IDSI Infectious Diseases Society of Ireland

10th Annual Scientific Meeting

IDSI - 10 years on...

4th - 6th May 2017

National University of Ireland Galway

PROGRAMME & BOOK of ABSTRACTS

Galway University Hospitals
Ospidéil na h-Ollscoile Gaillimh
UNIVERSITY HOSPITAL GALWAY
MERLIN PARK UNIVERSITY HOSPITAL

NUI Galway
OÉ Gaillimh

Welcome

Dear Colleagues,

On behalf of the organising committee, I am delighted to welcome you to Galway for the 10th Annual Scientific Meeting of the Infectious Diseases Society of Ireland.

This year, the IDSI ASM brings together a distinguished and diverse panel of international speakers at the forefront of important advances in Infectious Diseases. The complement of invited sessions and abstract sessions focus on HIV prevention, bone and joint infection, viral infections, gram negative resistance and infection control. The diversity of topics reflects the evolution of infectious diseases as a specialty in Ireland and highlights many of the medically challenging areas in which our specialty is increasingly involved. The agenda also highlights our close collaborations with our colleagues in Genito- Urinary Medicine, Medical Microbiology, Hepatology, Public Health Medicine and Orthopaedics, with the mutual goal of improving patient care.

This meeting is an opportunity for our research community to present new and important developments in the field of Infectious Diseases in Ireland. In addition to attending the abstract presentations, I encourage you to visit and review the posters, representative of ongoing and active research activity, again reflecting the growth of our specialty and Society in the ten years since its foundation.

The meeting has been accredited for CPD credits by the Royal College of Physicians in Ireland. I would like to take this opportunity once again to thank our corporate sponsors for their very generous and ongoing support to the IDSI Annual Scientific Meeting.

Finally I hope that you enjoy your time in Galway. We are very privileged to be able to host this meeting in the Aula Maxima which, completed in 1845, is a reminder of the short duration that the specialty of infectious diseases has been contributing to patient care in Ireland.

Dr Catherine Fleming
President

Organising Committee

Dr. Catherine Fleming, Galway University Hospital/NUIG
Dr. Helen Tuite, Galway University Hospital/NUIG
Dr. Patrick Mallon, Mater Misericordiae University Hospital, Dublin/University College Dublin
Dr. Eoin Feeney, St. Vincent's University Hospital, Dublin /University College Dublin
Professor Karina Butler, Our Lady's Hospital for Sick Children
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

KEYNOTE SPEAKERS

Janet Englund, MD

Professor, Department of Pediatrics, University of Washington School of Medicine, Seattle Children's Hospital.

Dr. Englund's research interests include the study of the diagnosis, prevention and treatment of viral respiratory diseases in children, pregnant women, and immunocompromised hosts. She studies new viral vaccines and novel agents for the treatment of respiratory viruses including influenza, adenovirus, parainfluenza viruses, and respiratory syncytial virus (RSV). Dr. Englund has a longstanding interest in maternal immunization and is a coinvestigator of maternal immunization studies with influenza virus vaccines in Nepal sponsored by the Bill and Melinda Gates Foundation, in collaboration with colleagues at Johns Hopkins and Cincinnati Children's Hospital, and RSV vaccines in Seattle. As a Clinical Associate at Fred Hutchinson Cancer Research Center, she is actively involved in transplant-related protocols with Drs. Michael Boeckh and Alpana Waghmare in studies of the prevention, treatment and outcome of respiratory viral diseases in transplant recipients of all ages.

Dr. Englund's research group at Seattle Children's Hospital is part of the New Vaccine Surveillance Network of the Centers for Disease Control (2010 through 2021), participating in respiratory and gastrointestinal viral surveillance in collaboration with Dr. Eileen Klein, Pediatric Emergency Department. This group assesses vaccine effectiveness of rotavirus and influenza virus vaccines in population-based studies of healthy and sick children and is involved in epidemiological studies of other viruses including respiratory syncytial virus, rhinovirus, EVD-68, and norovirus. Dr. Englund and her team are actively involved in studies of new respiratory vaccines and antivirals including vaccines for the prevention of RSV in infants, children, and pregnant women, and antivirals in healthy and immunocompromised children. Her group is also studying new methods to diagnose and characterize viral respiratory diseases.

Dr. Englund is active in national and international organizations including AAP, the CDC-sponsored Advisory Committee on Immunization Practices (ACIP), the FDA Vaccines and Related Biological Products Advisory Committee (VRPBAC), and the maternal immunization safety group at World Health Organization. She is past president of PIDS, past member of the WHO Influenza working group, and a current member of the Board of Directors and Influenza Working Group of the Infectious Disease Society of America. She received the Pediatric Infectious Disease Society's Distinguished Physician Award in 2015.

Patrick Kennedy

Dr Patrick Kennedy is a Consultant Hepatologist and Gastroenterologist at Barts Health NHS Trust. Dr Kennedy graduated from University College Dublin and completed his post-graduate medical training in Gastroenterology and Hepatology in London. He was appointed as a HEFCE Clinical Senior Lecturer in Hepatology at Barts and The London School of Medicine in 2009.

His primary research interest is in liver disease, specifically immune mediated liver damage. He is widely published in the field of hepatology and has produced novel work redefining disease categorisation and investigating the role of individualised treatment strategies for chronic hepatitis B virus. His research focuses on factors driving the development and progression of liver disease. He has a special interest in liver disease in young people and runs a dedicated young adult liver clinic at The Royal London. He is a member of the viral hepatitis clinical guideline committee for NICE and provides expert opinion for the United Kingdom Advisory Panel on blood-borne viruses.

Martin McNally MB BCh MD FRCSEd FRCS(Orth)

Martin McNally is the Lead Surgeon in the Oxford Bone Infection Unit at the Nuffield Orthopaedic Centre, Oxford University Hospitals, UK and Honorary Senior Clinical Lecturer at Oxford University. He spends almost all of his time in infection management, treating around 150 new cases of osteomyelitis per year. He was trained in Northern Ireland, USA and Oxford. He has a particular interest in bone reconstruction in osteomyelitis, infected fractures and non-unions. He runs research projects in outcome of treatments for bone infection and local antibiotic delivery systems. He is Vice-President of the European Bone and Joint Infection Society and Honorary Secretary of the Girdlestone Orthopaedic Society. He has published about 100 papers, articles and book chapters and contributes regularly to instructional courses and international meetings on bone infection and limb reconstruction.

Clare Rock

Assistant Professor, Division of Infectious Diseases, Faculty member Armstrong Institute of Patient Safety, Johns Hopkins University School of Medicine, Baltimore, USA

Dr. Rock graduated from UCD School of Medicine in 2004 with honors. Dr. Rock completed internal medicine and infectious diseases higher specialist training (2004-2011). In 2008 she was awarded University College Cork and South Tipperary General Hospital Outstanding Teaching Award, Ireland

Following her higher specialist training in Ireland Dr. Rock completed an ACGME accredited clinical infectious diseases fellowship program at the University of Maryland. She then pursued advanced fellowship in hospital epidemiology, and a masters of science in epidemiology clinical research track, during which she was awarded the MS scholar award and the society for healthcare epidemiology of America (SHEA) epidemiology competition prize for her thesis work on hospital onset bacteremia.

Dr. Rock has a leadership role in the SHEA research network and is an active committee member of the SHEA research committee. She is an active researcher including funding from the Agency for Healthcare Research and Quality and the Centers for Disease Control and Prevention. Her main area of interest is the role of the environment in transmission of pathogens in the healthcare setting.

In 2015 she started in her current position at Johns Hopkins School of Medicine. She also is an associate hospital epidemiologist and also attends on the infectious disease consult service in addition to consulting for Johns Hopkins International.

Alison Rodger

Dr Alison Rodger is a Reader in Infectious Diseases in the UCL Institute for Global Health, University College London and Consultant in Infectious Diseases and Director of Public Health at the Royal Free London NHS Foundation Trust. Alison's research interests are in HIV transmission and testing, economic evaluation of health care interventions and the impact of the colonising microbiome in early life on subsequent health. She was the lead author on the PARTNER HIV transmission study, and is PI on the current PANTHEON NIHR programme grant looking at cost-effectiveness of HIV prevention and testing strategies, including a large RCT on HIV self-testing, among MSM in the UK. She is also developing a programme of research activities centred on meeting the challenge of rising morbidity and mortality from non-communicable diseases in east and southern Africa.

Andrej Trampuz

Andrej Trampuz is Professor for Infectious Diseases, Clinical Consultant and Head of the Infectious Diseases research laboratory at the Charité – University Medicine Berlin, Germany. He received his MD degree from the University of Ljubljana, Slovenia in 1994, internal medicine board in 1997 and infectious diseases board in 2001. He performed his postdoctoral research fellowship at the Mayo Clinic in Rochester, Minnesota, USA (2001-2004), where he developed the sonication procedure for improved diagnosis of infection in removed implants. Thereafter, he established his research group at the University Hospital Basel, Switzerland, relocated to the University Hospital Lausanne, Switzerland in 2009 and was appointed Head of the interdisciplinary septic surgery unit in 2013 at the Charité – University Medicine Berlin in Germany.

He is one of the founders of the European Implant Cohort Study (EICS), which will include infected joint prostheses from over 100 institutions across Europe and other continents. In addition, he is principle investigator of several clinical trials involving implant-associated infections. The laboratory research involves the development and validation of novel methods for diagnosis and treatment of implant-associated infections, including animal models, emergence of antimicrobial resistance and development of new diagnostic methods.

Together with Dr. Olivier Borens, Head of septic surgery unit at the University Hospital in Lausanne, Switzerland, he organizes workshops on prosthetic joint infection in Berlin, supported by the PRO-IMPLANT foundation (www.pro-implant-foundation.org). In addition, the University hospital Charité offers clinical observership for osteoarticular infections as the Collaborative Centre of the European Society for Clinical Microbiology and Infectious Diseases (ESCMID, www.escmid.org).
His current research group consists of postdoctoral scientists, lab technicians, PhD and master students. From 2011 to 2013, 25 internal medicine assistants and 13 infectious diseases fellows rotated under his supervision for 3-6 months and performed consultations for orthopedic & traumatology, plastic & reconstructive, thoracic & cardiovascular, visceral, and neurosurgical units.

He has authored 96 peer-reviewed publications and 6 book chapters related to biofilms, implant infections, microcalorimetry, sonication and rapid microbiological diagnosis.

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Thursday 4 May 2017 Martin Ryan Building, Annex Lecture Theatre	
16.30	**Registration, Tea/Coffee**
17.00 - 18.00	Sponsored Symposium Chair: Dr. Ferhat Butev ***HIV/Hep C Co-Infection*** **Dr. Christoph Boesecke,** Infectious Diseases Specialist, Clinical Research Fellow, University of Bonn, Germany
18.00 - 20.00	Co-Chairs: Dr. Arthur Jackson, Cork University Hospital Dr. Susie Clarke, St. James's Hospital
18.00 - 18.40	Keynote Speaker ***HIV Epidemiology in the era of ART*** **Dr. Alison Rodger,** Reader in Infectious Diseases, University College London; Consultant in Infectious Diseases & HIV and Director of Public Health, Royal Free London
18.40 - 20.00	SpR Clinical Case Presentations ***DiGeorge Syndrome*** **Dr. Zakaria Al Balushi** ***Salmon amháin agus Salmon eile*** **Dr. Colm Kerr** ***A Case of Simple Plumbing?*** **Dr. Padraig McGettrick** ***From New York to ICU*** **Dr. Anna O'Rourke** ***A Foot in the Wrong Direction*** **Dr. Tee Keat Keoh** ***Beyond the GAPApp; Guidance in absence of Guidelines*** **Dr. Liam Townsend**

Friday 5 May 2017 Aula Maxima	
08.00	**Registration**
09.00 - 09.05	Annual Scientific Meeting Opening : **Dr. Catherine Fleming, President, Infectious Diseases Society of Ireland**
	Co-Chairs: Prof. Colm Bergin, St. James's Hospital/Trinity College Dublin Dr. Catherine Fleming, Galway University Hospital
09.05 - 9.45	Keynote Speaker ***Surgical Management of Complicated Osteomyelitis*** **Mr. Martin McNally**, Consultant Orthopaedic Surgeon in Limb Reconstruction, University Hospitals Oxford
9.45 - 10.25	Keynote Speaker: ***Prosthetic Joint Infections: A Continuous Challenge?*** **Professor Andrej Trampuz**, Clinical Consultant and Head, Infectious Diseases Research Laboratory, Charité – University Medicine Berlin
10.30 - 11.00	**Coffee/Tea, Poster Viewing, Exhibition**
11.00 - 12.30	Co-Chairs: Dr. Eoin Feeney, St. Vincent's University Hospital Dr. Cora McNally, Beaumont Hospital
11.00 - 11.45	**Review of Clinical Orthopaedic/ Infectious Disease Cases:** **Mr. Martin McNally, Dr. Nora Renz, Prof. Andrej Trampuz**
11.45 - 12.00	***A multidisciplinary OPAT-centred diabetic foot infection pathway reduces length of stay*** A O'Rourke, D Rajendran1, E Kellegher2, S Sheehan3, E Feeney1 Department of Infectious Diseases, St. Vincent's University Hospital, Dublin
12.00 - 12.15	***Self-Administered Outpatient Parenteral Antibiotic Therapy (S-OPAT) vs. Healthcare Personnel-Provided OPAT (H-OPAT): Experiences at a Tertiary Care Hospital*** J Woo, A Lyons, D Gallagher, H Tuite, S Clarke, C Fleming Galway University Hospital
12.15 - 12.30	***The decline in the burden of malaria in The Gambia has not compromised the acquisition of natural immunity to malaria*** S. Anya, A Palmer, R Brugha, S McConkey Dept. of International Health & Tropical Medicine, Royal College of Surgeons in Ireland
12.30- 13.15	**Lunch, Poster Viewing, Exhibition**

13.15 - 14.15	Sponsored Symposium: Chair: Prof. Colm Bergin, St. James's Hospital/Trinity College Dublin ***Overcoming psychiatric barriers to ensure effective treatment and prevention of HIV & HCV in patients*** **Dr. Glenn Treisman**, Professor of Psychiatry and Behavioural Science, Johns Hopkins Hospital
14.15 - 15.45	Co-Chairs: Prof. Karina Butler, Our Lady's Hospital for Sick children Dr. Corinna Sadlier, Cork University Hospital
14.15 - 15.00	Keynote Speaker ***Treatment of Viral Infections in the Transplant Patient*** **Prof. Janet Englund**, Department of Pediatrics, Seattle Children's Hospital, University of Washington
15.00 - 15.15	***Increased Respiratory Pathogen Diagnoses Using Multiplex NxTAG Respiratory Pathogen Assay*** D Waldron O Loughlin, L Dunford, C Byrne, A Waters, C de Gascun National Virus Reference Laboratory, University College Dublin
15.15 - 15.30	***The hidden burden of hepatitis C related advanced liver disease in the community*** N Iqbal, C Murphy, T McHugh, A Singleton, S Keating, D Crowley, H Gallagher, F Savage, J Maloney, J Lambert, S Stewart Mater Misericordiae University Hospital
15.30 - 15.45	***Hepatitis C Co-Infection with HIV Sustained Viral Response Outcomes and Antiretroviral Switch in the DAA Era*** P. McGettrick, C. Bannan, J.Lee, M.Coughlan, G.Farrell, C. Murray, M. Broderick, G. Hughes, S. O'Connell, C. Bergin GUIDe Department, St James's Hospital, Dublin
15.45 - 16.00	**Tea/Coffee, Poster Viewing, Exhibition**

16.00 - 16.30	***Clinical Abstract Oral Presentations*** Co-Chairs: Dr. Sarah O'Connell, University Hospital Limerick Dr. Cliona Ní Cheallaigh, St. James's Hospital
16.00 - 16.15	***Audit: Measuring performance of Tenofovir disoproxil fumarate (TDF) toxicity monitoring in HIV center of a tertiary hospital in Dublin, 2016*** Z Al Balushi, C Bergin St. James's Hospital, Dublin
16.15 - 16.30	***Application of a Recent Infection Testing Algorithm to New Diagnoses of HIV in Ireland*** E Robinson, K ODonnell[1], J Hassan[2], J Moran[1,2], L Nic Lochlainn[1], S O'Dea[3], H Tuite[4,5], F Cooney[6], O Ennis[6], S Doyle[7], E Nugent[8], J Connell[2], L Preston[9], S Keating[5], C De Gascun[2], Derval Igoe[1] 1. Health Protection Surveillance Centre, Health Service Executive; 2. National Virus Reference Laboratory, University College Dublin; 3. Gay Men's Health Service; 4. Infectious Disease Society of Ireland; 5. Society for the Study of Sexually Transmitted Diseases in Ireland; 6. Dept of Public Health Medicine, HSE East; 7. Dept of Public Health Medicine, HSE South East ; 8. HIV Ireland ; 9. Positive Now.
16.30 - 17.00	Sponsored State of the Art Presentation Chair: Adam Stubbs ***A clinical update on dolutegravir ▼ since IDSI 2016*** **Els Hollanders**

Saturday 6 May 2017 Aula Maxima	
09.30 - 10.30	Sponsored Symposium Chair: Dr. Catherine Fleming ***Engaging and Treating Patients in Marginalised and Vulnerable Populations*** **Dr. Stephen Barclay**, Glasgow Royal Infirmary, Scotland
10.30 - 11.10	Co-Chairs: Prof. Mary Horgan, Cork University Hospital, University College Cork Dr. Paddy Mallon, Mater Misericordiae University Hospital/University College Dublin Keynote Speaker ***Advances in Hepatitis B Management*** **Dr. Patrick Kennedy**, Reader in Hepatology, Consultant Hepatologist, Barts and the London School of Medicine and Dentistry, QMUL
11.10 - 11.30	**Tea/Coffee, Poster Viewing, Exhibition**
11.30 - 12.55	Co-Chairs: Dr. Eavan Muldoon, Mater Misericordiae University Hospital Dr. Aoife Cotter, Mater Misericordiae University Hospital
11.30 - 11.45	***An outbreak of hepatitis A associated with a childcare facility in Dublin Ireland, 2015*** L O'Connor[1], E McGovern[2], M O'Meara[3], M Ward[3], M O'Connor[3] 1. Health Protection Surveillance Centre, Dublin; 2. Department of Public Health, HSE South-East, Kilkenny; 3. Department of Public Health, HSE East, Dr. Steevens' Hospital, Dublin
11.45 - 12.00	***Findings From the Men Who Have Sex with Men (MSM) Internet Survey Ireland (MISI): Estimated Proportion of MISI Respondents with Indications for Pre-Exposure Prophylaxis (PrEP)*** L Nic Lochlainn[1], K O'Donnell[1], C Hurley[2], F Lyons[2], D Igoe[1] 1. HSE Health Protection Surveillance Centre (HPSC), Dublin 1 2. HSE Sexual Health and Crisis Pregnancy Programme (SHCPP), Dublin 1
12.00 - 12.15	***Out of sight, out of mind? Groundwater as a source and pathway for antibiotic-resistant infection in the Republic of Ireland*** J O'Dwyer, P Hynds, M Pot, C Adley, M Ryan Department of Biological Sciences, School of Natural Sciences, University of Limerick
12.15 - 12.55	Keynote Speaker ***Management of CRE Outbreak*** **Dr. Clare Rock**, Assistant Professor of Medicine, Johns Hopkins University, Baltimore, Maryland
12.55	**Close of Meeting:** **Dr. Helen Tuite, Secretary, Infectious Diseases Society of Ireland**

Oral Presentations
(in order of programme)

O1 A multidisciplinary OPAT-centred diabetic foot infection pathway reduces length of stay

A O'Rourke[1], D Rajendran[1], E Kellegher[2], S Sheehan[3], E Feeney[1]
1.Department of Infectious Diseases, St. Vincent's University Hospital, Dublin 4

Background: Foot infections are a common and serious complication in persons with diabetes; diabetic foot infections (DFI) cause morbidity and mortality amongst patients and represent significant economic costs. These complex patients often have prolonged length of stays due to multiple co-morbidities.

Methods: In April 6 St. Vincent's University Hospital (SVUH) introduced an integrated multidisciplinary clinical pathway for acute DFI admissions. The project aims were to streamline and improve patient care, improve access to diagnostics, reduce out of hours surgical procedures, reduce patient length of stay, and educate staff on urgency of vascular referral. A dedicated combined ID/OPAT/podiatry and vascular clinic was created for follow-up; on discharge patients were reviewed weekly. Following completion of OPAT, patients were followed for a minimum of three months in Infectious Diseases clinic. The duration of OPAT therapy for all patients was six weeks. The majority also received a six week oral antibiotic consolidation course. The primary outcome measured was inpatient bed days saved. This was compared to length of stay among patients with DFI in a historical cohort of patients before the implementation of the Diabetic Foot Pathway using Student's T-test. The secondary endpoints measured were DFI outcomes.

Results: Between there were 46 patients discharged on OPAT. Before the introduction of the Diabetic Foot Pathway, the average DFI inpatient stay was 33.2 days. Following its introduction, the average inpatient stay was 9.8 days (P<0.001). A total of 1405 inpatient bed days were saved. At a cost of € 926/ day for inpatient stay, this led to estimated savings of €1,301,030.
Of the 46 patients discharged on therapy, 45 patients completed the prescribed course of antibiotic.1 patient underwent TMA before completing treatment. A successful diabetic foot outcome, defined as being ulcer/ infection free three months post completion of therapy, was achieved in 91% of cases. 4 patients failed therapy: 2 patients underwent TMA, 1 patient had a TKA, and 1 patient had a femoral angioplasty performed.

Conclusion: The design and implementation of a dedicated OPAT-centred DFI pathway at a large tertiary referral hospital has led to significant savings in inpatient bed days and cost. Outcomes were good for patients with the majority of patients remaining disease free three months post follow-up.

O2 Self-Administered Outpatient Parenteral Antibiotic Therapy (S-OPAT) vs. Healthcare Personnel-Provided OPAT (H-PAT): Experiences at a Tertiary Care Hospital

J Woo[1], A Lyons[1], D Gallagher[1], H Tuite[1], S Clarke[2], C Fleming[1]
1. Galway University Hospital, Newcastle Road, Galway;
2. Clinical Lead for National OPAT Programme Ireland, St. James's Hospital, Dublin

Background: Outpatient Parenteral Antibiotic Therapy (OPAT) is the internationally established model of care for the safe delivery of intravenous antibiotics at home. Antibiotics are either self-administered (S-OPAT) or given by a trained healthcare professional (H-OPAT). OPAT has been available in Galway University Hospital (GUH), a 558 bed teaching hospital, via a national programme since 2013. This audit compares the demographics and safety of patients on S-OPAT versus H-OPAT.

Methods: A retrospective review was carried out of all patients enrolled in the GUH OPAT service between February 2014 and July 2016. Variables collected include mode of OPAT delivery, patient demographics, infection site, antimicrobial choice, duration of treatment, bed days saved and readmission rates. Patient data was derived from a national database and collated with hospital electronic patient records. Statistical analysis was performed using Microsoft Excel.

Results: A total of 179 courses of antibiotics were administered to 171 patients between February 2014 and July 2016 (S-OPAT: 103/179 (57.5%) courses for 101 patients; H-OPAT: 76/179 (42.5%) courses for 70 patients). Males comprised 75% of S-OPAT patients and 63% in the H-OPAT group (p=0.09). The mean age for patients on S-OPAT was 52.0 (range 9-84) and 54.9 for H-OPAT (range 16-92) (p=0.33). More patients on S-OPAT had prolonged treatment (65.0% >2 weeks) compared with those on H-OPAT (15.8% >2 weeks) (p<0.001). Average duration on S-OPAT was 21.2 days and on H-OPAT was 8.9 days (p<0.001). Bone/joint infections comprised 50.4% of antibiotic courses for S-OPAT patients whereas skin/soft tissue infections were the predominant infection in the H-OPAT group (53.9%). The most common antimicrobials used for S-OPAT were: Flucloxacillin (39.8%) and Daptomycin (18.4%). In the H-OPAT group, Cefazolin (44.7%) and Ceftriaxone (26.3%) were the most common. Geographically, 35.0% of S-OPAT vs. 7.9% of H-OPAT patients were outside county Galway (p<0.001). Estimated number of bed days saved in the S-OPAT group was 2188 and 675 for the H-OPAT group. Readmission rates related to OPAT or infection were 2.29 per 1000 OPAT days for S-OPAT and 1.48 per 1000 OPAT days for H-OPAT (p=0.67).

Conclusion: S-OPAT is a safe and effective method for treating patients at home with intravenous antibiotics. Readmission rates due to infection were low. Although rates were slightly higher in the S-OPAT group this may reflect treatment of more complicated infections and

the use of central lines vs. peripheral access for H-OPAT. OPAT programmes have demonstrated significant benefit to hospital bed capacity with early discharge of suitable patients.

O3 The decline in the burden of malaria in The Gambia has not compromised the acquisition of natural immunity to malaria

S Anya, A Palmer, R Brugha, S McConkey
Department of International Health & Tropical Medicine, Royal College of Surgeons in Ireland

Background: Reports of a sustained decline in the burden of malaria in The Gambia gave rise to concerns that this would lead to a reduction in immunity to malaria with more severe illness in older age groups. This and other concerns led to the establishment of a health facility-based sentinel surveillance system to monitor trends and enhance insight.

Methods: To examine the relationship between severe malaria and age, we analysed 252,000 parasitological tests for malaria and 158,000 haemoglobin results for febrile individuals seen at the six sentinel surveillance sites over the 54-month period from July 2008 to December 2012. Individuals with severe anaemia, defined as a haemoglobin concentration below 8g/dL, and malaria parasitaemia were considered to have severe malaria.

Results: In the presence of malaria parasitaemia, the prevalence of severe anaemia was highest among infants at 33.1% and remained above 30% in the first two years of life. Thereafter, the prevalence of severe anaemia was progressively lower in each subsequent age year to until 9 years of age when it was 6.9%. From 10-14 years of age, the prevalence of severe anaemia among children with malaria ranged from 4.6% to 8.5%. In contrast, among children who did not have malaria, the prevalence of severe anaemia peaked at 10.7% at 2 years of age and was progressively lower in subsequent 1 year age groups until 9 years of age when it was 5.8%. The prevalence of severe anaemia among infants 7.6% which was lower than the prevalence among older children aged 1-7 years. From 10-14 years of age, the prevalence of severe anaemia among children who did not have malaria ranged from 4.6% to 6.1%.
Among individuals who were more than 14 years old, the prevalence of severe anaemia was 5.6% in the presence of malaria parasitaemia and 5.5% in the absence of malaria parasitaemia.

Conclusion: The decline in malaria burden has not yet compromised naturally acquired immunity to malaria in The Gambia. The acquisition of immunity to severe anaemia is almost complete by nine years of age.

O4 Increased Respiratory Pathogen Diagnoses Using Mujltiplex NxTAG Respiratory Pathogen Assay

D. Waldron O Loughlin, L. Dunford, C. Byrne, A. Waters, C.F. de Gascun
National Virus Reference Laboratory, University College Dublin, Belfield, Dublin

Background: Acute respiratory infections cause considerable morbidity and mortality worldwide. Despite the improved sensitivity of molecular diagnostic methodologies an aetiological agent is still not identified in up to 50% of cases. Compounding this deficit is the fact that, as clinical presentations are non-specific, confirmation of an aetiological diagnosis primarily relies on laboratory testing. Rapid diagnosis can facilitate prompt therapeutic interventions, appropriate infection control measures and most importantly, optimise patient care.

Methods: The Luminex NxTag Respiratory Pathogen Panel (NxTAG) is a high throughput qualitative assay capable of detecting 21 pathogens that was introduced into routine testing at the National Virus Reference Laboratory, Ireland (NVRL) for the 2016/2017 respiratory season. Respiratory secretory specimens were prospectively analysed by the NxTAG (n=788). A proportion of results were additionally tested by either the BioFire respiratory FilmArray (BFFA), or our accredited (ISO 15189) laboratory developed respiratory virus multiplex RT-PCR test (LDT), on which all respiratory swabs, received during the same time-frame, were analysed.

Results: Overall, 65% of specimens analysed by the NxTAG assay were positive for at least one pathogen; 14% were positive for ≥3 respiratory viruses and/or bacteria. Of the specimens tested, 10% were positive for influenza AH3 and 17% for respiratory syncytial virus (RSV). Pathogens that are not routinely investigated by our LDT included pan-rhino/enterovirus, human coronavirus, and human bocavirus, which were detected in 30%, 12% and 7%, respectively. In addition, more than one coronavirus strain was detected in some samples, indicating co-circulation of different coronavirus strains during the same season. Finally, Mycoplasma pneumoniae was detected in 9 samples: of note, these atypical pneumonias would have otherwise have remained undiagnosed in our laboratory. Importantly, the turnaround time for the NxTAG assay was equivalent to our LDT, and as such the time to laboratory confirmed diagnoses of influenza and RSV remained unaffected.

Conclusions: The NxTAG assay offered both high-throughput capabilities, with improved sensitivity and specificity for all pathogens. In addition, results were generated for pathogens not included in the LDT or for which testing was not available on a routine basis. However, the clinical relevance of detecting multiple respiratory viral infections, especially in paediatric patients in which residual viral nucleic acid from prior

infections may persist for some time, is unclear. In agreement with previous studies, a high proportion of samples were positive for multiple pathogens. Nevertheless, the NxTAG data provide valuable real-time information on the circulation and seasonality of multiple respiratory pathogens in Ireland.

O5 The hidden burden of hepatitis C related advanced liver disease in the community

N Iqbal, C Murphy, T McHugh, A Singleton, S Keating, D Crowley, H Gallagher, F Savage, J Malony, J Lambert, S Stewart
Mater Misericordiae University Hospital

Background: In Ireland there are large numbers of hepatitis C (HCV) positive patients receiving methadone substitution therapy in drug treatment centre (DTCs) who do not attend specialist hepatology services. Most of these patients have never had their liver disease staged. Fibroscan™ (FS) is an excellent, point of care, non-invasive tool for measuring liver stiffness which correlates closely with hepatic fibrosis. The clinically relevant cut-offs are 8.5 kPa, which allows access to direct acting antivirals (DAAs) in Ireland, 25kPa which has a 90% positive predictive value for clinically significant portal hypertension and 35kPa which associates with a 10-20% risk of decompensation per year. The aims of the current study are to use FS to risk stratify patients receiving methadone substitution therapy in Dublin DTCs. To determine the impact of active alcohol consumption on FS score.

Methods: We performed FS on sequential clients receiving methadone substitution therapy in the six larger Dublin DTCs regardless of their HCV status. Clients were also asked regarding alcohol intake and grouped into two categories – abstinent or not abstinent.

Results: A total of 618 consecutive patients (75% male, mean age 38 ±7.2) were assessed. HCV status was known in 91% (561) of patients with 70% (391) being HCV +ve. The mean FS score was higher in the HCV +ve patients than the HCV –ve (11.0kPa ± 12.4 v 5.6kPa ± 4.0; p = 0.001). In the HCV +ve group, patients that drank alcohol (35 %) had a higher score than those that were abstinent (13.2kPa ±16.4 v 9.7kPa ±9.9; p = 0.02). There were 128 (33% of total cohort) HCV +ve patients with FS ≥8.5 kPa, 34 (9%) with FS ≥25 kPa and 21 (5%) with FS ≥35 kPa.

Conclusion: This community based study has identified a large number of HCV positive patients that do not attend specialist hepatology services yet qualify for DAA treatment. Within this group there are significant numbers of patients at high risk of decompensation. On-going alcohol use is associated with a significantly higher FS score. While these patients may have significant comorbidities, including addiction, which limits access to specialist hospital services, it is important to overcome these challenges if we are to make an impact on HCV-related mortality.

O6 Hepatitis C Co-Infection with HIV Sustained Viral Response Outcomes and Antiretroviral Switch in the DAA Era

P. McGettrick, C. Bannan, J.Lee, M.Coughlan, G.Farrell, C. Murray, M. Broderick, G. Hughes, S. O'Connell, C. Bergin
GUIDe Department, St James's Hospital, Dublin

Background: The use of Direct Acting Antivirals (DAA) in the treatment of Hepatitis C (HCV) has improved rates of Sustained Viral Response (SVR) in patients co-infected with HIV. However, the necessity to avoid drug-drug interactions (DDIs) and toxicities with co-administration of antiretroviral therapy (ART) require ART changes prior to commencing DAAs. We aimed to assess the treatment outcomes of the co-infected cohort attending our department, compared against the monoinfected cohort and assess rates of ARV switch to avoid DDIs and toxicities.

Methods: All patients treated with DAAs in the GUIDe department in St. James Hospital Dublin were included in the analysis. Demographic, virological and drug treatment data were collected and entered on a database with outcomes described as SVR12, PCR negative at end of treatment but awaiting SVR12 (EOT=ND), Failed/stopped treatment and Treatment Ongoing. Data are reported as median (IQR) and differences between the mono-infected and co-infected groups were assessed using SPSS V 24.

Results: 149 patients were treated with DAAs of which 95 were co-infected with HIV. Of the co-infected cohort, median (IQR) age was 47yrs (42, 52), 78 (82.1%) male, 55 (57.9%) acquired HCV through IV drug use and most prevalent genotype 1 (69.5%) and 3 (26.3%). 13 had documented decompensated liver disease (84.6% Genotype 1 and 15.4% Genotype 3).
The only significant between group differences were the HCV genotype and DAA regimen choice (see table 1). At time of analysis, 79 (83.2%) co-infected patients had completed treatment with 94% achieving either a SVR12 or were PCR negative at end of treatment, compared to 92% in the mono-infected cohort. 54% of the decompensated cirrhotic group (n=13) achieved a SVR12, however the mortality rate at 2 years was 54% (n=7). Kaplan Meire curves for mortality and liver related morbidity for total co-infected cohort are currently being formulated.
55% of co-infected patients required changes to their ART regime, with the most common switch off protease inhibitors (PI) and non-nucleoside reverse transcriptase inhibitors (NNRTI) to integrase inhibitors with no HIV viral escape detected in patients following switch. This compares to a switch rate of 17% overall in the clinic, calculated on audit data from 2014.

Conclusion: In this, the largest cohort of co-infected patients treated to date in Ireland with DAA therapy, there was no significant difference in SVR 12 rates between the co-infected and mono-infected groups. The ART switch rate was considerably higher than seen in the HIV clinic to avoid DDIs and toxicities in conjunction with DAA therapy.

O7 Audit: Measuring performance of Tenofovir disoproxil fumarate (TDF) toxicity monitoring in HIV center of a tertiary hospital in Dublin, 2016

Z Al Balushi, C. Bergin
St. James's Hospital, Dublin

Introduction: Tenofovir disoproxil fumarate (TDF) is used frequently as part of antiretroviral regimens. TDF can effect kidney and bone health hence it is important to monitor all patients for early evidence of toxicity. Urine dipstick and urine protein creatine ratio (UPCR) are recommended for all patients on TDF. DEXA is recommended in any patient with risk factors for bone disease and for all HIV+ patients over the age of 50 years.

Objective: To check the rate of urine monitoring in patients on TDF attending a HIV clinic and to check the percentage of patients who had positive protein in urine dipstick that were subsequently monitored by UPCR analysis. We additionally aimed to evaluate the number of patients on a TDF regimen tested for UPCR in the last 2 years. A secondary objective was to record the pattern of DEXA scan referrals amongst this sample group.

Method: All patients on TDF regimen for more than one year who were seen in HIV clinic during the month of August 2016 are included in the audit. The data of urine dipsticks, UPCR, eGFR and DEXA tests were collected. Analysis of the data was undertaken using SPSS software.

Results: (Tables 1 and 2): 384 patients on a TDF regimen attended the clinic and met the inclusion criteria, 71% male. Only 30% had urine dipstick though all positive urine dipstick tests for protein were sent to the laboratory for UPCR. 41% of the patients had UPCR. 57% had either urine dipstick, UPCR or both. 7% of the 104 patients who had UPCR performed had an abnormal result. 6% of the patient group had eGFR < 60. Among those patients, 30% had urine dipstick, 70% had UPCR and 74% had either UPCR, urine dipstick or both. Only 50% of patients above 50 years old had DEXA imaging undertaken. Findings of osteopenia and osteoporosis were reported in 31% and 18% of this subgroup of patients respectively.

Conclusion: In patients receiving TDF only 57% were tested by urine dipstick, UPCR or both. Only 50% of patients (above 50 years old) had DEXA scan imaging performed. Interventions to increase awareness of the importance of monitoring for potential TDF toxicity by urine dipsticks, UPCR and DEXA among doctors and nurses and increasing documentation of these tests on patient's chart are to be established. A second cycle of audit is planned to be done in 2017 after applying these interventions.

O8 Application of a Recent Infection Testing Algorithm to New Diagnoses of HIV in Ireland

E Robinson, K ODonnell[1], J Hassan[2], J Moran[1,2], L Nic Lochlainn[1], S O'Dea[3], H Tuite[4,5], F Cooney[6], O Ennis[6], S Doyle[7], E Nugent[8], J Connell[2], L Preston[9], S Keating[5], C De Gascun[2], Derval Igoe[1]
1. Health Protection Surveillance Centre, Health Service Executive; 2. National Virus Reference Laboratory, University College Dublin; 3. Gay Men's Health Service; 4. Infectious Disease Society of Ireland; 5. Society for the Study of Sexually Transmitted Diseases in Ireland; 6. Department of Public Health Medicine, HSE East; 7. Department of Public Health Medicine, HSE South East ; 8. HIV Ireland; 9. Positive Now.

Background: The proportion of recent HIV infections in a population is an indicator of ongoing HIV transmission. Recent infection testing algorithms (RITA) combine serological assays with epidemiological data to determine the likelihood of an infection being recent. We piloted the application of RITA to new HIV diagnoses in Ireland between January and June 2016.

Methods: New HIV diagnoses identified at the NVRL underwent avidity testing using the Sedia HIV Limiting Antigen Avidity assay. Results were combined with epidemiological data extracted from the national computerised infectious disease reporting system (CIDR). RITA classified diagnoses as recent, indicative of likely acquisition in the previous four months, based on an avidity index <1.5, unless other laboratory or clinical data (CD4 count <200 cells/mm3, presence of an AIDS-defining illness, history of antiretroviral treatment (ART), undetectable viral load (UVL)) indicated longstanding infection. Characteristics of those with recent infection were stratified by risk group.

Results: Of 199 diagnoses tested, 22.1% (n=44) had an avidity index <1.5. Of these, 31.8% (n=14) were deemed non-recent (history of ART (n=13), UVL (n=1). Overall, RITA classified 15.1% (n=30) of diagnoses as recent. The recent infection rate (RIR) was highest amongst people who inject drugs (PWID) at 33.3% (3/9), compared to 15.0% (15/100) amongst MSM, and 10.4% (5/48) amongst heterosexuals. The RIR was higher in those aged 15-24 years when compared to those aged over 45, amongst both MSM (33.3% v 12.5%) and heterosexuals (33.3% v 6.7%). Conversely, in PWID, the RIR was highest (75.0%) in those aged 35-44 years. The RIR was similar in Irish-born MSM and MSM born abroad (14.7% v 11.9%). In contrast, for heterosexuals, the RIR was higher in Irish-born (33.3% v 3.1%). The RIR was higher in residents of HSE East compared to elsewhere

amongst both MSM (18.1% v 7.1%) and PWID (37.5% v 0). Multivariable analysis did not identify statistically significant associations. Of note, data on CD4 count, VL, ART, and clinical stage, were unavailable for 40% of recent infections.

Conclusion: RITA suggests a high rate of ongoing HIV transmission in certain groups. However, differences may reflect testing practices or access to testing. In addition, the RIR may be overestimated due to the lack of completeness of epidemiological data, which requires strengthening in order to improve the reliability of RITA. Integration of RITA into HIV surveillance will enable targeting of prevention efforts and will therefore be a valuable asset to HIV prevention and control in Ireland.

O9 An Outbreak of Hepatitis A associated with a Childcare Facility in Dublin, Ireland 2015

L O'Connor[1], E McGovern[2], M. O'Meara[3], M Ward[3], M O'Connor[3]
1.Health Protection Surveillance Centre, 25-27 Middle Gardiner Street, Dublin; 2. Department of Public Health, HSE South-East, Dublin Road, Lacken, Kilkenny. 3. Department of Public Health, HSE East, Dr Steevens' Hospital, Dublin 8.

Background: Hepatitis A infection results in a spectrum of illness from asymptomatic disease to severe fulminant hepatitis. In recent years, less than 50 cases of hepatitis A have been reported annually in Ireland. We report on an outbreak of hepatitis A associated with a childcare facility (CCF) in 2015 in Dublin, Ireland. The first three cases identified, one a CCF attendee, occurred within one household. The notification of the fourth case in a second household associated with the same CCF as the index case alerted public health to the possibility of transmission within the CCF.

Methods: Enhanced surveillance was undertaken on all hepatitis A cases notified to the regional Department of Public Health. A look-back investigation was conducted on all cases notified from January 1st 2015. Hepatitis A serology was performed on all suspected cases and genotyping was undertaken, where possible, on confirmed cases. Potential environmental exposures were investigated, as well as an assessment of the hygiene practices at the linked CCF.

Results: Between January and July 2015, 12 symptomatic hepatitis A cases were associated with the outbreak. Seven (58%) cases were adults and eight (67%) were male. Six (50%) cases, all adults, required hospitalisation. All 12 cases were confirmed on serology. Four outbreak-associated cases, including the index case, were genotyped and were identical on phylogenetic analysis. Environmental investigations did not identify a definite source of infection.

Outbreak control measures included: provision of information on hepatitis A and infection prevention. Hepatitis A vaccination was offered to 555 CCF contacts. The CCF closed voluntarily for deep cleaning and staff education. Seven cases occurred during the implementation of control measures. Of these, four had been vaccinated. Given the incubation period of hepatitis A, these four cases were most likely already infected at time of vaccination.

Conclusions: Despite a reduction in notifications of hepatitis A infections in recent years in Ireland, outbreaks continue to occur. This outbreak highlights challenges in controlling a large CCF-associated hepatitis A outbreak. In addition, the number of adults hospitalised with hepatitis A highlights the morbidity associated with this disease.

O10 Findings From the Men Who Have Sex with Men (MSM) Internet Survey Ireland (MISI): Estimated Proportion of MISI Respondents with Indications for Pre-Exposure Prophylaxis (PrEP)

L Nic Lochlainn[1], K O'Donnell[1], C Hurley[2], F Lyons[2], D Igoe[1]
1. HSE Health Protection Surveillance Centre (HPSC), Dublin 1
2. HSE Sexual Health and Crisis Pregnancy Programme (SHCPP), Dublin 1

Background: In Ireland, HIV infection predominantly occurs among men who have sex with men (MSM). Combination prevention approaches, including pre-exposure prophylaxis (PrEP) are recommended to reduce the risk of acquiring HIV. At present, there are no standard international set of criteria for determining an individual's eligibility for PrEP. In 2015, France became the first country in Europe to approve and recommend a PrEP programme for people at risk of HIV. We used data from the 2015 MSM Internet Survey Ireland (MISI), a large-scale community based survey among adult MSM living in Ireland, in order to estimate the proportion of MISI respondents eligible for PrEP using PrEP eligibility criteria from France.

Methods: We applied French PrEP eligibility criteria to MISI variables. Where exact criteria to MISI variables could not be applied, the most similar form was used. French PrEP eligibility criteria include MSM or transgender adults who are HIV negative and who had at least one of the following: condomless anal sex (CAI) with two or more different partners in the past six months; episodes of STIs over the last 12 months; use of multiple post-exposure prophylaxis (PEP) treatment(s) or use of drugs during sex. We calculated our estimate by selecting MISI respondents reporting CAI with two or more non-steady partners in the past 12 months, rather than the past six months. We also selected responses from MISI respondents reporting use of crystal methamphetamine, GHB (gamma-hydroxybutyrate) or GBL (gamma-butyrolactone), mephedrone or ketamine as a proxy for use of drugs during sex.

Results: MISI respondents included 3,045 MSM aged 18-64 years, of whom 2,870 (94%) were HIV negative or had never received an HIV test. In the past 12 months, 370 (12%) reported CAI with two or more non-steady partners; 243 (8%) reported an STI diagnosis and 181 (6%) reported using drugs during sex. Four percent of respondents (n=119) reported having been treated with PEP. Overall, 23% [95%CI (22-25)] of MISI respondents have risk for acquiring HIV infection and met French PrEP eligibility criteria.

Conclusion: An estimated one in four MISI respondents met French PrEP eligibility criteria. Applying this estimate to the MSM population in Ireland, taking study limitations, those engaged in services and assumed uptake of PrEP into account would enable calculation of the number of MSM at risk of HIV eligible for PrEP in Ireland. This estimate will be useful for informing PrEP policy in Ireland.

O11 Out of sight, out of mind? Groundwater as a source and pathway for antibiotic-resistant infection in the Republic of Ireland

J. O'Dwyer, P Hynds, M Pot, M Ryan, C Adley
Department of Biological Sciences, School of Natural Sciences, University of Limerick

Background: Antibiotic resistant organisms and genes are now acknowledged as significant emerging aquatic contaminants with potentially adverse human and ecological health impacts. The current study is the first to investigate the presence of antimicrobial-resistant bacteria (E. coli) in Irish groundwater, and the role of anthropogenic (i.e. sources) and natural (i.e. pathways) drivers on levels of encountered resistance.

Methods: Antibiotic susceptibility testing was carried out on groundwater-derived E. coli isolates (N = 125) against a panel of commonly prescribed human (N = 13) and veterinary (N = 8) therapeutic antibiotics. Geo-spatial data extraction and geo-statistical analyses were employed to elucidate the sources and transport mechanisms associated with antimicrobial presence in Irish groundwater.

Results: Resistance to the human panel of antibiotics was moderate (21.4%) with the most frequently occurring resistance phenotypes associated with 1st and 2nd generation broad spectrum antimicrobials. Highest levels of resistance were associated with the penicillins (e.g. ampicillin – 14.3%), while notable levels of resistance were also found among the fluoroquinolones, representing a concern, as this antibiotic class is frequently employed in the treatment of salmonellosis. In contrast with the human panel, high levels of resistance to veterinary antibiotics were found; all isolates presented resistance to >1 veterinary antibiotic, with particularly high levels of resistance (93%) found among the aminoglycosides. Geostatistical modelling indicates a significant association between the presence of both human AR (p =0.011) and Multiple Antibiotic Resistance (MAR) (p =0.002) and Domestic Waste Water Treatment Systems (DWWTS) reliance, indicating that regions characterised by a higher density of on-site treatment systems as are associated with the presence of antibiotic resistant E. coli. Furthermore, a significant association was found between households comprising children <5 years of age and the presence of both human AR (p = 0.022) and MAR (p <0.001). Results also indicate a significant relationship (p = <0.001) between livestock density and the prevalence of veterinary MAR.

Conclusion: This study presents significant evidence of the presence and extent of antibiotic resistance in E.coli isolates the Irish groundwater environment, which represents the primary daily source of drinking water for ≈750,000 people. All isolates were sampled from groundwater sources for domestic human consumption, thus the significance of (multiple) antibiotic resistance, cannot be overstated.

Poster Presentations

- BASIC SCIENCE
- EPIDEMIOLOGY & PUBLIC HEALTH
- CLINICAL CARE, HIV, HEPATITIS
- CLINICAL CARE, INFECTIOUS DISEASES
- PHARMACOLOGY

BASIC SCIENCE

P1
Analysis of a High Resolution Melting Assay as a Measure of HIV Diversity.

I Teišerskytė, E Quinn, G Murphy1, C De Gascun, J Hassan
National Virus Reference Laboratory, University College Dublin, Dublin 4 and 1Public Health England, London on behalf of the Consortium for Performance and Evaluation of HIV Incidence Assays (CEPHIA)

Background: Current data suggest that a small number of HIV variants -possibly even one virus - initiates infection, and that the immune response and other selective forces then drive the evolution of viral variants within the infected person, generating a complex population of related viral quasi-species. Consequently, the degree of HIV diversity has been associated with different stages of HIV disease. Our group has recently investigated the use of limiting antigen and line immunoassays to calculate the incidence of HIV in Ireland. The aim of the present project was to set up an High Resolution Melting (HRM) assay that analyses the melting profile of DNA amplified from defined regions of the HIV genome (pol, gag and env), and to determine whether HRM when used as a measure of HIV Diversity can supplement HIV incidence estimation.

Methods: Thirty-two well characterised clinical specimens which included 12 patient plasma samples and 20 samples from the CEPHIA repository (San Francisco, CA) were analysed. Samples were previously classified as recent (n=16) or long-term (n=16) HIV infected using an HIV avidity assay. HIV RNA was extracted from each sample and target regions of the HIV genome were amplified. The resulting amplicons were then purified, quantified and subjected to HRM analysis. The HRM Assay was performed using a Roche LightCycler® 2.0 System. Each Melt curve was assigned an HRM Score based on the width of the negative first derivative melting curve. Statistical analyses to compare recent and long-term HIV infected groups were performed using the Wilcoxon rank sum test.

Results: An HIV diversity assay based on analysis of the melting of DNA duplexes was evaluated. A significant difference was observed in HIV viral load between recent and long-term HIV patients ($p<0.001$): however no significant correlation was observed between the viral load and HRM score for the 3 gene regions analysed. The gag and env regions had the widest and narrowest variation in HRM scores respectively. The env start Tm point was significantly lower in recent compared to long-term infections ($p<0.05$).

Conclusion: The HRM assay is a rapid, high-throughput method for quantifying genetic diversity without sequencing. In this preliminary study, no difference was observed in the defined pol, gag and env regions examined in recent and long-term HIV infected patients. Nevertheless, analysis of HIV diversity could facilitate studies of HIV transmission networks and inform infection prevention strategies.

P2
Bictegravir has Potent Activity against Wild-Type and INSTI-Resistant HIV-1 and has a Longer Dissociation Half-Life than DTG, EVG, and RAL

K. White, A. Niedziela-Majka, N. Novikov, M.D. Miller, H. Jin, . S. Lazerwith, Simone Antonucci,. M. Tsiang
Gilead Sciences

Background: Bictegravir (BIC) is a novel HIV-1 integrase strand transfer inhibitor (INSTI) with potent activity against HIV-1 in vitro and in vivo. For INSTIs, the high barrier to drug resistance is correlated with a long dissociation half-life (t1/2) from HIV-1 integrase (IN)/DNA complexes. The antiviral activity and dissociation t1/2 of BIC are compared to dolutegravir (DTG), elvitegravir (EVG), and raltegravir (RAL).

Methods: 47 patient-derived HIV-1 isolates with INSTI resistance mutations were phenotyped. The apparent dissociation t1/2 of 3H-labelled INSTIs were measured using WT and the clinically relevant G140S/Q148H mutant IN/DNA complexes with a scintillation proximity assay and analyzed using single exponential decay and equilibrium binding models.

Results: Patient-derived HIV-1 isolates (n=47) with high-level INSTI resistance had a significantly lower mean fold-change for BIC (2.8-fold) vs DTG (5.8), RAL (>100), and EVG (>106)($p<0.04$ for BIC versus DTG); of those, 13 isolates exhibited ≥2-fold lower resistance to BIC than DTG and 34 isolates had similar BIC and DTG activity. 23 HIV isolates with G140S+Q148H ± other mutations in IN had mean phenotypic fold-change values of 3.6 for BIC, 8.1 for DTG, and >100 for EVG and RAL ($p<0.01$ for DTG vs BIC). The dissociation t1/2 of INSTIs from WT IN/DNA complexes using the single exponential decay model was longer for BIC compared to DTG, EVG, and RAL (BIC 134 h; DTG 79 h; RAL 14 h; EVG 3.6 h; $p<0.001$). The equilibrium binding model resulted in overall shorter dissociation t1/2 values that may be more physiologically relevant, but the BIC dissociation t1/2 remained significantly longer than the other INSTIs (BIC 38 h; DTG 16 h; RAL 5.2 h; EVG 1.5 h; $p\leq0.017$). Dissociation t1/2 values from G140S/Q148H mutant HIV IN/DNA complexes were shorter than wild-type but longer for BIC compared to DTG by both models (single exponential BIC 5.5 h; DTG 2 h; equilibrium binding model: BIC 2.5 h; DTG 0.45 h; both $p<0.01$). EVG and RAL had no measurable association, consistent with high-level resistance.

Conclusions: BIC displayed significantly higher antiviral activity in vitro relative to DTG, EVG, and RAL. BIC also has a longer dissociation t1/2 than DTG, EVG, and RAL from wild-type and mutant IN/DNA complexes. Phase 3 studies with the once-daily unboosted BIC/emtricitabine/tenofovir alafenamide single tablet regimen are ongoing. These results support the study of BIC in a treatment-experienced, INSTI-resistant population.

EPIDEMIOLOGY & PUBLIC HEALTH

P3
Consistent contamination of recreational waters with shiga toxigenic Escherichia coli

C. Brehony, B. Mahon, J. Killeen, M. Cormican, P. Hickey, S. Keane, D. Morris
Clinical Science Institute, Discipline of Bacteriology, University Hospital Galway

Background: Shiga toxigenic Escherichia coli (STEC) are pathogenic E. coli associated with diarrhoea, haemorrhagic colitis and haemolytic uraemic syndrome. The incidence of laboratory confirmed human infection due to STEC in Ireland is the highest in Europe. Transmission is most commonly attributed to waterborne and person-to-person routes. However, for a significant number of sporadic cases and almost 30% of outbreaks each year, the mode of transmission is reported as unknown or unspecified. As recreational and occupational exposure to water is a potential source of infection we have examined relevant water samples for

STEC using a previously published high volume sampling approach.

Methods: Samples were collected from two separate sampling points between May and September 2016; seven times at location 1 and five times at location 2. A total of 30 litres of freshwater from streams feeding onto recreational beach areas were collected on each sampling date at each location. All samples were filtered using large volume filtration method. Filters were enriched overnight at 42°C in buffered-peptone water and enrichment broths were examined for the eae, stx1 and stx2 genes by real-time PCR. Enrichments broths were also cultured on Chromagar STEC and subjected to immunomagnetic separation (IMS). IMS eluates were cultured on Chromagar STEC.

Results: STEC was detected (positive for eae and stx1 or stx2 gene and Chromagar STEC plate culture positive) in the recreational water in at location 1 on all seven samplings and four out of five times at location 2. The O26 serotype was detected at location 1 on 6/7 occasions and at location 2 on 3/5 occasions. The O157 serotype was detected at location 1 on 3/7 occasions and at location 2 on 4/5 occasions.

Conclusion: The consistent detection of STEC in these recreational waters is a cause for concern and highlights the importance of monitoring such amenities. As we use a high volume sampling method it may be argued that we are detecting STEC below the limit of public health significance however as the infectious dose of STEC is considered very low this (as few as 10 cells) cannot be assumed. This is particularly important for an organism such as STEC with which disproportionally affects the very young - those most likely to ingest contaminated water in these areas.

P4
Mapping human cases of shiga toxigenic Escherichia coli in the west of Ireland - Implications for public health

C. Brehony, J. Cullinan, B. Hanahoe, M. Cormican, and D. Morris
Clinical Science Institute, Discipline of Bacteriology, University Hospital Galway

Background: Shiga toxigenic Escherichia coli (STEC) are pathogenic E. coli that cause infectious diarrhoea that can lead to significant outcomes in some populations such as renal failure and death. The incidence of laboratory detected human infection due to STEC in Ireland is the highest in Europe with the most common modes of transmission being person-to-person and waterborne. However, for a significant number of cases each year, the mode of transmission is reported as unknown or unspecified. Small group water supplies or untreated private wells are associated with the majority of waterborne outbreaks of STEC infection in Ireland. The aim of this project was to examine the spatial incidence of human infection with STEC in a region with a reported high incidence of number of cases annually and assess possible risk factors.

Methods: A total of 542 anonymised confirmed STEC patient records were obtained for the Irish Health Service Executive West (HSE-W) region, with metadata including, location (which was converted to District Electoral Division (DED)), date of sample, and gender. Population and water supply data were obtained from the Irish Central Statistics Office Census of 2011. Using STEC patient record and census data, the Geographic Information Systems (GIS) package, ArcGIS, was used to generate STEC incidence per 1000 by DED for the three-county HSE-W region. Incidence data was then used to map hotspots and coldspots using the Getis-Ord Gi* spatial statistic. The statistic was calculated for each feature (DED) using the incidence data. The value (Z score) was compared to its neighbouring DED's values and if there were a higher number of high values (clustering) in an area than would be expected by chance then this was a 'hotspot'. The reverse (a higher number of lower values in an area than would be expected by chance) was a 'coldspot'.

Results: Incidence rate ranged from 0 to 13.76 cases per 1000 across the region. Initial analyses identified a number of hotspots/coldspots in the region under investigation.

Conclusion: GIS analysis shows that STEC incidence shows significant local clustering. GIS is a valuable tool for public health and infectious disease epidemiology. In the case of STEC, this is particularly important in Ireland because so much of its transmission is unknown but risk factors such as private wells and ruminant animal contact have been identified. Here mapping was used to identify hotspots/coldspot areas within a HSE region with higher known incidence of STEC in Ireland. This will enable further analysis including the examination of potential risk factors such as water-source, socioeconomics and agricultural land use.

P5
Decrease in the uptake of seasonal influenza vaccine in persons aged 65 years and older in Ireland since the 2009 influenza A (H1N1)pdm09 pandemic

K Chaintarli, A Barrasa, S Cotter, J Mereckiene, J O'Donnell, L Domegan
HSE Health Protection Surveillance Centre, Dublin 1

Background: In Ireland, seasonal influenza vaccination is recommended for persons aged 65 years and older and is free for medical and GP cardholders. There is a year-on-year variation in the vaccine uptake which is consistently below the European vaccination target (75%) since 2003. In the literature, there is evidence that the 2009 pandemic may have influenced the uptake but this has not been investigated further in Ireland. We conducted this study to determine whether

the uptake has been influenced by the 2009 pandemic, age, deprivation status and GP density.

Methods: Aggregated seasonal influenza vaccine uptake data (2004-2015) by Health Service Executive (HSE) area and age group were obtained from the Primary Care Reimbursement Service. The Haase-Pratschke relative deprivation score (2011) was applied to these same areas. We used published data for GP density per county to calculate average density per HSE area. Using Poisson regression model, we estimated the associations between uptake before and after the pandemic, age, deprivation status and GP density.

Results: The median uptake was 62% before the pandemic (2004-2009) and 59% after (2010-2015). After adjusting for age, season, deprivation status and GP density, overall people aged 65 years and over were less likely to receive the seasonal influenza vaccine after the pandemic compared to before (Adjusted Risk Ratio (aRR)=0.93, 95% Confidence interval (CI): 0.90-0.96).
Vaccine uptake increased with age; both those in the "70-74 years" and "75 years and over" age groups were more likely to receive the vaccine compared to those aged 65-69 years (aRR=1.18, 95% CI: 1.14-1.24; aRR=1.34, 95% CI: 1.28-1.39 respectively).
There was no significant association between uptake and deprivation score or GP density. Areas with the highest/lowest uptake remained consistent across all seasons.

Conclusion: This study demonstrated that seasonal influenza vaccine uptake increased with age but decreased after the influenza pandemic. Qualitative studies should be undertaken to explore whether changes in public funding and/or people's perceptions on the risks of disease and the vaccine influenced the uptake. No association was found between uptake and deprivation status or GP density but disaggregated data are required to further explore this.

P6
Identifying Recent HIV Infections: an Individualised Assessment of Risk

J Hassan[1], J Moran[1,2], K O'Donnell[2], G Murphy[3], D Igoe[2], C De Gascun[1] on behalf of the Monitoring recently acquired HIV infection Group. National Virus Reference Laboratory, University College Dublin, Dublin 41, Health Protection Surveillance Centre, Gardiner Street, Dublin 12, Public Health England, London on behalf of the Consortium for Performance and Evaluation of HIV Incidence Assays (CEPHIA)3

Background: The accurate identification of recent HIV infection remains an important area of research to inform population-based HIV prevention and treatment intervention policies. Methods that use cross-sectional testing and biomarker information might be an alternative to longitudinal testing, as combinations of serological and molecular methods can potentially provide a means to identify recent HIV infections. The aim of this study was to develop a predictive scoring system which was based on combining the results of Schupbach's Line assay algorithm 15.1 and the viral load (VL) to predict the risk of having recently acquired HIV infection.

Methods: New HIV diagnoses in Ireland from January to April 2016 (n=151) were included in the study. All samples were tested on the Sedia limiting antigen avidity assay (LAg). The normalised cut-off in the LAg assay is 1.5. Schupbach's (2015) Algorithm 15.1 was applied to the Line assay results. This algorithm is derived from antibody reaction scores to HIV antigen bands on the LIA strip. Patients on antiretroviral treatment or previously diagnosed (>12 months) were excluded from the analysis (n=43). The Speigelhalter-Knill-Jones method was used to develop a predictive scoring system which is based on the LAg assay as a gold standard as this assay demonstrated 100% accuracy in identifying recency based on samples tested from the CEPHIA repository. Viral loads above the median of the cohort were used as an indicator of recency.

Results: Patient demographics showed that the recent cohort was predominantly male (87.1%) and MSM/bisexual (78.9%). The LAg assay and LIA Algorithm 15.1 identified 32 cases (21.2%) and 19 cases (12.6%) respectively as recently acquired HIV. The median viral load of the cohort was 16,428 copies/ml (log4.2). The results of the regression model including both the LIA and the HIV VL to predict recency are shown in Table 1. Combining both Algorithm 15.1 and VL demonstrated that the observed risk in our cohort of being recent is 100%. Using standard laboratory assays, this predictive scoring system allows an individualised assessment of risk for prediction of recency.

Conclusions: We have developed a predictive scoring system which is based on combining LIA Algorithm 15.1 and the VL. This proof of concept analysis has demonstrated that data such as LIA and VL can be used to develop a multiassay algorithm to accurately predict an individual's risk of recently acquired HIV infection.

Reference: Schupbach J et al. Decreasing proportion of recent infections among newly diagnosed HIV-1 cases in Switzerland, 2008 to 2013 based on line-immunoassay-based algorithms. PLOS ONE, July 2015; 1-21.

Table 1. Regression Model including both the LIA and the Median HIV Viral Load to predict recency.

	Observed Risk of being recent	Risk Predicted in new scoring system
LIA alone - recent	78.9%	78.8%
VL alone - recent	25.5%	24.2%
Both tests suggest recency	100%	81.3%
Both tests suggest non recency	11.9%	10.8%
LIA suggests recency but VL does not	60%	75.3%
VL suggests recency but LIA does not	10.3%	14.9%

P7
The Economic Crisis and Infectious Diseases in the Republic of Ireland, 2004-2012: How Contagious Was the Celtic Tiger?

P Hynds, J O'Dwyer
Environmental Health and Sustainability Institute,
Dublin Institute of Technology

Background: The recent economic downturn, initiated by the financial crisis beginning in 2007 may be responsible for precipitating infectious disease transmission, in addition to limiting the capacity for adequate control. Studies show that higher rates of contact, poorer standards of living, decreased access to therapy, diminishing retention in treatment, and financial pressures have directly resulted in higher rates of suicide, an increased occurrence of HIV epidemics, and declining road deaths, with the magnitude of effects dependent upon governmental budgetary responses. The global recession and resultant economic duress was more acutely felt in Ireland than many regions, however, to date, no robust examination of the human health effects of the recession have been undertaken, resulting in a lack of preparedness for future events.

Methods: Accordingly, the current study examined the seasonally adjusted effects of three notifiable enteric pathogens (VTEC, EHEC, and Cryptosporidium spp.) over a period comprising the boom-bust cycle. To negate potential spatial effects, the Midwestern HSE region (North Tipperary, Clare, Limerick) was employed as a pilot area for geo- and bio-statistical analyses of aggregated monthly rates, alongside 17 collated economic indices.

Results: Overall, 861 confirmed cases were available for analyses during the study period, of which 59.8% (n = 515) were cryptosporidiosis, 37.2% (n = 320) were VTEC, and the remainder were non-VTEC E. coli (EHEC). Almost 69% (n = 593) of cases were attributable to categorically vulnerable sub-populations (<5 years, >65 years). Analyses found that trends within the total population were mirrored within the vulnerable population, albeit they were slightly more responsive to economic events i.e. vulnerable populations exhibited quicker response. Cases of confirmed infection were correlated with all (total, long-term, and youth) unemployment rates ($p < 0.001$), with the most significant level of association found between infection numbers and youth (≤25 years) unemployment (Rsp = 0.436, $p < 0.001$). Highest levels of correlation were encountered between infection and transport prices (Rsp = 0.476, $p < 0.001$) and the average weekly wage (Rsp = 0.457, $p < 0.001$). In all cases, high levels of association were associated with a short time-lag i.e. effects were significant within 1-2 months. Cryptosporidiosis and VTEC infection exhibited distinctly different trends, for example VTEC infection was significantly more sensitive to unemployment, while cryptosporidiosis displayed an association with government spending, presumably both indicators of healthcare/treatment services.

P8
Blood borne virus testing practices: a survey of consultants in a university teaching hospital

L Martyn, H Tuite
Department of Infectious Diseases, Galway University Hospital

Introduction: Doctors may be the rate-limiting step in the implementation of routine blood-borne virus (BBV) screening for HIV, Hepatitis B and C. The UK National Guidelines for HIV testing (2008) advocate routine HIV testing in healthcare settings where HIV prevalence rates exceed 2/1000. Previous work has shown high rates of acceptability and feasibility for routine opt out testing for all 3 blood borne viruses in an Emergency room setting in a high prevalence area.
Aims: The aim of this study was to evaluate the practice of senior physicians and surgeons in relation to blood borne virus testing.

Methods: After ethical approval was granted, a 10 – item anonymous paper survey was distributed via post to all consultants in a university teaching hospital. The surveys were returned by post, collated into Excel and then analysed.

Results: 56 consultants completed the survey and their mean number of years practicing was 21.6. 20/56 (35.8%) identified as medics, 13/56 (23.2%) surgeons and 23/56 (41.1%) were from other specialties. 17/56 (30.4%) reported regular contact with HIV patients, 27/56 (48.2%) with HBV patients and 26/56 (46.4%) with HCV patients. 43/56 (76.8%) reported ever offering a HIV test, 39/56 (69.6%) a HBV test and 36/56 (64.3%) a HCV test. In the last month no HIV, HBV, or HCV tests were offered by 27/56 (48.2%), 26/56 (46.4%) and 24/56 (42.9%) respectively. 37/56 (66.1%) said they would be comfortable offering routine testing as part of BBV panel. 36/56 (64.3%) knew that verbal consent for testing was adequate and 24/56 (42.9%) believe that pre-test counselling is required. 31/56 (55.4%) knew life expectancy for HIV approaches normal in those engaged in care.

Conclusions: This cohort reports low contact with HIV, HBV and HCV patients, however over 60% have offered patients testing for all three viruses at some stage. 60% of the cohort identified as medics or surgeons who would have regular patient contact, however only 40% had offered any testing for these viruses in the last month. Despite these low testing practices, 66.1% said they would be comfortable offering routine testing for these viruses as part of a screening panel. 42.9 % of this senior practitioner group still feels that pre-test counselling is required for BBV testing. This is an important finding as the issue of pre-test counselling may be an important

barrier to widespread routine testing for these viruses in Ireland, where testing rates remain lower than that recommended internationally. Targeting more senior doctors with an education programme may be of value to promote screening for all three of these viruses thus offering a health benefit for the patient and for public health services nationally.

P9
A New National Hepatitis C Screening Guideline – a Step Closer to Elimination

E Robinson, P Flanagan, L Thornton
on behalf of the National Hepatitis C Screening Guideline Development Group

Background: Hepatitis C virus (HCV) is a major cause of liver disease worldwide. Recent advances in treatment have shifted the focus towards elimination. The WHO aims to eliminate HCV as a public health threat by 2030 and has stated that national testing policies and increased investments in HCV screening services are needed. A National Hepatitis C Screening Guideline has been developed to improve the identification of undiagnosed infections and progress HCV-elimination in Ireland.

Methodology: The guideline was developed by a Guideline Development Group (GDG) consisting of key stakeholders, under the auspices of the National Clinical Effectiveness Committee. Recommendations were adapted from existing high quality guidelines where appropriate. Where existing recommendations did not exist or were considered insufficient systematic literature reviews were undertaken to provide an evidence base. In formulating recommendations the GDG considered the quality of the evidence available, the balance of benefits and harms, the estimated resource use, the impact on health equity, and the acceptability and feasibility of implementation.

Results: The Guideline makes recommendations on who should be screened and how screening should take place. In addition to screening of traditional risk groups, other key groups for whom screening is recommended include:

- All those who have used unprescribed or illicit drugs but not by injecting, if there is a possibility of transmission of infection by the route of administration
- Migrants from a country with a high prevalence of hepatitis C
- Men who have sex with men
- Homeless people who have a history of engaging in risk behaviours
- People who have received medical or dental treatment in countries where HCV is common and infection control may be poor

While those born between 1965-1985 were identified as having the highest HCV prevalence, birth cohort screening could not be recommended in the absence of a comprehensive health technology assessment due to the likely cost implications.
The Guideline also contains an implementation plan and a monitoring and evaluation framework.

Conclusion: While a number of recommendations reiterate current practice, implementation of others will require novel approaches and multisectoral commitment. Linkage to care and treatment will be key to the success of the Guideline. The HSE's National Hepatitis C Treatment Programme (NHCTP) aims to provide treatment to all persons infected with hepatitis C in the coming years. Implementation of the National Hepatitis C Screening Guideline, in conjunction with the ongoing work of the NHCTP will advance Ireland toward the goal of HCV-elimination by 2030.

P10
An Acute Medical Unit Opt Out Blood Borne Virus Screening programme: uptake and results at study completion

Tuite H.,[1] Faherty C.,[2] Davies A.,[3] Lyons A.,[1,4] Allen N.,[1] O Regan J.,[3] 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] Fleming C.,[1] Gallagher D.[3]
1. Department of Infectious Diseases, Galway University Hospital, Galway; 2. Department of Virology and Microbiology, Galway University Hospital, Saolta Hospital group, Galway; 3. Acute Medical Assessment Unit, Galway University Hospital, Saolta Hospital group, Galway; 4. Department of Hepatology, Galway University Hospital, Saolta Hospital group, Galway; 5. Department of Genito-Urinary medicine and Infectious Diseases, St James's Hospital, Dublin, Ireland.

Background: Previous studies have reported diagnosed prevalence rates of 1/1000 for HIV infection in Ireland. The prevalence of hepatitis C viral infection (HCV) is estimated at 0.5-1.2% and prevalence of Hepatitis B viral infection (HBV) is unknown. Given recent improvements in treatment for all three viruses, we adopted an opt-out blood borne virus (BBV) screening programme in the Acute Medical Unit (AMU) in Galway University Hospital. Previous work has shown the value of opt out testing 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 such approach in an AMU in a low diagnosed prevalence area and is the first to describe the 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. Where feasible, patients undergoing blood sampling as part of routine clinical care were offered screening testing for HIV, HBV and HCV; verbal consent alone was sought. Linkage to care was co-ordinated by the study team.

Results: Over 44 weeks 1962/4822 (40.1%) patients assessed for medical care in the department consented to BBV panel testing. 54.3% were male and mean age was 53.1 years. There was 1 HIV positive result; this patient was previously diagnosed and engaged in care. 4 patients tested positive for Hepatitis B surface antigen; 1 new diagnosis, 1 previously lost to follow up and now linked back into care and 2 already engaged in specialist care. 3 patients had active Hepatitis C infection, 2 had been lost to follow up and are now linked back into services. Of the patients that were found to have evidence of Hepatitis C antibody positivity only one declined follow up bloods for active infection; they had prior documented undetectable viral load.

Conclusion: The opt-out strategy adopted in this study was acceptable to both staff and patients alike. However the uptake of testing was lower than expected; this was a research study so it is likely the uptake was affected by not incorporating testing into routine clinical care. Notwithstanding this, the percentage uptake of 40.1% is higher than previous studies that used opt in strategies in AMU settings. Diagnosed prevalence rates of HIV, Hepatitis B and Hepatitis C were 0.5/1000, 2/1000 and 1.5/1000 respectively. The diagnosed prevalence of Hepatitis B is most notable as little data currently exists about its prevalence in Ireland. From a public health perspective these data are valuable in order to inform further prevention strategies for these infections in a low prevalence setting.

P11
An audit of post exposure prophylaxis referrals and clinic attendances to CUH 2015

C Kerr, J McGrath, A Jackson
Cork University Hospital

Background: Post exposure prophylaxis is defined as a treatment to reduce the likelihood of infection from certain viuses after potential exposure, either occupationally, through percutaneous exposure or through sexual exposure. In HIV it involves a short term course of antiretroviral medications and in Hepatitis B it can involve the administration of vaccine and/or Hepatitis B immunoglobulin. Patients who present to the emergency department following a non-occupational exposure are assessed by emergency medical physicians and are risk stratified. Those in whom there is a moderate or high risk exposure should be commenced on antiretroviral therapy and/or given Hepatitis B vaccine/Immunoglobulin as appropriate and referred to their nearest Infectious Diseases clinic to decide on the need for continuation of treatment.

Methods: This is a retrospective audit of referrals and clinic attendances of patients to the Infectious diseases Clinic in 2015. 2016 data is currently being collated.

Results: In 2015, there were 31 referrals made to the ID clinic for consideration for PEP. The average patient age was 30. 21 referrals involved male patients and 10 were female. 23 patients were of Irish origin, 3 polish, 2 Spanish, 1 Malaysian, 1 Portuguese and 1 Mexican origin. 8 referrals involved sexual exposure, 1 involved a sexual assault. 11 involved percutaneous exposure. 7 involved human bites. 3 involved blood exposure to mucous membranes/ non intact skin. 1 involved blood exposure to intact skin. The HIV status of the source patient was known in one referral. The Hepatitis B status of the patient was unknown in all referrals. According to local guidelines, HIV PEP was not recommended in 19 referrals, to be considered in 9 cases and recommended in 3 cases. HIV PEP was initially given in 16 cases prior to review in the ID clinic. Overall, 22 patients were given appointments for the ID clinic, with 17 patients attending, 4 DNA and 1 referred to Occ health. After clinic review, PEP was continued in 8 cases. The full course was completed in 6 cases, with one patient being lost to follow up and one patient stopping due to side effects. Hepatitis B immunoglobulin was not recommended in any of the cases.

Conclusion: This audit highlights the young age, male predominance and diverse backgrounds of patients presenting to ED for PEP. It also shows that more needs to be done in Cork University hospital to educate medical staff on the PEP guidelines and appropriate referrals to the clinic.

HIV, HEPATITIS

P12
Review of Brain Abscesses Presenting to a Tertiary referral Hospital in Southern Ireland 2005-2015

Z Al Balushi, C. Kerr, M. Horgan
Cork University Hospital

Introduction: Brain abscess is life threating infection caused by several etiological agents which require complex diagnostic assays to identify. It can result from infection of contiguous structures, haemtogenous spread, post-head trauma or postoperatively. The objective of this review is to describe the demographics, clinical presentation, risk factors, microbiology, investigations and management of brain abscess and their impact on patient outcome.

Methods: Descriptive retrospective review of patients admitted to a tertiary hospital with diagnosis of brain abscess over 11 year period from 2005 to 2015. A retrospective chart review was undertaken following ethical approval. Data on clinical presentation, laboratory and radiological investigations was analysis using SPSS software.

Results: There were 59 patients admitted to a tertiary hospital with a diagnosis of brain abscess over the

11 year period. The majority of patients were male (N=41, 69.5 %) with a mean age of 42.6 years. The most common presenting symptoms were headache (N=48, 81%), fever (N= 40, 68%), and alteration in mental status (N=36, 61%). Neurosurgical procedure (N=16, 27%), diabetes mellitus (N= 6, 10%) and spinal trauma (N= 5, 8%), were the most common factors associated with brain abscess. The commonest infections associated with development of brain abscess were sinusitis (N= 19, 32%), otitis media (N=7, 12%) and dental infection (N=6, 10%) while 35 % of patients had no obvious associated infection identified. C - reactive protein (CRP) was elevated on 51 patients (86%) while WBC was elevated in only 35 patients (59%). MRI showed evidence of brain abscess in all patients. The most common site of abscess was frontal lobe in 34 patients (85%). Causative organisms were identified in 27 patients (46%). The most common species identified are Streptococcus species in 23 patients (85% of positive cultures) followed by Staphylococcus aureus in 8 patients (30% of positive cultures). 50 patients (85%) underwent surgical intervention while the reminding 9 patients (15%) were treated conservatively. The average duration of antibiotic was 38 days.

Conclusion: This is the first retrospective study of brain abscess in Republic of Ireland. Patients typically present with fever, headache and altered mental status. Sinusitis, otitis media and dental infections are most common infections associated with brain abscess. Brain MRI is the single best initial radiological investigation for diagnosis. Frontal lobe is the most commonly involved site for this infection. The most common organism isolated in this study is Streptococcus species which may help inform the choice of empiric therapy.

P13
HepLink: Integrating Hepatitis C Treatment in Primary Care

E O'Connor[1], D Swan[1], G McCombe[1], C Murphy[2], JS Lambert[1,2], G Avramovic[1], W Cullen[1]
1. School of Medicine, University College Dublin;
2. Infectious Diseases Department, Mater Misericordiae University Hospital

Background: Hepatitis C (HCV) infection is a major cause of chronic liver disease and death. Injecting drug use is the main route of transmission in most countries. In Ireland, general practice is increasingly providing long-term care, including methadone treatment (MMT), for people who inject drugs, 62-81% of whom are infected with HCV. Complex barriers mean few have received HCV treatment. The HepLink study aims to improve HCV care outcomes among MMT patients in general practice by developing an integrated model of HCV care and evaluating its feasibility, acceptability and likely efficacy.

Methods: The integrated model of care comprises: education of community practitioners, outreach of a HCV trained nurse into GP practices, and enhanced access of patients to community-based evaluation of their HCV disease (including a novel approach to diagnosis, i.e. Fibroscan). Methadone prescribing GP practices in North Dublin were recruited from the professional networks of the research team to participate in the pilot study. Patients were eligible if ≥18 years of age, on MMT and attend the practice for any reason during the recruitment period. Baseline data on HCV care processes/outcomes were extracted from the clinical records of participating patients.

Results: Fourteen GP practices agreed to participate. 134 patients were recruited. Baseline data on 94 patients (66% (n=62) male; 34% (n=32) female; median age 42 years (range 28-71 years)) showed that 91.5% (n=86) had been tested for HCV. Of those tested, 75.6% (n=65) were HCV antibody positive (Ab+); 10.8% (n=7) were co-infected with HIV or Hepatitis B. Less than half (47.7%; n=31) of HCV Ab+ patients had ever attended secondary care for specialist assessment. To date, the integrated model of care, has been piloted in five practices and is currently being piloted in three practices. Thirty HCV Ab+ patients have undergone a fibroscan; 12 (40%) scored above ≥8.5 kPa which until recently was the threshold for access to the new direct acting antiviral (DAA) treatments in Ireland.

Conclusion: A substantial proportion of HCV-positive patients on MMT in general practice are not engaged with specialist hospital services but qualify for DAA treatment. The HepLink model has the potential to reduce HCV-related morbidity and mortality.

P14
GMHS New Monday Clinic Initiative

S O'Dea[1], C O Sullivan[1], A Shanley[1], D Caixeta[1], S Clarke[1,2],
1. Gay Men's Health Service, Baggot St. Dublin;
2. St. James's Hospital, Dublin 8.

Background: In response to a dramatic increase in STI's among MSM in 2016 the GMHS set up a new walk in clinic on a Monday afternoon to increase testing among this population. This was initially set up as a six month pilot project in October and funding was made available through Health and Wellbeing. Unlike the other two evening clinics at GMHS, this clinic is nurse led and offers a rapid HIV test in addition to a full STI screen.

Methods: The new service was advertised on social media, hook up apps, social venues etc. The clinic was set up as a walk asymptomatic screening service and patients were invited to complete a patient satisfaction questionnaire.

Results: In the first 5 months of this initiative 490 patients attended the service, 20 of these were known HIV positive. Overall there was a 14% pick up of STI's,

12 patients had a blood borne virus detected, 2 HIV (One of these was P24 antigen positive, the other was HIV negative when tested 3 months earlier), 1 Hepatitis C PCR positive (this patient had tested Hepatitis C negative on his last screen 9 months earlier) and 9 Syphilis positive (6 of these were IgM positive while 3 were untreated infection of unknown duration) and the remaining patients had GC or Ct detected. 19% of patients had more than one infection at time of diagnosis. For 32% of patients it was their first time attending the GMHS. 12% of attendees had never had a HIV test before. 20% were <24 years of age with 40% in the 30-39 age group. 45% cited the availability of the rapid test as the main reason for attending while 36% attended as it was time for a regular checkup. 52% stated they attended because of the time and day of the clinic.

Conclusion: As this is an asymptomatic screening service the STI pick up rate at this clinic indicates that we are reaching our target population of high risk patients. This pilot initiative has been an enormous success encouraging patients to attend for screening, diagnosing STI's and ultimately reducing onward transmission and needs ongoing funding going forward

P15
Hepatitis C Care Continuum: Experience of an Emergency Department Screening Programme

J. Lee, P. McGettrick, A. Moriarty, G. Farrell, M.Coghlan, C. Murray, C. Bergin

Background: The Emergency Department Viral Screening Study (EDVS) was introduced in St. James' Hospital, Dublin in March 2014 as an opt-out screening study for blood-borne viruses in patients who are undergoing phlebotomy as part of routine clinical care. This study aim is to examine the existing cascade of care in those patients newly diagnosed with active Hepatitis C infection from the initial pilot programme, as well as those diagnosed and re-linked to care from the roll-out programme. We examined the demographic and disease-related factors in these cases, as well as the treatment outcomes.

Methods: Retrospective analysis was performed on PCR positive Hepatitis C patients who were referred to Infectious diseases clinic during both the pilot EDVS study from March 2014 to January 2015 and the subsequent roll-out programme from July 2015 to November 2016. The Electronic patient record was used to assess demographic factors, laboratory and radiological findings, as well as subsequent engagement in care and treatment provided. Treatment success was measured using the sustained virologic response at 12 weeks (SVR12).

Results: Of the 106 new or re-linked patients with active Hepatitis C infection, 80 (75.5%) were male, median age was 39, 104 (98%) were Caucasian and 85 (80.2%) had a history of intravenous drug use. All patients were linked to the Infectious Diseases clinic, 62 (58.5%) of whom attended. 66 (62.3%) had genotype testing, the most common being genotype 3 (50%) and 1(43.9%). Of those who attended, 42 (67.7%) had fibroscan testing of which 16 (25.8%) had a value greater than 8.5kPa and were eligible for treatment as per national DAA treatment criteria. 7 (44%) commenced treatment, 4 on direct acting antivirals and 3 on Interferon/ribavarin. To date, 5 have completed treatment and 3 (all on DAAs) have achieved SVR12 with 2 ongoing.

Conclusion: Through the EDVS study, 106 newly diagnosed or patients not currently engaged in care with active chronic Hepatitis C were linked to Infectious Diseases services. To date 7 patients were treated who otherwise may not have been. Despite best efforts to follow-up on patients with active Hepatitis C, subsequent engagement is lacking with 58% of patients attending. However, once engaged, 44% of patients deemed eligible by national criteria received treatment. Strategies to improve engagement in Hepatitis C services are required to improve the Hepatitis C care continuum and optimize outcomes from the screening programme.

P16
On the trail of *Treponema*: Frequency of syphilis testing in HIV patients to monitor a growing health concern

A Moriarty, C. Kerr, A. Jackson
Mallow General Hospital, Co. Cork

Background: Syphilis has been on the increase in Cork over the past 2 years with cases trebling from 7 between January and June 2015, to 23 between July and December 2015. This prompted a review of the frequency of syphilis testing in the Cork University Hospital HIV clinic.

Methods: From a database of HIV positive patients, we generated a list of patients that attended clinic in September 2016. The primary outcome was the frequency of syphilis testing. We looked at whether they had been tested at that visit, had they been tested in the previous year or had they been tested subsequently. We stratified results for age, gender and sexual practices. Secondary outcomes measured were positive syphilis results, antibody initially, and if positive, RPR (rapid plasma reagin) status.

Results: In September 2016, 118 patients were reviewed (76 Male, 42 Female). Average age was 43.42(SD +/-10.84) with an age range of 24 to 78 years of age. 48 (40.68%) patients were tested at their clinic visit. Of these 48 patients, 17 tested positive for syphilis antibody, 14 men and 3 women. The average age of those testing positive was 43.23 (SD +/-11.65, range 24-70). 6 of these 48 patients were found to be antibody and RPR positive. 3 of these had been previously RPR positive. 2

were previously antibody negative and one had never been tested, leading to 3 new cases of syphilis detected. Of the 70 patients who were not tested in September, 27 were tested at a subsequent visit. 3 of these were antibody positive. 2 of these 3 were RPR negative and 1 was RPR positive, hence a new case not previously picked up. 44 patients (37.29%) were not tested at all over a 17 month period.

Conclusions: Syphilis should be screened for at least annually in sexually active HIV positive patients, with consideration of more frequent testing in population groups with risky sexual behaviours.

P17
An Audit of HIV-2 Management at St. James's Hospital

C Ó Broin, C Merry, C Bergin, C De Gascún

Background: HIV-2 infection results in slower progression of disease, lower viral loads and decreased transmission. There are no current randomised control trials regarding antiretroviral treatment (ART) initiation. Due to the small number of HIV-2 infected individuals in Ireland, HIV-2 RNA testing is not provided on the island. Consequently, specimens are referred to the UK for viral load monitoring. Recent communications between St James' Hospital GUIDE and the National Virus Reference Laboratory identified a potential deficit in the expected number of HIV-2 RNA tests being performed, and highlighted the absence of a national HIV-2 dataset in Ireland. We aimed to quantify the number of HIV-2 infected individuals currently attending SJH and being monitored at the NVRL, and to assess the requirement for a more formal national approach to the management of HIV-2.

Methods: HIV positive results were identified in the NVRL Laboratory Information Management System (LIMS) representing all HIV diagnoses from SJH since 1999. These data were exported into Microscoft Excel and manually reviewed. The following syntax variations were searched within the data to identify those with HIV-2 infection: HIV2; HIV-2; and HIV 2. These patients were subsequently identified on Electronic Personal Records (EPR) in SJH; demographic and HIV-related data were collected.

Results: Five patients with confirmed HIV-2 infection were identified, three of whom remain in active care. Mean age was 33.3 years (19-54). The 3 patients in active care are of Western African origin and were further analysed. CD4 counts were available for two of these individuals, HIV-2 RNA for one patient. CD4 percentages ranged from 24-33%; HIV-2 RNA levels ranged from <200 to 4400 copies/ml (cpm) in patient 1. Two are in discordant relationships: one with an HIV negative partner, and one with an HIV-1 infected partner. Only one patient is on ART, commenced in 2010, comprising TDF, FTC, and LPV/r after documented HIV-1 viraemia. Of note, both individuals have had inadvertent HIV-1 RNA tests requested and performed, probably due to a combination of the existing IT test request codes, and human error. Monitoring for acquisition of HIV-1 infection in the two HIV-2 infected individuals does not appear to be standardized. Thus far, whether the remaining 3 cases are engaged in care, or remain in Ireland is unknown.

Conclusion: HIV-2 infection affects a small minority of patients in Ireland. Both HIV-1 and HIV-2 patients remain at risk of co-infection and should be advised accordingly. Younger patients still represent a significant group of HIV-2 positive patients. Post audit, there is improved documentation of HIV-2 status, introduction of a novel HIV-2 test request code at the NVRL, and increased awareness within staff regarding appropriate testing. Further analyses at a national level may be warranted.

P18
The changing face of HIV treatment in the West of Ireland: a 10-Year perspective

L. Townsend, L. Martyn, O. Hennigan, A. Ni Nuilainn, N. Boyle, C. Fleming, H. Tuite
University Hospital Galway

Background and AIM: In 2007, a retrospective study was carried out on the HIV care provided to patients attending University Hospital Galway (UHG). 10 years on, we have repeated this study to assess the changing demographics of this cohort and the differences in rates of HIV treatment, virological suppression and treatment adherence.

Methods: In February 2017, we performed a retrospective chart and laboratory reviewl of patients attending the UHG HIV clinic. Baseline demographics were recorded, as wel as treatment regimens. Virological suppression was defined as a HIV viral load < 40cpm. These findings were compared to those found in an identically-designed study conducted in 2007.

Results: The cohort in 2017 numbers 260, compared with 122 in 2007. Of the 260 patients that attend, 99 (38%) are female, compared with 54% in 2007. In 2017 74 (28%) patients are African, 106 (41%) are Irish, 21 from Eastern Europe, and 15 from Western Europe. 5 patients are Asian. In 2007, 62 (51%) are African, 42 (34%) are Irish, and 16 (13%) are from other European countries. 2 patients are Asian. In 2017 252/260 (96.9%) of patients have commenced HAART with the following regimens ; NRTI/PI 131 (52%), NRTI/NNRTI 75 (30), NRTI/ Intease 40 (16%), non-NRTI 6 (2%). In 2007, 83 (68%) had commenced HAART with regimens comprising ; NRTI/PI 60%, NRTI/NNRTI 32%, NRTI/NNRTI/PI 4% NRTI/ Dual PI 4%. In 2017, 236 (91%) are virally suppressed versus 70/83 (84%) in 2007

Conclusion: This study compares the cohort of a single HIV centre acro ten years and shows a large increase

in attendees. In addition, there is both an increase in the proportion of patients on treatment and in the numbers that are virally suppressed. This study shows that this centre is meeting the WHO targets of 90% on treatment, with 90% suppressed

P19
Feasibility of Pre-Exposure Prophylaxis Programme in an Urban HIV Centre

L. Townsend, A. Ni Nualainn, C. O'Broin, P. Cremin, C. Coleman, H. Tuite, C. Fleming
University Hospital Galway

Aim: To ascertain attitudes, knowledge and behaviours relating to pre-exposure prophylaxis (PREP) among men that report sex another man (MSM) attending the STI clinic in Galway University Hospital (GUH).

Methods: This was a cross-sectional survey of MSM attending the STI clinics in GUH. The survey was previously developed and validated in the Gay Mans Health clinic and used with permission. Ethical approval was granted by the local ethics board. A questionnaire was distributed at clinic triage to all male attendees that reported MSM activity. They were invited to complete these anonymously. This data was collated and analysed using basic descriptive statistical methods.

Results: 21 responses were received, of which 20 were male and 1 was transgender. 19 had sex with men exclusively, with 2 having sex with both men and women. 20 were European, while 1 was North American. 18 (86%) were not in a relationship. The mean number of sexual partners in the preceding 3 months was 3.5. Condomless sex was reported on a mean of 1.2 occasions in the preceding 3 months. The commonest reason for condomless sex was being under the influence of alcohol (24%). Risk of HIV acquisition was perceived to be higher when passive (4/6) than active (3.89/6). The commonest method of risk reduction was asking their partner to use condoms (13/21). 4 responders had tested positive for an STI in the last 12 months. 16/21 had heard of PREP, with 13/16 stating that they would consider taking PREP. The majority (8/13; 61.5%) favoured taking it daily, with 8/13 (61.5%) stating that they felt it would be easy to remember to take PREP.

Conclusion: This study shows that the majority of attendees at this clinic are informed regarding PREP and would be willing to take it. The high number of different partners illustrates that there is a role for PREP in this region. This study provides the data needed to support the establishment of a PREP clinic in Galway.

P20
Seizures in HIV. Are we doing things right?

L. Zaporojan, P. McNamara, J. Williams, C. Bergin, J. Redmond, C.P. Doherty
Neurology Department, St. James's Hospital, Dublin

Background: Seizures (both provoked and unprovoked) are quite common HIV associated neurological complications (4-11%) even in the era of highly active anti-retroviral therapy (HAART). Both conditions: HIV and seizures in this category of patients necessitate long term treatment with antiretroviral therapy (ART) and antiepileptic drugs (AED). Potential serious ART-AED interactions are possible. The aim of this study was to determine the rate, type and cause of new onset seizures (NOS) in a cohort of HIV+ individuals attending St James' Hospital (SJH) and evaluate seizure management and treatment.

Methods: This was a retrospective study. Electronic Patient Records (EPR) of 604 HIV+ patients attending HIV services at SJH were checked for Diagnosis of Epilepsy/Seizure/Seizure disorder, AED prescription, or Neurology/Neurophysiology/Epilepsy clinic attendances. In those who met the search criteria EPR and clinical notes were reviewed for further data collection.

Results: A total of 15/604 patients (2.4%) had history of epilepsy or acute provoked seizure at some stage in their life. Most (14/15) experienced at least one seizure after acquiring the HIV infection. Only one patient had prior history of epilepsy. Seven patients experienced the first seizure close to the time of HIV diagnosis (+/-12 months). Seven patients experienced single seizures only, four of them in the acute settings of opportunistic CNS infection. Eight patients were subsequently followed up by Neurology service but five of them disengaged from it. The most prescribed AEDs were lamotrigine, sodium valproate and levetiracetam. Levetiracetam proved to be the most effective AED and has less interactions with ART. However, it had the highest incidence of reported side effects and had to be discontinued in two cases. Lamotrigine failed to show seizure control in this cohort. Low lamotrigine serum levels have been documented. Overall, sodium valproate failed to provide seizure freedom in SJH cohort except in one case. Persistently low sodium valproate serum levels have been documented.

Conclusion: Seizures and epilepsy are important CNS complication of HIV infection. HIV stage i.e. immune status at NOS is clinically important. Not only opportunistic infections but also possible direct HIV effect on CNS might be responsible for seizure onset. Careful consideration needs to be given to AED prescription in this group of patients. Prescription of higher lamotrigine doses should be considered in HIV+ patients when appropriate. These patients need supplementary counselling/supportive services to ensure engagement with services. Both ID and Neurology services should be involved in seizure evaluation and management in HIV+ individuals.

INFECTIOUS DISEASES

P21
Point Prevalence Survey of Antimicrobial Prescriptions at a Tertiary Hospital in Southern Ireland, 2015

Z Al-Balushi[1], M. Shah[2], D Hogan-Murphy[3], A Jackson[2]
1 St. James's Hospital, 2 Cork University Hospital, 3 Irish Antimicrobial Pharmacists Group (IAPG)

Background: Point prevalence surveys (PPSs) are useful to obtain a detailed snapshot of antimicrobial prescription patterns in a hospital setting. This provides a picture of antimicrobial usage and informs investigators of areas that need further interventions for improvement. It can also be used to assess local guideline compliance. Cork University Hospital is a tertiary referral hospital in the South of Ireland with a broad range of medical and surgical specialties.

Methods: The study was conducted between 14th September and 10th October 2015 using a standardised protocol and data collection form. All inpatients in the hospital were included. All drug charts were reviewed for current systemic antimicrobial prescriptions and data were subsequently analysed using Excel management software.

Results: Two hundred and nineteen patients out of 505 patients were prescribed antimicrobials (43%) and a total of 344 antimicrobials were charted. The numbers of antimicrobials for patients in surgical, medical and intensive care wards were 35%, 56%, and 6% respectively. Piperacillin-tazobactam was the most commonly prescribed antimicrobial (21%), followed by amoxicillin-clavulanate (15%), vancomcyin (10%), metronidazole (7%), and flucloxacillin (6%). Pneumonia was the main indication for all prescriptions (28%), followed by skin & soft tissue infections (15%,) and intra-abdominal infections (8%). Ninety four percent of patients who received surgical prophylaxis received <24 hours of antimicrobials. Seventy percent were charted as intravenous. Of these, 14 prescriptions (6%) were assessed as inappropriate. Only 31% of prescriptions had a proposed duration specified and 94% had a correct dose prescribed. In total, 20% of prescriptions were assessed as inappropriate.

Conclusion: Forty-three percent of inpatients were prescribed antimicrobials and 80% were deemed appropriate. The hospital compares well with national figures. Piperacillin/tazobactam was the most commonly prescribed agent. Ongoing antimicrobial stewardship by the antimicrobial stewardship team and clinical pharmacists is important to ensure high levels of appropriate antimicrobial prescribing at individual patient level to improve patient outcomes.

P22
Evaluation of Meropenem use and Stewardship

Z AlMusa, C Fleming, U Ni Riain
Galway University Hospital

Background: Proper use of carbapenems is an important goal of antimicrobial stewardship team (AST) to control antimicrobial resistance. Due to increased use of meropenem in Galway university hospital, an audit was performed in 2013, which showed that the empiric initiation of meropenem was appropriate in most of cases, however treatment duration was long with no de-escalation to more appropriate antimicrobial when indicated. Based on the audit results, meropenem stewardship round was initiated. In October 2016, re-audit of meropenem use was performed.

Methods: Patients' characteristics, cultures, and antimicrobials used in the treatment were evaluated retrospectively for all patients who were identified by AST member in October 2016. The charts were reviewed and the data was collected to figure out the appropriateness of initiation and duration of meropenem and if de-escalation was done when indicated based on the guideline for meropenem de-escalation that was developed by the antibiotic stewardship team (AST).
Criteria for meropenem de-escalation are; 1. A diagnosis of infection with a causative organism has been identified for which there was an appropriate alternative antibiotic without contraindications or 2. A diagnosis of infection with no causative organism identified and no organism isolated from any specimen in the previous 12 months for which meropenem therapy is specifically indicated.

Results: During the month of October 2016, 20 patients on meropenem were identified and reviewed. Meropenem was empiric in 18/20 (90%) patients {first antibiotics in 3/20 (15%) and escalation from another antibiotic in 15/20 (75%)} and definitive in 2/20 (10%). Initial use of meropenem was appropriate in 19/20 (95%) of patients. Recommendation by AST, microbiologist or infectious diseases physician to de-escalate according to the guideline was made for 17/20 (85%) patients. The advice was followed for 14/17 (82%) vs. (66%) of patients in the last review in 2014. The mean duration of meropenem therapy was 8.5 days. The duration was appropriate in 13/20 (65%) of patients.

Conclusions: Compared to previous data, there was a significant improvement in meropenem de-escalation when indicated. Meropenem stewrdship round is an effective tool to minimize meropenem use that might reduce development of antimicrobial resistance. Dedicated resources for more frequent stewardship rounds should result in more timely step down from and reduced use of merepenem in our institution. (368 words)

P23

Acute Herpes Zoster and Post Herpetic Neuralgia in Primary Care: a Study of Diagnosis, Treatment and Cost

B Crosbie, S Lucey, L Tilson, J Kieran
St. James's Hospital, Dublin

Background: Acute Herpes Zoster and its most common complication Post Herpetic Neuralgia represent a significant challenge to primary care physicians in their care of an aging population of patients.

Methods: Cross-sectional observational study by means of quantitative survey of 184 GPs registered in Ireland exploring frequency of diagnosis and methods of treatment of AHZ and PHN with a cost analysis of results.

Results: 80% of cases of AHZ occur in patients aged 50 years or more with 81.4% of study participants encountering cases at a rate of 1-3 patients per month. Famciclovir (36.7%) and Valaciclovir (35.6%) were the most commonly prescribed antiviral agents. Mild opioids (31.5%) were the most common analgesic agents used for first line AHZ pain and Pregabalin the most commonly prescribed analgesic agent for second line AHZ pain (36.8%) and both first and second line PHN pain (28.7% and 23.9% respectively). The mean per-case direct cost (medication and GP visits) of treating AHZ and PHN was €193.19 and €166.43 respectively. The combined annual direct costs of treating AHZ and PHN as per this data set is €2,094,545.87.

Conclusion: The treatment of AHZ and PHN represents both a significant care and cost burden on primary care resources in Ireland in keeping with other European studies.

P24

A review of patients with Culture Negative Endocarditis

H. Khan, W.Goravey, T.K.Teoh, C.McNally,
Beaumont Hospital, Dublin

Introduction: Culture negative endocarditis has a widely variable incidence throughout the world. It can create increased difficulty in the diagnosis and treatment of infective endocarditis.

Method: We gathered patient data from the electronic patient records for patients treated for IE in Beaumont Hospital over a five-year period. We then compiled the data on Excel and analysed it on Excel and Using the Chi squared test.

Results: There were 42 patients in the Culture negative group and 120 in the Culture positive group. 28% of patients in The CNE group had Cerebral emboli compared to 13% in the Culture positive group. 62% in The CNE group had AV involvement compared to 46% in the Culture positive group. 5% of patients in the CNE group died compared to 10% in the Culture positive endocarditis group. In the CNE group 19% had definite endocarditis, 79% had possible endocarditis and 2% were rejected, in the culture positive group 80% had definite endocarditis and 20% had probable endocarditis.

Discussion: There is a higher incidence of embolic stroke in patients with CNE. There is a higher rate of involvement of the AV in CNE. There was a lower death rate in the CNE group compared to the Culture positive group. There were fewer cases of definite endocarditis in the culture negative endocarditis group compared to the culture positive group.

P25

A review of patients with Staphylococcal Endocarditis compared to Non-Staphylococcal Endocarditis

H. Khan, T.K.Teoh, W.Goravey, C.McNally
Beaumont Hospital, Dublin

Introduction: Staphylococcus is the commonest cause of infective endocarditis worldwide. Its incidence is increasing in large part due to the increased use of intravascular prosthetic devices. Staphylococcal endocarditis is associated with a high mortality rate.

Method: We collected data on 162 patients in Beaumont Hospital who were treated for Infective Endocarditis. We accessed the data via electronic patient records. We analyzed the data on an Excel spreadsheet.

Results: We had 69 patients in the Staphylococcal group and 93 in the non-staphylococcal group. In terms of risk factors; 30% of patients had a PPM/ICD in the staphylococcal group compared to 12% in the non-staphylococcal group, 30% in the staphylococcal group had central lines compared to 22% in the non-staphylococcal group. 17% of cases of Staphylococcal endocarditis involved infected device leads compared to 8% in the non-Staphylococcal group. Patients with staphylococcal endocarditis were more likely to be dukes definite 84% compared to 49% in the non-staphylococcal group. 14% of patients with staphylococcal endocarditis dies compared to 6% in the non-staphylococcal group.

Discussion: This study showed that staphylococcus infection was strongly associated with the presence of risk factors such as intravascular devices. Patients with staphylococcal endocarditis were more likely to be dukes definite compared to non-staphylococcal endocarditis. Patients with staphylococcal endocarditis had a higher mortality than patient without staphylococcal endocarditis.

P26

Aspergillus spp isolated in critically-ill patients supported with extracorporeal membrane oxygenator (ECMO)

Rodriguez-Goncer I, Felton TW, Thomas S, Feddy L, Hayes T, Muldoon EG
University Hospital South Manchester, National Aspergillosis Centre

Background: Invasive aspergillosis (IA) is a life-threatening opportunistic infection which classically occurs in immunocompromised patients. *Aspergillus* infections are increasingly recognized in critically ill patients who lack traditional risk factors for IA. Isolation of *Aspergillus* spp in respiratory samples of critically ill patients is associated with high mortality, independent of invasive disease. IA has been reported in critically ill patients requiring extracorporeal membrane oxygenation (ECMO) and in patients with Influenza A (H1N1) infection.

Methods: A retrospective service evaluation was performed of all patients supported with ECMO at a tertiary hospital in Manchester (UK) between January 2014 and December 2016. Data collected included epidemiological data, microbiological cultures, radiographic findings and outcomes. Cases were classified as proven IA, putative IA or *Aspergillus* colonization according to the recently validated criteria in critically ill patients.

Results: During the 3-year study period, 97 patients were supported by ECMO (54 men and 43 women), with a mean age of 46.1±8.2 years. Asthma was the most common underlying disease being in 15 (15.5%) patients. Fifteen patients (15.5%) had microbiological evidence of *Aspergillus* spp during their admission; eleven had clinical, radiological and microbiological criteria for putative IA and 4 had *Aspergillus* colonization. Eleven were males (73.3%) and mean age was 47.1±11.8 years. The median number of days on ECMO before first *Aspergillus* isolation was 4 days. One patient had positive *Aspergillus* cultures prior to receiving ECMO support. Six patients with putative IA (54.5%) lacked classical risk factors for IA (i.e.neutropenia, steroid treatment, malignancy on treatment or inherited severe immunodeficiency). A.fumigatus was isolated in 14 patients with one patient having A.flavus. Seven patients with putative IA (46.7%) had Influenza A (H1N1) co-infection preceding ECMO support whereas none of the colonized patients were co-infected with H1N1. Three-month mortality rate was 54.5% and 50% in patients with putative IA and in patients colonized with Aspergillus spp, respectively. Overall 3-month mortality rate in patients supported with ECMO was 37.1%.

Conclusion: *Aspergillus* infection and colonization is associated with high mortality among patients supported with ECMO, and may occur in the absence of classical risk factors. IA is a potential complication of severe influenza infection in patients supported by ECMO

P27

Role of the Pharmacist in the management of drug toxicities in patients with Multidrug Resistant Tuberculosis (MDRTB) and Extensively Drug Resistant Tuberculosis (XDRTB) in Northern Ireland

C Nevin, M Hunter, S Hedderwick, C Donnelly
Pharmacy Department, Royal Victoria Hospital, Belfast

Background: Northern Ireland has a low rate of tuberculosis (TB) (3.4/100,000 in 2015[1]), with 11 cases of MDRTB/XDRTB since 2006. The treatment of drug resistant TB is challenging and serious adverse effects of second line TB drugs include hearing loss, peripheral neuropathy, myelosuppression, prolonged QTc and hepatitis. Completion of treatment requires expertise and support for patients. The pharmacist has a crucial role in the management of these complex patients.

Methods: The charts of patients with MDRTB/XDRTB were reviewed and data on drug regimens and side effects extracted. All patients were managed according to the WHO guidelines2 which were current, along with the incorporation of drug susceptibility testing. All patients had baseline and follow-up tests including audiometry while treated with injectable agents.2,3

Results: The treatment of 10 patients with MDRTB and one patient with XDRTB was reviewed. 8 patients were cured. One patient defaulted from care and was lost to follow-up and 2 patients are currently on treatment. All patients received an injectable agent in addition to oral agents depending on their susceptibility results. One patient with XDRTB also had lung resection surgery. 5 patients developed sensorineural hearing loss whilst being treated with amikacin. 2 patients developed hypothyroidism secondary to para-aminosalicylic acid. 2 patients developed clinically significant hepatitis necessitating a treatment interruption. One patient developed severe peripheral neuropathy due to cycloserine. 3 patients taking linezolid developed myelosuppression. One patient developed psychiatric side effects whilst on cycloserine. One patient developed an acute kidney injury secondary to amikacin. Gout, skin rashes and skin discolouration were also reported. Drug treatment switches due to serious adverse effects were frequent.

Conclusions: Drug treatment for drug resistant TB is associated with very significant adverse side effects. Intensive monitoring and management of these improves patient safety and compliance with treatment. Providing expert advice to patients and involving them in their treatment decisions improves treatment completion rates. A pharmacist with expertise in second line TB drugs is a crucial member of the multi-

disciplinary team managing complex patients with drug resistant TB. Effective strategies for the alteration of treatment plans must be in place. Northern Ireland is a low prevalence area for TB but even low prevalence countries require expertise in managing this difficult condition.

1. Epidemiology of Tuberculosis in Northern Ireland. Annual Surveillance Report 2015. Public Health Agency.
2. Companion handbook to the WHO guidelines for the programmatic management of drug-resistant tuberculosis WHO/HTM/TB/2014.11
3. Potter JL., Capstick T. (2015). A UK based resource to support the monitoring and safe use of anti-tuberculosis drugs and second line treatment of multidrugresistant tuberculosis

P28
An Audit of Surgical Antibiotic Prophylaxis in Day of Surgery Admission (DOSA) patients and cardiothoracic patients in Cork University Hospital

L Quigley, A Jackson
Cork University Hospital

Background: Surgical antibiotic prophylaxis (SAP) has been shown to be an effective way to prevent surgical site infections1. However, prophylaxis should be administered within 30-60minutes before the surgical incision2 for most antibiotics, or one to two hours before incision for vancomycin, which needs to be given via slow infusion3.
This study was carried out to investigate timing of administration of antibiotics pre-surgery, with a particular focus on patients that may need an antibiotic given by infusion. Day of Surgery Admission (DOSA) patients were chosen as it was possible to obtain allergy and Methicillin Resistant Staphylococcus Aureus (MRSA) status in advance of surgery, where vancomycin may have been recommended as prophylaxis. Cardiothoracic patients were chosen as it was assumed there would be a relatively high use of vancomycin and gentamicin, as they are first line prophylactic antibiotics for patients undergoing aortic valve replacement.

Method: During August 2016, consecutive DOSA and cardiothoracic patients were enrolled in the study over a two week period. Information gathered included MRSA status, drug allergies, type of surgery, time of surgery, time of administration of antimicrobial, name and dose of antimicrobial, and time of surgical incision. The information was then assessed for appropriateness.

Results: 29 surgical patients were enrolled in the study. Of the 7 DOSA patients included in the study, one patient received SAP at the correct time, with breast surgery, urological surgery and neurosurgery being the types of surgery involved. Of the 22 cardiothoracic patients, 12 patients received SAP at the recommended time. No patient who received vancomycin or gentamicin had the infusion completed prior to surgical incision, or received the recommended dose (4 patients). Where vancomycin was recommended for patients with MRSA or who were penicillin allergic, patients received either erythromycin or ciprofloxacin (3 patients).

Conclusion: Choice, timing and dosing of antimicrobials were identified as problem issues. Due to the long infusion time associated with vancomycin, procedures need to be put in place to ensure timely administration pre surgery. The aim of the study will be to drive discussion between surgeons, anaesthetists and infectious disease specialists, to determine the best way to ensure patients requiring infusions have the infusion complete prior to incision. Education of dosing and choice in penicillin allergy are also an area of focus.

P29
An Audit of Meropenem Use at Cork University Hospital

L Quigley, A Jackson
Cork University Hospital

Background: Carbapenems are frequently used as empiric treatment in severe infections due to gram negative organisms, and are the most commonly used antimicrobials in the critical care setting, especially for nosocomial sepsis. However, increased use of broad spectrum antimicrobials leads to antimicrobial resistance, which can be a particular problem when treating Enterobacteriaceae. Carbapenem resistant Enterobacteriaceae (CRE) infections have a high risk of mortality, with limited therapeutic options available to treat.
This audit was carried out due to the yearly increase in carbapenem use, to assess appropriateness when prescribed, and to compare to an audit of use done in 2015.

Method: During the course of the audit period in February 2017, 52 patients were identified as being prescribed meropenem. Patient information such as gender, age, allergies and reason for admission was gathered, as well as speciality, recent positive cultures, any contact with micro or ID, and the duration of therapy. The results were then analysed using Microsoft Excel, and appropriateness of prescription was determined based on appropriateness at initiation of prescription.

Results: 27 of the 52 prescriptions were prescribed where the relevant team had authority to do so without microbiology or Infectious Disease (ID) team input, and were therefore following hospital policy i.e. appropriate. One patient was under the care of ID, and so was also deemed appropriate. Of the remaining 24 prescriptions, 11 patients had microbiology or ID input before prescription, either with or without positive cultures, and a further 11 patients prescriptions were deemed clinically appropriate even without prior microbiology or ID approval, either due to positive cultures, or use of

broad spectrum antimicrobials for a suitable time before escalation to meropenem. Of the 11 prescriptions initiated without microbiology or ID input, 7 patients had input during therapy. The remaining 2 prescriptions were deemed inappropriate based on the information available. When determining appropriateness strictly following our current hospital guidelines, however, a total of 7 prescriptions were classed as inappropriate (13.5%), which was similar to the results found in 2015.

Conclusion: Although the use of meropenem has increased, the appropriateness of prescription was similar to the results found in 2015, with more than 4 out of every 5 prescriptions deemed appropriate. Due to the high percentage of prescriptions prescribed by teams with authority to prescribe without micro or ID input (52%), constant review of the current guidelines is prudent to ensure appropriateness of prescription in this large cohort of patients.

P30
Prophylactic Antimicrobial Use in Long Term Care Facilities in Ireland (HALT 2013)

M Tandan, R O' Connor, K Burns, F Roche, S Donlon, M Cormican, A Vellinga
Discipline of General Practice, NUIGalway

Background: The National Institute for Health and Care Excellence (NICE), UK and Health Service Executive (HSE), Ireland has guidelines for appropriate use of antimicrobials both in and outside long-term care facilities (LTCFs). Generally, prophylactic use is discouraged, owing to lack of evidence to support use. In LTCF, prophylactic antimicrobials are often prescribed. The presented study explores indication and other factors related to antimicrobial prophylaxis in LTCFs in Ireland.

Methods: A point prevalence survey on antimicrobials and healthcare associated infections (HCAI) in LTCFs (HALT) conducted in May 2013 in Ireland included 9318 residents from 190 LTCFs. The facility questionnaire included information on facility type and stewardship initiatives. Demographic and information on antimicrobial prescribed collected from residents with HCAI and/or treated with antimicrobial.

Results: Overall, 4% of 9318 residents were on antimicrobial prophylaxis; three of four were for urinary tract infections (UTIs), 12% for respiratory tract infections (RTIs) and 9% for skin infections. For UTI, trimethoprim (44%), nitrofurantoin (37%), and fluoroquinolones (4%) were most often prescribed. Half of UTI prophylaxis was associated with a dipstick and 30% with a urine culture. Of all prophylactic prescriptions, 80% were without an end date.
More than half of prophylactic antimicrobials use was in residents of intellectual disability facilities (IDF) and 40% in general nursing homes. In IDFs, eight residents (14%) received fluoroquinolone for UTI and five (9%) vancomycin for skin and wound prophylaxis. One resident reported on three different prophylaxis for UTI (co-amoxiclav, nitrofurantoin and trimethoprim). Residents with a urinary catheter were most likely to be on a prophylactic antimicrobial, even though this practice is not recommended in national guidelines.

Conclusion: Antimicrobial prophylaxis should only be prescribed when it is evidence-based and for the shortest possible duration. The high prevalence of UTI prophylaxis overall, its specific use for patients with a urinary catheter, high prophylaxis in IDFs and the choice of prophylactic agents reflects key opportunities for antimicrobial stewardship.

P31
An evaluation of influenza vaccination among eligible patients with prolonged in-hospital stay

J Trousdell, J.Kieran, C.Ó'Broin, B.O'Connell
St. James's Hospital, Dublin

Introduction: Influenza is an important global cause of morbidity and mortality and vaccination remains the single best public health initiative. Much of the focus to date has been on community vaccination, however in 2015 there was a large outbreak of nosocomial related influenza in St. James's Hospital.

Aim: The aim of this audit is to investigate the number of inpatients who have received influenza vaccination during a prolonged inpatient stay.

Method: Data were collected from a cohort of 104 inpatients. Inclusion criteria included age >65years, or <65 years with a chronic medical condition eg COPD. All patients audited had length of stay >40 days. Data were collected by reviewing charts and the prescription Kardex of suitable patients. Patients reviewed were under care of medical, surgical and medicine for the elderly teams.
A Consultant Microbiologist gave feedback to lead clinicians in all hospital specialties, highlighting the patients under their care who had yet to be vaccinated. Following this intervention, a subgroup of 42 patients of the original cohort was re-audited.

Results: Of the initial 104 patients reviewed, results showed that 20.19% of patients received vaccination. Average age of patients reviewed 77.5years (95% CI 75 – 80). 25% of COPD patients vaccinated compared to 19% of non-COPD patients. 24% of MedEl patients were vaccinated compared to 17% of medical, and 18% of surgical.
Re-audit results showed 19% of 42 patients were vaccinated following intervention. 100% of these had not been vaccinated on the initial audit.

Conclusion: Results from this audit demonstrate

that 20.19% of eligible patients received vaccination against influenza whilst in hospital, with a further 19% in response to a reminder email. Given the strong indications for vaccination and prior inpatient outbreaks, we recommend hospital-wide education. This audit outlines the need for persistent feedback to ensure compliance with influenza vaccination, and a suggested benefit of appointing Physician and Nurse Champions throughout the hospital annually. Identification of patients at risk of influenza and compliance of vaccination may be optimised via a reminder system through Electronic Patient Record (EPR) when St. James' Hospital becomes paperless.

P32
Needle to Door Time - An Audit of Delaying Factors in Hospital Discharge of OPAT Suitable Patients in an Irish Tertiary Care Hospital

S Waqas[1], J Kieran[1], C O'Donovan[1], F Carroll[1], S Clarke[1]
1 Department of Infectious Diseases, St. James's Hospital, Dublin, Ireland

Out-patient antimicrobial therapy (OPAT) program aims for earlier discharge of patients from a hospital. Some patients in spite of being suitable for OPAT do not get discharged in a timely anticipated manner.
This audit assessed the delay in hospital discharge of OPAT suitable patients and tried to identify the delaying factors. Records of 33 consecutive patients were prospectively assessed over three months. Data was analysed using SPSS.
Mean age of patients was 48.7 years and the majority 69.7% (n=23) were male. The most frequent indication for OPAT referral was osteomyelitis 54.5% (n=18) and majority 93.9% (n=31) were assessed by OPAT team on the day of referral. Referrals were appropriate for OPAT in 90.9% (n=30). Most patients 66.7% (n=22) required antibiotics for more than 2 weeks and peripherally inserted central catheter(PICC) was chosen as the appropriate access in the same number of patients. The mean time taken for PICC placement in these patients was 2.68 days (Range 0-8 days). The most frequent factor identified in delaying patient discharge for more than 24 hours was a delay in PICC placement in 24.2% (n=8). Lack in community OPAT capacity was the second most frequent discharge delaying factor in 18.2% (n= 6).For the eight patients in which PICC insertion was identified as a discharge delaying factor, the total bed cost beyond 24 hours stay was estimated at about € 37000. Out of the total 33 patients referred to the OPAT services, 87.9% (n=29) were ultimately discharged from the hospital to the community OPAT services. The average time taken for the OPAT appropriate patients to get discharged from the hospital since the time of being declared fit for OPAT was 3.3 days with a maximum of 8 days.
Most of the referrals to the OPAT services were appropriate and majority of the patients referred to the OPAT services got discharged on OPAT program to the community. PICC was required in many patients and delay in PICC placement was the most frequent factor delaying patient discharge from the hospital, followed by lack of capacity in community OPAT services. Delayed patient discharge has significant cost implications for the hospital. Decreasing the time in PICC insertion of OPAT eligible patients by training the OPAT clinical nurse specialist in PICC placement and increasing capacity of community OPAT services can improve delays in discharges. Audit will be repeated after implementation of these recommendations.

P33
Gardnerella vaginalis in a Postpartum Lung Empyema: A Case Report and Literature Review.

S Zahradnik[1], Z Al Balushi[2], B Cryan[3], M Horgan[4]
1 School of Medicine, University College Cork; 2 Genito-Urinary Medicine and Infectious Diseases, St. James's Hospital, Dublin; 3 Department of Laboratory Medicine and 4 Department of Infectious Diseases, Cork University Hospital, Cork, Ireland

Background: *Gardnerella vaginalis* is one of the commonest contributors to bacterial vaginosis and a risk factor for chorioamnionitis, preterm birth, and fetal lung inflammation in the setting of preterm intrauterine infection. *G. vaginalis* is an unusual culprit of systemic disease in adults. We report a case of a *G. vaginalis* lung empyema in a 20-year-old healthy woman postpartum.

Methods: A retrospective review of the woman's clinical records was performed. A systematic review of the literature also assessed the current understanding of the systemic pathogenicity of *G. vaginalis*, especially outside of the genitourinary system.

Results: A 20-year-old female underwent a normal vaginal delivery, and complained of pleuritic chest pain 3 days post-delivery up to the time of her admission 10 days later. She was admitted with a diagnosis of a large left hydropneumothorax with mediastinal shift requiring immediate drainage of 2.5L via chest drain and was commenced on Piperacillin/tazobactam and Clindamycin. CT thorax indicated a trapped lung, extensive pneumonia and features consistent with the diagnosis of empyema. She subsequently transferred to our centre for cardiothoracic intervention with severe septic shock. Antibiotics were changed to Meropenem and Linezolid. She underwent a VATS procedure revealing an empyema with decortication performed the day after. Pleural empyema fluid culture grew *Gardnerella vaginalis* sensitive to Amoxicillin hence antibiotics were changed to IV Amoxicillin with clinical improvement. She was discharged clinically well on oral Amoxicillin. She remains well, with chest x-ray at 5-month follow-up reporting only minimal residual pleural change. The literature review did not find similar cases, however cases of *Gardnerella vaginalis* bacteraemia, lung abscess in an alcohol abuser, urolithiasis, perinephric abscess

and empyema, and prosthetic joint infection did arise. Adherence and cytotoxicity of *G. vaginalis* in vaginal and alveolar epithelial cell lines have been demonstrated in vitro, indicating a potential pathogenic nature of this usually commensal organism. *G.vaginalis* contributes to postpartum endometritis, with bacteraemia occurring in 5-20%of these patients. We postulate that organisms seeded to her lung in this way and delay in seeking care due to her new baby at home contributed to her critical presentation.

Conclusion: A possible predilection of *G. vaginalis* for respiratory and other epithelialtissues outside the female reproductive tract could link our case with the role of *G.vaginalis* in fetal lung inflammation. Our report of this young woman further characterizes this trend and indicates an exciting opportunity for further research and increased understanding.

P34
Serial Transient Elastography Readings Indicate Progression of Untreated Fibrosis among Patients Attending Opioid Substitution Treatment Clinic in South County Dublin

J. Moloney, G. Hawthorne, A.P. McCormick, E. Feeney, D. Houlihan, S. Keating, C. Murphy, T. McHugh, J.S. Lambert

Background: Injecting drug use (IDU) is a major driver of the hepatitis c virus (HCV) epidemic. Opioid substitution treatment clinics (OST) are the main provider of care for these individuals. The aim of the current study was to assess the prevalence of significant liver disease and progression in patients attending an OST clinic and evaluate the effectiveness of opportunistic Transient Elastography (TE) service in this setting.

Method: Unselected serial TE readings were carried out on patients in the OST clinic in 2008 and 2016. Mortality in the 2008 group was related to TE readings and progression of TE readings from 2008 to 2016 was recorded.

Results: In 2008, 84 patients were scanned. Of these 77% were HCV Ab positive and 58% of this group were HCV viraemic. By 2016, all of the 2008 patients with TE scores > 13 Kilopascal (Kpa) had died (a total of 13 patients) and 11 of these patients died as a result of liver failure associated with hepatitis c viraemia and alcohol. In 2016 105 scans were carried out on surviving patients from 2008 who still attended the clinic and on new patients attending the clinic. 16 patients (15%) of the 2016 population had TE scores > 13 Kpa, the previous threshold for death at eight years.

Conclusions: This longitudinal data demonstrates universal mortality at 8 years among OST patients with a TE reading of 13 Kpa or greater. Among surviving patients it demonstrated widespread progression of TE readings to levels indicating a requirement for early DAA treatment, and to levels previously associated with high mortality.

P35
Among people attending emergency department, does nurse initiated counselling and rapid HIV testing compared to traditional testing improve patient health outcome?

S Babu,
HMRG, UCD

Background: For many patients, a visit to the emergency department may be their only source of health care, and thus their only opportunity to receive preventive care. The emergency nurse is a vital link between the community and the hospital, and possesses numerous opportunities to influence the health and wellbeing of individuals, including those who are at most risk for disease and injury. In rapid HIV testing in general, while giving positive results to the people a qualified staff should be available for Pre and Post-test counselling, supportive services and right referral to care pathways. ANP role and triage role of nurses in Emergency Department can be utilized to understand the early signs of HIV infection by assessment and by using routinized HIV screening questions and followed by pre-test counselling, rapid testing, post test counselling and referral to HIV clinical care

Objectives: This review examines all the literature on nurse initiated counselling and rapid HIV testing in emergency department and provides an up to date review on all published material in scientific journals.
Methods: A literature search was conducted using GOOGLE SCHOLAR, PUBMED, EBSCO and MEDLINE databases using key word searches nurse initiated counselling, rapid HIV testing and emergency department. No restrictions were placed on study date and design of publication. Full text of articles for all remaining articles was retrieved. Six articles were retrieved in full text and all relevant information was placed in a standard data extraction form

Discussion: Primary level of prevention applied through rapid testing and nurse initiated counselling. All the studies included in the review had a fairly large number of participants; however, participants in each study were not truly representative of the general public. The existing researches articles reviewed that rapid testing and nurse initiated counselling have been well accepted in non-research settings. Based on the existing literature, this topic represents the first attempt to systematically synthesize nurse initiated counselling and rapid HIV testing in the emergency department.

Conclusions: Our existing study explores the way toward a process for Nurses initiated counselling & rapid HIV testing in emergency department, so that

it may significantly increase testing rates and, more importantly, receipt of results. The routine Nurses HIV counselling and testing in the setting of treatment availability has the potential to identify and place into care many of the approximately 300,000 people who are unaware of their HIV-positive status, which, as research has proven, works to mitigate the further spread of the HIV/ AIDS epidemic.

PHARMA & THERAPEUTICS

P36
Interventions to Improve the Treatment of Malaria in an Acute Teaching Hospital in Ireland

O'Connor R, Morley D, Relihan E, Broderick A, Merry C, Bergin C
Infectious Disease Department, St. James's Hospital, Dublin

Background: Malaria is the most serious parasitic infection worldwide. Early recognition and appropriate prompt treatment is essential. At our institution the average number of malaria cases seen per year is 10. Over the last two years it was noted that there were treatment errors in 18%of these cases (n=3). The aim of this quality improvement study is to enhance staff knowledge of malaria through a cluster of interventions namely improve existing hospital guidelines, provide prescribing information with medication supply, education sessions with front line staff and ensuring access to treatment.

Methods/Results: This is an interdisciplinary (doctor/ pharmacist) quality improvement project. In an effort to improve staff knowledge of malaria a multifaceted approach was taken as discussed below:

- Updated guidelines & Prescribing Information leaflet
- A set of updated detailed guidelines based on the WHO, BIA & RCOG guidelines were introduced.
- These updated guidelines give a step-by-step guide as to how to recognise and classify malaria, what treatment is recommended, and where the treatment can be found. These guidelines were included in the SJH Prescriber's Capsule and this was advertised on the intranet homepage in March 2017. An IV guideline for quinine and prescribing information leaflet for artemether/lumefantrine (Riamet®) was also developed. It is supplied with the medication when dispensed from the pharmacy department.
- Education sessions & quiz- Presentations to nursing, medical & pharmacy staff
- Education sessions by multidisciplinary team (doctor & pharmacist) were arranged for front line staff targeting Emergency Department, General Medical, Intensive Care, and Infectious Disease services. These included a quiz highlighting important pearls of malaria. An end of presentation questionnaire was handed out to assess learning outcomes. A short presentation was also given to the pharmacists.
- Access to treatment Quantities of antimalarials available in the A& E & emergency drug room were reviewed to ensure sufficient quantity would be available out of hours.

Conclusion: Malaria is a medical emergency and failure to institute early and appropriate treatment could lead to significant morbidity and mortality. A programme of continuing education for nursing and medical staff is required to maintain the interventions implemented in this study and ensure that care for patients with malaria continues to develop. Continuing education initiatives should focus on enhancing knowledge and understanding of the local guidelines, and encompass regular audits to ensure that the management of malaria is complying with best practice standards.
(BIA = British Infection Association, RCOG= Royal College of obstetricians and Gynaecologist, WHO= World Health Association)

P37
Clinical Pharmacology of the HIV Integrase Strand Transfer Inhibitor Bictegravir

H Zhang, J M. Custodio, X Wei, H Wang, A Vu, J Ling, H Martin, E Quirk, S Antonucci, B P Kearney
Gilead Sciences

Background: Bictegravir (BIC) is an investigational, once-daily, unboosted HIV integrase strand transfer inhibitor (INSTI) with potent in vitro activity against most INSTI-resistant variants. BIC is currently in development as a single tablet regimen (STR) coformulated with FTC/TAF for treatment of HIV-1 infection in adults and adolescents. Clinical pharmacology assessments of the PK, ADME and DDI potential were performed.

Methods: A single- (SD) and multiple-dose (MD) randomized, double-blind, placebo-controlled (6 active; 2 placebo/cohort) of staggered dose-escalation evaluated SD BIC 5, 25, 50, 100, 300 or 600 mg; or once-daily MD 5, 25, 50, 100 or 300 mg for 14 days (fasted) in healthy volunteers. An ADME/ mass balance study included 8 healthy male subjects dosed with a SD 100 mg plus 100 µCi [14C]-labeled BIC. Blood, urine and feces samples were analyzed for total radioactivity and pooled plasma and excreta samples were radio-profiled. An open-label, six cohort (n=15/cohort), fixed sequence and cross-over study assessed the DDI liability of BIC as a victim through utilization of CYP3A4, UGT1A1, and/ or P-gp inhibitors and inducers. Safety was assessed throughout each study.

Results: BIC exposure was dose proportional following SD of 25-100mg. Accumulation at steady-state was approximately 1.6x, consistent with the observed half-life of approximately 18 hours. Following a SD of

[14C]-labeled BIC, the total recovery of radioactivity was 95% ± 1.5%, with 60% ± 5.5% from feces and 35% ± 5.0% from urine. Balanced glucuronidation and oxidation contributed to the major clearance pathways of BIC. The DDI study (Table 1) showed increased BIC AUC (61-74%) by CYP3A4 inhibitors voriconazole and DRV/COBI, but showed a greater increase (~4x) by potent dual inhibitors of UGT1A1 and CYP3A4, ATV and ATV+COBI. Coadministration of BIC with a potent CYP3A4/UGT1A1/P gp inducer, rifampin resulted in a 75% decrease of BIC AUC; in contrast, a lesser reduction (38%) was associated with the moderate CYP3A4/P gp inducer, rifabutin. Overall, BIC was well tolerated at all doses studied. No deaths, SAEs, or Grade 3 or 4 AEs were reported. The safety profile for BIC did not differ with increasing doses of SD or MD.

Conclusions: The favourable BIC PK profile supports once daily dosing. The DDI results of BIC are consistent with its ADME profile, in which both CYP3A4 and UGT1A1contributed to BIC elimination. BIC was safe and well tolerated in healthy volunteers.

Table 1. Effects of Concomitant Medications on BIC PK in Healthy Volunteers

BIC Coadministered Drug(s) and Dose(s)	Dose (s) of BIC	Geometric Mean Ratio % (90% CI) of BIC PK with/without Coadministered Drugs n=15 for each cohort		
		C_{max}	AUC	C_{tau}
ATV (400 mg) QD	BIC (75mg) SD fed	128 (123, 134)	415 (381, 451)	NA
ATV (300 mg)+ COBI (150 mg) QD	BIC (75mg) SD fed	131 (123, 140)	406 (376, 438)	NA
Voriconazole (300 mg) BID	BIC (75mg) SD fasted	109 (96.1,123)	161 (141,184)	NA
DRV/COBI (800 150 mg) QD [c]	BIC (75mg) MD fed	152 (140, 164)	174 (162, 187)	211 (195, 229)
Rifabutin (300 mg) QD [c]	BIC (75mg) MD fasted	80.4 (66.9, 96.5)	62.0 (53.1, 72.5)	44.0 (37.1, 52.1)

P38
Significant Efficacy and Long Term Safety Difference with TAF-based STR in Naïve Adults

J Arribas, M Thompson, P Sax, E DeJesus, A Clarke, M Das, S Antonucci, S McCallister
Gilead Sciences

Background: Two randomized, controlled, double-blinded multinational Phase 3 trials compared tenofovir alafenamide (TAF) vs tenofovir disoproxil fumarate (TDF), each in single tablet regimens coformulated with elvitegravir/cobicistat/emtricitabine (E/C/F). At Week (W) 48, E/C/F/TAF was statistically noninferior to E/C/F/TDF for the proportion of subjects with HIV-1 RNA <50 copies(c)/mL and had significant improvements in renal and bone safety endpoints. We now describe follow up of blinded data at W144.

Methods: ARV naïve participants randomized 1:1 to receive E/C/F/TAF(TAF) or E/C/F/TDF(TDF). W144 viral suppression by FDA snapshot analysis, pre-defined bone and renal safety and tolerability endpoints are reported.

Results: 1,733 HIV-infected adults were randomized and treated: 15% women, 43% non-white, 23% viral load >100,000 c/mL. At W144, TAF met prespecified criteria for both noninferiority and superiority to TDF by FDA snapshot algorithm (Table 1). Mean [SD] % decrease in BMD was significantly less in the TAF group for both lumbar spine and total hip (Table 1). Multiple measures of renal safety were significantly better for participants randomized to TAF. There were no cases of renal tubulopathy in the TAF arm vs 2 on TDF. No participants on TAF had renal-related discontinuations vs 12 on TDF (p<0.001).

Conclusion: at W144, participants on E/C/F/TAF had significantly higher rate of virologic suppression (<50c/mL) than those on E/C/F/TDF, driven by fewer participants on E/C/F/TAF with no W144 data. E/C/F/TAF continued to have a statistically superior bone and renal safety profile compared to E/C/F/TDF, demonstrating significant safety advantages over E/C/F/TDF through 3 years of treatment.

Table 1. W144 Efficacy and Changes from Baseline in Renal and Parameters

Efficacy	E/C/F/TAF (n=866)	E/C/F/TDF (n=867)	Significance
HIV-1 RNA <50 c/mL, n (%)	729 (84.2%)	694 (80.0%)	p=0.021
HIV-1 RNA ≥50 c/mL, n (%)	40 (4.6%)	34 (3.9%)	—
No Virologic Data	97 (11.2%)	139 (16.0%)	—
Safety (change from baseline)			
Renal, change from baseline			
eGFR, mL/min (CG)	-1.6	-7.7	All p<0.001
UPCR	-10.50%	25.20%	
β-2M/Cr	-25.70%	53.80%	
RBP/Cr	34.80%	111.00%	
Bone Density, change from baseline			
Lumbar Spine	-0.92% (4.12%)	-2.95% (4.29%)	Both p<0.001
Total Hip	-0.75% (4.45%)	-3.36% (4.33%)	

β-2M/Cr =urine beta-2-microglobulin to creatinine ratio; c/mL=copies/mL; eGFR=estimated glomerular filtration rate; UPCR = urine protein to creatinine ratio; RBP/Cr=urine retinol binding protein to creatinine ratio.