the pilot, participants reported benefits to themselves in terms of knowledge and confidence and, particularly, in the creation of a network which provided support to practitioners working in challenging patient groups. Participants reported dissemination of their knowledge to colleagues who were not participating in the programme. All participants reported that they would like to continue to participate in ECHO-based learning programmes.
The majority of patient cases discussed in the ECHO HCV management pilot had more than one chonic medical condition, in addition to addiction, psychiatric and social co-morbidities. The multi-disciplinary, multi-site approach of the ECHO model proved particularly suitable for these patients

Conclusions: An ECHO-based model is feasible for use in Ireland, and delivers its aims of training and supporting community-based care providers using distance learning to deliver care traditionally delivered by specialists in hospital settings. The best use of Project ECHO in Ireland may be to address multi-morbid patients needs. We envisage developing a model of ECHO Complex Care focused around the needs of PWID and other marginalised groups in Ireland.

P25
An Audit of the Management of Vitamin D Deficiency in Children with HIV

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Background and Aims: The impact of lifelong HIV infection and prolonged antiretroviral therapy (ART) on bone health for youth is unknown. Low bone mineral density (BMD) is common in perinatally infected youth, who may fail to attain expected peak bone mass in adulthood, increasing later osteoporosis and fracture risk. ART initiation can trigger increased osteoclastic activity and decrease BMD. Low vitamin D increases risk for low BMD and is associated with increased HIV disease severity and death. Daily vitamin D3 safely increases vitamin D levels and may improve immune markers. This audit assessed compliance with vitamin D management standards for infected youth with key target of 100% having autumnal vitamin D screening with appropriate therapy where indicated.

Methods: Retrospective review of blood test and pharmacy records of HIV infected youth attending the Rainbow Clinic, Children's University Hospital Temple Street & Our Lady's Children's Hospital Crumlin January to December 2015 was performed. Screening and treatment practices were compared to The Children's

HIV Association Guideline on Vitamin D management.

Results: Of 56 eligible patients, 57% met the primary target; an autumnal vitamin D level. 98% were screened at some stage during the year. 63% were insufficient (vitamin D < 50 nmol/L), 9% deficient (<25 nmol/L) of whom 2 of 5 had PTH levels checked. 32% with insufficient vitamin D levels received treatment in the same quarter; 54% in the following quarter; 14% after a 2 quarter delay. 40% of deficient patients were treated within the same quarter; 60% the next quarter. 20% of those with vitamin D levels <50 nmol/L did not receive treatment during the period of review. 88% were prescribed maintenance therapy, with 96% prescribed an age appropriate dose.

Conclusions: The primary target (autumnal vitamin D assessment) was met for 57% patients, although levels were checked in 98% during the year. Despite appropriate supplement prescribing, a continuing high prevalence of insufficiency/deficiency was found. A fifth of patients with insufficient levels did not receive therapy during the study period. Potential delays between screening and treatment were identified in almost two-thirds of patients. PTH levels were only checked in 40% of cases with deficient levels, indicating a lack of awareness of the importance of screening for complications. Improvement targets include focussing on seasonally appropriate screening and expediting treatment for insufficiency. Most patients were appropriately prescribed maintenance therapy however the high prevalence of vitamin D insufficiency/deficiency is indicative of non-adherence and warrants re-evaluation of the current supplementation program.

Clinical Care: Infectious Diseases

P26
Influenza Associated Blood Stream Infections

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Background: Bacterial super-infection is a known complication among patients presenting with influenza. Many studies have commented on superimposed pneumonia, usually with staphylococcus and streptococcus. There is a paucity of literature on the frequency and type of bloodstream infections in patients presenting with influenza. Levels of influenza in Galway University Hospital(GUH) are at their highest since the influenza A pandemic of 2009. We have reviewed bloodstream infections associated with laboratory confirmed influenza infection in this hospital.

Methods: All patients admitted to GUH testing positive for influenza virus RNA between 31st October 2015 and 2nd March 2016 were identified. Using the Laboratory Information System (LIS) each case was reviewed to ascertain if there was a confirmed bloodstream infection within 1 week of confirmation of influenza infection. The clinical notes for cases with bacteraemia were reviewed and clinical relevance of positive blood cultures assessed.

Results: 141 patients tested positive for influenza RNA in the examined time period; 83/141 (58.9%) influenza A, 58/141 (41.1%) influenza B. 88/141 (62.4%) of patients had blood cultures taken during the admission. 7/88 (8%) had a positive blood culture. Three of the isolates were considered to be contaminants. (*Aerococcus viridans, Staphylococcus hominis, Micrococcus luteus*). Four patient's had clinically significant organisms in blood cultures. Three patients had Influenza A(H1)pdm09 RNA detected on in-house testing and one had Influenza B. 2/4 patients were admitted to the intensive care unit with respiratory failure. The blood culture isolates in these cases were *Serratia* species in a 71-year-old man with previous sputum colonisation with this species, and *Group A Streptococcus*(GAS) in an 8-year-old boy. The third patient was a 35-year-old male admitted with sepsis and *Streptococcus mitis* in blood cultures. The fourth case was a 64-year-old woman who developed severe sepsis with *Citrobacter* species 3 days after the onset of influenza-like symptoms. The 3 adult patients had significant co-morbidities. The patient with *Serratia* species in blood cultures did not survive the admission. The child with GAS infection had a prolonged admission to the intensive care unit. The two remaining cases were discharged home well.

Conclusion: Infection with influenza can be associated with bloodstream infection with a wide variety of organisms, apart from the common association with *Staphylococcus aureus.* The importance of blood cultures in patients presenting critically unwell with likely influenza should not be overlooked.

P27
A non-interventional audit of antimicrobial stewardship practices on two separate wards

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Aim: To compare antimicrobial prescribing practices on two separate wards; Ward A, a haematology-oncology ward which has regular infectious diseases & microbiology input; and Ward B, an acute medical ward which has intermittent support.

Methods: Data was collected on a daily basis from each ward for a period of one month (19-11-15 – 16-12-15). Patient kardexes, medical admission notes and electronic patient information were reviewed. Antimicrobial choice and route were recorded and

compared to empirical prescriber guidelines which are available on the hospital intranet. Culture data and documentation of antimicrobial indication and duration were also noted.

Results: A total of 50 patients were prescribed 106 antimicrobials on ward A during the audit period, with microbiology and ID support in 48% of these patient cases. 117 patients were prescribed a total of 258 antimicrobials on Ward B, and microbiology and infecious diseases consults were recorded in 23% of these cases.

With regards to patient demographics: 56% of patients were female on ward A, and 53% on Ward B. The age range was 25-86 in the former group and 18-100 in the latter. 20% of patients had a history of a transmissable organism on Ward A and 15% on Ward B.

Antimicrobial choice was appropriate in 83% on Ward A, and 78% on Ward B. Documentation of antimicrobial duration was suboptimal on both wards at 13% and 7% respectively, while documentation of indication was 57% on Ward A and 90% on ward B.

Intial antimicrobial choice was intravenous in 64% of cases on ward A and 80% of cases on ward B, while the oral route was available in 98% on both wards.

Culture rates were 82% (Ward A) and 73% (Ward B)and sensitivities were available in 17% and 30% of these samples. Of note, blood culture samples were taken in 50% of cases on Ward A and only 33% of ward B patients.

Conclusion: Antimicrobial appropriateness and culture rates are greater on a ward which has dedicated mircobiology and infectious diseases support versus a ward which does not. Though less than anticipated, this difference would support our wish for greater antimicrobial stewardship involvement on unsupported wards. The level of antimicrobial appropriateness in the acute Ward B may reflect sucessful NCHD use of empical precribers guidelines on the hospital intranet.

In addition, this audit data demonstrates a possible excess use of intravenous antimicrobials, particularly in the acute medical ward (B) where 80% of patients were prescribed intravenous antimicrobials initially when oral options were available in 98% of cases.

Targeted microbial culturing should continue to be encouraged on both wards, and documentation of antimicrobial indication and duration should be reinforced.

P28
Prevalence and nature of patient-reported antimicrobial allergies in a tertiary level hospital

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Background: Patient-reported antimicrobial allergies can have a significant impact on antimicrobial treatment options. Differentiating between true and perceived allergies along with integrating allergy de-labelling into antimicrobial stewardship programmes can promote more prudent antimicrobial prescribing and, thereby, decrease broad-spectrum antimicrobial use, healthcare costs, complications of treatment and patients' length of stay. The purpose of the present study was to assess the prevalence and nature of patient-reported antimicrobial allergies in our tertiary level hospital.

Methods: This was a hospital-wide point prevalence survey of patients' self-reported antimicrobial allergies carried out by a team of researchers over the course of a single morning. Patients were interviewed at their bedside and information was captured by means of a standard proforma. Descriptive column statistics were used to analyse data.

Results: Of 725 inpatients, 582 (80.3%) were captured by the survey and able to provide first-hand information. In total, 73 (12.5%) patients self-reported an allergy to antimicrobials, of which 26 (35.6%) were males and 47 (64.4%) were females. In terms of multiple allergies, 10 patients reported allergy to 2 antimicrobial classes, 5 reported allergy to 3 classes, 3 reported allergy to 4 classes and 1 reported allergy to 5 classes. The most common antimicrobial allergy was to penicillins (n=57, 78.1%), followed by co-trimoxazole (n=7, 9.6%), quinolones (n=5, 6.8%), macrolides (n=4, 5.5%), antifungals and cephalosporins (both n=3, 4.1%), trimethoprim and carbapenems (both n=2, 2.7%) and nitrofurantoin (n=1, 1.4%). Allergies due to unknown antimicrobial agents were reported in 3 cases (4.1%). In terms of classic manifestations of allergy, patients reported rash (n=21, 28.7%), angioedema (n=18, 24.7%), urticaria and anaphylaxis (both n=6, 8.2%). With regards to other reactions, 13 patients (17.8%) reported gastrointestinal upset, 16 patients (21.9%) reported a variety of other reactions including fever, rigors, shakes, weakness, joint stiffness, arrhythmias, jaundice and collapse, while 10 patients (13.7%) were unable to describe the nature of their reaction, and 1 patient (1.4%) considered himself allergic to an antimicrobial based on family history. Most patients (n=57, 78.1%) had sought medical attention as a result of their antimicrobial-related reaction. Only 9 patients (12.3%) had been offered formal allergy testing following the incident.

Conclusion: Self-reported antimicrobial allergies are common. A significant proportion of reactions potentially represent drug side-effects or manifestations of the underlying disease as opposed to genuine allergies. Facilitating investigations of patient-reported allergies in a dedicated allergy clinic may improve antimicrobial stewardship outcomes in this

patient population.

P29
An audit of empiric antibiotic choice in the inpatient management of community-acquired pneumonia

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Background: Community-acquired pneumonia (CAP) is an important cause of inpatient morbidity and mortality. Appropriate initial empiric antibiotic choice reduces mortality, length of hospital stay and healthcare costs in CAP. CURB-65 score is one of the many prognostic scoring tools developed to aid assessment of severity of CAP and to guide treatment, and is the one most widely used in Ireland. Local guidelines have been produced to outline the appropriate empiric antibiotic regimen in CAP depending on severity. These can be based on scoring tools such as CURB-65. Adherence to these guidelines, however, is often low when reviewed.

Methods: A retrospective review of consecutive adult patients admitted to the Mercy University Hospital with a CAP over a two month period was performed. Electronic and paper-based sources provided details on demographics, imaging and empiric antibiotics. Empiric regimens were then compared to the local guidelines and descriptive statistics performed.

Results: 60 patients were admitted with a primary diagnosis of CAP in the two months. 21 (36%) had a CURB-65 score of 0-1, 36 (60%) a score of 2-3 and 3 (5%) a score of 4. The CURB-65 score was documented in the medical notes in 7 (12%) cases. The infiltrate on chest radiograph was unilateral in 54 (90%) patients and bilateral in 6 (10%). Underlying lung disease was evident in 13 (22%) of the 60 chest x-rays. Empiric antibiotic regimen was concordant with local guidelines in 29 (48%) of cases and not in the remaining 31 (52%). Concordance was highest in those with a CURB-65 score of 2 (59%) and lowest with a score of 3-4 (35%). Guideline adherence was 100% in those 12% of cases with the CURB-65 score documented in the medical notes.

Conclusion: Guideline adherence was poor with significant use of excessively broad-spectrum and inappropriate antibiotic regimens. This is in keeping with results from international reviews although the rate of adherence here was lower than the majority of similar studies. A considerable number of patients had a score of 0-1 and may have been suitable for outpatient care avoiding unnecessary admission. In addition 76% of patients with a score of 0-1 received intravenous antibiotics. Documentation of the CURB-65 score in clinical notes was low but was associated with appropriate prescribing when performed. This supports the theory that lack of knowledge regarding pneumonia severity assessment tools and unfamiliarity with therapeutic guidelines are key barriers to guideline adherence.

P30
Risk of Mother-to-Child Transmission of Hepatitis B Virus Infection in Sub-Saharan Africa: Results from a Systematic Review and Meta-Analysis

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Background: Chronic Hepatitis B is endemic in sub-Saharan Africa (sSA). Globally, the mother to child transmission (MTCT) risk in the absence of any prophylaxis is quoted as 70-90% among women positive for HBsAg and HBeAg and 5-30% among women positive for HBsAg but negative for HBeAg. These figures, however, are derived mostly from Asian studies, another area of high endemnicity.

Methods: A systematic search using OVID Medline, OVID Global Health and ELSEVIER Embase was carried out to assess MTCT in SSA. The meta-analysis was carried out using "metaprop" command with STATA 13.1 (STATA Corporation, Texas). The confidence intervals for the individual studies were presented with the score-test statistic and for the pooled estimates with the Wald test statistic. The pooled African estimates without any prophylaxis were compared with the lower boundary of the MTCT risk frequently quoted in the literature using the Z statistic.

Results: The search strategy identified 3,110 papers, 61 full text papers were assessed and 14 papers were included. The results showed 1) the pooled risk of MTCT, without any preventive measures, in infants of HBeAg-positive mothers was 38.3% (95% CI: 7.0-74.4%). This was significantly lower than the 70-90% risk that is quoted in the literature (P = 0.007); 2) the pooled risk in infants of HBeAg-negative mothers was 4.8% (95% CI: 0.1-13.3%). This was not different from the lower boundary of the 5-30% risk presented in the literature (P = 0.2); 3) among the infants of HBeAg-positive mothers, the pooled risk of MTCT in those who received hepatitis B vaccine at 3-8 weeks (36.6%, 95% CI: 8.3-69.9%) and those with a timely birth dose vaccine (36.5%, 95% CI: 15.5-59.7%) did not differ from the MTCT risk without prophylaxis (38.3%, 95% CI: 7.0-74.4%, P = 0.9); 4) compared to the infants of HBeAg-negative mothers without prophylaxis, the pooled risk of MTCT was significantly lower in those who received hepatitis B vaccine at 3-8 weeks (0.0%, 95% CI: 0.0-0.0%, P = 0.01) and those with a timely birth dose vaccine (0.0%, 95% CI: 0.0-0.1%, P = 0.01)

Conclusion: This meta-analysis showed that 1) in the absence of any preventive measures the pooled MTCT risk from HBeAg-positive mothers in SSA was significantly lower than those reported in Asia (38.3% versus 70-90%). 2) the administration of hepatitis B vaccine at birth and at >1 week was associated with a

reduction in transmission risk from HBeAg-negative mothers but not HBeAg-positive mothers.

P31
Gram Negative Sepsis in Term and Preterm Infants: Aetiologies and Clinical Outcomes

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Background: Neonatal septicaemia is a source of extensive morbidity and mortality in NICUs worldwide. My aim is to evaluate the outcome and aetiology of every episode of gram negative sepsis in the neonatal population of Cork University Hospital (CUH) over the past 8 years.

Methods: This is a retrospective descriptive analysis. Neonates with blood cultures with gram negative growth were identified from microbiology database in CUH. Files were reviewed in conjunction with the Badger electronic discharge system.

Results: 50 babies with 51 episodes of gram negative sepsis were included in the study. The majority of sepsis occurred after the first 72 hours of life (41; 80.3%), i.e. late onset sepsis. Mean gestation was 29 weeks, 3 days and mean birth weight was 1357g. The majority of neonates in this group were <32 weeks i.e. very premature (37; 74%). The incidence of gram negative sepsis was 5.3% for new-borns less than 32 weeks. The most common pathogen was Escherichia coli (34; 66%) followed by Klebsiella spp. (15; 29%). Pseudomonas aeruginosa and Enterobacter cloacae were isolates in 1 case each. There were 2 instances of extended spectrum beta lactamase (ESBL). Mortality was 10%. There was no difference in gestational age, birth weight or blood parameters (CRP, WCC and Platelets) between those who survived or died. Chorioamnionitis and sepsis occurring in the first 72 hours of life are associated with mortality (p=.018, p=.047). There was a wide variety in the adverse clinical outcomes of the patients in this group. 16 (32%) were diagnosed with intraventricular haemorrhage. 4 (8%) had a diagnosis of periventricular leukomalacia. 16 (32%) had a diagnosis of necrotising enterocolitis. 10 (20%) had a diagnosis of retinopathy of prematurity and 15 (30%) had a diagnosis of bronchopulmonary dysplasia. A diagnosis of periventricular leukomalacia was associated with a higher C-reactive protein on day 0 and day 7 of sepsis (p=.028 and p=.043). BPD and ROP were associated with a gestational age <28 weeks in this cohort.

Conclusion: E.coli remains the most common gram negative pathogen in the NICU and early onset disease is associated with significant risk of mortality.

P32
Comparative OPAT Costings and Cost Saving Mechanisms for the Future

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Background: Outpatient Parenteral Antimicrobial Therapy (OPAT) as part of antimicrobial stewardship has helped provide improved care for patients in their home. Over 3,000 patients have been recruited in the last 2 years, with a saving of over 28,000 estimated bed days. Both self-administered OPAT (S-OPAT) and healthcare administered OPAT (H-OPAT) have very different costs given nursing visits and the geographical location of patients. Furthermore, infusion pumps are not used in routine practise and there has been no cost comparison in the Irish programme of this area to date.

Aim: To assess the cost of commonly prescribed antimicrobials in S-OPAT and H-OPAT and to explore the costs of 24 hour infusion pumps.
Objectives: To compare the cost of S-OPAT and H-OPAT antimicrobials.

Methods: Prescription rates of Pipericillin-Tazobactam, Vancomycin and Daptomycin were collected in the national OPAT service. Costs included were antimicrobials, ancilliary and waste charges, IV access, and additional bloods. Relative costs were compared for the different methods of administration for all antimicrobials. Savings were estimated based on the introduction of infusion pumps on this basis.

Results: 1 week of Pipericillin-Tazobactam is 39% more expensive on H-OPAT versus S-OPAT. 7 S-OPAT patients cost approximately the same as 5 H-OPAT patients. It is 46% more expensive to prescribe H-OPAT for a 2 week course. 8 S-OPAT and 5 H-OPAT patients have similar costs.
Daptomycin is 120% more expensive to deliver via H-OPAT than S-OPAT for a 1 week course of 500mg OD. 11 S-OPAT and 6 H-OPAT patients cost a similar amount to the service. It is 186% more expensive to prescribe the same dose for a 2 week period on H-OPAT.
The data collected relating to one week of Vancomycin 1g BD demonstrated that it is 190% more expensive to prescribe on H-OPAT versus S-OPAT. H-OPAT Vancomycin is more expensive given that nursing staff must monitor the patient during the infusion. This may take nearly 2 hours for each 1g dose. Infusion pumps offer an alternative given that Vancomycin may be slowly administered. This will save considerable nursing time. Cost analyses of infusion pumps are outstanding.
Patient prescription data, data comparing Vancomycin and Daptomycin cost, and expenses relating to the use of PICCS and IVCs are pending.

Conclusion: Outpatient antimicrobial prescription

saves unnecessary admissions for suitable patient groups and facilitates hospital discharge. Identifying patients who are suitable for S-OPAT has significant savings for the service. Furthermore, 24 hour infusion pumps will be available for Pipericillin-Tazobactam, Vancomycin and Flucloxacillin in April 2016 – significant cost savings are anticipated and will be presented as comparative data to current systems being used.

P33
Attitudes to Sexual Health and PrEP in High Risk Population MSMs attending Gay Men's Health Clinic

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Background: HIV is on the rise in men who have sex with men (MSMs). Both Pre and Post-exposure prophylaxis (PEP and PrEP) have been shown to effectively reduce transmission of HIV in heterosexual, homosexual, and intravenous drug users at risk. PrEP is not licensed for use in Ireland currently.
Aim: To assess the attitudes of MSMs to PrEP
Objectives: To perform a sexual health risk assessment including sexual behaviours, STI diagnoses, and substance abuse.

Methods: This was a self-completed questionnaire; which included basic demographics, sexual behaviours, STI diagnoses, use of PEP, and knowledge of and motivations for PrEP use. Statistical analyses were performed using Excel, including Z tests, T scores, and correlation.

Results: 201 patients completed the questionnaire. There was a mean age of 28.38 (range 19-60). The two largest ethnic groups consisted of those from Ireland or South America (63% Vs 22%). 63% of patients were not in a relationship. There was an average of 4.69 sexual partners in the last 3 months (median 2, range 0-55). 64% of patients had at least one partner with whom they had unprotected anal intercourse (UPAI); 43% one partner, 11% two partners, 10% greater than two partners. 9.4% reported UPAI with a patient who was known to be HIV positive, of whom 70% were known to be on treatment.
Risk Perception: 13.1% perceived there to be little or no risk with unprotected receptive intercourse, whilst 40.2% felt it was a very large risk. Nearly one third of patients felt there was either low, medium or high risk with unprotected insertive intercourse. Irish respondents viewed themselves at lower risk.
Patients managed risk for HIV acquisition using condoms, serosorting and strategic positioning to different degrees. With regards to unprotected intercourse, 26.3% felt that alcohol contributed to their risk, whilst only 6.4% felt that drug abuse was a factor. 18.9% did not view themselves at risk.
Drug Use: 63% of patients reported drug use in the last year (n=194), some of whom had used intravenous drugs (n=5). The use of drugs significantly increased the number of partners, the risk of UPAI, and STI diagnoses.
Use of PEP/PrEP: 12% of patients had used PEP. 10% of all respondants had used PEP as PrEP. They had higher mean and median partners in the last 3 months than the general population (mean 9.8, median 4.5). Those who used PEP more often were more likely to perceive HIV risk acquisition as high.
80% of patients would consider using PrEP, however cost had a significant impact on use (93% free, 34% €70, 12% €140 respectively). 64% of patients wished to reduce their risk, whilst 19% sought to have more condomless sex.

Conclusion: HIV is on the rise in MSMs and there is good evidence for use of PrEP in high risk populations. The high incidence of UPAI, concomitant STI diagnoses and substance abuse in this population make a clear case for the use of PrEP in Ireland. Education is critical and attitudes to the use of condoms must chance through public health interventions. This study would suggest that STIs may rise through condomless intercourse on PrEP. Funding for PrEP needs to be prioritised by government agencies.

P34
Mobile Devices in a Healthcare setting- Fomite for pathogenic bacteria?

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Background: Mobile phones are widely used by doctors throughout the course of clinical duties. The widespread use of these devices by doctors provide a new vector for the transmission of microbial pathogens (1,2). Clear evidence exists that personal items, such as mobile phones, act as an ideal fomite (3). A recent meta-analysis revealed that up to 30% of doctors mobile phones were contaminated with pathogenic bacteria, including antibiotic resistant organisms (4). In an Irish context, little data exists regarding the burden of potential microbial pathogens dwelling on doctor's mobile devices.
Method: In this study we examine culture plates from swabs of mobile devices belonging to 100 non-consultant hospital doctors, looking specifically for the presence of multi-drug resistant organims (MRDO) *i.e.* meticillin resistant *Staphylococcus aureus* (MRSA), vancomycin resistant enterococci (VRE), carbapenem resistant *Enterobacteriaceae* (CRE) and extended spectrum beta-lactamase (ESBL).
This is a pertinent venture considering the significant rise in anti-microbial resistance in Ireland. Ireland, for example, is the only country in Europe where the proportion of invasive *E.faecium* isolates which are VRE is greater than 25%; in 2015 in Ireland 48% were VRE. The proportion of invasive *E.coli* infection which were ESBLs increased from 6.1% in 2010 to 10.8% in 2015. The

proportion of invasive *K.pneumoniae* infection which were ESBLs increased from 5.1% in 2010 to 13.5% in 2015. The proportion of invasive *K.pneumoniae* infections which were CRE increased from 0.0% in 2010 to almost 3.0% in 2015
The findings of the study will provide an ideal graphical means to construct educational interventions for healthcare workers and increase awareness of infection control practices, including ways of targetting this potential mode of MRDO transmission.

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P35
Cutaneous Myiasis (Tumbu fly larvae) in a Returning Traveler from Zambia: A Case Report

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Background: Human cutaneous myiasis is rare in Ireland but is common in much of sub-Saharan Africa. The most common agent associated is known as the Tumbu /mango fly (*Cordylobia anthropophaga*). We describe a case presenting to primary care in Ireland in 2016.

A 63 year old woman initially presented to her General Practitioner with 6 to 8 itchy raised erythematous lesions in a unilateral dermatomal distribution on her left side at about the level of the T8/T9. She had returned from Zambia 4 days previously and noted small red spots below the shoulder blade on the following day. She was initially treated with oral valacacyclovir for a presumed diagnosis of shingles. Three days after the initial GP visit she experienced episodes she described as spasms or neuralgia in the affected area and noted that the lesions appeared to crust over. She visited her GP again 6 days after the initial consultation. The GP observed a larvae emerging from one of the lesions. The larva was removed, placed in a universal container and submitted to a clinical microbiology laboratory. The morphology of the larvae was consistent with that of Tumbu fly larvae. She began to apply petroleum jelly to the other lesions which resolved over subsequent weeks. When specific exposures were discussed the patient indicated that her stay in Zambia had been for 1 week. She worked and lived in an area on the periphery of Lusaka. She did not recall any insect bites to the area. Infection was suspected to have occurred from local bed linen while the patient slept. She indicated a preference for sleeping on her left side which may be relevant to the distribution of the infestation.

Cutaneous myiasis due to larvae of the African tumbu fly is a temporary parasitic infestation of the skin by fly larvae/ maggots. The female typically lays eggs on clothing, and bed linen, which subsequently hatch into larvae. On contacting skin, the larvae painlessly burrow into the sub-dermal layer. Painful and itchy blister like lesions subsequently develop. Larvae can be removed using techniques including suffocation of the larvae by occlusion of the pore with petroleum jelly or mineral oil to avoid rupture of the larvae and a resultant granulomatous reaction.

Conclusion: This case demonstrates the potential for the condition to mimic other conditions resulting in delay in diagnosis even when there is awareness of recent travel.

P36
The role of *Clostridium difficile* in paediatric gastroenteritis

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Background: *Clostridium difficile* is classically associated with antibiotic-associated diarrhoea in patients >65yrs. It was once thought that *C. difficile* was not a cause of diarrhoea in children <2yrs. However, evidence is emerging that *C. difficile* may be a significant pathogen in children and infants.

Method: All stool samples with clinical details of gastroenteritis were tested for *C. difficile* using the EntericBio realtime *C. difficile*, a polymerase chain reaction (PCR) for the *C. difficile* toxin B (*tcd*B) gene. Active production of toxin in PCR positive samples was detected using the Techlab C. diff Quik Chek Complete, an enzyme immunoassay (EIA) that detects both *C. difficile* toxin and glutamate dehydrogenase (*C. difficile* antigen). Chart reviews and faecal lactoferrin (a marker of intestinal inflammation) testing were conducted to assess the significance of any EIA toxin positive results.

Results: 404 patients were tested over a 9 week period. 48 samples tested positive for the *tcd*B gene. 22 of patients tested positive for *C. difficile* by PCR and EIA with a median age of 13.5 months. Chart reviews were conducted on 21 of these patients. 15 EIA toxin positive patients tested positive for faecal lactoferrin. This was not significant when compared to the

lactoferrin positive, EIA toxin negative group. When faecal lactoferrin was carried out on the *tcd*B positive, EIA toxin negative samples, 15 out of 22 (68.2%) samples were positive. No genuine cases of *C. difficile* infection (CDI) were found. There was no relationship between raised faecal lactoferrin and CDI.

Conclusion: *C. difficile* is not a significant pathogen in children and infants. Testing for *C. difficile* should only be performed when clinically indicated.

P37
A Review of Paediatric Influenza Presentations to the Mercy University Hospital, Cork, Ireland during the 2015-2016 Influenza Season

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We would also like to acknowledge the contribution of the Microbiology Laboratory at Mercy University Hospital.

Background: Influenza is an acute respiratory illness caused by influenza A or B viruses. It is associated with significant morbidity and mortality in children, both in healthy and at risk groups. Immunization is the main public health measure for prevention of influenza, while antiviral medications are an important treatment option.

To date in Ireland during the 2015-2016 influenza season, there have been over 500 paediatric hospitalizations caused by the influenza virus, according to weekly Health Protection Surveillance Centre (HPSC) surveillance data. We conducted a review of paediatric influenza presentations at Mercy University Hospital in Cork, Ireland, during the 2015-2016 influenza season. Our aims were to gain a deeper understanding of the clinical picture and management of paediatric influenza in Cork, and to compare trends observed in Cork with national data.

Methods: A retrospective review of the patient records of all laboratory-confirmed influenza case files was performed and information collected regarding patient demographics, presenting symptoms, laboratory findings, and clinical management.

Data will be collected until the end of Week 14 (3-10 April, 2016). Trends are compared with national paediatric influenza surveillance (accessed via www.hpsc.ie). Influenza testing was performed in the microbiology laboratory, Mercy University Hospital, using the Xpert® Flu, Cepheid® system. Statistical analyses were completed using SPSS Statistics.

Results: to 24 February, results included 27 laboratory-confirmed influenza cases, 18 male, 9 female, aged 0-14; median age 4 years. Clinical information was unavailable for one child. No influenza-related deaths occurred in this cohort.

12 attended their GP and 7 attended out-of-hours services prior to ED presentation. Cases rose significantly in weeks 5-7. Average length of hospital stay was 1.83 days. Presenting symptoms varied greatly within respiratory, gastrointestinal, musculoskeletal and neurological categories. All were pyrexic. Instigation of respiratory infection prevention and control precautions on presentation was documented in 18 cases. Laboratory diagnoses by influenza strain were: A – 1, A H1N1 – 14, B – 11. 16/26 children were in at-risk groups for influenza vaccination as per HPSC guidelines, although influenza vaccination was not documented in patient records. CRP ranged from 1-78mg/L, WCC 1-29.7 x10^9/L. Oseltamivir was prescribed in 6/26 cases, antibiotics in 15/26 cases. 2 cases re-presented to A&E with unresolving illness.

Conclusion: Initial analyses indicate general trends that parallel national influenza surveillance, namely the dominance of influenza A H1N1 in hospitalized cases. Results indicate possible room for improvement with regard to antimicrobial prescribing and influenza vaccination in at risk groups.

Pharmacology

P38
Longer Term Safety of Tenofovir Alafenamide in Renal Impairment

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Background: Tenofovir alafenamide (TAF) is a novel prodrug of tenofovir (TFV) that results in 91% lower plasma TFV levels compared to TDF. Switch to a once-daily single tablet regimen of elvitegravir, cobicistat, emtricitabine, and TAF (E/C/F/TAF-Genvoya) in HIV-1 infected patients with $eGFR_{CG}$ (Cockcroft-Gault) 30 to 69 mL/min was shown to be effective and safe through 48 weeks. Here, we report longer term results.

Methods: Virologically suppressed adults with stable $eGFR_{CG}$ of 30 to 69 mL/min had their treatment switched to open-label E/C/F/TAF. The primary endpoint was the change from baseline in glomerular filtration rate estimated using various formulae at 24 weeks. Longer term efficacy and safety data are described, including tests of renal function and bone mineral density (BMD).

Results: Of 242 subjects enrolled, mean age was 58 years (range: 24 – 82), 18% Black, 39% hypertension, 14%diabetes, and 65% were taking TDF-containing

regimens prior to switch. Through Week 72, minimal change in $eGFR_{CG}$ was observed. Five patients (2.0%) with baseline eGFR <50 mL/min discontinued study drug for decreased creatinine clearance, none had evidence of proximal renal tubulopathy and all had risk factors for renal disease progression (diabetes and poorly controlled hypertension). Subjects who received TDF at baseline had significant improvements in proteinuria and albuminuria (median UPCR 21.4 to 10.4 mg/mmol and median UACR 4.6 to 1.2 mg/mmol) to levels seen with non-TDF regimens (median UPCR 11.9 to 9.6 mg/mmol and median UACR 2.0 to 1.8 mg/mmol). The prevalence of significant proteinuria (UPCR > 22.6 mg/mmol) and albuminuria (UACR ≥ 3.4 mg/mmol) decreased from 42% to 18% and 49% to 28%, respectively. Hip and spine BMD increased significantly (mean % changes from baseline +1.50 and +1.91, respectively, p<0.001). 93% maintained HIV-1 RNA <50 copies/mL based on Missing = Failure analysis.

Conclusions: Through 72 weeks, switch to E/C/F/TAF was associated with minimal change in eGFRCG. Proteinuria, albuminuria and bone mineral density significantly improved. These data support the efficacy and safety of once daily E/C/F/TAF in HIV+ patients with eGFR 30-69 mL/min without dose adjustment.

P39
Acid suppressing medications: A study to determine their prevalence of use and the pharmacist led interventions used to manage the potential for interaction with Hepatitis C direct acting anti-virals

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Background: Acid-suppressing medications are widely available both on prescription and over the counter (OTC) in pharmacies. These medications include proton pump inhibitors (PPIs) (e.g. omeprazole), H2 receptor antagonists (e.g. ranitidine), antacids (e.g. aluminium hydroxide) and calcium supplements (e.g. calcium carbonate). While gastric pH does not affect all medicines, it is an important factor to consider in patients with Hepatitis C (HCV) infection, particularly those treated with the NS5A polymerase inhibitor ledipasvir. Drug-drug interaction (DDI) studies for ledipasvir have shown that medicines which increase the gastric pH are expected to decrease serum concentrations of ledipasvir and thus potentially impact on clinical outcomes for patients. (1)
In 2015 Marra *et al* (2) reported that 28% of patients treated with HCV direct acting anti-virals (DAAs) in the UK were co-prescribed a PPI. In Ireland, PPIs are known to be over-prescribed nationally, and by extrapolation patients receiving HCV DAA therapy in Ireland are likely to be co-prescribed PPIs. (3)
This study aims to identify the baseline prevalence of co-prescribed acid suppressing medications among patients treated for HCV infection in Ireland and to examine what pharmacist-led care interventions are *in situ* to mitigate the effect of these potential interactions on HCV treatment outcome.

Method: All patients treated with all oral DAA based HCV therapies at St. James's Hospital from Dec 2014 to January 2016 were included in the study
1. Patients were reviewed by the HCV pharmacist for concomitant prescribing of acid suppressing medicines.
2. In patients where a potential interaction between DAA therapy and an acid suppressing medication was identified, the management plan for the interaction was recorded.
3. HCV treatment outcomes were obtained for all patients included in the study.

Results: 161 patients were included in the study. 57% (92/161) of patients were prescribed at least one acid suppressing medication of whom 64 patients (40%) were prescribed PPIs and 12% calcium containing supplements. 2.5% (4/161) of patients were prescribed H2-receptor antagonists and 1.2% (2/161) were taking antacids.
41/64 patients taking PPIs were prescribed ledipasvir as part of their HCV therapy. 63% of these patients had their PPI dose reduced to omeprazole 20mg daily during treatment and 22% were counselled to stop taking a PPI during treatment. 6/19 patients taking calcium containing supplements were prescribed ledipasvir as part of their HCV treatment. All of these patients were counselled by the specialist HCV pharmacist to separate the dosing time of calcium supplement from ledipasvir by at least four hours.

Conclusion: This study identifies a high prevalence of use of acid suppressing medications in the Hepatitis C treatment population in Ireland. The workload involved in the identification and management of the potential DDIs between acid suppressing medications and HCV regimens containing ledipasvir is significant.

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P40

An audit of weight based antimicrobials in Galway university hospital medical patients

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BACKGROUND: Prescription of antimicrobials and other weight based medications is common practice in inpatient medical care. Errors associated with weight based dosing have been frequently described among the paediatric population, particularly with anti-infective agents and analgesia. There is less data available among the adult population, however there is now a greater focus on the importance of appropriate weight based dosing of antimicrobials among adults with increasing incidence of obesity. Assessment of weight is an essential component of all hospitalised patient assessments, with the NICE guidelines (2006) recommending assessment of Body Mass Index for all patients on admission.

METHODS: The aim of this audit was to identify the proportion of medical inpatients that were weighed and were being prescribed weight based medications. An audit was conducted of all medical inpatients in University Hospital Galway on a given day. 193 patients were included in the study. For each patient, the drug Kardex, nursing notes, vitals sheet and medical notes were examined for documentation of current patient weight. Each drug Kardex was also analysed to establish whether patients were on weight-based medications or not, with specific focus on antimicrobial agents, low molecular weight heparin (LMWH) and direct oral anticoagulants (DOAC).

RESULTS: 107/193 (55.4%) patients had their weight documented, 72% of these on the drug Kardex. 130/193 (67.3%) of patients were on weight-based medications. 20/130 (15.4%) were on weight-based antimicrobials (Vancomycin, Gentamycin, Daptomycin, Ethambutol, Acyclovir) and 3 of those patients did not have documented weights (15%). 10/130 (7%) patients were on therapeutic doses of LMWH with only 60% having clearly identified weight based dosing.

CONCLUSION: Over two thirds of patients were on weight based medications, while only just over half had documented weights. 15% of patients on anti-infective agents did not have any documented weight. This may put patients at risk of under treatment of serious infection or harm relating to over dosing such as acute kidney injury. Strategies need to be put in place to ensure weight measurements become an integral component of patient admission in order to avoid such adverse events.

P41

An Audit on the Use of Restricted Antimicrobials in Cork University Hospital

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Background: Prudent use of antimicrobials is necessary to preserve the limited armamentarium of agents available to treat the increasingly drug-resistant infections seen in practice currently. National Recommendations for the Implementation of Antimicrobial Stewardship Restrictive Interventions for Acute Hospitals in Ireland were published in 2015. Cork University Hospital (CUH) has an established Restricted Antimicrobial Policy and its implementation is a key role of the Antimicrobial Stewardship Team. The aim of this study was to audit the current Restricted Antimicrobial Policy at Cork University Hospital.

Methods: A retrospective audit was undertaken for a six month period in 2015 of all restricted antimicrobials dispensed from the pharmacy and recorded in the Pharmacy Restricted Antimicrobial Register, to ascertain whether they complied with the Restricted Antimicrobial Policy. A second prospective study consisted of a ward audit on the six wards where certain restricted agents were stocked over a two week period. Each drug chart on those wards was reviewed and all restricted antimicrobials were assessed against the Restricted Antimicrobial Policy.

Results: 309 restricted antimicrobials were reviewed in the retrospective audit. 91% (282/309) of all the antimicrobials on the Antimicrobial Register in CUH had been pre-approved before prescribing, with 2% (6/309) not approved. 2% (7/309) of the antimicrobials on the register were discontinued prior to review by the Antimicrobial Stewardship Team. For 5% (14/309) of prescriptions, there was incomplete information to ascertain compliance with the restricted antimicrobial policy. Meropenem was the most commonly prescribed restricted antimicrobial (185/309:60% of all restricted antimicrobials), followed by caspofungin (49/309:16%) and linezolid (41/309:13%). During the prospective audit, 32 restricted antimicrobials were prescribed. 100% of all 32 prescriptions complied with the Restricted Antimicrobial Policy.

Conclusions: This study demonstrates that the current Restricted Antimicrobial Policy in CUH is followed by clinicians to a high level and complies with the current national recommendations on antimicrobial stewardship restrictive interventions. The ongoing Antimicrobial Stewardship Team review of all restricted antimicrobials is important to ensure prudent use of these agents.

P42
Evaluation of Meropenem Use in Ireland

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Background: Meropenem consumption in Irish hospitals has increased considerably in recent years. This may be attributed to the rise in infections caused by multi-drug resistant organisms (MDROs). However, increasing carbapenem use raises the concern of an increase in the prevalence of carbapenem resistant enterobacteriaceae. The aim of this study was to review meropenem prescribing trends at a national level in order to inform us how this agent is being utilised and how antimicrobial stewardship can aid appropriate prescribing.

Methods: During the National Point Prevalence Survey (PPS) of Antimicrobial Use (September-October 2015), hospitals were requested to submit an extended data collection form for patients prescribed meropenem. Prescriptions were assessed for appropriateness by the individual hospital's antimicrobial pharmacist, microbiologist or infectious diseases physician. Data were analysed using Microsoft Excel ® and IBM SPSS Statistics v22. Fisher's Exact test was used to test for associations between categorical variables ($p<0.05$=statistical significance).

Results: 27 hospitals participated in the national meropenem audit. 120 meropenem prescriptions were evaluated. These data represents 66% of all meropenem prescriptions during the National PPS. Of the 120 prescriptions: 41% treated lower respiratory tract infections, 18% intra-abdominal infections, 12% urinary tract infections. The most common dose was 1g TDS IV (72%). 84% (101/120) were classified as appropriate by the hospital's antimicrobial pharmacist, microbiologist or infectious diseases physician. 28% of (34/120) meropenem prescriptions were targeted to multi-drug resistant organisms (MDROs); 17% (20/120) were empiric first line treatment; 55% (66/120) were empiric escalation of treatment. There was a strong association between microbiology / infectious diseases consults and appropriate meropenem use ($p=0.005$). Empiric therapy was more likely to be inappropriate than therapy targeted to MDROs ($p=0.017$).

Conclusion: In this snapshot study of meropenem use across 27 hospitals in Ireland, 84% of meropenem prescriptions were assessed as appropriate. 28% were targeted to MDROs. This study suggests that a review of all meropenem prescriptions by microbiologists / infectious diseases physicians will aid appropriate prescribing of meropenem. A priority for review should be empiric meropenem therapy not targeting MDROs. Antimicrobial pharmacists are key members of the antimicrobial stewardship team in the identification and follow-up of patients prescribed meropenem.