Infectious Diseases Society of Ireland

12th Annual Scientific Meeting

NeuroInfection

16-18 May 2019

The Royal College of Surgeons in Ireland

PROGRAMME & BOOK of ABSTRACTS

RCSI

BEAUMONT HOSPITAL

The Infectious Diseases Society of Ireland (IDSI) is grateful for the support of the following Pharmaceutical Companies who have provided unrestricted educational grants to make this Scientific Meeting possible:

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Welcome

Dear Colleagues,

I am delighted to welcome you to the 12th Infectious Diseases Society of Ireland Annual Meeting (IDSI ASM). As the first conjoined meeting of the IDSI and the Society for the Study of Sexually Transmitted Diseases in Ireland (SSSTDI), it represents the natural convergence of our shared interests. Thus, we are pleased to extend a particular welcome to the SSSTDI, its president, Dr Say Quah and its members. The natural overlap in interests and the collegial relations and friendships we enjoy makes this a real pleasure.

The heart of the meeting is the wonderful programme that has been brought together by the hard work of committee members, the generosity and willingness of guest speakers to share their expertise, and the dedication of all who have submitted their abstracts and cases for discussion.

This year we bring focus to the important issue of neurologic infection. Distinguished international and local experts who are at the forefront of research and clinical management in their fields will cover topics including encephalitis, bacterial meningitis, fungal infection, shunt infections, host susceptibility and host-pathogen interactions. While changes in patient population have heralded an increase in previously rare CNS infections e.g aspergillosis, old foes such as neurosyphilis remain to be conquered. All will receive due attention during the course of the meeting. Other important areas of infectious diseases are not however forgotten, with particular attention being paid to many topical issues such as PrEP, hepatitis, immunisation, tuberculosis and antimicrobial stewardship.

The programme enjoys great diversity in learning platforms: the more formal presentations are complemented by case-based discussions, oral abstract sessions, poster presentations and important networking opportunities. An added bonus is the kind invitation from the SSSTDI for you to attend their scheduled sessions.

This meeting is a chance for our research community to present new and important developments in the field of infectious diseases in Ireland. In addition to attending the plenary sessions and abstract presentations, we ask you to visit and review the posters, which not only inform and provide opportunity for stimulating discussion but are a great source of ideas for future research. Don't miss out!

The meeting has been accredited with 12 CPD credits by the Royal College of Physicians in Ireland.

I would also like to thank our corporate sponsors once again for their very generous and ongoing support for the IDSI Annual Scientific Meeting.

Finally, I hope you have a very enjoyable experience in the historic venue that is the Royal College of Surgeons in Ireland.

Prof. Karina Butler
Children's Health Ireland
President

Organising Committee

Prof. Karina Butler, OLCHC/Temple St./UCD, President IDSI
Dr Eoghan de Barra, Beaumont Hospital Dublin/RCSI, Secretary IDSI
Prof Sam McConkey, Beaumont Hospital Dublin/RCSI
Dr Catherine Fleming, Galway University Hospital/NUIG, Past-President IDSI
Dr Helen Tuite, University Hospital Galway/NUIG
Professor Colm Bergin, St. James's Hospital, Dublin/Trinity College Dublin
Dr Susie Clarke, St. James's Hospital, Dublin
Dr Aoife Cotter, Mater Misericordiae University Hospital, Dublin/University College Dublin
Dr Eoin Feeney, St. Vincent's University Hospital, Dublin /University College Dublin
Professor Mary Horgan, Cork University Hospital/University College Cork/President, RCPI
Dr Arthur Jackson, Cork University Hospital/Mercy University Hospital, Cork
Dr Patrick Mallon, Mater Misericordiae University Hospital, Dublin/University College Dublin

KEYNOTE SPEAKERS

Dr. Nicholas Davies

Dr. Davies is a consultant neurologist at Chelsea and Westminster Hospital, the Royal Marsden Hospital, and Imperial College Healthcare NHS Trust. His subspecialty and research interest is neurological infection. He trained in neurology at the National Hospital for Neurology and Neurosurgery, St George's Hospital (Atkinson Morley's) and St Mary's Hospital in London. Prior to his consultant appointment he was awarded a 12-month Personal Travel Fellowship, which he spent studying HIV neurology at St. Vincent's Hospital, Sydney, Australia. Since 2016 he has also been neurologist to the National Centre for Human Retrovirology at St Mary's Hospital, which specialises in management of HTLV infection.

Dr. Fidelma Fitzpatrick

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

Prof. Christina Marra

Prof. Marra completed residency training in neurology and fellowship training in iInfectious diseases at the University of Washington, in Seattle, Washington, USA. She is Professor and Vice Chair for Academic Affairs in Neurology, and she has an adjunct appointment in Medicine (Infectious Diseases) at the University of Washington. Prof. Marra directs a US National Institute of Health-funded clinical and translational research program on factors that influence the clinical course of syphilis, with a particular focus on HIV and on neurosyphilis. She received the American Sexually Transmitted Diseases Association Achievement Award in 2014 for work in this area. She also participates in multi-center clinical research on the neurological consequences of HIV, and she provides general neurological care in inpatient and outpatient settings, including a multispecialty HIV clinic.

Mr. David O'Brien

David O'Brien qualified as a doctor at the National University of Ireland, Galway (then University College Galway) in 1986. His basic surgical training took place in University Hospital Galway and his neurosurgical training at Beaumont Hospital, Dublin, Manchester Royal Infirmary, Royal Manchester Children's Hospital and Hope Hospital, Salford, Manchester.

He has a M.Ch. in surgery, and a M.Med.Sc., F.R.C.S.I. and F.R.C.S. (SN) (Fellow of the Royal College of Surgeons specialising in surgical neurology). He has an M.B.A. from the University of Hull, also an LL.M. from the University of Leicester, where he followed an approved postgraduate programme in Medical Law and Ethics.

Mr. O'Brien is a former Consultant Neurosurgeon at the Royal Melbourne Hospital and at the Hull Royal Infirmary, England, where he was later appointed Clinical Director in Neurosurgery. He was appointed Consultant Neurosurgeon at the National Neurosurgery Centre at Beaumont Hospital, Dublin in August 2009. He has had numerous papers published in the surgical literature and has presented to numerous national and international meetings.

Mr. O'Brien was appointed Clinical Director in Neurosciences at Beaumont Hospital from July 2010 to May 2016. He was a member of the Board in Beaumont Hospital from November 2012 to October 2013 and was appointed Honorary Clinical Senior Lecturer, Royal College of Surgeons in Ireland in October 2012. He is Chairman of the Department of Neurosurgery, National Neurosurgical Centre, Beaumont Hospital since January 2018. His special interest is in complex spine disorders and management.

Prof. Diederik van de Beek

Diederik van de Beek is a neurologist specialised in neurological infectious disease and the principle investigator of the neurologic infectious diseases research group in the AMC. He studied medicine at the University of Amsterdam and finished his PhD thesis entitled "Bacterial meningitis in adults" in 2004 at the same university. After finishing his neurology training he spent a year in the Mayo Clinics, Rochester, Minnesota, USA studying neurological infections in transplant patient and experimental meningitis.

Following his return to the AMC he received research grants from the Dutch organization for scientific research (NWO) and the European Research Council (ERC) to continue his meningitis research. In a translational, bench-to-bedside approach, Prof. van de Beek unravels cause and effect in neurological infectious disease ultimately aiming to develop new treatments and prevention strategies. His focus is mainly on three areas of research including bacterial meningitis, infections in stroke patients and delirium in sepsis patients. Prof. van de Beek has published over 150 papers in international scientific journals including the New England Journal of Medicine, the Lancet and Journal of Clinical Investigation.

Prof. Adilia Warris

Prof. Warris is a paediatric infectious diseases specialist with a specific interest in medical mycology. She is a principal investigator of the Aberdeen Fungal Group and co-director of the MRC Centre for Medical Mycology at the University of Aberdeen. Prof Warris' research profile has a strong translational focus and specific areas of interest include the host-fungus interaction in specific patient groups, the development of new management strategies for invasive fungal disease, paediatric antifungal stewardship and the epidemiology of fungal infections in children. Prof. Warris Chairs the European Paediatric Mycology Network (EPMyN). She is a member of the editorial board of the Journal of Pediatric Infectious Diseases Society, Medical Mycology and Medical Mycology Case Reports journal and has published over 140 peer-reviewed papers and contributed to several book chapters both nationally and internationally. Prof. Warris is actively involved in the development of various international guidelines (ECIL, ESCMID-ECMM) and Consensus Definitions (EORTC) targeted at the diagnosis and management of invasive fungal infections.

IDSI Annual Scientific Meeting
16-18 May 2019
PROGRAMME

Thursday 16 May 2019 O'Flanagan Theatre, Royal College of Surgeons in Ireland	
16.30	**Registration**
17.00 – 18.00	Sponsored Symposium ***Improving access to OPAT services for vulnerable and hard to reach patients*** Dr. Neil Ritchie, Claire Vallance, NHS Greater Glasgow and Clyde
18.00 – 20.30	Co-chairs: Dr. Eoghan de Barra, RCSI/Beaumont Hospital Dr. Ciaran Bannan, St. James's Hospital
18.00 – 18.40	**Keynote Presentation:** ***Acute Infectious Encephalitis: A Neurologist's Perspective*** Dr. Nicholas Davies, Chelsea & Westminster Hospital
18.40 – 20.30	SpR Clinical Case Presentations Rob Durcan: ***A Nervous Tick*** Conor Grant: ***Just another Fever in a returning Traveller*** Jeffrey Harte: ***If it Looks Like a Duck and it Quacks Like a Duck…*** Anna O'Rourke: ***Careful with his Brains on this one...*** Audrey Rice: ***A Ring-Enhancing Lesion Presenting with Hemiballismus*** Nahed Seddiq: ***The Italian Job***
Friday 17 May 2019 **O'Flanagan Theatre, Royal College of Surgeons in Ireland**	
08.00	**Registration**
09.00 – 09.05	**Annual Scientific Meeting Welcome :** Prof. Karina Butler, President, Infectious Diseases Society of Ireland, UCD Clinical Professor of Paediatrics, Consultant Paediatrician, Our Lady's Children's Hospital Crumlin, Temple Street Children's University Hospital
09.00 – 10.25	Co-chairs: Prof. Sam McConkey, RCSI/Beaumont Hospital Dr. Eavan Muldoon, Mater Misericordiae University Hospital
09.05 – 09.45	**Keynote Presentation:** ***Community-acquired Bacterial Meningitis*** Prof. Diederik van de Beek, Amsterdam Neuroscience Institute

09.45 – 10.25	**Keynote Presentation:** ***Fungal Infections of the Brain and Meninges; Who is at Risk?*** Prof. Adilia Warris, University of Aberdeen
10.25 – 11.00	**Coffee/Tea, Poster Viewing, Exhibition**
11.00 - 11.40	**Panel of Keynote Speakers to Discuss Interesting Cases** Case Presenters: Joe Heskin, Colm Kerr, Brendan O'Kelly
11.40 – 12.40	Sponsored Symposium **Is it time to rethink the way we treat HIV?** Chair: Adam Stubbs ***The evidence supporting dolutegravir-based 2 drug regimens focusing on dolutegravir and lamivudine*** Prof. José Gatell ***Clinical experience and expert opinion*** Prof. Mark Nelson, Chelsea & Westminster Hospital:
12.40 – 13.10	**Scientific Abstracts: Oral Presentations (TB)** Co-chairs: Prof. Sam McConkey, RCSI/Beaumont Hospital Dr. Eavan Muldoon, Mater Misericordiae University Hospital
12.40 – 12.50	A retrospective evaluation of Central Nervous System Tuberculous Disease in Beaumont Hospital over a ten-year period; case definitions, adherence to treatment guidelines and patient outcomes
12.50 – 13.00	Tuberculosis Hospitalizations in Ireland over a 4-Year Period: A Descriptive Study
13.00 – 13.10	A Clinical Review of Tuberculosis in the West of Ireland
13.10 – 13.45	**Lunch, Poster Viewing, Exhibition**
14.00 – 15.00	HIV Nurses Group Meeting
13.45 – 14.45	Sponsored Symposium Chair: Prof. Colm Bergin, St. James's Hospital, Dublin ***Biktarvy Clinical Cases: Experience from the U.S.*** Dr. Paul Sax, Brigham & Women's Hospital, Massachussetts
14.45 – 17.00	Co-chairs: Dr. Sarah O'Connell, University Hospital Limerick Dr. Arthur Jackson, Cork University Hospital/Mercy University Hospital, Cork
14.45 – 15.15	**Keynote Presentation:** ***VP Shunt Infections - Does the Shunt always Have to be Removed?*** Dr. Fidelma Fitzpatrick, Beaumont Hospital/RCSI
15.15 – 15.45	**Scientific Abstracts: Oral Presentations (HIV)**
15.15 – 15.25	Impact of Renal Tubular Function on Bone Mineral Density in Older People With HIV

15.25 – 15.35	Immunosenescence in HIV is associated with CMV status and lower CD4:CD8 ratio
15.35 – 15.45	Inflammatory Phenotypes Predict Pulse Wave Velocity Change on ART in Malawian Adults
15.45 – 16.00	**Tea/Coffee, Poster Viewing, Exhibition**
16.00 – 16.40	**Scientific Abstracts: Oral Presentations (HIV contd.)**
16.00 – 16.10	Hepatic steatosis, Ageing and MEtabolic Syndrome in HIV patients (The HAMES-HIV study)
16.10 – 16.20	Elite controllers requiring elite management decisions in the test and treat era
16.20 – 16.30	An Assessment of Prescriber's Attitudes to the Introduction of Preferred Regimens of Highly Active Antiretroviral Therapy (HAART) at a Local and National Level
17.00 – 17.30	Sponsored State of the Art Presentation ***Polypharmacy in HIV - Manageable Now?*** Fiona Marra, University of Liverpool
17.30 – 18.30	**IDSI AGM,** Tutorial Room 4, Ground Floor
Saturday 18 May 2019 O'Flanagan Theatre, Royal College of Surgeons in Ireland	
09.00-10.00	**10 x 5-minute Oral Presentations** Chair: Dr. Eoghan de Barra, Hon. Secretary, IDSI
	Demographics and Treatment Outcomes of Patients with Chronic Hepatitic C Infection Attending a Tertiary-Level Hospital in the Era of Unrestricted Access to Direct-Acting Antivirals
	Hepatitis B Genotype Distribution and Drug Resistance Mutations in Ireland, 2016-2018
	Compliance of Hepatitis B Management at a single site with European Guidelines
	Association between Integrase Strand Transfer Inhibitors and serum magnesium levels
	An Audit of Staphylococcus aureus Bacteraemia Clinical Management in a Large Model 4 Teaching Hospital, 2018
	Outpatient Antimicrobial Therapy for Endovascular Aortic Repair Infection; a Five-Year Retrospective Evaluation
	A Retrospective Evaluation of Malaria in Beaumont Hospital Over a Ten-Year Period from 2008-2018; Diagnosis and Management, Adherence to Treatment Guidelines and Patient Outcomes
	Audit of Meningitis Management at Mater Misericordiae University Hospital

	Patient Satisfaction Survey for HIV Ambulatory Care in University Hospital Limerick (UHL)
	Service disparity within the National OPAT programme
10.00 – 11.00	Sponsored Symposium **Hepatitis C Elimination: The role of simplification in identifying and engaging marginalised patients** Chair: Professor Sam McConkey, Beaumont Hospital Speakers: Dr. Eoin Feeney, St. Vincent's University Hospital, Dublin, Dr. Clíona Ní Cheallaigh, St. James's Hospital, Dublin
11.00 – 11.40	Co-chairs: Dr. Eoghan de Barra, RCSI/Beaumont Hospital Dr. Eoin Feeney, St. Vincent's University Hospital
11.00 – 11.40	**Keynote Presentation:** ***Spinal Infection, Instability and Neurological Deficit*** Mr. David O'Brien, Beaumont Hospital
11.40 – 12.00	**Tea/Coffee, Poster Viewing, Exhibition**
	Joint Session with the Society for the Study of Sexually-Transmitted Diseases in Ireland (SSSTDI)
12.00 – 13.25	Co-chairs: Dr. Say Quah, Royal Victoria Hospital, Belfast Dr. Eoin Feeney, St. Vincent's University Hospital
12.00 – 12.45	**PrEP Cases Discussion** Facilitator: Say Quah Panel: Suzanne Todd/Susan Clarke/Emma Devitt
12.45 – 13.25	**Keynote Presentation:** ***Neurosyphilis: Host and Bacterial Risk Factors*** Prof. Christina Marra, University of Washington
13.25 - 13.30	**Presentation of Best Clinical Case, Best Oral Presentation and Best Poster Prizes, Close of Meeting** Dr. Eoghan de Barra, Hon. Secretary, Infectious Diseases Society of Ireland
13.30 – 15.55	**IDSI Attendees are welcome to attend the SSSTDI Lunch and Education Sessions as guests of the SSSTDI**

SSSTDI Spring Meeting
Saturday, 18th May 2019 at RCSI

10:20	Registration & Refreshment **Welcome – Aisling Loy**
10:30	48 hours access to GUM clinics, is it achievable? **John White, Western HSCT**
11:05	Recovering sexual wellbeing **Professor Eilis McCaughan, Ulster University**
11:40	Coffee/tea, Posters, Exhibition

JOINT IDSI-SSSTDI session

12:00	PrEP cases discussion with Expert panel **Facilitator – Say Quah** *Expert Panel – Suzanne Todd/Susan Clarke/Emma Devitt*
12:45	Neurosyphilis: Host and Bacterial Risk Factors **Prof. Christina Marra, University of Washington**
13:30	Lunch
14:30	Hepatitis B Virus (HBV) Monitoring in a HCV+ DAA Treated Patient Cohort **Farrell, G**
14:40	Trends in STI notifications in Cork and Kerry 1997-2018 **Aline Brennan**
14:50	GUM cases & FAQs **Facilitator – Say Quah** *Expert Panel – John White/Fiona Lyons/Emma McCarty*
15:50	Closing remarks

Oral Presentations
(in order of programme)

O1

A retrospective evaluation of Central Nervous System Tuberculous Disease in Beaumont Hospital over a ten year period; case definitions, adherence to treatment guidelines and patient outcomes

N. Allen, C. McNally, S. McConkey, E. de Barra
Beaumont Hospital, Dublin

Background: Tuberculous Meningitis (TBM) remains a diagnostic and management challenge and clinical outcomes are poor. The Infectious Disease Department in our tertiary referral hospital - also a national Neurosurgical Centre- have recently set up a dedicated TB outpatient clinic. The aim of this study was to describe clinical characteristics, treatment and outcomes in order to identify areas for improvement.

Methods: All patients with a discharge diagnosis of tuberculous meningitis (TBM) from Beaumont Hospital from 2007 to 2017 were identified from the Hospital Inpatient Enquiry (HIPE) system. Demographic, clinical, microbiological and radiological data were collected using patient paper and Frequencies of clinical characteristics were stratified by outcome, and differences were assessed using Fisher exact test.

Results: Twenty-one patients were included; 12 confirmed, 5 probable and 4 possible cases. 15/21 (71.4%) were female, median age 37, IQR 30-47. Areas of origin: Ireland (10), Indian subcontinent (7), Sub-Saharan Africa (4). Presenting features included headache- 16/21 (76.2%), vomiting- 9/21(42.9%), fever- 8/21(38.1%), limb weakness- 7/21(33.3%), confusion- 7/21(33.3%) and weight loss- 7/21(33.3%). MRC grade at presentation was ≥2 in 7/21 (33.3%). Focal neurological signs were found in 7/2 (33.3%). 4/21presented with meningism. Lymphocytic meningitis with raised protein (median 970mg/dl, IQR 289mg/dl – 1870mg/dl) was found in all cases where CSF was sampled (16/21). MTB was cultured from CSF in 4/16 (25%); all pan-sensitive isolates. 11/21 (52.4%) patients presented with hyponatraemia. 6/21 (28.6%) patients presented with hydrocephalus. Baseline radiological findings were normal in 2 patients. Median time from presentation to initiation of treatment was 10 days, range 1-90. Therapies comprised of 4 anti-tuberculous drugs in 13/21(61.9%), 5 drugs in 8/21 and steroids in 19/21(90.5%). 6/19 (31.6%) had a steroid course of >8 weeks. Steroid-related psychosis occurred in 2/6; 1 life-threatening. 12 patients had an adverse reaction to at least one anti-tuberculous drug. 4 patients had life-threatening treatment complications; stroke (2), blocked VP shunt (1), steroid-related psychosis (1). Inpatient stay ranged from 5-135 days. Of the 17 patients for whom outcome data were available, 15/17 (88.2%) were alive one year after treatment completion. 7/15 (46.7%) had a Modified Rankin Score of ≥3, indicating significant disability. No statistical association was found between individual clinical characteristics and patient outcomes.

Conclusion: TBM has a range of clinical presentations and can have normal neuro-imaging at baseline. Lymphocytic meningitis with markedly elevated protein remains a hallmark. Negative culture on CSF is common. Hyponatraemia may be a presenting feature. All efforts should be made to confirm the diagnosis microbiologically, without leading to delays in treatment initiation. Adjunctive steroid therapy is recommended for all patients and care should be taken to taper appropriately according to internationally recognised guidelines.

O2

Tuberculosis Hospitalizations in Ireland over a 4 Year Period: A Descriptive Study

James O'Connell, Eoghan de Barra, Sam McConkey
Dept. of International Health and Tropical Medicine, Royal College of Surgeons in Ireland, Dublin

Background: Ireland has a low incidence of tuberculosis (TB). Understanding the nature of hospital admissions may help efforts to improve services and meet WHO End TB targets. The aim was to describe demographic and clinical characteristics of TB inpatient admissions.

Methods: The National Quality Assurance and Improvement System was searched for discharges where TB was the primary diagnosis from 1/1/15-31/12/18. Secondary diagnoses of TB admissions were searched for risk factors.

Results: 1182 discharges compromising of 909 patients where TB was the primary diagnosis. These compromised of 909 patients with TB. There was no significant decline in discharges across 4-years. 799 (67.6%) were emergency admissions. 732 (91.6%) of emergency admissions required admission for at least one night (referred to as EAOs here onward). The median age of patients admitted was 42 years (IQR=28-58). 28/560 (5%) were aged under 16 years. Males made up 62-67% of admissions. 36/732 (4.9%) required ICU admission. The median length of stay for EAOs was 11 days (IQR=6-21) and was similar over the 4 years. 387/732 admissions (52.9%) were to 9 level 4 hospitals. 306/732 (41.8%) of admissions were to 19 level 3 hospitals. 107/732 (14.1%) of admissions were through an assessment unit. 389/560 (69.5%) had neither a medical card nor health insurance. 233/560 (41.6%) of patients requiring EAO were from Dublin. This remained unchanged over time. However, an increase in the number of EAO admissions to Dublin level 3 and 4 hospitals was seen over time. 104/560 (18.6%) patients were from Cork. The number of patients from Cork and EAOs to Cork level 3 and 4 hospitals had declined each year. 402/732 (43.9%) patients were admitted under 20 specialties. The remainder were admitted under respiratory or infectious diseases. 71/732 (9.7%) of admissions were readmitted within 30 days. 17/560 (3%) patients who required EAO died. Risk factor prevalence was: diabetes 46/909(5.1%), HIV 28/909 (3.1%), chronic kidney disease 25/909 (2.8%), smoking 325/909 (35.8%), homelessness 13/909 (1.4%), illicit drug use 15/909 (1.7%), harmful alcohol use/alcoholic liver disease 36/909 (4%). 109/732 (14.9%) required isolation.

Discussion and Conclusion: A high proportion of TB cases require emergency admission given that a total of 1251 cases were notified over the same period. The relatively low proportion requiring isolation suggests that most admissions were not thought to be at risk of infecting others. Cases are managed in many hospitals and under many specialties. The introduction of a national TB lead, national multidisciplinary team, hospital group TB leads and a cohort review process should be considered.

O3

A Clinical Review of Tuberculosis in the West of Ireland

Grant C., McHugh JW, Ryan C, Tuite H, O'Regan A. Fleming C.
Galway University Hospital

Background: Despite declining rates of MTB infection in Ireland, diagnosis and treatment remains challenging. Galway University Hospital (GUH) has a dedicated TB clinic co-staffed by ID and Respiratory and is the local referral centre for TB management.

Aims: To describe demographics, clinical presentation and course of TB in patients attending the GUH TB clinic, comparing younger and older patients, Irish-born (IB) and Non Irish born (NIB), and pulmonary (P) versus extra-pulmonary TB (EP).

Methods: A retrospective chart and laboratory review was performed for all patients diagnosed with TB in GUH from 2014 to 2018. Univariate and stratified analysis was performed, stratifying for age, place of birth and infection si te.

Results: 85 cases of TB presented between 2014 and 2018. 10 were clinical diagnoses, 75 lab-confirmed; 1 was M.Bovis culture positive; 2 were HIV co-infected. Mean patient age was 41.4 years (median 33.5, range 15-90). 54% of patients were male, 62% were IB. For NIB patients, the median years in Ireland at diagnosis was 6 (range 0-15). The mean age of IB patients was 46 vs. 32 years in NIB (p=0.003). 10/85 (12%) patients had multi-site TB. Single-site cases included: Pulmonary 44/75 (59%); Lymph node 12/75 (16%); Musculoskeletal 7/75 (9%); Pleural 4/75 (5%); Genitourinary (3/75); Ocular (2/75); Nasal (1/75). Site of infection was not affected by age or place of birth. 4/85 patients had previous diagnosis of latent TB; 3 treated. Average duration of symptoms was 139 days prior to first hospital presentation, and 65 days from date of first hospital presentation to commencement of TB treatment. The average number of days from symptom onset to treatment was significantly longer for patients ≥34 years vs. those <34 (265 vs. 126 days, p=0.008). EP cases had symptoms for an average 240 days prior to commencing treatment, compared with 162 in P disease (p=0.088). Time to diagnosis was not affected by place of birth (IB vs. NIB: 200 vs. 178 days, p=0. 692)

Drug resistance was identified in 2/53 (4%) IB vs. 6/30 (20%) NIB (p=0.017). Patients spent 17 days on average as inpatients on treatment and attended 11 TB clinic appointments. This was not affected by age, place of birth or site of infection. 22 patients experienced 33 treatment interruptions. IB patients more frequently experienced treatment-interruptions vs. NIB (47.17% vs. 16.67%, p=0.006). Readmission rate was 39/100 treatment courses; 0.56 among patients ≥34 years and 0.2 among younger patients (p=0.05). 4/85 (4.7%) patients died; partially attributable to TB in 2/4.

Conclusion: Patients with TB are young, diverse, with a wide variety of disease sites and have symptoms on average for 4 months at presentation. The delay in symptom recognition should be addressed by increased awareness and possibly by screening for latent infection in NIB. The data supports national trends in increasing resistance among NIB patients and emphasizes the complexity of care with high readmission rates. TB disease remains a significant challenge and requires a coordinated national management programme.

O4

Impact of Renal Tubular Function on Bone Mineral Density in Older People with HIV

Elena Alvarez, Lucy Campbell, Keith Burling, Sebastian Noe, Mingjin Yan, Hiba Graham, Martin Rhee, Patrick W. Mallon, Frank Post
University College Dublin, Catherine McAuley Centre

Background: Whether renal tubule dysfunction (RTD), common in people living with HIV (PLWH), contributes to low bone mineral density (BMD) remains controversial. We studied the relationship between RTD and BMD in a cross-sectional study (GS-US-104-0423) in a group of older (men >50 years and post-menopausal women) PLWH on stable antiretroviral therapy (ART) that had always or never contained tenofovir (TDF), with or without exposure to protease inhibitors (PI) within the previous three years.

Methods: We analysed stored urine for total protein (PCR), albumin (ACR) and retinol-binding protein (RBPCR) expressed as a ratio to urine creatinine, and fractional excretion of phosphate (FE-PO4) and urate (FE-urate). BMD at the lumbar spine (LS) and femoral neck (FN) was measured by dual X-ray absorptiometry (expressed in g/cm2). ART exposure was stratified into four groups (no-TDF/no-PI, no-TDF/PI, TDF/no-PI, TDF/PI). Associations between tubular markers and BMD were assessed using multivariable linear regression models adjusted for demographic factors, clinical characteristics and ART exposure.

Results: 247 individuals (median (IQR) age 57 (53, 65) years, 47% female, 13% of Black ethnicity, time on ART 10 (6-16) years), CD4 643 (473, 811) cells/mm3 and 98% with HIV RNA<200c/mL) contributed to the analysis. The prevalence of osteoporosis (T-score<-2.5) at LS and FN ranged from 21-30% and 14-28% in the four ART exposure groups respectively (p=0.24 and p=0.08). Of the renal parameters evaluated, only RBCR was associated with reduced BMD at the FN (β -0.014 [95% CI -0.025, -0.002], p<0.0001) and none were associated with BMD at the LS. In addition, both female gender and lower BMI were associated with lower BMD at FN and LS. The association between RBPCR and BMD_FN remained after controlling for age, gender and ethnicity (Table 1, model 1). The observed association lessened with the inclusion of BMI in the model (model 2). Further adjustment for ART exposure group largely attenuated the relationship between RBPCR and BMD at the FN; using no-TDF/no-PI as the ART reference group, exposure to TDF (with or without PI) was associated with lower BMD at the FN (model 3).

Conclusions: In this cohort of older PLWH with high prevalence of osteoporosis, RBPCR was the only marker of RTD associated with reduced BMD. This association was attenuated after adjustment for BMI and fully abrogated after additional adjustment for ART exposure. TDF exposure was an independent risk factor for reduced BMD at the FN.

Table 1. Mean effect (coefficient β) and 95% confidence interval (95% CI) derived from series of multivariable linear regression models

Multivariable Models	Mean effect on BMD_FN (95% CI)	p
MODEL 1: Adjusted for demographic factors		
RBPCR (log transformed)	-0.013 (-0.025, -0.001)	0.029
MODEL 2: Further adjustment for BMI		
RBPCR (log transformed)	-0.008 (-0.016, 0.006)	0.166
BMI (per 1 unit)	0.011 (0.007, 0.015)	<0.0001
MODEL 3: Further adjustment for ART group		
RBPCR (log transformed)	-0.003 (-0.015, 0.009)	0.647
BMI (per 1 unit)	0.013 (0.009, 0.017)	<0.0001
No-TDF/No-PI	1	
No-TDF/PI	-0.047 (-0.098, 0.004)	0.071
TDF/No-PI	-0.072 (-0.121, -0.023)	0.004
TDF/PI	-0.065 (-0.117, -0.013)	0.015

O5

Immunosenescence in HIV is associated with CMV status and lower CD4:CD8 ratio

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Introduction: It remains unclear whether increased immunosenescence observed in people living with HIV (PLWH) is driven by high rates of cytomegalovirus (CMV) co-infection or underlying immune dysfunction. We investigate relationships between immune function, CMV IgG positive status (CMV+) and immunosenescence in PLWH and HIV- control subjects.

Methods: Using cryopreserved PBMC from subjects in HIV UPBEAT, a cohort of PLWH and HIV- controls from similar demographic backgrounds, we measured CD4 and CD8 T-cell immunosenescence by flow cytometry, defined as CD4+/CD8+, CD28- CD57+ T-cells. We used linear regression to explore associations between immunosenescence, HIV status, demographics, CMV+, CMV IgG titres and CD4:CD8 ratio. Data are median (interquartile range) or model estimate (ME) [95% confidence interval (CI)] unless stated.

Results: Of 219 subjects, 107 (48.8%) were PLWH (68% male, 34% African, age 47 [39-53] years, 30% smokers) and 112 were HIV- (48% male, 17% African, age 50 [44-56] years, 15% smokers). PLWH had lower CD4:CD8 ratios (0.89 [0.65-1.19] vs 2.3 [1.63-3.18], P<0.001), higher % of senescent CD4+ and CD8+ T-cells (4.2 [1.4-7.6] vs 0.5 [0.1-2.1] and 34 [21.0-45.4] vs 22.6 [14.4-35.0] respectively, both P<0.001) and were more likely to be CMV+ (89% v 40%, P<0.001). In univariate analyses, HIV status, lower CD4:CD8 ratio and CMV+ were associated with higher CD4+ and CD8+ senescence. In analyses adjusted for age, gender, ethnicity and smoking, HIV infection remained significantly associated with higher CD4+ (ME [95%CI) 1.668 [1.168-2.168], P<0.001) and CD8+ (0.306 [0.115-0.497], P=0.002) T-cell senescence. Additional adjustment for CD4:CD8 ratio or CMV+ attenuated this association (table1), with both lower CD4:CD8 ratio and CMV+ associated with increased CD4+ and CD8+ senescence. When both were included in the model, CD4:CD8 ratio and CMV+ remained independently associated with increased T-cell senescence. CMV+ was similarly associated with CD4+ and CD8+ senescence in PLWH and HIV- subjects (interaction p=0.27 for each) but associations with CD4:CD8 ratio were slightly weaker among PLWH (interaction p=0.002 and p=0.001, respectively). Replacing CMV+ with CMV IgG titres did not alter these findings.

Conclusions: Increased CD4+ and CD8+ senescence in PLWH can be attributed to both immune dysfunction, reflected in lower CD4:CD8 ratios, and CMV status. Future research should focus on immunosenescence and its impact on clinical outcomes in PLWH.

Table 1: Association between HIV, log CD4:CD8 ratio and CMV positivity with CD4+ and CD8+ T-cell senescence*

*All models adjusted for age, gender, ethnicity and smoking status.

Effect on log CD4+ T-cell senescence	Model (i)			Model (ii)			Model (iii)		
	ME	95% CI	P	ME	95% CI	P	ME	95% CI	P
HIV+ vs HIV -	0.665	0.075; 1.256	0.03	0.422	-0.022; 0.866	0.062	-0.206	-0.698; 0.287	0.41
log CD4:CD8 ratio	-0.999	-1.357; -0.642	<0.001	-	-	-	-0.713	-1.001; -0.425	<0.001
CMV IgG: Positive vs Negative				2.786	2.317; 3.254	<0.001	2.591	2.139; 3.043	<0.001
Effect on CD8+ T-cell senescence	ME	95% CI	P	ME	95% CI	P	ME	95% CI	P
HIV+ vs HIV -	-0.087	-0.312; 0.138	0.45	-0.053	-0.245; 0.139	0.59	-0.328	-0.541; -0.116	0.003
log CD4:CD8 ratio	-0.392	-0.529; -0.256	<0.001	-	-	-	-0.313	-0.437; -0.189	<0.001
CMV IgG: Positive vs Negative	-	-	-	0.803	0.6; 1.005	<0.001	0.717	0.522; 0.913	<0.001

O6

Inflammatory Phenotypes Predict Pulse Wave Velocity Change on ART in Malawian Adults

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Background: Inflammation has been linked to vascular dysfunction and increased risk of cardiovascular disease. In low-income settings, drivers of inflammation are multiple, with infectious and environmental factors contributing. We hypothesise that adult people living with HIV (PLWH)

in sub-Saharan Africa starting ART with advanced immunosuppression can be stratified into inflammatory phenotypes that predict changes in vascular dysfunction on ART, as measured by pulse wave velocity(PWV).
Methods: We recruited PLWH with CD4<100 cells/ul two weeks after starting ART in the REALITY trial (NCT01825031). PWV was recorded 2, 10, 24 and 42 weeks post ART. We measured markers of cell surface immune activation by flow cytometry and plasma inflammation markers by electrochemiluminescence at week 2. We identified inflammatory phenotypes using principle components analysis of 22 different markers, using linear mixed models to explore associations between inflammation clusters and change in PWV with ART.
Results: In 260 of 279 PLWH with available biomarker data we identified three clusters representing 59 (cluster 1), 194 (cluster 2) and 7 (cluster 3) subjects (Figure 1A). Cluster 1 showed markedly higher CD4 and CD8 T cell expression of HLADR and PD1 vs clusters 2 and 3 (HLADR: CD4 86% vs 69%, CD8 84% vs 72%; PD1: CD4 69% vs 39%, CD8 54% vs 33% respectively; all p<0.0001). Although small, subjects in cluster 3 had significantly higher levels of inflammatory cytokine pathways (IL6, IFN, IP10, IL1RA, IL10), chemotaxis (IL8), systemic and vascular inflammation (CRP, ICAM1, VCAM1) and SAA (all p<0.001); and marginally lower pre-ART CD4 (17 vs 42 cells/mm3, p=0.08). Baseline PWV was statistically lower in cluster 3 (6.3m/s vs 7.6, p=0.009), but increased over 42 weeks (log change 0.1m/s vs -0.5, p=0.07, Fig 1B). In mixed models, IL1RA was independently associated with lower baseline PWV (log -0.32m/s per pg/ml higher, p=0.02) and attenuated decline in PWV by week 24 (change in log slope +0.39m/s per pg/ml higher, p=0.01). Cluster 3 also had lower adjusted baseline PWV (log -0.13m/s, p=0.005) but no adjusted change in PWV over time (log +0.23m/s, p=0.13).
Conclusions: In PLWH from low income settings with high pre-ART T cell activation, PWV improves (declines) on ART. However, we identified a cluster with a hyper-inflamed biological profile in whom PWV increased, with IL1RA a potential marker of this hyper-inflamed state and increasing PWV. The clinical implications of this phenotype require further research.

O7

Hepatic steatosis, Ageing and MEtabolic Syndrome in HIV patients (The HAMES-HIV study)

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Background: HIV patients are now living longer and liver disease has emerged as one of the leading causes of morbidity and mortality (1). Metabolic syndrome, ageing, HIV infection, viral hepatitis and antiretroviral therapy all affect the liver in unknown quantities. The prevalence of non-alcoholic fatty liver disease (NAFLD) is higher in the patients living with HIV than the general population (2). NAFLD covers the spectrum of conditions that begin with hepatic steatosis (accumulation of fat in the liver) which can progress to steatohepatitis, fibrosis and cirrhosis. Guidelines recommend liver imaging in patients with suspected NAFLD and metabolic syndrome. The NAFLD Fibrosis score has been developed to identify those that would benefit from further liver investigations. The aim of this pilot study was to assess the prevalence of metabolic syndrome and hepatic steatosis in HIV patients over 50 years.
Methods: St James's Hospital has the largest cohort of HIV patients in Ireland. HIV Patients ≥50 years were identified and relevant data was extracted from the electronic patient record. Metabolic syndrome is defined as ≥3 of the following features which are associated with insulin resistance: hypertension, body mass index (BMI) ≥30kg/m2, low HDL, hypertriglyceridemia and type 2 diabetes. The NAFLD Fibrosis score was calculated using alanine/aspartate aminotransferase level, albumin, platelet counts, BMI, diabetes history and age; a score of >0.675 is suggestive of liver fibrosis. Statistical analysis was conducted using STATA v15.1.
Results: There were 456 patients ≥50 years identified, from a cohort of ~2,400. The majority were HIV mono-infected (85.5%, n=390). 11.4% (n=52) were co-infected with HCV (of these 25% were genotype 3). Where available data was captured (58.6%, n=267), 52 patients had metabolic syndrome (19.5%). Liver ultrasound imaging was performed in 16 of these patients (30.8%), the majority had steatosis confirmed (62.5%, n=10). The majority of patients with metabolic syndrome had normal liver function tests (84.6%, n=44). The absence of metabolic syndrome was associated with low NAFLD fibrosis scores (p=0.045). From ultrasound imaging, higher rates of hepatic steatosis were noted in HIV mono-infection (37.2%, n=32) compared to patients co-infected with viral hepatitis (15.5%, n=9).
Conclusion: High rates of liver morbidity identify the need to develop a screening programme for the identification and subsequent management of hepatic steatosis in patients living with HIV. This pilot data suggests that hepatic steatosis in HIV mono-infection is potentially more concerning than previously realised.

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O8

Elite Controllers requiring elite Management Decisions in the Test and Treat era.

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The management of people living with HIV who are long term non-progressors is controversial. Data is accumulating that the risk of co-morbidities are increased in this group of patients, but guidelines remain unclear on whether ART should be initiated. We present two patients who are long term non-progressors as examples of the clinical issues involved.
The first is a 34-year old lady diagnosed with HIV in 2004. She had one detectable VL of 247 copies/mL in 2008 but all other viral loads since diagnosis have been undetectable. CD4 counts have always been maintained well above 500 cells/

uL. CD4/CD8 ratio is 1.86. BMI is 19 and there is no history of smoking, dyslipidaemia, diabetes, hypertension or family history of heart disease. She is not currently on any ART and there is no clear guidance on whether she should start, given potential side effects of life long ART.

On the other hand, the second lady is a 51-year old lady diagnosed with HIV in 1984. She has persistently had detectable viral loads around 200 copies/mL since diagnosis but was commenced on ART in 2014. At the point of ART initiation, CD4/CD8 ratio was 0.5. She is an active smoker with poorly controlled diabetes, dyslipidaemia and hypertension. Her brother died age 33 from an MI. She was admitted to hospital in November 2018 with dusky, painful, numb fingers on her left hand. She was found to have a 20% stenosis in her left subclavian artery and was commenced on aspirin. However, she was then admitted again in January 2019 with worsening symptoms in her hand and a fixed deformity in her left 4th digit. A repeat CT angiogram revealed a 70% stenosis of the left subclavian artery and urgent subclavian stenting was undertaken.

These cases highlight the issues involved in managing patients who are long term non-progressors. There is an urgent need for more data, including clinical biomarkers of immune activation, to help inform optimal management. They also represent an interesting cohort of patients to inform us about the non-infectious complications of low level HIV viraemia and the particular endovascular clinical phenotypes that may emerge in these populations.

O9

An Assessment of Prescriber's Attitudes to the Introduction of Preferred Regimens of Highly Active Antiretroviral Therapy (HAART) at a Local and National Level

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Introduction: The evolution of HIV from a terminal illness to a chronic condition has been driven by early diagnosis and effective management with highly active antiretroviral therapy (HAART). Patients living with HIV (PLWH) now have a life expectancy nearing that of HIV negative patients. The management of an ageing HIV population and the sustainability of HIV care remain major challenges (1). There are presently no restrictions to HAART regimen choice in Ireland, each individual centre is responsible for their own procurement and prescribing.

Aim: To assess the attitude of prescribers to the introduction of preferred HAART regimens at a local and national level.

Methods: This study design involved semi-structured interviews of ten prescribers (six consultants and four specialist registrars). A topic guide was prepared, consent was obtained in writing from all prescribers and all interviews were recorded. Thematic analysis was used to analyse the interview. Ethical approval was obtained.

Results: The prescriber interviews showed that 9/10 prescribers would be in favour of an internal GUIDe preferred regimens algorithm, with 6/10 in favour of this system nationally. The main themes that emerged from anyalysis of the interviews were patient factors that influence prescribing and disease factors that influence prescribing. Patient factors were sub-divided into patient characteristics and patient co-morbidities. Disease factors were sub-divided into HIV disease status, co-morbidities and potential side effects. Concerns at a local level include loss of autonomy, a possible compromise to patient care and the structure around the creation of a preferred regimens algorithm. Concerns at a national level include having one algorithm for varied patient cohorts and a financial focus and loss of clinical Involvement.

Conclusions: The prescriber concerns highlighted the requirement for clinician involvement in any system of preferred regimens. All prescribers said that an incentive-based system would drive cost saving innovations within the department.

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O10

Prescribing Pattern of Highly Active Anti-Retroviral Therapy (HAART) in an Outpatient Genitourinary and Infectious Disease (GUIDe) Department

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Introduction: The evolution of HIV from a terminal illness to a chronic condition has been driven by early diagnosis and effective management with HAART. The GUIDe department at St James's Hospital (SJH) provides care to more than 2500 HIV positive patients. International best practice guidance advises using a dual NRTI (nucleoside reverse-transcriptase inhibitors) backbone and a third agent as standard HAART, there are presently no restrictions to HAART regimen choice in Ireland (1, 2). The increase in new pharmaceutical therapies has meant there are a plethora of treatment choices for HIV clinicians.

Aim: To identify prescribing trends for patients on HAART in an outpatient GUIDe clinic.

Methods: A point prevalence study was undertaken in SJH GUIDe clinic. All patients who attended HIV clinics from 30th April-30th May 2018 were included in the study unless they met the exclusion criteria. Ethical approved was obtained.

Results: Data from a total of 521 HIV patients was collected. The study population had similar patient demographics to the wider GUIDe population; men who have sex with men (MSM) (53.5%, n=279), people who inject drugs (PWID) (6.75% n=35), male (73.7%, n=384) with an average age of 42 years. While 92% of the patient cohort were virally suppressed, this was 82% in people who inject drugs (PWID). In total 63 different HAART combinations were used. There were 484 (92.89%) patients taking standard HAART regimen with two NRTI backbone drugs and a third agent. Tenofovir disoproxil fumarate (TDF) was the most utilised NRTI backbone (42.56%), with integrase inhibitors the most popular choice for third agent (43%). There were 53% (n=260) of patients taking a single tablet regimen (STR). Analysis of the switch cohort (5.75%; n=30) showed a trend towards prescribing STRs, tenofovir alafenamide (TAF) and integrase inhibitors.

The main drivers for switch were toxicity and simplification. **Conclusions:** Viral suppression rates indicate that the GUIDe clinic in SJH is on track to meet the UNAIDs 90:90:90 targets. However, guidance targeting the PWID cohort could improve adherence and outcomes in this population. This study shows a movement towards prescribing STRs, TAF containing regimens and integrase inhibitors, with a decline in NNRTI use. All current prescribing meets international best practice guidance but an increase in choice means that prescribing has become more variable.

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Saturday, 18th May 2019

O11

Demographics and Treatment Outcomes of Patients with Chronic Hepatitic C Infection Attending a Tertiary Level Hospital in the Era of Unrestricted Access to Direct-Acting Antivirals

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Background: Direct-acting antivirals (DAAs) have revolutionized management of chronic hepatitis C virus (HCV) infection. We sought to establish the demographic characteristics and treatment outcomes in HCV-infected patients attending the Mater Misericordiae University Hospital in the era of unrestricted access to DAAs. **Methods:** Retrospective chart review of patients treated for HCV infection 01/04/2017-31/12/2018 gathering information on gender, age, mode of transmission, country of origin, co-infections, HCV genotype, degree of liver damage as assessed by transient elastography (Fibroscan), previous treatment history, and DAA treatment outcomes (early treatment response, ETR, i.e. HCV viral load undetectable/<12copies/ml at week 4 of treatment; end-of-treatment, EOT, i.e. HCV viral load undetectable/<12copies/ml at the time of completion of treatment; sustained virologic response, SVR, i.e. HCV viral load undetectable or <12copies/ml at 12 weeks after completion of treatment). Descriptive column statistics were used to analyze data. **Results:** Of 145 treated patients, 104 (71.7%) were male and intravenous drug use was the most likely mode of transmission in 109 (75.2%) cases. Remaining cases were attributed to: 7 (4.8%) men having sex with men, 1 (0.7%) each to tattoos/ blood transfusion/vertical transmission, and 26 (17.9%) had no indentifiable risk. Irish-born patients totalled 103 (71.0%) cases, 9 (6.2%) were from other European countries, 23 (15.9%) from countries of the former Soviet Union, 4 (2.8%) from Sub-Saharan Africa, 3 (2.1%) from Asia, 2 (1.4%) from Middle East and 1 (0.7%) from South America. Of the non-Irish patients, 15 (35.7%) were asylum-seekers. Co-infection with HIV and HBV was present in 38 (26.2%) and 1 (0.7%) of cases, respectively. Fibroscan score was 6.5±0.6kPa (mean±standard error of mean) for the non-cirrhotic patients (n=116, 80%) and 23.7±4.4kPa for the cirrhotic patients. History of previously failed treatment was present in 9 (6.2%) cases, including 2 (1.4%) DAA failures. Genotype distribution was as follows: 65 (44.8%) G1a, 57 (39.3%) G3, 13 (9.0%) G1b, 5 (3.5%) G4, 1 (0.7%) G2, 1 (0.7%) G1e. Dual genotypes were identified in 3 (2.1%) patients. Treatment duration was 8 weeks in 24 (16.6%), 12 weeks in 118 (81.4%), and 24 weeks in 3 (2.1%) cases. ETR was achieved by 93 (64.1%) and EOT by 135 (93.1%) patients. Of 83 patients for whom SVR data are available, 80 (96.4%) achieved SVR.

Conclusion: Our DAA treatment outcomes are comparable with those previously reported. While traditional risk groups remain overrepresented among those infected with HCV, new patient groups are emerging and pose new challenges to care.

O12

Hepatitis B Genotype Distribution and Drug Resistance Mutations in Ireland, 2016-2018

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Background: Hepatitis B virus (HBV) infection is a leading global cause of morbidity and mortality. Recent WHO estimates suggest that 257 million individuals worldwide are chronically infected. HBV can be classified into 10 genotypes (A-J), each containing several subgenotypes, with associated geographical distribution and clinical manifestations. Comparable to other northern European countries (0.1-0.7%), the prevalence of HBV in Ireland is low (<1%), but little is known of the HBV genotypic distribution in Ireland. Likewise, even though resistance to antiviral drugs can significantly affect the clinical outcome of HBV infection, little is known about the prevalence of resistance-conferring mutations in the Irish HBV patient cohort. This report summarises the genotypic distribution of HBV in Ireland from 2016 to present. Collating these data will inform national policy for the prevention and control of HBV in Ireland. **Method:** In 2016, the National Virus Reference Laboratory (NVRL) switched from the INNO-LiPA® line probe assay to hemi-nested PCR and Sanger sequencing for HBV genotyping and drug resistance testing. A 1.1kb fragment of the HBV polymerase gene, incorporating partial S1 and entire S2 and S genes, was amplified from clinical specimens received between 2016 and 2018 (n=463 patients), and including both

acute and chronic HBV infections. Sanger sequencing was performed on the amplified product and consensus sequences analysed, with analysis of amino acid substitutions performed using the online genotyping tool Geno2Pheno[HBV]. **Results:** Hepatitis B genotype D was the most prevalent at 30.52% (n= 141), closely followed by genotype A (28.35%; n=131), E (16.88%; n=78), C (12.99%; n=60) and B (10.17%; n=47). As expected, genotypes F and H were identified in low numbers (0.65% and 0.22% respectively; n=3, n=1). One putative dual/mixed (C/D) infection was identified, but has yet to be confirmed. One or more drug resistant mutations were identified in 10 patients (2.16%). Mutations at codons 180 and 204 were seen most frequently, detected in 6 patients each. The mutations conferred resistance to Telbivudine, Lamivudine, Entecavir, Adefovir and Tenofovir. In each case, the mutations appear to have arisen whilst the patient has been receiving antiviral treatment for HBV. None of the cases identified as acute infection possessed resistance mutations. **Conclusions:** HBV antiviral drug resistance is uncommon in Ireland, but the ability to determine both genotype and drug resistance profiles in a single assay allows for detection of resistance mutations in real-time, even in patients not suspected of harbouring resistant virus, and/or cases of transmitted drug resistance.

O13

Compliance of Hepatitis B Management at a single site with European Guidelines

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Background: The European Association for the Study of the Liver (EASL) have guidelines for management of hepatitis B (HBV). We audited our compliance with these guidelines in the St James's Hospital GUIDe Department. **Methods:** We evaluated clinical notes and electronic records of all HBV patients listed as attending the GUIDe department. We evaluated our compliance with EASL guidelines regarding:

- Initial HBV assessment
- HBV surveillance
- Treatment initiation
- Cirrhosis follow up

Results: 265 patients attended GUIDe for HBV evaluation.

Guideline	Concordance (n=265)
Baseline liver biochemistry	265 (100%)
HBV Viral Load	264
Imaging (US/Fibroscan)	217
Hepatitis A status - HAV immune - non immune and received vaccination - non immune but did not receive vaccination	231 190 28 13

Regarding comorbidities, there were 61 HIV co-infected, 10 HCV co-infected, and 4 HDV co-infected. Non-infectious comorbidities include 20 with alcohol excess, 8 with diabetes, and 60 with increased BMI. 65 have been lost to follow up, with 200 retained in care. Of those retained in care, 161 had a partner:

- 151 partners tested
- 16 showed previous HBV exposure
- 122 of those underwent vaccination

Of those retained in care:

Guideline	Concordance
Requiring Treatment -commenced on treatment	109 102
Viral suppression on treatment (VL < E+3)	96
Loss of sAg	12
Annual Surveillance	
Imaging within 6/12 -imaging ordered within 6/12	106 58
Liver biochemistry & αFP within 6/12	186
Viral Load within 3 years	186

Nine patients are cirrhotic; three have undergone endoscopic variceal surveillance.

Conclusion: HBV management is broadly in line with EASL guidelines. 93% of those eligible for treatment have received same, and of those on treatment all are suppressed, with recent starts the only exception. We are achieving high levels of radiological surveillance (82% engaged in ultrasound surveillance). The main shortcoming in our service is immunisation for other co-infections. 13% have never had their HAV status assessed. Of those that were found to be non-immune, 32% have not been vaccinated. The low testing for HDV in our cohort is not in keeping with guidelines for testing for same, and will need to be addressed. There are a small number of cirrhotic patients (4.5%); however, only one third of these have had endoscopic variceal surveillance.

O14

Association between Integrase Strand Transfer Inhibitors and serum magnesium levels

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Background: Concerns surround potential links between the Integrase Strand Transfer Inhibitor (InSTI) dolutegravir and neural tube birth defects (NTDs) in cohort studies. That low gestational magnesium (Mg++) is associated with NTDs in rodents and NTDs produced by depletion of the bifunctional protein TRPM7 can be prevented through Mg++ supplementation, indicates a role for Mg++ in neural tube closure. Low maternal Mg++ levels have been associated with NTDs in humans, although causality has not been established. Dolutegravir binds strongly to a magnesium moiety at the HIV integrase enzyme active site. The aim of this study was to explore associations between use of InSTI and dolutegravir in particular, with magnesium levels. **Methods:** Adult ART-treated subjects living with HIV recruited to the University College Dublin Infectious Diseases Cohort provided demographic and clinical data alongside routine measurement of albumin, folic acid and serum electrolytes, including total and ionized magnesium. Unadjusted and adjusted differences between groups in magnesium parameters were assessed using the Wilcoxon rank sum test and linear regression respectively. Data are median (IQR) unless stated. **Results:** 149 subjects provided data, the median (IQR)

age was 41 (36-47) years, 58% were male, 45% Caucasian and 45% African. HIV transmission risk was through heterosexual contact (55%), men who have sex with men (20%), intravenous drug users (16%). 60% of patients were on InSTI ART. 90% had viral RNA <40 copies/ml. Mg++ levels were not significantly different between those on INSTI regimens versus non-INSTI regimens (0.82 (0.77-0.86) mmol/L vs 0.84 (0.79-0.87) mmol/L, p=0.09), Mg++ levels were significantly lower in those on DTG regimes versus non-DTG regimens (0.81 (0.76-0.87)mmol/L vs 0.84 (0.79-0.87) mmol/L, p=0.01). Corrected for age, gender and ethnicity, there remained significantly lower total magnesium levels (-0.026 mmol/L, p=0.05) in those on DTG regimens compared to those on non-DTG regimens. There were no significant differences in ionized magnesium levels between groups. **Conclusions:** Current dolutegravir use was associated with a statistically significant but small reduction in total Mg++ levels, which remained significant after correction. Given the role of magnesium in development of NTDs, these data support the need for further, larger studies in this area.

O15

An Audit of *Staphylococcus* aureus Bacteraemia Clinical Management in a Large Model 4 Teaching Hospital, 2018

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Background: A number of quality-of-care indicators (QCIs) have been demonstrated to reduce mortality in *Staphylococcus aureus* bacteraemia (SAB): follow-up cultures 48-96 hours after starting antimicrobial therapy, early source control, echocardiography in those with clinical indications, early IV cloxacillin, adjustment of vancomycin to troughs and treatment duration according to infection complexity. **Materials/methods:** All cases of SAB managed in St James's Hospital for 2018 were examined. Data was collected using the Electronic Patient Record system, microbiology and medical records.

Results: There were 68 patient episodes of SAB. 62 (91%) were methicillin-sensitive S. aureus (MSSA) versus 6 (9%) methicillin-resistant *S. aureus* (MRSA). 28 were community-acquired (41%). An IV/IA line was the source in 32 cases (4 7%).

1. Follow-up blood cultures 68% of patients had repeat cultures within 48 hours; 19% between 48 and 96 hours. Therefore the QCI for follow-up blood cultures was met in 87% of cases.
2. Source control Line removal was performed in all 32 cases in which it was the source. 16 patients (24%) had soft tissue abscesses; 6 were drained. 20 patients (29%) had prosthetic material other than a line. It was implicated as the source in 6 cases and removed in
3. Echocardiography 61 patients had echocardiography (90%). 24/28 patients with community-acquired SAB (86%) had an echo; 31/32 patients with line-associated SAB did (97%).
4. Early IV cloxacillin Flucloxacillin was the most commonly used antibiotic (76%). Otherwise, prescribers used vancomycin (7%), daptomycin (7%), cefazolin (6%). Of the 11 cases (7%) in which an antibiotic other than flucloxacillin/cefazolin was used, 5 had penicillin allergy and 5 had MRSA bacteraemia. One patient was discharged on oral ciprofloxacin.
5. Adjustment of vancomycin dose to troughs Of the 5 cases in which vancomycin was used, 2 maintained the majority of troughs within target range (15-20mg/L). Doses were adjusted to troughs in all cases.
6. Treatment duration according to infection complexity In the community-acquired group, 18 of the 28 patients (64%) received at last 4 weeks IV antibiotics. Of the 30 patients with hospital-acquired, line-associated infection, 20 (66%) received 2 weeks IV therapy.

Conclusions: This data demonstrates high rates of timely follow-up cultures, adjustment of vancomycin dose to troughs and early IV cloxacillin. The rate to which source control was achieved varied according to its nature. High echocardiography rates were seen, although it was perhaps over utilised in uncomplicated cases. In a significant minority of cases, antibiotic duration did not correspond to infection complexity. We suggest that a bundle focused on improving adherence to QCIs with infection services taking over patient care might improve practice.

O16

Outpatient Antimicrobial Therapy for Endovascular Aortic Repair Infection; a Five Year Retrospective Evaluation

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Background: An estimated 1% of endovascular aortic repair (EVAR) devices become infected, carrying a high mortality rate. Few published data exist around patient outcomes. We examined our cohort retrospectively to add to the understanding of these complicated infections and their management.

Methods: Using the Hospital Out-Patient Antimicrobial Therapy (OPAT) database we identified all patients who received at least one course of OPAT for infected EVAR over a 5-year period from 2014-2018 inclusive. Patient medical and electronic records were used to collect demographics, clinical, microbiological and radiological data. Management of Aortic Graft Infection Collaboration (MAGIC) case definitions were applied and management and patient outcomes are described.

Results: Eleven cases were identified; 10/11 (91%) male, median age 76, range 65-85. Index indication for graft insertion was; aneurysm size- 6/11 (54.5%), symptoms- 3/11 (27.3%) and rupture- 2/11 (18.2%). 3/11 were emergency procedures, 6/11 elective, 2/11 semi-elective. Post-operative complications occurred in 7/11 (63.6%) (five endo-leak (one type 1, two type 2, two type 3), one haematoma and one wound infection). Median time to presentation with aortic graft infection (AGI) post deployment was 229.5 days, range 0-2670. 4/11 (36.4%) had undergone re-intervention prior to presentation with infection. Symptoms included: fever- 6/11 (54.5%); anorexia 6/11 (54.5%); abdo/groin pain 5/11(45.5%); back pain 3/11 (27.3%); bleeding 2/11 (18.2%). 2/11 (18.2%) had leucocytosis. 6/11(54.5%) had probable or confirmed aorto-enteric fistula. 7/11 (63.6%) were late infections (presentation >4 months post stent deployment). Causative

organisms were identified in 5/11 (45.5%) cases (blood cultures 3/11, sac aspirate 1/11; endograft culture 1/11). 3/6 (50.5%) were polymicrobial infections. 8/11(72.8%) met criteria for definite infection, 3/11 suspected. 9/11 (81.2%) were re-admitted to hospital at least once, median 3.5, range 0-5, median bed days 67, range 0-193. Median number of days on OPAT was 46.5, total 864. 2/11 had surgical explantation. 4/11 (36.4%) reached primary outcome of death (at 5, 10, 27 and 72 months). Palliative care referral was offered to 3/11.

Conclusion: AGI occurs most commonly in the first year post deployment. Common presenting features include pain, fever and anorexia. Normal leucocyte count and negative blood cultures do not exclude infection. Where causative organisms are determined, infections are often poly-microbial. This should be considered when treating empirically. Patients require prolonged antibiotic therapy, have lengthy hospital stays, multiple re-admissions and high mortality rates. The role and optimal timing of surgical explanation is unclear. Given the high mortality rate OPAT for EVAR infection could be considered a palliative intervention and services should plan appropriately.

O17

A Retrospective Evaluation of Malaria in Beaumont Hospital Over a Ten Year Period from 2008-2018; Diagnosis and Management, Adherence to Treatment Guidelines and Patient Outcomes

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Background: Malaria should be suspected in returned travellers or anyone originating from a malaria-endemic area with an influenza-like illness (fever, headache, myalgia, and arthralgia) or pyrexia. Severe malaria is usually caused by *P. falciparum* and is generally fatal in the absence of a reasonable standard of medical care. Suspected malaria in Ireland is a medical emergency and should be immediately referred to the Emergency Department, as delayed diagnosis and management results in poorer outcomes. This audit aims to review Beaumont Hospital's adherence to diagnosis and treatment guidelines.

Methods: A retrospective chart review was performed on patients who attended Beaumont Hospital (a Dublin medical tertiary care centre) between December 1st 2008 and December 1st 2018 and with a subsequent diagnosis of malaria. HIPE coding (ICD-10-am) was used to identify all patients with a malaria diagnosis. Patient charts and electronic records were then reviewed to establish information pertinent to the audit purpose. Particular data of interest included patient demographics, malaria prophylaxis, country of travel, presenting symptoms, confirmatory diagnostics, time to diagnosis and time to treatment.

Results: In total, 41 patients were identified as being admitted through the Emergency Department with malaria (for 1 patient full data could not be obtained). This included 24 males, and 17 females. The primary diagnosis was *P. falciparum* in 35 cases. There was also 1 case of *P. vivax* and 4 cases of *P. ovale* infections. No patient had correctly taken travel prophylaxis. 29 patients had travelled from countries on the African continent where malaria is endemic. The two commonest symptoms at presentation were fever (presenting complaint in 35 of 40 cases) and headache (14/40). The average time from review by a doctor to diagnosis was 3.9 hrs (with the general turnaround time of malaria testing taking approx 1.5 hrs) (Times varying from 0 – 23 hrs). Time to treatment was varied and categorised as <2hrs from confirmatory bloods (32 patients; 80%), < 12 hrs from confirmatory bloods (3; 7.5%) and >12hrs from confirmatory bloods (5; 12.5%).

Conclusion: A high index of suspicion is needed to ensure that a diagnosis of malaria is not missed. There have been delays reported in our diagnosing and treatment of malaria, although patients are often presenting with classic symptoms and a history of travel to endemic areas. Malaria therapies are not commonly stored in our emergency department drug dispensary, which may be delaying treatment as staff have to wait until sourced from outside the department.

O18

Audit of Meningitis Management at Mater Misericordiae University Hospital

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Background: The incidence of bacterial meningitis is decreasing in Ireland, however mortality remains high. Studies have suggested that adherence to management guidelines improves outcomes in patients diagnosed with meningitis. Current national guidelines for the initial diagnosis and management of bacterial meningitis in Ireland are based on HPSC guidelines published in 2016.

This audit aims to assess concordance with the national guidelines on patients admitted to the Mater Misericordiae University Hospital (MMUH) with meningitis during 2017. This is part of a larger audit being conducted by the University of Liverpool and sponsored by NITCAR, British Infection Association and Meningitis Research Foundation to assess the management of meningitis.

Methods: All patients, 16years or older, admitted to the MMUH with meningitis in 2017 were included. Patients were identified using ICD10 codes based on HIPE coding.

Meningitis was defined as a CSF WCC>4x10cells/L (regardless of pathogen identification) and a clinical suspicion of meningitis or, in the case of bacterial meningitis, symptoms and signs of meningitis with a significant pathogen in the CSF (culture or PCR) or blood, regardless of CSF leukocyte count. Tuberculous, cryptococcal, nosocomial meningitis, and encephalitis were excluded.

Clinical data was extracted from patient records and CSF cell counts and microbiological results from CSF and blood were recorded.

Results: 14 cases of meningitis were diagnosed and treated at MMUH during 2017. Of these, 12 sets of notes were available for analysis. 4/12 (33%) were confirmed cases of bacterial meningitis.

6/12 (50%) of patients had blood cultures drawn, only 3/6 being within one hour of suspected diagnosis. Lumbar puncture was carried out in all cases; only one was performed within the recommended 1 hour. All 12 patients had a CT brain performed before lumbar puncture (LP). Opening pressure was not recorded in any case.

9/12 (75%) received antibiotics; one patient received

parenteral antibiotics prior to hospital admission. 6/12 (50%) received dexamethasone. Input from Infectious Diseases specialists was sought in all cases. 3/12 (25%) of CSF samples had positive Gram stains, and 3 had positive cultures. All patients had CSF viral PCRs sent. There were no confirmed deaths during admission or at 3 months.

Conclusion: While the audit demonstrates some areas of good practice, there are a number of changes which could be implemented to improve the recognition, diagnosis and subsequent management of bacterial meningitis. Further steps will focus on identifying barriers to guideline compliance, and staff education.

O19

Patient Satisfaction Survey for HIV Ambulatory Care in University Hospital Limerick (UHL)

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Background: With recent developments in HIV ambulatory care, we aim to achieve a high patient satisfaction rate. Our objective was to assess patient satisfaction with care received at the ambulatory HIV clinic in UHL.

Methods: The Standardized Patient Satisfaction Survey for HIV Ambulatory Care was administered directly to all adults who attended the clinic in period from November 2018 to January 2019. This questionnaire was adapted from New York State Department of Health AIDS Institute. Data including patient demographics, access to HIV care, waiting times and referral to appropriate services were collected.

Results: A total of 52 cases gave consent to complete the questionnaire. 36.5% (19) of respondents were male, 55.8% (29) were females. 55.8% (29) were heterosexual, 2.8 (15) were homosexual, 3.8% (2) were bisexual, 1.9% (1) was unsure. 34.6% (18) were black, 7.7% (4) were Hispanic, 5.8% (3) were Latino, 40.4% (21) were Asian, and 3.8 (2) were others. 42.3% (22) rated their health as very good, 36.5% (19) rated health as excellent and no one rate his health as poor.

Access to HIV Care: 53.8% (28) reported they found it possible to schedule an appointment when required. 94.2% (49) answered that their care provider always advised them about the importance of follow up. 30.8 (16) reported that their medical queries were always answered. Appointment waiting-time: At the clinic visit, 75% (39) declared were met by friendly staff, while 17.3% (9) were not. 80.7% (42) received educational material while waiting and 9.6% (5) never received it. 76.9% (40) were happy at their waiting time, while 9.6% (5) were not satisfied with the waiting time. Quality of clinical care: 84.6% (44) of respondents reported their visit was not interrupted, while 5.7% (3) reported it was. All participants 100% (52) reported that providers made sure they understood their laboratory results. 42.3% (22) did not want more time with their provider while 32.7% (17) need more time than what was given. 84.6% (44) found their provider accepting and non-judgmental. 84.6% (44) reported their provider explained anti-retroviral side effects. 28.8 (15) were asked by providers about living situation. 50% (26) were offered support around disclosure, 57.7% (30) were asked and offered support about Drug and Alcohol use.

Conclusion: Results show that the ambulatory clinic in UHL achieved high standards on provider care but much work is required to improve patient satisfaction rates, including the provision of multi-disciplinary support services to address patient care needs.

O20

Service disparity within the National OPAT programme

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Background: The national OPAT programme was established in 2013 and has been demonstrated to be a safe and cost-effective method of treating patients with parenteral antibiotics at home. The aim of this review was to determine the availability of OPAT programme nationwide, to identify areas for service development.

Methods: A retrospective review was carried out on all OPAT referrals made to the national Management Control Centre (MCC) for the year 2018. Variables collected included referral centre and patient address. As the focus was on patient's address, those who had more than one OPAT course, or multiple antibiotic changes in the study period were only included once. Patients with Cystic Fibrosis and referrals from Maternity and Paediatric hospitals were excluded. Statistical analysis was performed using Microsoft excel.

Results: For the year 2018, a total of 1520 patient referrals were made to the National OPAT programme; 1305 referrals met the inclusion criteria. 503/1305 (38.5%) of these patients resided in Dublin. Recent CSO figures indicate that this region makes up 28.3% of the population. 123/1305 (9.4%) of patients resided in Cork, 63/1305 (4.8%) in Galway and 54/1305 (4.1%) in Limerick. 17/1305 (1.3%) of referrals were made for the Northwest (Cavan, Donegal, Monaghan and Sligo) which makes up 8.3% of the population. Nationally 966/1305 (76%) were H-OPAT, 339/1305 (26%) were S-OPAT. For Dublin a larger proportion of patients could avail of HOPAT 421/503 (84%) whereas in the Northwest 5/17 (29%) of patients were treated with HOPAT. 72% of OPAT referrals were made through a hospital with an Infectious Diseases physician. Distance travelled for the round trip for weekly follow up was also investigated with a wide range noted from under 1km to 622km.

Conclusion: This review identifies the significant disparity of OPAT availability to patients according to their county of residence. A significant proportion of urban dwellers, even while considering population density avail of the service and H-OPAT when compared to their rural counterparts. Other factors precluding rural residents from being considered for OPAT is the need for SOPAT due to lack of CIT services, and the need to travel in some instances very long distances, for their weekly clinic review.

Poster Presentations

CLINICAL CARE: HIV

P1
HIV in General Practice: a GP Perspective

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Background: The General Practitioner (GP) plays an important role in coordinating the overall care and wellbeing of patients. In HIV care, more patients are living to older ages, with similar expected life spans as those seen in the general population. With this, they are forming a cohort of patients known as People Living With HIV (PLWHIV). Their care needs are similar to other aging populations and therefore, they will continue to have a heavier reliance on routine GP level care. These needs will unlikely be met by HIV clinics. However, in Ireland, because HIV care remains primarily hospital based at present, it is unclear how confident GPs are in managing the non-HIV and chronic conditions that their patients may present with.
Purpose: The purpose of this clinical review is to assess GP attitudes and confidence towards the care they provide in their services and the issues they currently face with PLWHIV.
Methods: A questionnaire was developed using the Google form application to answer the practice review question. Information sought included demographics (location of GP practice, number of doctors, and number of patients with HIV) and then specific questions about HIV care. The questionnaire was then sent electronically GP trainees and GPs practicing in Ireland.
Outcomes: To date, 21 GPs were surveyed, with 16 of 21 (76.2%) situated in an urban area. Of the 21 GPs, 17 (81%) said they had, at one time, a HIV+ patient registered to their practice. 14 of 17 were aware of one or more HIV+ patient currently attending their practice. When asked what role they felt they played in HIV care, the response was varied, from playing no role, to being included in education, treatment and monitoring of the disease. 9 of 17 GPs said they did not ensure that their HIV+ patients received yearly pap smears. Only 9 out of 21 GPs said that they would deem co-prescribing of ARVs and Atorvastatin to be concerning, with 3 stating that they were unaware of any commonly prescribed drugs interacting with ARVs. The survey demonstrated that none of the GPs felt confident in managing the complaints of their HIV+ patients, irrespective of whether any attend their practice or not.
Conclusion: In conclusion, involvement in care and attitudes to HIV vary widely both within, and between, demographics, based on individual experience. Therefore, it is important as ID physicians, to ensure that GPs are up to date on issues regarding HIV, through the utilisation of resources such as training days.

P2
Patient-reported outcomes among HIV-1-infected adults randomised to B/F/TAF versus DTG/ABC/3TC in two Phase 3 controlled clinical trials over 48 weeks

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Background: As efficacy of triple antiretroviral therapy remains high, patient wellbeing (e.g. patient-reported outcomes) has become an important differentiator among regimens. Bictegravir is a novel, unboosted integrase strand transfer inhibitor, coformulated with emtricitabine and tenofovir alafenamide (B/F/TAF). We aimed to characterise change in symptoms of adult patients with HIV-1-infection after initiating or switching to B/F/TAF versus ABC/DTG/3TC.
Methods: Treatment-naïve adults were randomised 1:1 to receive blinded B/F/TAF or ABC/DTG/3TC (study 1489). Virologically suppressed adults were randomised 1:1 to switch to B/F/TAF or continue ABC/DTG/3TC in blinded fashion (study 1844). Across studies, HIV Symptoms Distress Module (HIV-SI) was administered at baseline (BL), W4, W12, and W48 with responses dichotomised as bothersome/not. Treatment differences were assessed using logistic regression models adjusted for BL HIV-SI count, age, sex, BL Veterans Aging Cohort Study Index, medical history of serious mental illness, BL Short Form [SF]-36 Physical Component Summary [PCS], BL SF-36 Mental Component Summary [MCS], and years since HIV diagnosis (study 1844 only). Longitudinal modeling of bothersome symptoms was conducted using generalised, mixed model including treatment, time, time-by-treatment, and additional covariates. Pittsburgh Sleep Quality Index (PSQI), administered with same frequency as HIV-SI, with total score dichotomised as good/poor sleep quality. Similar models to HIV-SI were applied using BL sleep quality and BL SF-36 MCS as covariates.
Results: Bothersome symptoms were reported by fewer participants on B/F/TAF than ABC/DTG/3TC in both studies. For treatment-naïve adults, fatigue/loss of energy, nausea/vomiting, dizzy/lightheadedness, and difficulty sleeping significantly favoured B/F/TAF at ≥2 timepoints. Fatigue and nausea were significantly less common for B/F/TAF in longitudinal models. For virologically suppressed participants, nausea/vomiting, sad/down/depressed, nervous/anxious, and poor sleep quality (from the PSQI) significantly favoured B/F/TAF at ≥2 timepoints and in longitudinal models. No symptom favoured ABC/DTG/3TC at ≥2 timepoints in either study.
Conclusions: Results suggest that patient-reported wellbeing may be better with B/F/TAF compared to ABC/DTG/3TC. B/F/TAF was associated with significantly lower prevalence of multiple bothersome symptoms across gastrointestinal disorders, neuropsychiatric events, and sleep.

P3

B/F/TAF versus ABC/DTG/3TC or DTG + F/TAF in treatment-naïve adults with high baseline viral load or low baseline CD4 count in 2 Phase 3 randomized, controlled clinical trials: Week 96 Results

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Background: Treatment-naïve, HIV-1-infected individuals with high viral load (HIV-1 RNA) and/or low CD4 count may be difficult to treat. In two Phase 3 studies of fixed-dose combination bictegravir/emtricitabine/tenofovir alafenamide (B/F/TAF) vs. dolutegravir comparators, there were no treatment differences between arms for subgroups with HIV-1 RNA >100,000 copies (c)/mL or CD4 <200 cells/µL at baseline. B/F/TAF was non-inferior to comparator arms by snapshot at the primary endpoint, Week (W) 48, and W96. No participant failed with resistance. To further characterise efficacy of B/F/TAF, we analysed pooled results from these trials for those with high viral load or low CD4 count at baseline. Results were similar among treatment groups at W48; herein, we present results at W96.

Materials and Methods: Treatment-naïve, HIV-1-infected adults were randomised 1:1 to receive blinded treatment with B/F/TAF (50/200/25 mg) vs. dolutegravir/abacavir/lamivudine (DTG/ABC/3TC) (Study 1489) or DTG (50 mg) + F/TAF (200/25 mg) (Study 1490). Participants were recruited in North America, Europe, and Australia. To evaluate the real efficacy of B/F/TAF in these populations, we conducted a per-protocol (PP) analysis, which included all participants randomised who received ≥1 dose of study medication but excluded those without on-treatment results in the W96 window (unless discontinued for lack of efficacy) or who had low medication adherence (<2.5th percentile). We present W96 virologic responses by FDA Snapshot algorithm for participants with baseline viral load >100,000 c/mL or CD4 count <200 cells/µL or both using the W96 PP analysis set.

Results: 629 adults were randomised in study 1489 (B/F/TAF n=314, DTG/ABC/3TC n=315) and 645 in study 1490 (B/F/TAF n=320, DTG+F/TAF n=325). Pooled, 184 participants (PP analysis set) had baseline viral load >100,000 copies/mL (B/F/TAF n=95/634 [15%], DTG/ABC/3TC n=43/315 [14%], DTG+F/TAF n=46/325 [14%]), and 122 (B/F/TAF n=65/634 [10%], DTG/ABC/3TC n=26/315 [8%], DTG+F/TAF n=31/325 [10%]) had baseline CD4 count <200 cells/µL. For both high viral load and low CD4 subgroups, virologic suppression (HIV-1 RNA <50 c/mL) at W96 was similarly high for B/F/TAF, DTG/ABC/3TC, and DTG+F/TAF (table). No participant failed with resistance to any components of study drug.

Conclusions: B/F/TAF demonstrated potent viral suppression with no treatment-emergent resistance in treatment-naïve adults with high baseline viral load and/or low CD4 count through W96. These data provide further evidence that B/F/TAF is an appropriate treatment for a wide range of patients, including late presenters who have been historically more difficult to treat.

P4

A Phase 3, Randomized, Controlled Clinical Trial of Bictegravir in a Fixed-Dose Combination, B/F/TAF, vs ABC/DTG/3TC in Treatment-Naïve Adults at Week 96

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Introduction: Bictegravir (B), a potent INSTI with a high barrier to resistance, is coformulated with emtricitabine (F) and tenofovir alafenamide (TAF) as the FDA-approved single-tablet regimen B/F/TAF. We report Week (W) 96 results from an ongoing phase 3 study comparing B/F/TAF to coformulated dolutegravir, abacavir, and lamivudine (DTG/ABC/3TC) in treatment- naïve adults living with HIV-1. Primary outcome at W48 demonstrated noninferior virologic responses, similar bone and renal profiles, and no viral resistance.

Methods: We randomized 1:1 HLA-B*5701-negative adults, without HBV and with estimated glomerular filtration rate (eGFR) ≥50 mL/min to receive blinded B/F/TAF (50/200/25 mg) or DTG/ABC/3TC (50/600/300 mg) with matching placebos QD. Primary endpoint was proportion with HIV-1 RNA <50 c/mL at W48 (FDA snapshot), with secondary analyses at W96. Noninferiority was assessed with 95% confidence intervals (CI) (12% margin). Other secondary endpoints were safety (adverse events [AEs], laboratory abnormalities) and predefined analyses of bone mineral density (BMD) and measures of renal function (eGFR, proteinuria).

Results: 629 adults were randomized/treated (314 B/F/TAF, 315 DTG/ABC/3TC). At W96, B/F/TAF was noninferior to DTG/ABC/3TC: 87.9% vs 89.8%, respectively, achieved HIV-1 RNA <50 c/mL (difference 1.9%; 95%CI -6.9% to 3.1%, p=0.45). In per-protocol analysis, 99.6% on B/F/TAF vs 98.9% on DTG/ABC/3TC achieved HIV-1 RNA <50c/mL (p=0.33). Most common AEs overall were nausea (11% B/F/TAF, 24% DTG/ABC/3TC, p<0.001), diarrhoea (15%, 16%), and headache (13%, 16%). Through W96, no participant had emergent resistance to study drugs. No participant discontinued B/F/TAF due to AEs; 5 (2%) discontinued DTG/ABC/3TC due to AEs (1 after W48). Treatment-related AEs occurred in 28% B/F/TAF vs 40% DTG/ABC/3TC (p=0.002); most common was nausea (6%, 17%. p<0.001). At W96, mean % changes in spine and hip BMD were small and similar between groups (table); median change in eGFR was significantly less with B/F/TAF, while median % changes in proteinuria were similar.

Conclusions: At W96, B/F/TAF was virologically noninferior to DTG/ABC/3TC, with no viral resistance or safety-related discontinuations. B/F/TAF was well tolerated with less nausea than DTG/ABC/3TC and similar bone and renal safety.

Table. Changes from baseline in safety parameters at W96

	B/F/TAF (n=314)	DTG/ABC/3TC (n=315)	P value
eGFR, median (mL/min)	-7.8	-9.6	0.01
Renal Biomarkers, median (%)			
Urine Albumin: Creatinine Ratio	-0.3	5.2	0.25
Urine Retinol Binding Protein: Creatinine Ratio	21.2	22.1	0.91
Urine Beta-2-Microglobulin: Creatinine Ratio	-30.8	-29.4	0.96
BMD, mean (%)			
Spine[a]	-0.71	-0.22	0.14
Hip[b]	-1.13	-1.26	0.59

[a] n=256 (B/F/TAF), n=258 (DTG/ABC/3TC)
[b] n=250 (B/F/TAF), n=258 (DTG/ABC/3TC)

P5

Building capacity within a Hepatitis C treatment model. The validation process for a Hepatitis C pre-treatment pharmacist assessment complex intervention toolkit

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Background: Knowledge relating to use of Hepatitis C direct-acting antivirals is confined to specialist centres in Ireland. The pre -treatment pharmacist assessment is a novel complex intervention toolkit which has been designed and optimised with the aim of supporting devolvement of Hepatitis C treatment to primary care providers including pharmacists, nurses and clinicians. It combines all aspects of pre-treatment assessment into a user-friendly proforma to ensure optimum Hepatitis C treatment is selected for each patient. This study describes the validation process for this toolkit for pharmacist use.

Methods: Pharmacists were invited to participate in this matched cohort study to review Hepatitis C case vignettes using the intervention toolkit or standard of care. Participants were divided into two groups using a concealed randomisation method. A random sample of test cases were selected from the Hepatitis C treatment registry using selected co-variates (e.g. fibrosis stage). A sample size of 58 cases per group was calculated with 7 participants in each group to complete 8 cases each. Group A utilised the toolkit and group B completed the cases as per standard of care. The primary endpoint was selection of the optimum treatment regimen as per national guidelines. Secondary endpoints included time to case completion, detection of drug-drug interactions and identification of patient interventions. Statistical analysis was completed to assess variation in results between groups.

Results: A total of 56 cases were completed by each group. Use of the toolkit was associated with selection of an optimum DAA regimen in 92.9% of cases as compared with 60.7% of cases in group B ($p<0.05$). Drug-drug interaction detection rates were significantly higher with toolkit use (74.8% vs 47.1%; $p<0.05$). Participants utilising the toolkit suggested an average of 3.43 interventions per case versus 1.95 interventions per case in Group B. The toolkit was associated with a longer median time to completion compared with standard practice (20 versus 15 minutes), however this difference was not found to be statistically significant (p 0.060).

Conclusions: The findings of this validation study confirm the effectiveness of the toolkit in aiding pharmacists in selecting the optimum Hepatitis C treatment for patients. The potential for pharmacists working in all practice environments in Ireland, including community, to make a robust contribution to treatment of Hepatitis C, is something that can be supported using this toolkit. This type of capacity building is key to upscaling the model of care in Ireland to achieve World Health Organisation elimination targets.

P6

Potential Risk Associated with Dolutegravir in Pregnancy - a Multidisciplinary Team Response

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Background: A direct healthcare communication from Glaxo Smith Kline on the 22/05/2018 highlighted a potential link to dolutegravir exposure during the first trimester and an increased risk of neural tube defects of 0.9% (normal risk 0.1%). The infectious disease team initiated a plan to contact all women of childbearing potential, currently receiving dolutegravir, under our care.

Methods: Female patients on dolutegravir were identified from the pharmacy dispensing records. A letter was sent to the relevant patients highlighting the potential risk in pregnancy and requesting patients to immediately contact us if they thought they might be pregnant, if they were trying to conceive or if they had any concerns.

The antiretroviral regimen of female patients who had a pregnancy wish was changed; the remaining patients attending the clinic were advised of the risk in greater detail and were requested to sign a risk acknowledgement form (RAF) if they were happy to do so.

Results:

Patient Characteristics

On dolutegtravir	**59**
Emigrated	3
Attending different ID service	1
> 50 years old	13
Notification Letters Sent	23
RAF signed	31
Patient counselled (did not sign RAF)	1
Patient counselled in clinic or by phone or both	43
Regimen Changed	11
Pregnancy test performed	17

59 patients were identified as receiving dolutegravir; 3 patients emigrated and were uncontactable. 43 patients were of childbearing potential and contacted. Patients were sent a written risk notification letter, 1 patient contacted the team by phone after receipt of the letter, 31 patients signed the RAF, 1 patient wanted to review the RAF further at home before signing, 11 patients changed regimen (2 of whom had previously signed the RAF).

One patient was 29 weeks pregnant at the time of the dolutegravir exposure alert. A senior clinical team member contacted the patient's obstetrician who confirmed that the pregnancy scans showed no neural tube defects. He then contacted the patient to inform her that the scans did not indicate any problem and as the patient was now in her third trimester that there was no need for regimen change. The patient delivered a healthy baby at 34 weeks gestation. The patient did not want regimen change and opted for longterm effective contraception.

Conclusion: The unexpected announcement of the risks associated with dolutegravir use in pregnancy prompted a swift and coordinated multidisciplinary response, which culminated in an informed patient cohort and 11 regimen changes.

P7
Screening for chronic co-morbidities in HIV clinics in GUIDe and adherence to guidelines

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Background: People with HIV are living longer and the risk of non-infectious co-morbidities is an important cause of morbidity and mortality for people living on anti-retroviral therapy (ART). HIV management guidelines recommend screening and management for cardiovascular risk, hypertension, dyslipidaemia, renal disease, diabetes and osteoporosis. We conducted an audit to ascertain to what extent the GUIDe department, St James Hospital adheres to EACS guidelines on monitoring for non-infectious co-morbidities.

Methods: We received permission from St James Hospital Research and Development department to conduct the audit. Patients attending all HIV clinics in GUIDe clinic for the month of December 2019 were included. A standardised excel spreadsheet was used to extract data from electronic records. Summary statistics were presented as median with interquartile range(IQR).

Results: 425 patients were identified as attending HIV clinics during the month of December 2018. The median age was 43 years (37 – 52) and 25% were female. 5% were of no fixed abode and 25% had no GP. 25% had at least one missed clinic appointment in the past year and 63% were on 6 monthly reviews. The median time from HIV diagnosis was 6.8 years (2.6 – 13.6). Median current CD4 was 669 cells/mm3 (531 – 899) and 7% were not virologically suppressed. In the previous 2 years, blood pressure had been measured 66% of patients, weight in 66%, cholesterol in 63% and HbA1C in 39%. 40% had no smoking status documented and 66% had no data on BMI. 17% overall had a DEXA scan, and 5% of those who were eligible for osteoporosis screening did not have a DEXA scan. 42% of those screened by DEXA had osteopaenia and 29% had osteoporosis. 61% overall, and 63% of those on TDF, had a UPCR done. 7% of the cohort had a prior diagnosis of hypertension. 40% were smokers and 36% had dyslipidaemia. eGFR was less than 90 in 62% and less than 60 in 7%. Median BP was 128/80 mmHg (115/76 – 132/85) and median weight was 79Kg (71 – 93). Median total cholesterol and LDL were 2.55mmol/L (2.05 – 3.05) and 4.58mmol/L (4.11 – 5.14) respectively. Median HbA1C was 35% (31 – 39) and eGFR was 76 (67 – 12).

Conclusions: For this unselected cohort of patients attending HIV clinic for management of chronic HIV, we found high rates of smoking and dyslipidaemia. Fewer than one half of patients had smoking status documented and HBA1C measured. BMI was not documented in two thirds of patients. Efforts should focus on smoking cessation and monitoring for metabolic disease in this cohort.

P8
Exploring the Attitudes of HIV-Positive Patients on Single-Tablet Antiretroviral Regimens towards Generic De-Simplification

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Background: Generic equivalents of the most commonly prescribed, single-tablet antiretrovirals are not yet available. Most patients attending the Infectious Diseases service at the Mater Misericordiae University Hospital (MMUH) are prescribed single-tablet regimens (STRs). The majority of patients on STRs would therefore be required to increase their pill burden, or 'de-simplify', their regimen in order to switch to generic antiretrovirals. Although the potential exists to realise substantial medication cost savings through generic de-simplification, there are several barriers to its widespread adoption including potential adverse effects on adherence and quality of life. The study aim was to establish the perspectives of patients on STRs regarding generic de-simplification.

Methods: A questionnaire was completed by patients on STRs attending the Infectious Diseases outpatient clinic at the MMUH. The questionnaire consisted of three key domains: (i) participant characteristics, (ii) medication details and (iii) perspectives regarding de-simplification and generic antiretrovirals. Individual results were aggregated and entered onto IBM® SPSS® for further analysis. Descriptive statistics were used to summarise participants' characteristics and non-parametric tests such as Chi-square (or Fisher's exact test) were used to test for statistical significance between groups.

Results: 287 questionnaires were completed. The highest proportion of participants were non-Irish national, employed males with a college degree or above (n=66, 23%). The majority of participants were on antiretrovirals 1-4 years (n=114, 39.7%). Of those on treatment less than 1 year, 77.3% (n=17) were always on a STR, compared with 20% (n=16) of those on treatment 10 years or longer. Thirty two percent (n=91) were open to a proposed switch to two tablets daily. This rose to 46.1% (n=132/286) and 59.1% (n=169/286) when participants who were unsure, or unwilling, were asked if generic de-simplification would be acceptable to them for cost saving reasons or re-investment into HIV care respectively. Having too many medication bottles was the main reason for reluctance to switch at 53.6% (n=105/196), followed by concerns about adherence (n=85/196, 43.4%). There was a significant association between familiarity with the term 'generic medicines' and concerns regarding generic antiretrovirals ($\chi 2=22.805$, $p<0.001$). Those who were familiar were less likely to have concerns.

Conclusion: It appears that the majority of participants would not oppose generic de-simplification for the benefit of society or HIV care. Patient engagement and effective communication regarding generic de-simplification could aid acceptance. Overall, the introduction of generic de-simplification could result in significant cost savings for the State without compromising patient care.

P9

The ART of Insulin Resistance: Analysis of glucose intolerance, HbA1c and BMI in a HIV population on Integrase Inhibitors

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Background: Since the advent of antiretroviral therapy (ART), metabolic complications such as Insulin resistance (IR), impaired glucose tolerance and diabetes mellitus have been observed more commonly in people living with HIV (PLWH). The current prevalent use of Integrase Strand Transfer Inhibitors (InSTI) has been associated with weight gain with some evidence of increases in fasting glucose and HBA1c, potential surrogate markers for insulin sensitivity. This study aimed to analyse BMI, HbA1c and fasting glucose levels in virally suppressed PLWH and assess difference with InSTI based ART .

Methods: We conducted a cross-sectional analysis of (PLWH) on ART enrolled on the UCD ID cohort study. We collected patient demographic, laboratory and medication data. Between group differences in BMI, fasting glucose and HBA1C were analyzed using the Statistical Analysis System IBM SPSS v24.0. Data are reported as median (IQR) unless otherwise stated.

Results: Of 147 PLWH were included in the analysis. 62% were male, 38% African and median (IQR) age was 41 (35,48) years. All participants were on ART with 91% virally suppressed (HIV RNA <40 cps/ml). Nadir CD4 count was 244 (99, 399) cells/mm3 with most recent CD4 count 657 (460, 860) cells/mm3. 60% of patients were on an InSTI regimen; eltegravir 55%, dolutegravir 42% and raltegravir 2.2%. Median duration of INSTI use was 3.87 (0.07, 22) years. Median BMI was 25.9 (23, 30) kg/m2, HbA1c was 35 (32, 39) mmol/mol and fasting glucose was 4.8 (4.5, 5.1) mmol. 12.9% (n=19) of all participants had an elevated HbA1c of above 42 mmol/mol., of whom 12 (63%) had no previous diagnosis of diabetes. Between group analysis of those on InSTI versus not on InSTI demonstrated similarities in age, gender, ethnicity, transmission risk and duration of ART. There was no significant between group differences (InSTI vs non InSTI) in BMI (26.5 (22.9, 30.3) kg/m2 vs 25.6 (22.2, 27.3) kg/m2 p=0.18), HBA1C (35 (32, 39) mmol/mol vs 34 (32, 38) mmol/mol, p=0.53) and fasting glucose (4.8 (4.5,5.1) mmol vs 4.8 (4.6,5.2) mmol p=0.357).

Conclusion: There was no significant difference in BMI, HbA1c or fasting glucose concentration associated with InSTI use within our cohort. Further work is necessary to examine the longitudinal effects of InSTI use on glucose and fat metabolism within this cohort.

P10

Attitudes and Opinions of HIV & General Practice

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Background: The advent of Anti-Retroviral Drugs has allowed Human Immunodeficiency Virus positive (HIV+) patients to have longer life spans. With this, HIV+ patients are developing chronic diseases at rates similar to those seen in the general population. While historically, HIV+ patients were looked after by HIV specialists such as Infectious Disease (ID) physicians, a General Practitioner (GP) continues to have a more vital role in HIV+ care.

Purpose: The purpose of this clinical review was to assess the opinions of HIV+ patients towards their GPs and ID physicians with respect to the care they receive from health services.

Methods: The initial part of this clinical audit was performed in the Beaumont ID clinic over a 10 week period (from January 2019 to April 2019). A questionnaire was developed to answer the audit purpose (see Table 1) which was delivered in the HIV clinic to patients who verbally consented. Patients were interview privately. To-date, a total of 45 patients were interviewed.

Outcomes: There were 28 males and 18 females surveyed. The average age of the participants was 42.7 years with an age range of 21-83 years. Of the 45 patients, 37 (82%) patients were registered to a General Practice, 28 (75%) of whom had visited their GP in the last 6 months. There was a high level of HIV status disclosure to GPs. When asked for confidence in GPs treating HIV related medical issues, there were varying opinions. Overall, patients were confident in their ability to manage general health problems (score 4.79 out of 5), but less confident in their ability to manage HIV-related issues (score 3.56 out of 5). Anecdotes of patient experience were also recorded. Generally even if a patient felt their GP was not knowledgeable about HIV, they felt supported. For example, one patient stated that he stuck with his GP regardless because he wanted the doctor to "learn about the disease with him".

Conclusion: As HIV+ patients start to live longer and develop chronic diseases, integration of services between ID physicians and GPs is becoming increasingly important. Therefore, GP training in HIV services is becoming vital. Increasing patient confidence in GPs is also important.

Table 1: Patient Questionnaire

Patient Initials	Date of Birth
Age	Year of Diagnosis
Past Medical History	Relevant Social History
1. Are you registered to a GP surgery? Where?	
2. Does your GP know about your HIV status? If not, what has prevented you from disclosing this to your GP? Do you feel supported by your GP?	
3. Have you changed your GP since your diagnosis? If yes, why?	
4. On scale of 1-5, how confident do you feel your GP is to deal with an HIV related concern?	
5. On a scale of 1-5, how confident are you that the doctors in this clinic would manage one of your medical concerns not related to HIV?	
6. On a scale of 1-5, how confident are you that your GP is equipped to deal with any medical concerns you have, whether related to HIV or not?	
7. How many times have you attended your GP in the last 6 months? For what?	
8. On a scale of 1-5, how adequate do you feel the communication is between this clinic and your GP?	
9. Have you contacted the ID clinic between appointments? For what?	
10. Have you attended any hospital or emergency services in the last 6 months? For what?	

P11

Hepatic steatosis, Ageing and MEtabolic Syndrome in HIV patients - the emerging use of elastography/controlled attenuation parameter (The HAMES-HIV e-CAP study)

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Background: The burden of liver-related morbidity is a new concern in HIV management. The prevalence of non-alcoholic fatty liver disease (NAFLD) in HIV patients is significantly higher than in those non-infected; risk factors include high body mass index (BMI), diabetes, dyslipidaemia (1). Weight gain has also been linked to antiretroviral therapy. Hepatic steatosis can lead to fibrosis and cirrhosis, research has identified that hepatic steatosis in HIV mono-infection has been shown to progress faster than those who are co-infected with viral hepatitis (2). Serum fibrosis markers have been developed to aid identification of patients at risk such as NALFD- Fibrosis score and FIB-4 score. Liver biopsy is the gold standard in the diagnosis of NAFLD. More recently, non-invasive techniques have been developed such as transient elastography, measuring liver stiffness (fibrosis), and controlled attenuation parameter (CAP), measuring steatosis, which are more sensitive than ultrasound imaging (3). The aim of this pilot study was to evaluate fibrosis scores in identifying at risk patients and to assess the emerging use of CAP in HIV patients with steatosis.

Methods: St James's Hospital has the largest cohort of HIV patients in Ireland. Transient elastography has been available for many years, the addition of CAP was initiated in St James's Hospital in August 2018 and relevant data were extracted from the electronic patient record. A liver stiffness measure (LSM) ≥6.5kPa indicates fibrosis and a CAP value ≥250 dB/m indicates steatosis. The FIB-4 index was calculated using alanine/aspartate aminotransferase level, platelet counts, and age; ≥2.67 has an 80% positive predictive value for fibrosis. Additional parameters including BMI, diabetes history and albumin were used to calculate the NAFLD Fibrosis score; >0.675 is suggestive of liver fibrosis. Statistical analysis was conducted using STATA v15.1.

Results: To date, 67 HIV patients had transient elastography performed; 16 HIV mono-infected patients (24.0%) and 51 co-infected with HCV/HBV (76.1%). Age profiles were similar in both groups (mean HIV: 49.1 years, co-infected 46.3 years). The majority had abnormal lipid profiles (73.4%, n=47) and the mean BMI was 26.3 kg/m2 (SD 4.9) where available data was captured (58.2%, n=39). A third of patients had abnormal liver function tests (37.3%, n=25) and the majority had liver ultrasounds performed initially (72%, n=18). Notably, 46.3% of patients had high CAP scores indicating steatosis (n=31). The proportion of high CAP scores was significantly higher in HIV mono-infection (87.5%, n=14) compared to co-infected patients (33.3%, n=17) (p<0.000). High LSM scores were similar in both groups (HIV mono-infection: 31.3%, n=5; co-infected: 31.4%, n=16). Low NALFD (p=0.000) and low FIB-4 scores (p=0.011) were more likely associated with low LSM scores.

Conclusion: This emerging data indicates that hepatic steatosis is of increased concern in HIV mono-infection. More research is required to further evaluate.

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P12

An Audit of Cardiovascular Risk Assessment and Management in HIV Patients Attending a Tertiary Referral Outpatient Service

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Background: Observational studies have demonstrated elevated rates of coronary heart disease in HIV-infected patients compared to controls. European AIDS Clinical Society (EACS) guidelines recommend annual assessment of cardiovascular risk. EACS guidelines suggest using the D.A.D (Data collection on adverse events of HIV drugs study) 5-year cardiovascular risk prediction tool. The aim of this study was to assess adherence to EACS guidelines for cardiovascular risk assessment and management in patients with HIV attending our outpatient clinics.

Methods: A review of the clinical notes of 80 patients was performed for patients attending our outpatient clinics in 2014 and repeated for 2018. **Results:** 54/80 (67.5%) of patients were female. 52/80 (65%) were African and 22/80 (27.5%) were Irish. Median age was 45 years (IQR=36-50). By 2018 2/80 patients were lost to follow up. 1/78 patients had developed cardiovascular disease. 12/78 (15.4%) patients were on Abacavir. The mean time exposed to protease inhibitors was 7.5 years (SD±5.8). 13/78 (16.7%) were smokers which had declined from 18/80 (22.5%) in 2014. 32/78 (41%) were alcohol drinkers which was unchanged since 2014. 14/78 (14.9%) had a family history of cardiovascular disease. 27/78 (34.6%) had a diabetes screen in 2018, improved since 2014. 2/78 patients had diabetes in 2018. Both were on treatment. Neither had a HbA1c checked in 2018. 35/78 (44.9%) had a lipid profile checked in 2018, improved since 2014. 17/78 (17.8%) had hyperlipidaemia in 2018. 11/17 (64.7%) were on pharmacological treatment in 2018 but all were still hyperlipidaemic. 11/78 (14.1%) had hypertension in 2018, all were on treatment. Blood pressure measurement is not routinely performed during our outpatient clinics. D.A.D score calculation was possible for 23/78 patients in 2018. The mean D.A.D scores in 2018 were 2.21% (SD±1.87) assuming all patients were normotensive and 2.33 (SD±2.00) assuming all patients had grade 1 hypertension. The patient who developed cardiovascular disease had a D.A.D score of 6.02% prior to the event. One other high risk patient was identified with a D.A.D score between 7.59-9.42%. The proportion of patients with 0.1,2,3

and 4 modifiable risk factors was 30/78, 29/78, 16/78, 2/78 and 1/78 respectively.

Discussion/Conclusion: Risk factor assessment and management did not meet guidelines though it did It improve over time. The overall risk was low for those in whom enough data existed to calculate risk. Two high risk patients were identified, one of whom developed cardiovascular disease. Consideration should be given to developing protocols for risk assessment and management with an MDT approach for high risk patients or encouraging patients to attend primary care annually for risk assessment.

P13

Compliance with EACS Vaccination Guidelines in an Irish HIV Cohort

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Background: Due to immunocompromise and shared route of transmission vaccinations are recommended for people living with HIV (PLWHIV). The European AIDS Clinical Society (EACS) guidelines recommend that PLWHIV should be vaccinated against Hepatitis B (HepB), Streptococcus pneumoniae, and Influenza. The Human Papilloma virus (HPV) and Hepatitis A (HepA) vaccinations are also indicated in select subpopulations.

Purpose: The aim of this audit was to evaluate the compliance of a regional Infectious Diseases (ID) department with EACS vaccination guidelines.

Methods: 100 PLWHIV were randomly selected for review of documentation of vaccination. Pneumovax 23 (PPV)/ Prevnar-13 (PCV13), yearly flu vaccine, HepA and HepB vaccination was assessed. Charts and clinical documentation were then analyzed for immune response (ie. HepBs antibody detection), reasoning for (or against) vaccination, disease associated risk factors, and CD4 counts at time of vaccination.

Results: Compliance with HepB vaccination was excellent (55/59 patients where vaccination was indicated). 12 patients did not follow the recommended HepB vaccination schedule. 30 patients did not have adequate antibody response (>100mIU/mL) and only 15 were given repeat vaccination. No association could be made with lower antibody response rates and lower CD4 counts at the time of vaccination. 9 patients met the criteria for HepA vaccination and 4/9 were vaccinated. The commonest indication for HepA was originating from an area with high HepA prevalence (6/9 patients). PPV was given and up-to-date in 97 patients. PCV13 is not yet offered in this ID clinic. PPV was occasionally delayed in cases where a patient's CD4 count measured <200cells/µL. 46 patients had CD4 counts <200cells/µL at initial evaluation, the average time to vaccination in new diagnosis patients was 14mths (0–132mths). 92 patients had documented (either from the ID clinic or GP) receiving the yearly influenza vaccine in the 2017/2018 flu season. The HPV vaccine was not documented in any patient records as it is not yet provided in this clinic, however, 10 patients met criteria for vaccination.

Conclusion: There were mixed results with regards to compliance with EACS vaccination guidelines in this Infectious Diseases clinic. Further work needs to be made to assess causes for poorer vaccination rates in order to improve compliance with local guidelines.

P14

Neutrophil-to-Lymphocyte Ratio compared to CD4:CD8 ratio as a predictor of non-AIDS events in people living with HIV

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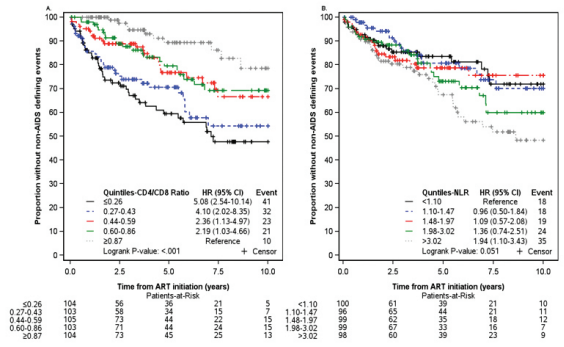
Background: In the ART era non-AIDS events have emerged as the leading cause of morbidity and mortality for people living with HIV (PLWH). CD4:CD8 ratio has been shown to be incrementally associated with Non-AIDS Defining Events. Neutrophil-to-Lymphocyte ratio (NLR) is a predictor of cardiovascular mortality in the general population, and has previously been linked to excess cardiovascular mortality in PLWH. Our goal was to investigate if there is a correlation between NLR and NADE in PLWH.

Methods: This was a single centre retrospective cohort study including all patients recruited to the UCD ID Cohort. NLR was collected at time of ART initiation, and again at either pre-NADE event or end of study period. Data was collected between 2001 and 2015. Multivariable Cox proportional hazards regression models explored factors independently associated with the progression to NADE. Data are reported as median (IQR).

Results: Of 550 PLWH, 317 (58%) were male, 299 (54%) Caucasian, 220 (40%) African, 114 (21%) men who have sex with men and 131 (24%) injecting drug-users (IDU). 128 (23%) were co-infected with Hepatitis C. At ART initiation median (IQR) age was 34 (29, 40) yrs, and nadir CD4+ count 187 (80, 284) cells/mm3. We observed 135 non-AIDS events (NADEs) in 2557 person years of follow (crude incidence 5.3 /100 PYFU (95%CI 4.50-6.30)), the commonest of which were pneumonia (n=39), liver disease (n=17), cardiovascular disease (CVD) (n=14) and non AIDS malignancies (n=12).

In unadjusted Cox regression models, pre-event CD4+/ CD8+ lower T-cell ratio and higher NLR were both associated with higher incidence of non-AIDS events (p<0.01, p=0.05 respectively, Figure 1). However, after adjustment for age, gender, ethnicity and HIV transmission risk group, pre-event CD4+/CD8+ T-cell ratio remained independently associated the incidence of non-AIDS events but NLR did not. The model containing pre-event CD4+/CD8+ T-cell ratio predicted the risk of non-AIDS events more accurately than the one with pre-event NLR (AUC; 0.73 vs 0.68 respectively)



Conclusions: Incidence rate of NADE across all quintiles of NLR was similar, and did not scale as the NLR increased. This study suggests NLR does not have predictive value for NADE in PLWH. This differs from other studies which suggest that NLR may be used as a predictor of mortality.
Limitations: Single centre retrospective cohort analysis. Unable to correct for traditional risk factors (e.g. smoking, family history) due to incomplete data.

P15
A Pilot Study Profiling Frailty and Ageing in a Population of Older Adults Living with Human Immunodeficiency Virus (HIV) in Ireland

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Background: Advances in healthcare in recent years has resulted in people living with Human Immunodeficiency Virus (PLWH) are reaching older age in much larger numbers. Research shows that PLWH suffer from premature ageing syndromes, such as frailty, younger than the general population. At present there are approximately 2800 patients attending the Infectious Disease Services at St. James Hospital, of whom 461 patients are aged ≥50 years. The aim of this pilot study was to profile frailty levels in a population of older PLWH in a national centre caring for adults with HIV. Secondary objectives were to investigate their levels of social connectedness, quality of life and perceptions about ageing.
Methods: A cross-sectional study design was employed. Inclusion criteria included; aged ≥50 years of age, a diagnosis of HIV and being under the care of the Infectious Disease Services at St. James Hospital. Seventeen participants were assessed for frailty using the Fried frailty phenotype. Physical activity levels (International Physical Activity Questionnaire [IPAQ]), social connectedness (Lubben Social Network Scale-6 [LSNS-6]), quality of life (Control, Autonomy, Social & Pleasure Scale-19 [CASP-19]) and perceptions about ageing (Ageing Perceptions Questionnaire [APQ]) were assessed using self-report questionnaires. Ethical approval was obtained from St. James Hospital/ Tallaght Research Ethics Committee.
Results: Males accounted for 65% of participants (n=11). The median age was 55 years (IQR=11) and median number of years since HIV diagnosis was 9 years (IQR=15). Frailty prevalence was 6% (n=1). Pre-frailty was highly prevalent at 71% (n=12). Levels of social connectedness indicated moderate social connection with a median score of 16 (IQR =10) on the LSNS-6. Low levels of physical activity were observed in over half of participants (n=9). The CASP-19 showed moderate quality of life with a median score of 39 (IQR=11). Perceptions about ageing were largely positive with a median APQ score of 22.7 (IQR=3.4).
Conclusion: In this pilot study, PLWH > 50yrs presented with high levels of pre-frailty, moderate levels of social connectedness, low levels of physical activity, moderate quality of life but with largely positive perceptions about ageing. Due to the small sample size, the results of this pilot are not necessarily generalizable to the entire population. For this reason, further investigation of the HIV positive cohort >50 years of age (n=461) attending St. James Hospital is planned.

P16
Attaining UNAIDS Treatment Outcomes in Newly Attending HIV+ Patients – a one year review

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Background: The UNAIDS 90-90-90 treatment targets were established with the goal of ending the AIDS epidemic by 2030. In order to reach this goal, the UNAIDS 90-90-90 targets were introduced. By 2020 90% of all people living with HIV worldwide will know their status, 90% of people with a HIV diagnosis will receive sustained antiretroviral therapy (ART) and 90% of all people on ART will have viral suppression (viral load <200cpm). This audit aims to look at the treatment outcomes for newly attending HIV+ patients to St James's Hospital (SJH) in regards to these treatment targets.
Method: This is a retrospective audit looking at the patients with a newly diagnosed HIV infection attending the HIV Clinic in SJH for the first time in 2017. The details of every patient who attended the clinic for the first time in 2017 were obtained from the Data Manager of the Department of Genito Urinary Medicine and Infectious Diseases in SJH. The number of newly-diagnosed HIV+ patients, as opposed to those who were previously diagnosed, was measured by looking at viral load on first attendance in combination with clinic notes from their first attendance. Viral suppression was defined as less than 200 copies of HIV RNA per millilitre of blood.
Results: 254 patients attended the HIV Clinic for the first time in 2017. Group A (n=136) were newly diagnosed with HIV and not receiving ART at the time of their first review. 130 patients (96%) in Group A were virally suppressed at the time of their most recent review. Of the 6 patients who were not virally suppressed, 4 had issues with compliance and 2 had viral resistance. Group B (n=109) had a known diagnosis of HIV and were receiving, or had previously received, ART at the time of their first review in the clinic. 107 patients (98%) in this cohort were virally suppressed at the time of their most recent review. 9 patients were excluded due to insufficient data. Of all patients who attended the clinic for the first time in 2017, 97% of patients were virally suppressed at the time of their most recent review.
Conclusion: This audit demonstrates that the HIV Clinic in SJH is meeting the UNAIDS 90-90-90 treatment target that relates to achieving viral suppression among newly attending HIV+ patients.

P17

Healthcare service utilization in patients with HIV and disease associated cognitive impairment

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Background: HIV associated neurocognitive disorders (HAND) remain very common (50%) despite the introduction of highly-active antiretroviral therapy (HAART). 604 randomly selected HIV+ patients were previously screened for cognitive impairment (CI) in a cross-sectional study carried out at SJH. Of them, 51.5% (311/604) screened positive (CI+) and 48.5% (293/604) screened negative (CI-) for cognitive impairment. We hypothesized that CI+ group requires a larger quantum and a wider range of hospital services, and incur higher healthcare related costs than CI- group.

Methods: For this study, 100 HIV+ individuals who screened positive for CI (CI+ group) and 100 who screened negative (CI- group) were randomly selected from the original 604 cohort. Demographic and clinical data, and the number of Emergency Department (ED), Day Case (DC), outpatient (OP) and inpatient (IP) episodes were collected from the hospital patient administration systems (PAS) and electronic patient records (EPR) for a six year period (2011-2016). Additionally, from the hospital's financial system, data reporting the costs of OP, IP and DC episodes of care was obtained for years 2014 and 2015. A Mann-Whitney U test was used for the continuous variables analysis, and a Chi-squared test was used for the categorical data analysis.

Results: Over the six year period the number of hospital services use (OP, DC, and IP) were found to be higher for the CI+ group. These differences were statistically significant for accessing in-hospital services, which included all IP and DC episodes combined ($p=0.044$), total number of admission days ($p=0.032$), and total OP visits ($p=0.049$). On average, the CI+ group had 0.33 more ED visits per patient than the CI- group ($p=0.042$), significantly more DNAs (did not attend) per patient ($p<0.001$), 3.62 more HIV services OP visits per patient ($p=0.051$), and 5.2 days longer length of inpatient stay per admission episode ($p<0.0001$). Clinical data analysis found a significant association between cognitive status and noncompliance with the prescribed antiretroviral treatment (24 in CI+ group vs 11 in CI- group) ($p=0.016$). Over the two year period (2014 and 2015), the total costs for the CI+ group amounted to €508,818 compared with €233,855 for the CI- group with an average cost per patient per annum for CI+ being nearly double the cost of a CI- patient in 2014 (€2,733/patient/year versus €1,405/patient/year, respectively) and 2.5 times higher in 2015 (€2,355/patient/year versus €933/patient/year, respectively).

Conclusion: The CI+ group are bigger users of all hospital services and account for greater healthcare costs.

CLINICAL CARE: INFECTIOUS DISEASES

P18

Hepatitis C Care at University Hospital Limerick (UHL)

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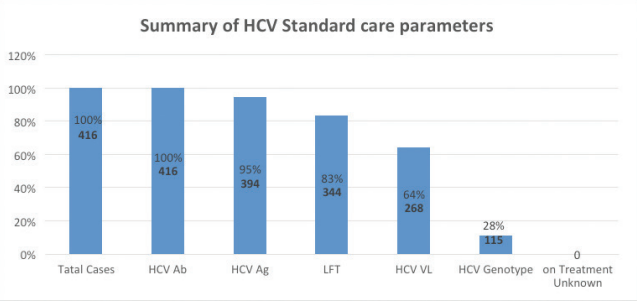
Background: Identifying deficits in hepatitis C (HCV) care is necessary for clinicians, public health officials, and policy makers. Antiviral DAA therapy is associated with greater than 95% cure rates in recent times. Current guidelines recommend treatment for all patients with HCV infection. This study examined baseline characteristics of patients with HCV infection diagnosed at UHL. All patients with HCV infection are currently referred to other centres for treatment but many cannot access therapy as a result of this.

Methods: A retrospective review of 416 HCV antibody (Ab) positive cases at UHL serology laboratory from January 2010 to July 2018 was performed. Data was collected, coded and analysed to describe demographics, viral load (VL), genotype, treatment referral, and follow up.

Results: 416 patients tested HCV Ab positive. Mean age was 44.6 years, SD of 12.6. 57.5% (239) were male and 42.5% (177) were female. The mean number of cases diagnosed per year was 42. 60.6% (252) of cases had positive HCV antigen (Ag), 33.9% (141) had negative HCV Ag test, equivocal result in 0.2% (1) while the test was not done on 5.3%(22) of cases. Viral load was tested in 66.1% (275) of cases; 33.9% (141) of cases were not tested. In 42.5% (177) viral load was detected; the greatest value was 49693817 copies/ml. HCV genotype was not tested in 74.8% (311). Of those tested (115), 62.6% (72) were genotype 1a, and 26.1% (30) were genotype 3. Liver function test at time of diagnosis was done in 82.6% (344) of patients and were abnormal in 63.6% (219) of those tested. HCV Ab test was done by GPs in 43.3% (180), 13.2% (55) while inpatients, 11.8% (49) by infectious diseases department, 7.5% (31) in prison, 7.5% (31) by Drug and Alcohol Services and 16.8%(70) by others such as antenatal and gastroenterology.

Conclusion: Results reflect a gap in delivery of HCV care in the Midwest Region and further review is recommended to evaluate who were treated and those lost to follow up. More resources are required to provide appropriate HCV treatment services. Results have been presented locally and have been used to support applications submitted for the initiation of HCV treatment at University Hospital Limerick.



P19

Use of a Simple Education Programme to Reduce Blood Culture Contamination Rates in a Rural Emergency Department

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Background: Blood culture contamination is a major problem when attempting to manage serious infections safely and cost-effectively. It has been shown in numerous studies to both increase costs associated with managing patients and increase individual lengths of stay. The aim of our intervention was to reduce contamination of emergancy department taken blood cultures towards the internationally recognised target rates for contamination of 2-3%.

Methods: We sought lab data on blood culture results from April – August 2018 of samples sent from the Emergency Department of our institution. We obtained the medical notes of all the patients with positive blood culture results from an organism other than Escherichia Coli, Staphylococcus Aureus, Klebsiella Pneumoniae, Proteus Mirabilis, Streptococcus Pneumoniae and Pseudomonas Aeruginosa and determined whether the positive results were contaminants or true positives. We then presented our findings to the nursing and medical staff in the emergency department regarding the rates of contamination and re-educated the staff with regard to evidence-based practices in taking blood cultures in a manner that reduces contamination. This education took place during the final week of January 2019 and we will re-audit the blood culture contaminant rates during the months of February and March 2019.

Results: Out of 552 sets of blood cultures taken during the initial study period, 90 (16.3%) were positive. Of these 48 (8.7%) were found to be contaminants. This is markedly above the recognised international target contamination rates of 2-3% and well above most similar studies published in the literature which show widely varying contamination rates of 0.6-6%. Re-audit of the contamination rates in the months following the intervention is yet to be completed.

Conclusion: ED taken blood cultures at our institution have an extremely high contamination rate compared to figures available in the literature. There is a number of published studies that suggest that the financial and bed-day burden of this is likely to be considerable. Our intervention aimed to reduce contamination of blood cultures in this setting and thus the costs and lengths of stay of patients admitted to the hospital with infections.

P20

Audit of a Single Centre's Management of Chronic Pulmonary Aspergillosis

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Background: Chronic pulmonary aspergillosis (CPA) is an uncommon disease affecting the lungs, as a result of fungal infection, which can complicate many other pulmonary diseases. It is thought to affect approximately 240,000 people in Europe, and an estimated 180 people in Ireland. It can be associated with significant morbidity and mortality if left untreated. In 2015, the European Society for Clinical Microbiology and Infectious Diseases (ESCMID) and the European Respiratory Society (ERS) published clinical guidelines for the diagnosis and management of this condition.

Methods: We performed an audit of patients currently attending the infectious diseases clinic in the Mater Misericordiae University Hospital for management of their CPA. Clinical notes, and investigations performed were reviewed. Treatment and follow up care of patients was also included. All the information collected was compared against the ECSMID/ERS guidelines

Results: A total of 12 patients were included. Of these, 11 patients have confirmed CPA, meeting diagnostic criteria with characteristic findings on CT thorax, alongside either a positive *Aspergillus IgG*, growth of *Aspergillus spp*. in respiratory specimens, or visualised fungal forms on cytology from a fine needle aspirate. The final patient has suspected CPA, with characteristic imaging findings, but not meeting other diagnostic criteria, and was excluded from further analysis. Of the patients with confirmed CPA, 9/11(82%) are on appropriate antifungal therapy. Therapeutic drug monitoring is being implemented in all cases. Of the remaining 2 patients, one was treated for 1 year, but had significant tolerability issues with therapy, and the other has declined treatment. 10/11(91%) patients have had or plan to have repeat imaging within 6 months of therapy. No patients have had surgical management of their disease.

Conclusions: Overall, compliance with the guidelines on the diagnosis and management of CPA in the Mater Hospital is very good. Attention should be paid to ensuring follow up imaging is organised to evaluate response to treatment, and consideration given to the surgical management of appropriate cases. It is likely that there are a cohort of undiagnosed patients who could benefit from management in a specialist service such as ours, and efforts must focus on case finding.

P21

Investigation of the social and professional influences on NCHD antimicrobial prescribing at St. James's Hospital

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Background: Antimicrobial resistance (AMR) is an ever increasing global healthcare problem. Antimicrobial stewardship (AMS) is a multifaceted set of targeted interventions to ensure that optimal antimicrobial therapy is prescribed while minimizing adverse outcomes. Challenges to AMS exist in modifying antimicrobial prescribing behaviour. In hospitals, AMS is challenged by established prescribing norms and team hierarchies which dictate antimicrobial prescribing behaviour and conflicts with formal policies, procedures and guidelines. This study aims to contribute to the paucity of evidence exploring these factors in Irish healthcare settings.

Methods: Setting: St. James's Hospital (SJH), a large inner city tertiary referral centre in Dublin, Ireland.
Study Design: Quantitative, cross – sectional survey design.
Non – consultant hospital doctors (NHCDs) were surveyed using a behaviour change theory informed survey tool hosted on SurveyMonkey®. Participants were recruited electronically

through group text, email and website advertisement. Data were analyzed and reported descriptively. Ordinal survey responses were coded numerically and analyzed using analysis of variance and least squared difference statistical tests for comparison between the different grades of NCHD.
Results: NCHDs were aware of the concept and scale of AMR and the importance of antimicrobial prescribing as a driver of AMR. However, they appeared to lack insight into the consequences of their individual prescribing such as the development of AMR and transmission. NCHDs do not view their own prescribing habits as part of the solution to AMR. Junior NCHDs use guidelines for prescribing support but also rely on input from senior colleagues which may be driven by a perceived lack of specific training and confidence in infection management. Reluctance existed, particularly among interns, to interfere in antimicrobial prescribing by other NCHDs even if there was absence of an appropriate indication. Prescribing tasks which NCHDs thought should be deferred to their senior colleagues were deciding on therapy duration and switching from the intravenous (IV) to oral (PO) route.
Conclusions: The findings from this study indicate that antimicrobial prescribing training should emphasize the potential for AMR development in patients treated with antimicrobials and support decision making in relation to prescribing tasks such as IV to PO switch. Senior clinician influence and prescribing autonomy are strong influencers of NCHD antimicrobial prescribing behaviour and should be leveraged as facilitators of prudent antimicrobial prescribing in practice.

P22

An investigation of hospital inpatient willingness to ask questions about prudent infection therapy

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Background: Antimicrobial resistance (AMR) is an increasing cause for concern particularly in the hospital environment. Antimicrobial stewardship (AMS) is a targeted set of interventions designed to optimise antimicrobial therapy while minimising adverse consequences. Previous research has explored the patient role in infection control. Little research has explored the patient role in AMS. This study aimed to investigate the willingness of hospital inpatients to question staff about prudent antimicrobial use.
Methods: Setting: St. James's Hospital (SJH): a large inner–city Dublin tertiary referral centre.
Study Design: Quantitative, cross–sectional survey design. A survey instrument was co–designed with the SJH patient representative group to measure willingness of inpatients to ask factual and challenging infection–related questions of doctors and nurses. Empowerment messages encouraging questioning were viewed by the participants, after which they rated their willingness to ask the same set of questions again. Some 200 inpatients were randomly selected to self–complete the survey using pen and paper. Results were analysed descriptively and with SPSS using parametric statistical tests.
Results: Some 120 potential participants were excluded for reasons such as cognitive impairment or feeling unwell. Of the remaining 80, 67 completed the survey (response rate 84%). The average respondent age was 56 years, 30% were employed and 30% had an undergraduate degree or higher. Over 90% had not heard of AMS but over two thirds were aware of the need to reduce antimicrobial use in healthcare. A little over 50% had not heard of AMR. Patients preferred asking factual than challenging questions. Empowerment messages did not affect patient willingness to ask factual or challenging questions. After viewing the intervention patients were more willing to ask factual, but not challenging, questions of doctors compared to nurses. Patients 65 or older were among the respondents most unlikely to raise questions. Employment or education status were not associated with willingness to engage. Comments from one open–ended question suggested that patients prefer and assume their antimicrobial treatment in hospital will be optimal but may be hesitant to query this.
Conclusions: Based on the findings of this study, patients prefer to ask factual based questions about prudent antimicrobial treatment in hospital rather than challenging ones and are less likely to do so with increasing age. This provides the basis for future studies to design and evaluate the utility of patient engagement with antimicrobial therapy interventions as a hospital AMS strategy.

P23

Dose Banding High Dose Co-Trimoxazole in an Electronic Prescribing System

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Background: High-doses of co-trimoxazole for severe infections e.g. Stenotrophomonas, Pneumocystis jirovecii are described in standard resources as mg/kg/day doses either as the combination of trimethoprim and sulfamethoxazole (e.g. 120mg/kg/day) or as the trimethoprim component alone (e.g. 20mg/kg/day).These doses are then prescribed in twice or three times daily regimens rounded to a 480mg vial/tablet to facilitate safe administration. This process has historically been associated with a variety of medication errors (1). The decision support infrastructure of the hospital electronic prescribing system (EPR) doesn't have the capacity to convert a total daily dose in mg/kg/day to a rounded dose at an appropriate interval. Dose banding is a system whereby drug doses that are calculated by any method are grouped and rounded to a set of predefined doses for the convenience of the users. (2) It has been commonly used as an alternative to precise dosing in paediatrics and oncology in order to reduce medication error, and increase efficiency (3,4).
Aim: To simplify the process of prescribing high dose co-trimoxazole by developing prescribing plans within the EPR including dose banding tables.
Method: Dose banded tables were developed for three dosing regimens; 60mg/kg/day, 90mg/kg/day and 120mg/kg/day. Doses were grouped by weight in bands between 50kg and 120kg. The banded dose was calculated using the midpoint weight in each weight band and then rounded to a 480mg increment. The maximal percentage deviations versus the precise dose were calculated using the weights at the higher and lower end of each weight band. All calculations were

carried out in Microsoft Excel®, and checked independently by three pharmacists. The dosing tables were presented and agreed at workshops with infectious disease and microbiology physicians and pharmacists. The tablets were added as prescribing plans to a test domain of the EPR, where they were validated by clinical staff prior to building in the live domain.
Results: Three dose banding tables were agreed. The maximal percentage deviation versus the precise dose for the 120 mg/kg/day and the 90mg/kg/day regimens was within a 10% range. The maximal percentage deviation was higher for the 60 mg/kg/day but the benefits of simplification were considered in workshops to outweigh any risks at this dosing regimen as all doses were judged to be within a safe and efficacious range. Doses in the three plans were built as twice daily regimens, where possible, to facilitate efficiencies in nursing time and to avoid excessive manipulation of IV cannulas. The naming convention for the three prescribing plans expressed the dosing regimens both as total dose and using the trimethoprim component only to aid in dose selection.
Conclusion: The development of dose banded tables within a prescribing plan in an EPR is expected to have benefits in reducing error and increasing efficiency when using high-dose co-trimoxazole.
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P24

Vancomycin use within the National OPAT programme

Claire Kenny, Susan Clarke, on behalf of the National OPAT Working Group

Background: The National OPAT programme was established in 2013 with an aim to provide antibiotic therapy with an equivalent level of care to the inpatient setting, with the advantage of reducing bed days. Vancomycin is often avoided as its nephrotoxicity mandates TDM and long infusion times preclude many nursing services from offering this as a HOPAT option.
Methods: This was a retrospective analysis of patients enrolled in the National OPAT Programme who received vancomycin between January 2016 and January 2019. A secure connection to the OPAT database was established for the purposes of this study.
Results: 95 patient referrals for Vancomycin were made during this time period. A total of 2565 bed days were saved, with an average of 26 bed days saved per patient episode. Treatment durations ranged from a single day to 103 days. The median treatment duration was 24 (IQR= 12-34.5). The most frequent prescribers were Mater Misericordiae University Hospital (20 referrals; 21.1%), University Hospital Waterford (15 referrals; 15.8%) and University Hospital Galway (11 referrals; 11.6%). 54 (56.8%) referrals were for bone and joint infections, 29.6% of which were classified as prosthetic joint infections and 5.6% as discitis. 21 referrals (22.0%) were for skin and soft tissue infections (SSTIs). 7 patients (7.4%) were treated for blood stream infections (BSIs). 7 (7.0%) patients were treated for cardiovascular infections, of which 5 (71.4%) were for treatment of infective endocarditis. 4 (4.2%) patients were treated for respiratory infections. 58.9% of patients received self-administered OPAT (SOPAT). The remaining 41% had their OPAT administered by a healthcare professional (HOPAT). Nationwide, 35% of the referring institutions employ an ID Consultant and 64.7% of centres employ an OPAT CNS. 31 referrals for Vancomycin therapy were made in 2016, 38 in 2017 and a further 25 referrals were made in 2018. In comparison there were 206 OPAT referrals for Daptomycin nationwide in 2018.
Conclusion: Vancomycin remains a popular treatment in the outpatient setting for the management of bone and joint infections and skin and soft tissue infections. Vancomycin at 1g BD involves infusion over 90 minutes, administered either by the HOPAT service or via SOPAT using a vacuum system. Vancomycin requires intensive monitoring and dose alteration. Hospitals that continue to prescribe Vancomycin must demonstrate an ability to efficiently monitor drug levels and alter doses quickly when necessary.

P25

Tuberculous Meningitis in a Patient Receiving TNF Alpha Inhibitor

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Background: Tuberculous Meningitis is rare in Western Europe.[1] It accounts for about one per cent of all cases of TB.[2] One of the common known causes of Tuberculous Meningitis is immune deficiency caused by Tumour Necrosis Factor – Alpha Inhibitors.[3] The case fatality ratio remains high (15-40%).[2] Early recognition, diagnosis and treatment of TB Meningitis is crucial as clinical outcomes are greatly worsened when therapy is initiated at a later stage.[4]
Case Report: Here we describe a case of a thirty-six-year-old heterosexual male carpenter. His background was significant for a history of Ulcerative Collitis which was well controlled on a TNF Alpha inhibitor; Golimumab. He presented with a six-day history of severe headache, neck pain, fevers and dizziness. He was subsequently diagnosed with Tuberculous Meningitis following positive acid-fast bacilli found on his second Lumbar Puncture. The infectious disease team in The Mater Hospital, Dublin were contacted and were of great assistance in the management of this patient. The patient was treated with anti-tuberculous medications and steroids and had a good response to treatment.
Discussion: Tuberculous Meningitis is a rare but serious disease with a high mortality rate.[2] Prompt recognition and diagnosis of this disease is important to ensure the best chance of a positive outcome. This case highlights the

importance of maintaining a broad differential and a high index of suspicion even in the face of negative investigations. It also highlights the benefit of repeat investigations in certain circumstances.

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P26

Progressive Multifocal Leukoencephalopathy after Carboplatin and Taxol Chemotherapy for Ovarian Carcinoma

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Background: Progressive multifocal leukoencephalopathy (PML) is a demyelinating disease of the central nervous system (CNS) caused by reactivation of the John Cunningham (JC) virus. It has been reported as a fatal complication of immunosuppressive agents such as natalizumab, rituximab and dimethyl fumarate amongst others. We describe a rare case of PML after three cycles of carboplatin and taxol.

Case: A 78-year-old lady presented with a 2-day history of slurred speech and right hand clumsiness. She was diagnosed with high-grade serous ovarian carcinoma 5 months ago with port site metastasis within one week of laparoscopy. She had completed 3 cycles of neoadjuvant carboplatin and taxol chemotherapy one month prior to presentation. Initial MRI brain demonstrated non-specific T2 FLAIR hyperintensities.

A week following admission, she developed temperatures not responsive to broad spectrum antimicrobial cover. Blood tests demonstrated normal lymphocytes. Microbiology results included sterile blood cultures and negative HIV, hepatitis B, hepatitis C, *Treponema Pallidum, Brucella, Coxiella Burnetti, Toxocara* and *Tropheryma Whipplei* serology. Autoimmune and paraneoplastic antibodies were negative.

In the weeks following admission, she clinically deteriorated with significant dysphasia, ataxia and inability to mobilise independently. She developed focal motor seizures of her right upper extremity consistent with epilepsia partialis continua. Seizures were successfully terminated with levetiracetam and adjunctive clonazepam. Interval, MRI brain scan with contrast showed new multifocal subcortical T2 FLAIR hyperintensities without postcontrast enhancement. Cerebrospinal fluid analysis was inflammatory with 10 white cells, 100% lymphocytic. CSF JC virus PCR returned positive.

The clinical and radiological progression along with CSF JV virus PCR results confirmed the diagnosis of PML. Based on observational data, she was commenced on a trial of mirtazapine. Four months after initial presentation, she had accrued significant disability and was fully dependent and bed bound.

Discussion: This case highlights PML as a rare adverse effect of carboplatin and taxol chemotherapy. Myelosuppression has been commonly associated with carboplatin, however reports of PML are rare. Primary neutropenia is associated with taxol chemotherapy; however there is no case report to our knowledge of PML in the literature. This case illustrates the importance of considering PML in individuals with occult immunosuppression.

P27

Expanding Hepatitis C Treatment to Community Pharmacies

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Background: Many Hepatitis C Virus (HCV) positive patients are engaged with the addiction and homeless services; however, few are linked with hospital services and access to HCV treatment. A programme was established to develop a shared model of care across primary and secondary care settings to improve access to HCV treatment for a difficult to engage patient cohort.

Methods: The HCV positive patient's pre-treatment bloods and screening are completed at the Granby Methadone Centre. Patients are referred to the Mater Misericordiae University Hospital (MMUH) pharmacist who completes the funding application, checks for drug-drug interactions and liaises with the patient's Opioid Substitution Therapy (OST) community pharmacy. Patients only attend the MMUH on Day 0 of treatment, accompanied by a peer support worker. Patients are provided with a 7 day supply to bring to their community pharmacy. The patient's community pharmacy stores the HCV treatment and supervises their HCV treatment daily dose alongside their OST. All further supplies of HCV treatment are couriered from the hospital to the patient's community pharmacy. Patients are reviewed medically each week in the Granby Methadone Centre and the community pharmacy is contacted to check adherence. A weekly email communication provides updates to all stakeholders on patients' progress throughout the treatment allowing issues to be addressed by the multidisciplinary team.

Results:

	No. of patients
Patients enrolled in the programme	29
Patients who fully completed treatment course	22 (75% n=22/29)
Patients currently on treatment	3 (10% n=3/29)
Patients who defaulted early from treatment	4 (14% n=4/29)
Patients who are at least 12 weeks post completion	18
Achieved SVR	11 (61% n=11/18)
Treatment failures identified	0

Table 1: Patient Progress

Conclusion: The programme has enrolled patients who have not previously engaged with secondary care and has successfully guided them through treatment in a community based setting. Utilising established relationships between patients and community care providers is an integral part of encouraging patients to avail of treatment. The role of the hospital remains to provide clinical expertise and dispense

the medication for the patient. This programme has proven effective and is a stepping stone for the complete transition of Hepatitis C Treatment to Primary Care. Clearly defined roles and responsibilities for each stakeholder have ensured safety and governance of patient care. Improving access to Hepatitis C treatment in primary care will play a key role in the drive to eradicate HCV in Ireland.

P28

An Audit of OPAT services in the Mater Hospital in 2017

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Background: Outpatient Parenteral antibiotic therapy (OPAT) is increasingly used in Ireland. OPAT offers advantages to both patients and healthcare systems; including reduced hospitalizations, less nosocomial infections and increased patient satisfaction. We sought to undertake an audit and review of our OPAT services in a tertiary Dublin hospital in 2017.

Methods: Identifying patients via electronic records, we retrospectively analysed records of patients undergoing OPAT in MMUH from 01/01/2017 - 31/12/2017. A minimum of name, demographics, infection diagnosis and antibiotic prescription was required for the analysis. In terms of OPAT outcome, success was defined as completed OPAT therapy with no change in antimicrobial agent, cure or improvement of infection and no adverse events or readmission. Partial success meant they completed OPAT but either changed antibiotics or had an adverse event, which did not require readmission.

Results: 125 patients were identified, and 103 patients had complete clinical records available. Looking at antibiotic choices, Ceftriaxone was the most popular option chosen 61/103 (59%). A range of other antibiotics were used including Tigecycline 7/103 (7%), Meropenem 8/103 (8%), and Vancomycin 9/103 (9%). In terms of diagnosis, the most common recorded indication for OPAT was osteomyelitis 34/103 (33%). Spinal infections 13/103 (13%), abscesses 13/103 (13%), prosthetic joint infections 9/103 (9%), and cellulitis 7/103 (7%), also made up significant numbers. Less frequent diagnosis included syphilis 1/103, (1%). 26 cases (25%) had no positive microbiology results but in 77 (75%) cases at least one organism was isolated. Most of these cases were polymicrobial 17/77 (22%). Methicillin-Sensitive *Staphylococcus aureus* 16/77 (21%), Coagulase-negative *Staphylococci* 14/77 (18%), and *Streptococcus* species 10/77 (13%), were also commonly grown. Total days of OPAT recorded was 2,908 which represents the number of hospital bed days saved. Longest duration recorded was 229 days. The mean duration was 31 days, the median duration was 27 days (Interquartile range 14-40). OPAT was well tolerated, 18/103 (17%) patients had adverse events, the majority of which were minor eg nausea and vomiting and diarrhoea. Only one patient (1%) had documented *Clostridium difficile* infection. 60/103 (58%) cases achieved success as per this definition and a further 7/103 (7%) had partial success of OPAT, in 19/103 (18%) of cases the outcome was not recorded.

Conclusion: Analysing 103 OPAT episodes in 2017 in the Mater Hospital, OPAT effectively saved 2908 bed days, was well tolerated overall and successful outcomes were recorded in the majority of patients.

P29

Antibiotic susceptibility in Intensive Care in a London Hospital

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Background: Multidrug resistant infection in Intensive Care is increasingly common and is associated with significant patient mortality and morbidity. St George's Hospital is a Level 1 trauma and tertiary referral centre covering the catchment area of South West London and Surrey. The Adult Critical Care directorate provides 61, level 2 and 3 beds spread across three units: General, Cardiothoracic and Neuro Intensive Care. The aim of this retrospective observational study is to assess the frequency and degree of antimicrobial resistance among common Gram Negative (GN) and Gram Positive (GP) bacteria isolated from patients in a large London Intensive Care Facility.

Methods: Clinically indicated specimens collected from the three intensive care units over a four year period (2013-2016) were included consisting of community and hospital acquired infection, and colonisation specimens. Resistant categories were defined by Minimum Inhibitory Concentration (MIC) using EUCAST breakpoint recommendations. Data was collected and analysed using WHONET software

Results: 2911 patient isolates over a 4-year period from January 2013 to December 2016 were included. Of these isolates 59% (1726) were gram negative organisms and 40% (1185) gram positive. Among Enterobactericae, all tested isolates were sensitive to meropenem. 3rd Generation cephalosporin resistance was most prevalent among *Enterobacter clocae*, with 22.8% and 24.4% of isolates resistant to ceftazidime and cefotaxime respectively. 10.6% of *Escherichia coli (E. coli)* isolates were resistant to ceftazidime and 13.3% to cefotaxime. Ceftazidime and cefotaxime resistance was present in 8.6% and 9.3% of *Klebsiella pneumonia (K. pneumonia)* isolates. Ciprofloxacin resistance was highest among *E. coli* (15.5%) followed by *K. pneumonia* (8.9%). Meropenem resistance was present in 3.7% of *Pseudomonas aeruginosa (P. aeruginosa)* isolates, ciprofloxacin resistance in 7.8% and piperacillin/tazobactam resistance in 6.1%. Vancomycin resistance was present among 14.3% of *Enterococcus faecium* isolates.

Conclusions: Intensive care is commonly considered to be a reservoir for infection due to its vulnerable immunosuppressed population, frequency of invasive procedures, and use of medications such as muscle relaxants and sedation. This study provides an interesting insight into the ecology of a large London ICU and how it compares to national UK nosocomial data. A significant percentage of *E. coli* and *K. pneumonia* at our ICU were resistant to 3rd line cephalosporin. This is comparable to national data demonstrating resistance to 3rd generation cephalosporin's to be 10.8-12.4% for *E. coli* and 10.0-11.5% for K. *pneumonia* over similar period (2012-2016). Meropenem resistant pseudomonas is a growing concern nationally. London has

the highest level of resistance with over 10-14% resistance recorded between 2012-2016. Interestingly the percentage resistant isolates was significantly lower among our critically ill patients (3.7%).

P30

An Audit of Latent Tuberculosis Management at Beaumont Hospital

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Background: It is estimated that 25% of the world's population has latent tuberculosis (TB). It is not known how prevalent latent TB is in Ireland. The infectious diseases department at our tertiary referral center treats patients with latent TB and takes referrals from other departments which screen for latent TB on a regular basis. In low incidence countries identifying and treating latent TB in groups at high risk of reactivation is an important part of disease control.

Aims: 1) to determine the prevalence of latent TB in our cohort 2) to determine referral patterns to the infectious disease department 3) to audit practice against the 2010 national guidelines for the prevention and control of tuberculosis.

Methods: 166 patients were chosen at random from a dataset of all patients on whom QuantiFERON testing had been performed in our tertiary referral centre in 2018 (673 patients). The patients QuantiFERON test result, risk factors for TB and chest x-ray findings were collected from the dataset, the patient's clinic letters and the radiology system respectively.

Results: Sufficient data was available for 136/166 patients. QuantiFERON testing indication was pre-TNF blockers in 91/136 patients (67%), pre-immunosuppression in 26/136 (19%) patients, contact with a TB case in 2/136 patients (1.5%). 14/136 (10%) patients were screened during investigation for active TB. Indication was unknown in 2/136(1.5%) patients. 1/136 (0.7%) was because of abnormal chest x ray findings which were suggestive of latent TB. 127/136 (93%) had a screening chest x ray or CT thorax performed. The requesting team was rheumatology in 59/136 (43%), gastroenterology 34/136 (25%), dermatology 21/136 (15%), neurology 8/136 (6%), respiratory in 3/136 (2.2%) patients, infectious diseases in 2/136 (1.5%) patients and other specialties 7/136 (5%) patients. Overall 6/136 (4.4%) patients had latent TB.

Discussion and Conclusion: The prevalence of latent TB in this cohort was low. This could be due to the select nature of the population screened. Referrals and treatment patterns were appropriate and in line with national guidelines. A high number of QuantiFERONs are requested in the work up of active TB.

	Total (%)	Proportion positive (%)	Proportion negative (%)	Proportion indeterminate (%)
QuantiFERONs	136	7/136 ()	127/136 ()	2/136
Proportion performed under non-respiratory or infectious diseases services	131/136 (96%)	5/7 (71.4%)	124/127 (97.6%)	0/2 (0%)
Proportion referred to respiratory or infectious disease	6/131 (4.6%)	4/5 (80%)	2/124 (1.6%)	0/0
Proportion of referrals diagnosed as latent TB	3/6 (50%)	3/4 (75%)	0/2 (0%)	0/0
Proportion of referrals diagnosed as Active TB	2/6 (33.3%)	1/4 (25%)	1/2 (50%)	0/0
Proportion not referred	125/131 (95%)	1/5 (20%)	122/124 (98.4%)	2/2 (100%)
Proportion of those not referred with either clinical risk factors for or radiological evidence of latent TB	21/125 (16.8%)	0/5 (0%)	22/122 (18.1%)	0/2 (0%)

P31

An Audit of the Treatment of Malaria in a Large Teaching Hospital

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Background: Early recognition and appropriate prompt treatment of Malaria is essential. At our institution malaria is seen uncommonly averaging 10 cases per year. From an analysis of medication safety data it was noted that over a two year period there were treatment errors in 18% of cases of malaria (n=3). In view of this a quality improvement study was undertaken in March 2017 to enhance staff knowledge of malaria through a cluster of interventions namely improve existing hospital guidelines, provide prescribing information with medication supply, educational sessions with front line staff and ensuring access to treatment. The aim of this audit was to see if the management of malaria has improved in the subsequent one year period.

Methods: This is a multidisciplinary (pharmacist/doctor) project. In an effort to improve staff knowledge of malaria a multifaceted approach was taken as detailed above- education, revision of guidelines and ensuring access to treatment. Treatment of malaria pre & post these interventions was analysed to assess if there has been any reduction in treatment errors.

Results: From 2017-2018 there were 13 cases of malaria of which 92% of cases were deemed to be treated correctly in hospital – i.e. correct drug and dosing frequency. The majority of malaria cases treated were *Plasmodium (P) Falciparum (n=10)*, remainder being *Plasmodium ovale* (n =2) & 1 mixed case *P Ovale/Falciparum* (n=1). With regard to the *P falciparum* cases, five were treated as severe and received IV artesunate initially. The dosing and frequency prescribed were appropriate in 4 out of 5 of these cases. Artemether/lumefantrine was prescribed as initial treatment in 8 cases (non-severe *P falciparum, P ovale* & mixed *P.ovale/Falciparum* case) & for follow on treatment for all of the severe P falciparum cases. The dosing and frequency of artemether/lumefantrine prescribed were appropriate in all of these cases (n= 13). Although prescribing was correct in all cases there were two errors with regard to administration delay & a duplicate dose of artemether/lumefantrine administered. There

were none of the same prescribing errors with artemether/lumefantrine that were found in the prior medication safety analysis.

Conclusions: The proportion of appropriate treatment of malaria improved in the post- quality improvement audit versus the pre QI audit (91% versus 82%). Repeated audits of guideline compliance and promotion of reporting of medication near misses and errors along with the electronic prescribing system should help ensure that these benefits are sustained.

P32

A Retrospective Evaluation of Toxoplasmosis in Beaumont Hospital Over a Ten Year Period from 2008-2018; Diagnosis and Management, Assessment of Risk Factors, and Patient Outcomes

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Background: Toxoplasmosis is caused by the protozoan parasite *Toxoplasma gondii*. In immunocompromised individuals illness usually occurs with reactivation of latent *T. gondii* infections. Such patients typically present with focal neurological deficits and neuroimaging showing ring enhancing lesions. Alternatively, immunocompetent persons with primary infection are usually asymptomatic. Most previous cases of clinical Toxoplasmosis have been linked to HIV infections. However, with the advent of biological agents to treat chronic diseases, new patient populations are progressing to Toxoplasmosis reactivation and clinical disease[1,2].

Methods: A retrospective descriptive analysis was used to review cases of Cerebral Toxoplasmosis in a tertiary neurosurgery referral centre. Beaumont Hospital HIPE coding (ICD-10-am) was used to identify all patients with a diagnosis of Toxoplasmosis between 2008 - 2018. Patient charts and electronic records were then reviewed to establish information pertinent to the clinical review questions. Particular data of interest included patient demographics, presenting symptoms, confirmatory diagnostics, and potential risk factors, including immunocompromised states, treatment and clinical outcomes.

Results: Eleven confirmed cases of Cerebral Toxoplasmosis were identified between December 1st 2008 and December 1st 2018. 5 patients were male (45%) and the average age was 48 years (range 21 yrs to 81 yrs). The average length of stay was 20.45 days. 6 cases were HIV infected, while 3 were linked to immunosuppressive agents (Mycophenolate Mofetil, Tacrolimus, and long term Prednisolone) and 2 were deemed immunocompetent after thorough workup. Presentations included seizures (2/11), hemiparesis (2/11), headaches (2/11), altered mental status (3/11), and ataxia (2/11). 10/11 cases of cerebral Toxoplasmosis were confirmed via histology from brain biopsy, and 1 via CSF PCR. MRI images reported ring enhancing lesions (11/11) and 7/11 had Toxoplasmosis serology performed. All cases were treated with Sulfadiazine, Pyrimethamine, and Folinic Acid. Overall, 1 death was reported in an HIV+ patient. All remaining patients had residual neurological effects after treatment, including 2 patients who had biopsy-related complications, including hemorrhage and a 3rd nerve palsy. Of note, many patients originated from other Irish hospitals (and 1 from Ecuador). Of the 8 patients with no previous history of HIV, testing was only performed in 5 cases and new HIV diagnoses were made in 3 patients.

Conclusion: Toxoplasmosis is associated with immunosupression. Possible bias occurred because the diagnosis was confirmed through biopsy rather than Toxoplasmosis serology. Biopsy preceeded serology in many cases, as the leading differential diagnosis was malignancy and neuroradiology and neurosurgery services were readily available. Significant complication rates can be seen with biopsy; therefore, it is ideal to perform serology prior to invasive investigations. Additionally, HIV testing should be considered in cases of cerebral Toxoplasmosis.

Resources:

1. http://www.hpsc.ie/a-z/zoonotic/toxoplasmosis/factsheets/
2. https://www.cdc.gov/parasites/toxoplasmosis/disease.html

P33

Crohn's Disease Masquerading as Pyuria

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Background: Extra-Intestinal or Metastatic Crohn's disease is a rare entity but is most commonly related to a chronic inflammatory process. Most common manifestations involve the skin, lung, liver, spleen and bone. A literature search reports that any bladder involvement of Inflammatory Bowel Disease (IBD) is often secondary to fistulation (ie colo-vesicle fistula formation). Granulomas distinct from the gastrointestinal tract are the hallmark feature of the disease. Patients may present with extra-intestinal disease during periods of relatively inactive bowel activity. Only one similar case was reported in the literature to-date.

Case: CG, a 61 year old gentleman with a background medical history of hypertension and haemachromatosis presents with painless haematuria 1 month post-cystoscopy and biopsy for chronic symptoms of frequency and nocturia. Chronic inflammation was seen on histology from original biopsy which was performed privately. This haematuria cleared post a short admission for bladder irrigation. Unfortunately these symptoms recurred along with diarrhoea, and Mr. CG represented 2 months later. He had a colonoscopy for his bowel symptoms, which was reported as unremarkable. Originally felt to be related to ongoing cystitis, Mr. PC received empiric therapy for culture-negative pyuria. After failure to respond clinically or biochemically to appropriate treatment, a further cystoscopy and biopsy confirmed non-specific inflammation, chronic abscesses and an occasional granuloma. Mr. CG commenced *Mycobacterium tuberculosis* (TB) therapy RHZE (rifampicin, isoniazid, pyrazinamide, clarithromycin, ethambutol and pyridoxine) after a thorough work up including an autoimmune screen. Despite initial improvement on TB therapy, he developed gout approximately 1 month on RHZE treatment and required intermittent pulses of steroids. After approximately 4 months of RHZE, Mr CG disimproved with worsening renal function

and a chief complaint of diarrhea. Cultures failed to confirm TB at any point. He was then re-admitted for a renal biopsy. At this point Schistosomiasis serology returned positive and he was given a course of Praziquantel. He further had a positive urine culture with resistant *E. coli* and a PET scan was performed and showed uptake in the bowel and bladder. Pathology from the kidney and bladder biopsy, along with all imaging and results to-date, were then reviewed at a renal MDM and he was commenced on OPAT for management of what was deemed a resistant urine infection. Despite 2 weeks of Ceftriaxone, there was no improvement and OPAT was discontinued. The fevers and sweats returned and his chief complaint of diarrhoea remained. The decision was then made to commence high dose steroids, which had remarkable positive impact on his symptoms. He then went for a 2nd colonoscopy which showed granulomas and inflammation consistent with Crohn's diseases. Mr CG was admitted for IV steroids and 48hrs later his symptoms improved. He has now been placed on Infliximab, and after 2-3 courses his symptoms have dramatically improved and the sweats, dysuria and bowels remain settled.

P34

Use of FIB4 to replace Transient Elastography (TE) in Hepatitis C care pathways

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Background: Transient elastography (TE), while more cost effective and safer than liver biopsy, is resource intensive. It has similar misdiagnosis rates to liver biopsy3. There are many advantages to using fibrosis 4 (FIB4) in a clinical setting. FIB4 is based on minimally invasive biomarkers that are collected during routine follow up and could therefore be used in primary care settings for ongoing monitoring of chronic HCV patients after treatment with Direct Acting Antivirals (DAA). FIB4 has been shown to be accurate in its ability to rule in cirrhosis. With cure rates of >95% in the post DAA era and with TE being more resource intensive that the FIB4 score this study investigates the use of FIB4 to negate the need for TE assessment in Hepatitis C positive patients treated with DAA therapy.

Methods: This is a diagnostic testing evaluation study using a retrospective single centre patient cohort. Patients were used who had consented and enrolled onto the ICORN registry and treated in the Department of GU Medicine and Infectious Diseases, Saint James' Hospital. Data was accessed from patient electronic records. Analysis was done using SPSS version 24. Ethical approval exemption for this study was granted by the School of Public Health, Physiotherapy and Sport Science, University College Dublin.

Results: 208 patients were treated with DAA therapy between January 2016 and February 2018 and eligible for inclusion for analysis. 162 (77.9%) were male with a mean age of 44.1 years (SD 9.4). 117 (56.2%) were HIV positive and 2 were co-infected with Hepatitis B. 109 (52.4%) were infected with HCV genotype 1a. Pre-treatment FIB4 and TE scores had a median (range) of 1.24 (0.34 to 30.62) and 7.5Kpa (3.4 to 56) respectively. Post treatment FIB4 and TE scores had a median (range) of 1.1 (0.43 to 24.81) and 5.7Kpa (2.8 to 64.5) respectively. 6 patients had a pre-treatment and 1 year follow up TE score of ≥F4. The AUROC for FIB4 in these patients was 0.917 (CI 0.795 to 1).

Conclusion: FIB4 scores have demonstrated their ability to rule in cirrhosis both before and following DAA therapy. Anyone with a pre-treatment TE score of ≥12.5Kpa and a 1 year post treatment FIB4 of≥ 3.25 does not require a Fibroscan following treatment but instead should enter routine surveillance for complications of cirrhosis.

P35

Seroprevalence of Hepatitis E Virus infection in the Irish Liver Transplant Population

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Introduction: Acute and chronic Hepatitis E Virus (HEV) infection can affect orthotopic liver transplant (OLT) recipients, leading to graft hepatitis and significant liver fibrosis. While rates of prevalence amongst UK patients is low (1), there is no available prevalence data on Irish liver transplant patients, and seroprevalence varies across Europe. HEV is not routinely tested as there is insufficient data to support annual screening. There is however evidence to support testing among OLT recipients with deranged liver function tests (2).

Aim: The primary aim was to establish the prevalance of HEV infection in the Irish liver transplant recipients. The secondary aim was to examine relationships between liver function tests and HEV seroprevalence.

Methods: We conducted a cross-sectional study measuring seroprevalance and presence of HEV RNA in liver transplant recipients attending the National Liver Transplant Unit in St Vincent's University Hospital between November 2016 to June 2017. We measured seroprevalence against a cirrhotic non-transplanted cohort of patients attending the same centre. We consented cirrhotic and OLT recipients attending for inpatient and outpatient transplantation care in our centre. Patient characteristics were assessed using electronic patient records and charts. The prevalence of HEV infection was measured using serology and HEV RNA. Differences between groups were compared using Student's T-Te st.

Results: 131 patients were included in our study. There were 85 patients in the OLT group, and 36 patients in the cirrhotic group. In the OLT group (N=85), 56(65%) were male. Median age was 60(23-82) years. 79(92.9%) patients were of Irish nationality. 9 (10.6%) patients had a positive HEV IgG. One(1.16%) patient had detectable HEV IgM. No patient had a detectable HEV RNA (0/84). Median ALT levels and ALP levels were no difference between groups; ALT HEV IgG+ 24 IU/ml, HEV IgG- 24IU/ml (p = 0.353); ALP HEV IgG+ 167 IU/ml, HEV IgG- 94 IU/ml (p = 0.175). Median GGT levels were significantly higher in HEV seropositive subjects 78 IU/ml vs 43 IU/ml (p = 0.033). In the cirrhotic group (N= 36), 23 (63.8%)were male. Median age was 53 (19-72) years. 30(83.3%) patients were of Irish nationality. 5 (16%) patients had a positive HEV IgG (5/31). No patient had a detectable HEV

IgM or detectable HEV RNA (0/29). There were no differences between HEV+ and HEV- groups for ALT, ALP or GGT. **Conclusion:** The seroprevalance of previous HEV infection is low in both asymptomatic Irish OLT cohort and cirrhotic patients. No patient had evidence of chronic infection in both groups. These data do not support routine screening for HEV in patients with normal liver function tests. However the relationship between deranged LFTs, in particular elevated GGT in the OLT group requires further study and may warrant HEV testing in this situation.

References: 1. Prevalence of hepatitis E virus infection in liver transplant recipients. Haagsma EB, Niesters HG, van den Berg AP. Liver Transpl. 2009 Oct;15(10):1225-8. 2. Hepatitis E virus and chronic hepatitis in organ-transplant recipients. Kamar N, Selves J, Mansuy JM, Ouezzani L, Peron JM,Guitard J, et al. N Engl J Med 2008;358:811-817

P36

Review of Helminth Testing in the Mater Misericordiae University Hospital (MMUH)

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Background: Helminth Infections are widely distributed in tropical and subtropical areas, with the majority occurring in sub-Saharan Africa, the Americas and Asia. In 2013, the "Helminth Prevalence study" proposed screening for latent parasitic infections in HIV patients given the potential morbidity and mortality and the lack of subjective and objective symptoms and signs. Schistosomiasis and strongyloides serology testing was subsequently included on the electronic order set for baseline bloods in the HIV clinic in MMUH. The aim of this study was to examine the appropriateness of test requests over a 6 month period.

Methods: We conducted a retrospective review on Schistosomiasis/Strongyloides testing in MMUH from January to July 2018. Laboratory data was compiled on an excel spreadsheet and using each patients electronic patient record variables including country of origin, HIV and Hepatitis B infection status, travel history was collected. The approximate cost for schistosomiasis and strongyloides serology is €65 and €38 respectively.

Results: A total of 136 tests were ordered for 72 patients within the audited period at an estimated cost of €6787. 52/72 (72%) patients were HIV positive, 2/72 (2.7%) were Hepatitis B infected and 3/72 (4.16%) were co-infected with HIV and Hepatitis B. 63/72(87.5%) patients has both tests performed. 39/72 (54%) were of African origin, 17 (23.6%) Irish and 16 (22%) were unknown. Of the 39 African patients of known origin were we able to ascertain that, 16 (41%) were South African, 4 (10%) from West Africa and 1 (2.5%) from Eastern Africa.. 63/72 (87.5%) of tests were ordered by Infectious Disease team. Six instances of duplicate testing with repeat negative results were recorded over the six month period. 6/72 (8.3%) tested positive for schistosomiasis; 3 from Africa, 2 from Brazil and 1 from Ireland. 2/72 (2.7%) tested positive for strongyloides (2 patients); 1 from South Africa and 1 from Ireland.

Conclusion: Just over half of the patients who had schistosomiasis/strongyloides serology requested were from areas endemic for helminth infections. This and the duplicate requests resulted in the low positivity rate. Given the cost of these tests we should be more selective with ordering them and suggest that more stringent criteria should be met prior to the lab processing the test.

P37

An Unusual Case of Talaromyces Marneffei Infection in a Non-Immunocompromised Host

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Background: Talaromyces marneffei is a dimorphic fungus endemic to Southeast Asia, causing a systemic mycosis most commonly seen in patients with HIV/AIDS who are, or have been resident in that area. It is an unusual cause of disease in a non-immunocompromised individual. We describe a rare case of T marneffei with respiratory and cardiac manifestations, in an otherwise healthy adult woman without evidence of immunocompromise.

Methods: A retrospective review of this patient's clinical notes was carried out. We also performed a systematic review of the literature, with a view to establishing the prior reported incidence of T marneffei in the non-immunocompromised host, and presenting in non-endemic regions.

Results: A 26 year old female, who had recently immigrated to Ireland from Afghanistan, presented to hospital with a short three week history of low grade fevers, night sweats, and dry cough. She was otherwise systemically well. She gave a past history of having been treated for Tuberculosis for three years in her native country, finishing a year prior to this presentation. Recurrence of TB was suspected, however sputum and pleural fluid on this occasion stained negative for acid-fast bacilli, and GenExpert was negative. Computerised tomography of the lungs demonstrated dense chronic consolidation with the development of new collateral vessels, and two ventricular lesions of uncertain aetiology. Pleural biopsy demonstrated granulomatous inflammation with numerous eosinophils and yeasts. Mediastinal lymph node biopsy demonstrated fungal yeast forms staining positive with silver stain, and demonstrating septate, branching hyphae. This eventually yielded a diagnosis of Talaromyces marneffei, after consultation with the Medical Mycology service in Manchester. She was commenced on Itraconazole, and remains well with improving radiological features on CXR. Multiple HIV tests have returned negative results, and she had no evident secondary causes of impaired cell-mediated immunity. The literature revealed only a handful of cases in the non-immunocompromised patient, and no previous cases with intra-cardiac involvement.

Conclusion: T marneffei is rarely described in the literature among non-HIV, non-immunocompromised individuals. Delays in diagnosis can result from the non-specific presentation of the illness. This case demonstrates an unusual manifestation of the disease, and aims to raise clinician's suspicion of the condition in patients from endemic regions.

P38

Cross-sectional Study of Respiratory Aspergillus spp. Colonization or Infection in Patients with Various Stages of Chronic Obstructive Pulmonary Disease (COPD) Using Culture Vs Non-culture Based Technique

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Background: COPD patients are now recognized to be at increased risk of colonization by *Aspergillus spp*. which may progress to invasive pulmonary aspergillosis (IA). Published data on the frequency of *Aspergillus* detection in COPD are limited.

Methods: A cross-sectional study was undertaken to determine *Aspergillus* colonization or infection in COPD patients undergoing bronchoscopy for any indication. Culture as well as galactomannan antigen (GM) and *Aspergillus* nucleic acid detection (PCR) were performed on bronchoalveolar lavage fluid (BAL).

Results: One hundred and fifty patients were included (44.7 % female, mean age 68.2 years). 21.3% were inpatients, 74.7% outpatients and 4% were ICU patients. Investigation of lung masses was the most common indication (43.3%) for bronchoscopy. Most patients (81.3 %) were either GOLD stage 1 or 2 COPD. Cancer was the most frequent co-morbidity (60.48%). 12 % and 48.7 % were on systemic and inhaled steroids respectively. Lung mass was the most common (28.43%) CT imaging finding. Seventeen patients (11.3%) had a positive result for *Aspergillus* (Culture +Galactomannan + PCR). 76.4% out of these seventeen were in the early stages (GOLD stage 1 or 2) of COPD.

Conclusion: *Aspergillus sp.* was detected in 3.3% of patients by culture, which increased to 11.3% if culture was combined with either a positive GM or PCR result. Overall the frequency of *Aspergillus* detection in this population of COPD patients was low which may reflect the predominance of Gold stages 1 and 2 among the study population.

P39

What stops doctors switching from intravenous to oral antibiotics?

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Aims: To explore doctors' perceptions of the facilitators and barriers to complying with intravenous to oral switch antibiotic guidelines in a Model 4 Irish hospital.

Methods: A cross-sectional study was carried out amongst doctors attending hospital-wide educational sessions in November 2018 via a validated paper-based survey post ethical approval. Data were independently analysed using SPSS.

Results: One hundred and seventy four doctors of all grades and a variety of specialties participated. Respondents felt they were aware of the local intravenous to oral switch criteria but expressed they required prompts to consider switching to oral agents when appropriate, inclusive of alert stickers in the Kardex and medical notes as well as reminders from nursing and pharmacy staff. Other interventions to assist with improved decision-making included further education to junior doctors on the benefits of an intravenous to oral switch, electronic prescribing, and better accessibility to laboratory results.

Conclusion: Results will assist in implementing quality improvement initiatives to increase the rate of guideline compliance.

P40

Bartonella Neuroretinitis

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Background: Cat-scratch disease (CSD) is caused by Bartonella henselae transmitted from infected cats via scratch, bite, saliva, or cat flea bite. Incidence of CSD is 6.4 cases / 100,000 population in the United States; incidence in Ireland is unknown. CSD is characterised by self-limiting regional lymphadenopathy. Only 1-2% of patients with CSD develop neuroretinitis.

Method: We report a rare case of meningitis and neuroretinitis caused by *Bartonella hensalae* infection.

Results: A 36-year-old Caucasian lady presented with a 5-day prodrome of fever, drenching sweats and muscle aches, followed by a 7-day history of left frontal headache, left eye blurred vision and painful eye movement. Examination revealed left eye reduced visual acuity to hand movements, central scotoma, failure with Ishihara colour plates testing, and fundus showing a swollen optic disc and swollen macula. There was no lymphadenopathy, organomegaly, scratch or bite mark. The patient recently acquired a kitten 5 months prior and already owned an 8-year old adult cat.

Serial retinal photography demonstrated left eye optic disc oedema and macular oedema 2 weeks from symptom onset, followed by the development of a macular star 4 weeks from symptom onset (Figure 1). Cerebrospinal fluid analysis showed raised protein (65mg/dl) and lymphocytic-predominant pleocytosis (white cell count 164/mm3, lymphocytes 97%). Magnetic resonance imaging of the brain showed an isolated focus of increased T2 signal and contrast enhancement at the optic disc head in the left eye. Serologic testing for HIV, CMV, Hepatitis, Toxoplasma, syphilis and Lyme were negative. *Serum Bartonella Henselae* titre showed an initial low-positive IgG titre of 1:640 (<1:320) with a subsequent rise to 1:1280 three weeks later.

The patient was treated with intravenous methylprednisolone for 5 days then oral prednisolone taper for 6 weeks, in conjunction with oral rifampicin and doxycycline for 6 weeks. Left eye visual acuity gradually improved to 6/15 five weeks from symptom onset.

Conclusion: *Bartonella henselae* is one of the most common infectious causes of neuroretinitis. It should be suspected in a patient with an infective prodrome and fundus showing optic disc oedema and macular star. Exposure to infected kittens portends a higher risk of transmission compared to

adult cats. Absence of lymphadenopathy, as observed in our patient, has been reported in other published cases of Bartonella neuroretinitis. A negative or low-positive initial serologic test for Bartonella henselae should not rule out CSD if there is high clinical suspicion, and repeat serologic testing is recommended to look for a titre rise.

EPIDEMIOLOGY & PUBLIC HEALTH

P41
Trends in STI notifications in Cork and Kerry 1997-2018

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Background: Aggregate data on sexually transmitted infections (STIs) have been reported on a quarterly basis in Cork and Kerry since 1997. The computerised infectious disease reporting (CIDR) system introduced nationally in 2013 for notification of STIs to Public Health from STI clinics, laboratories and primary care enabled a comprehensive analysis of trends. The aims of this study were to examine the trends in STI notifications reported to the Department of Public Health in Cork and Kerry since 1997 and to estimate the proportion of STIs diagnosed in primary care in Cork and Kerry since individual level patient data started being collected in 2013.

Methods: Data on eight notifiable STIs (Chancroid, Chlamydia trachomatis, Genital Herpes Simplex, Gonorrhoea, Granuloma Inguinale, Lymphogranuloma Inguinale, Syphilis and Trichomoniasis) were extracted from a local Access database (aggregate quarterly data 1997-2018) as well as from CIDR (patient level data 2013-2018). Patient level data was anonymised and included age at diagnosis, gender, disease name, primary referral source and patient type. The vast majority of STI notifications had at least one laboratory record associated with them and notifications were manually classified based on the name and/or address of the clinician who referred the first sample (primary referrer).

Results: In total between 1997 and 2018 12,570 notifications of STIs were reported in Cork and Kerry. The crude incidence rates of the most common STIs all increased markedly between 2012 and 2013 corresponding to the time individual level notification was introduced via CIDR. Gonorrhoea showed a 3-fold increase, Syphilis a 2.4-fold increase, Chlamydia a 1.9-fold increase, and Herpes a 1.3 fold increase. Two thirds of STIs notified between 2013 and 2018 were diagnosed by GPs, with 29% being diagnosed in STI clinics and 5% being diagnosed elsewhere. The proportion of STIs diagnosed in primary care varied by disease with 70% of Chlamydia, 62% of Genital Herpes Simplex, 52% of Gonorrhoea, and 33% of Syphilis notifications being diagnosed initially by GPs. Approximately 22% of all GP diagnosed STIs were diagnosed in student health services. When patient characteristics were compared between GPs and STI clinics there was no difference in mean age of patients, however a significantly higher proportion of GP diagnosed cases were female compared to STI clinics (60% vs 42%).

Conclusion: Information on local STIs trends, including on the diagnostic setting, is vital for mounting an effective response to emerging STI clusters and outbreaks as well as for the informed planning of local STI prevention and control activities. The introduction of the CIDR system enabled a more comprehensive and accurate analysis of incidence and trends.

P42
TNFα blockade: Increasing complex tuberculosis

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Background: TNFα blockade is associated with an increased risk of tuberculosis (TB). Tuberculous disease associated with TNFα inhibition is often complex disseminated disease, which sometimes involves the central nervous system. Withdrawal of TNFα blockade following TB diagnosis may lead to worsening symptoms due to paradoxical reaction as the immune system reconstitutes.

The incidence of TNFα associated TB cases has increased ~ 10 fold in the last fifteen years. A total of forty one cases of TNFα associated tuberculosis were reported to the Health Protection Surveillance Centre (HPSC) from 2015 to 2018, compared to only six cases over the same time period ten years earlier, from 2005 to 2008.

A complete understanding of this is likely multifactorial, however we are seeing an increasing number of patients commencing TNFα therapies for inflammatory disorders such as Crohn's disease and Rheumatoid Arthritis, and as such an increasing pool of susceptible patients.

In St. James' Hospital we are seeing a concerning increase in drug resistant TB. Several of our cases of TNFα associated TB have been either drug-resistant or, alarmingly, multi-drug resistant TB. For the first time we can report this in Irish national patients, without exposure by travel. Two of our cases have also been due to disease from Mycobacterium bovis – both patients immunosuppressed by TNFα therapies. Patients diagnosed with TB when immunosuppressed on TNFα inhibitors are at increased risk of paradoxical reactions when their TNFα therapy is stopped. These patients can be challenging to manage as disseminated disease is frequently unmasked, and long course high-dose steroids are required for successful management. In rare cases, in patients suffering from severe disease unresponsive to steroid therapy case reports suggest successful reintroduction of TNFα inhibitor as a treatment for paradoxical reactions, indicating the severity of the immune response.

Conclusion: As clinicians we must be vigilant to the increasing number of patients at risk of tuberculosis as a result of TNFα inhibition, and to the varied way in which disease may present in this patient cohort. We have to be aware of rising rates of drug- and multi-drug resistant cases, and infections from other *M. tb* complex pathogens, such as *M. bovis* – as these cases are intrinsically pyrazinamide resistant.

P43

A look-back review of borderline Hepatitis A IgG results from a 4-year period

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Background: A look-back review is a process initiated where a number of people have been exposed to a specific hazard in order to identify if any of those exposed have been harmed and what needs to be done to take care of them. In 2018, 2 patients of St. James's hospital developed acute Hepatitis A infections despite previous serological testing showing immunity. These two patients were found to have Hepatitis A IgG results just above the threshold for immunity as per the guidance of the test's manufacturer. As a result of this occurrence, an audit of all Hepatitis A IgG tests performed in St. James's Hospital between 2014 and May 2018 was undertaken. Those with borderline results were to be offered Hepatitis A vaccination.

Methods: A retrospective audit was undertaken of all Hepatitis A IgG serological tests performed over a 4 year period (2014-2018) at St. James's Hospital. All serological tests that showed borderline immunity (Hepatitis A IgG weakly positive) were identified. Results belonging to patients of the Genito-urinary medicine and Infectious Diseases (GUIDe) department's HIV, Hepatitis and STI clinics were further analysed.

Results: 419 individual test results showed borderline immunity to Hepatitis A. 157 of these results belonged to GUIDe patients. 146 individual patients were identified after discounting private patients, deceased patients, those immune on repeat testing and duplicate results. 116 (80%) patients were deemed to be high risk due to having either HIV and/or Hepatitis B/C infection (n=58, 40%) or being identified as MSM or unknown risk (n=58, 40%). 30 patients (20%) were deemed to be heterosexual and at low risk.

By January 2019, 60 patients (41%) had commenced vaccination, 13 patients (9%) had completed vaccination, 13 (9%) had DNA'd vaccine appointments, 9 (6%) had declined vaccination, 8 (5%) preferred to attend elsewhere for vaccination, 3 (2%) were awaiting vaccination appointments, 1 (1%) RIP and 1 (1%) deferred their vaccination. 38 (26%) of patients were uncontactable by phone or mail.

Conclusion: Most patients affected have been informed of their results and have had the opportunity to avail of vaccination. However, a significant proportion of patients have been uncontactable by phone or letter, raising discussion about the need to record email addresses as part of demographic data collection. As a result of the events leading to this look-back process, the serology laboratory of St. James's Hospital now use a higher reference range to signify immunity to Hepatitis A.

P44

HPV vaccination rates and demographic breakdown of the HIV positive MSM cohort attending St. James's Hospital

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Background: Human papillomavirus is the most common STI in the world. 90% of people worldwide will be infected by it throughout their lifetime. More than 80% of anal cancer is caused by infection from HPV. Anal cancer is relatively rare in the general population, however, HIV-positive MSM have more than 50 times the risk. The HPV vaccine has the potential to prevent HPV infection and associated cancers. HPV vaccination was introduced in Ireland in 2010. In September 2018, it was extended to all MSM up to and including 45 years of age. This audit aims to look at the demographics of the HIV positive MSM cohort attending St. James's Hospital and examine HPV vaccination rates.

Methods: A retrospective audit was undertaken of all patients attending the HIV clinics of St. James's Hospital in 2018. HPV vaccination data from 2014 to 2018 was also accessed.

Results: 2,534 patients attended the HIV clinics of St. James's Hospital in 2018. 1,217 patients (48%) were MSM. Regarding MSM patients, the average length of time that they had been attending the clinic was 6.7 years (range 0.2 – 32.2 years). The average age at their most recent clinic visit 41.3 years and the average age at their first clinic attendance was 35 years. The most common regions of origin of patients was Ireland n=598 (49%), followed by South America n=262 (22%) and Europe n=250 (21%). Patients from South America had the shortest average duration of clinic attendance (2.9 years). 825 patients (68%) were aged 45 years or less at their last clinic visit and therefore eligible for HPV vaccination. Of these 825 patients, 255 (31%) patients had commenced HPV vaccination, 127 (15%) had received 2 HPV vaccines and 61 (7%) were fully vaccinated. A greater proportion of patients 26 years old or less have received at least 1 HPV vaccine (66%) compared to patients aged between 2 and 46 years of age (28%).

Conclusion: This audit highlights the changing demographic of MSM patients attending the HIV clinics of St. James's Hospital with a greater proportion of patients from South America presenting in recent years. Over two thirds of MSM patients attending the clinic are eligible for HPV vaccination following the recent NIAC HPV vaccination guideline change in late 2018. Almost a third of eligible patients have commenced HPV vaccination. Additional education on HPV infection and vaccination eligibility among both patients and providers will increase vaccination coverage further.

P45

An audit of Influenza vaccine uptake among HIV positive and Hepatitis patients of the Genito-Urinary Medicine and Infectious Diseases (GUIDe) Department at St. James's Hospital during the 2018-2019 flu season

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Background: Over 2,500 patients attend the outpatient clinics of the St. James's Hospital GUIDe department every year for their HIV and Hepatitis treatment and care. Influenza vaccination is a crucial part of routine care for patients with chronic illnesses, especially Hepatitis and HIV. The GUIDe department has dedicated vaccination nurses and operate a SMS text-alert system for clinic patients when the influenza vaccine is available. The GUIDe department has separate clinics for HIV patients, HIV and Hepatitis co-infected patients and for patients in need of assertive engagement. This audit aims to look at the rates of vaccination among outpatients attendees of GUIDe during the 2018-2019 flu season.

Methods: This is a retrospective audit of vaccination rates among GUIDe clinic outpatients. The vaccination status of each patient attending GUIDe OPD clinics was recorded in their electronic patient record at each clinic visit. These data were collated by our data manager and analysed using Microsoft excel.

Results: The 2018/2019 influenza vaccination became available to patients of GUIDe in late September 2018. Results were collected from 25th September 2018 to date. From September 25th to February 12th, there were 2,975 individual patient visits to the clinics. During this time, 65% of patients (n=1946) received the influenza vaccination at the GUIDe clinic with 10% (n=299) receiving the vaccine elsewhere. 4% of patients (n=97) declined vaccination. 1% of patients (n=20) deferred their vaccination. 4% (n=104) were referred for vaccination but didn't present to the vaccine nurse for vaccination. 4 patients attended clinic but did not wait to be seen. 1 patient reported a previous influenza vaccine allergy and wasn't vaccinated. The vaccine status of 7 patients was unclear. 9% (n=256) were not referred for vaccination.

Conclusion: To date, 82% of clinic attendees received the influenza vaccination at the GUIDe clinic or reported receiving it elsewhere during the 2018-2019 influenza season. While these results are encouraging, a significant amount of patients were not referred for vaccination at all. More can be done to increase our vaccination rates further.

P46

An audit of immune status and vaccination among newly attending patients of a large HIV clinic in Ireland in 2017

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Background: The HIV positive patient cohort of the Department of GU Medicine and Infectious
Diseases (GUIDe) St. James's Hospital is the largest in Ireland. 2,387 patients attended the clinic in
2017. In 2017 there were 254 new patients (both newly diagnosed and transfers with established diagnosis). As vaccination is essential in HIV care provision, an audit of immune status and
vaccination practices for all newly attending HIV positive patients at our clinic was undertaken.

Materials/methods: We performed a retrospective analysis of all new patients attending GUIDe in 2017. Data were collected using the Electronic Patient Record System (EPR).

Results: There were 254 newly attending patients. Data analysis is ongoing. Of the data analysed to date, 20% of patients had CD4 counts less than 200 cells/mm3 and 47% had HIV viral loads <200 copies/ml on presentation. 20% were Measles IgG negative, 20% were Mumps IgG negative, and 14% were Rubella non-immune. 8% were varicella non-immune. 36% were non-immune to Hepatitis A on presentation. 3% had chronic Hepatitis B. 56% had Hepatitis B surface antibody levels less than 10 international units per ml. Regarding vaccination, 78% of patients received the influenza vaccine. 64% received PCV13vaccination and 42% received PPV23 vaccine. 39% of patients received pneumococcal vaccination in a boost and prime manner with PCV13 followed by PPV23. 24% of patients were under the age of 27 on presentation and therefore eligible to receive HPV vaccination. 33% of those eligible received all 3 HPV vaccinations, 7% of patients received 2 vaccines and 21% patients have received 1 vaccine. 8% of all patients have received MMR vaccination. 0 patients have received varicella vaccination. 57% of non-immune patients have completed Hepatitis A vaccination. 51% of patients have received at least 1 dose of Hepatitis B vaccine.

Conclusions: This audit highlights how many of our patients are susceptible to vaccine preventable infections of significant clinical importance if acquired in adult life. Non-immune patients who are eligible for vaccination are being recalled. Targeted education of prescribers will help to increase our prescribing rates. Introduction of prescheduled electronic vaccination prescription in 2018 will ensure improved vaccine receipt.

PHARMACOLOGY & THERAPEUTICS

P47

A retrospective audit of intravenous to oral antimicrobial switches and change of treatment with culture results

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Background: Antibiotic stewardship programmes are vital for improving patient outcomes, reducing adverse events and antimicrobial resistance. Local and international guidelines recommend switching to oral antimicrobials when clinically appropriate and changing antibiotics in accordance to culture results.

Methods: A retrospective chart review was undertaken of in-patients prescribed antimicrobials in November 2018 across three wards. The standard used was the hospital antimicrobial stewardship guideline which advises intravenous to oral switch at 48-72 hours and switching with reference to any culture results. Exceptions to the oral switch are (i) Nil by mouth/concern regarding absorption, 2) Special

infections such as *Staphylococcus aureus* bacteraemia, osteomyelitis/septic arthritis, endocarditis or central nervous system infection, 3) Lack of clinical improvement/ deterioration, 4) Other clearly documented indication. Data on indication, route, timing of intravenous to oral switch, drug choice and culture results were collected Documented failures to switch from intravenous to oral antimicrobials at 48 to 72 hours were noted and assessed against hospital antimicrobial stewardship guidelines. Intravenous treatment beyond 72 hours and not meeting set criteria were deemed inappropriate. Antimicrobials not modified with availability of culture results and no clear documentantion of reasons why were also deemed inappropriate.

Results: 107 drug charts were reviewed, 58 involved antimicrobial prescriptions of which 52 were intravenous. The most common indication for treatment was respiratory tract infection in 65% (38/58) followed by urinary tract infection in 15% (9/58). Of the 52 uses of intraveous antibiotics only 34% (18/52) were appropriately switched to oral within 48-72 hours, 38% (20/52) of which were deemed not appropriate. Reasons identified for not completing appropriate switches included: switches that were due over the weekend, patients on piperacillin/tazobactam and charting errors. No reason was identified in 40% (8/20). There were 11 patients in the cohort who had positive culture results and 5 of these did not have appropriate antimicrobial change (45%). Urine culture results were the most likely to be overlooked There were only 3 patients in whom intravenous formulations of highly bioabsorbale antibiotics were used despite clinical stability

Conclusion: While there were few uses of intravenous formulations of highly bioabsorbable antibiotics, a large proportion of patients did not have a timely intravenous to oral switch at 48-72 hours or de-escalation to narrower spectrum antimicrobials with culture results. These findings will help direct antimicrobial stewardship team led interventions.

P48

Impact of a pharmacist-led vancomycin TDM service

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Background: Vancomycin remains a challenging antibiotic to manage in relation to dosing and monitoring. Previous audits inhouse suggested the need for a defined therapeutic drug monitoring (TDM) service[1,2] Pharmacist led TDM studies have shown benefits in terms of patient & financial outcomes[3-5] A pilot TDM service led jointly by the AMS and infectious disease pharmacists was thus trialled over a 4 week period.

Methods: Our objectives were to assess the feasibility and uptake of recommendations of a pharmacist-led TDM service & as a secondary objective to assess the impact of the newly implemented electronic system on vancomycin prescribing. Patients prescribed vancomycin during the pilot period were accessed via electronic prescribing system. Electronic TDM recommendation notes were documented & team/nurse contacted via phone when required. Patients were reviewed in a virtual clinic on a Wednesday and followed up later that week.

Results: A total of 42 patients were reviewed with a total of 49 recommendations documented. TDM recommendations were followed in 37 out of 49 recommendations (76%). Of the cases that were not followed; 8 (16%) were no longer applicable as vancomycin had been stopped; a total of 4 recommendations were not followed. Trough levels within range increased from 58% to 76% post TDM intervention. With regard to the impact of the electronic health record (EHR) on Vancomycin prescribing, 67% of patients were already on appropriate vancomycin therapy as per guidelines– higher than previous inhouse audit (51%)3. Loading doses had been given in 18 (43%) of cases-higher than previous audit3. The documented indication for vancomycin in case notes matched the EPR indication in 32 (76%) of cases. Only 4 cases out of 42 had overdue trough levels and trough levels timing were correct in 24 of 26 trough levels taken.

Conclusion: Uptake of the pharmacist TDM recommendations was high & had a positive impact on prescribing of vancomycin. The implementation of the EHR & access to guidelines at point of prescribing has appeared to improve vancomycin prescribing in our hospital.

P49

The Impact of Intensive Vancomycin Stewardship in a Large Tertiary Hospital

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Background: Vancomycin is recommended for treatment of proven or suspected MRSA infection, or as therapy for some patients with a severe penicillin allergy. Vancomycin consumption in this hospital has increased in recent years and is above the national median. A recent hospital-wide point prevalence study showed that it was the third most-commonly prescribed antibiotic (9% of all antibiotic prescriptions). Vancomycin resistant enterococci bloodstream infection (VRE BSI) rates are higher than the national average (71% versus 40% national VRE BSI in 2017).

The initial phase of this audit of vancomycin was performed in late 2018 and identified that 68% of vancomycin prescriptions were in keeping with the guidelines, but that 82% of prescriptions contained at least one error in vancomycin management. On review of these results, the Antimicrobial Stewardship Team planned an intervention and significantly increased vancomycin-specific antimicrobial stewardship over a four week period in an effort to increase appropriate vancomycin prescribing and to curb the rise in vancomycin consumption, close the loop on the audit, and investigate the resource implications of same.

Method: For the intervention period, all adult inpatients on vancomycin were reviewed (excluding those on haemodialysis) over a four week period in January and February 2019. Intensive vancomycin stewardship consisted of daily (Mon-Fri) review of vancomycin assay results and advice on dose optimisation by pharmacists, and twice-weekly focused stewardship rounds by the Antimicrobial Pharmacist with the Infectious Diseases team to review need for continued therapy. Information was collected on indication, dosing, duration, therapeutic level monitoring and appropriateness of therapy, as well as interventions made during the study

period. Data was analysed using Microsoft Excel.
Results: 98 patients were reviewed over the four week intervention period. 114 interventions on dosing and level monitoring were made during this period, with 99% accepted, and 32 interventions recommending discontinuation of therapy, with 91% of interventions accepted. The overall appropriateness of use increased significantly during the intervention phase compared to the control period, from 18% to 79%. The consumption of vancomycin reduced by 7.7% during the study period. The time taken for the interventions equated to 0.5 WTE pharmacist per week, and three hours of the Infectious Diseases team clinical time per week.
Conclusion: Vancomycin prescribing and monitoring is a complicated process involving multidisciplinary management. The benefit of continuous interventions was demonstrated in this study, with a significant improvement in appropriateness of use and a decrease in vancomycin consumption. Sustaining appropriate vancomycin use requires considerable antimicrobial stewardship resources on a continuous basis, and rolling education of nurses and doctors is also necessary and an identified priority for the antimicrobial stewardship team for 2019.

P50
HIV Replication at <40c/mL for DTG+3TC Vs DTG+TDF/FTC in the GEMINI 1&2 Studies

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Background: GEMINI-1&2 studies in treatment-naive adults with screening HIV-1 RNA ≤500,000c/mL showed dolutegravir+lamivudine (DTG+3TC, 2DR) was noninferior to dolutegravir+tenofovir disoproxil fumarate/emtricitabine (DTG+TDF/FTC, 3DR) at Week 48 by FDA snapshot; 91% (655/716) in the 2DR group versus 93% (669/717) in the 3DR group achieved HIV-1 RNA <50c/mL. Abbott RealTime HIV-1 assay measures viral load (VL) from 40 to 10,000,000c/mL and provides qualitative target detected (TD) or target not detected (TND) for VL<40c/mL. Clinical and subject management implications of more stringent low-level VL data need clarification. We assessed the proportion of participants with TND over time and by baseline VL for 2DR versus 3DR.
Methods: Subjects were randomised 1:1 to 2DR or 3DR. Proportion of subjects with HIV-1 RNA <40c/mL and TND status at Week 48 was analysed using a Cochran-Mantel-Haenszel test stratified by plasma HIV-1 RNA (≤100,000 vs >100,000c/mL) and CD4+ cell count (≤200 vs >200 cells/mm3) at baseline. Proportion of subjects with TND status were summarised by visit and at Week 48 by baseline HIV-1 RNA subgroup. Time to plasma HIV-1 RNA <40c/mL and TND status overall and by baseline HIV-1 RNA subgroup were estimated using nonparametric Kaplan-Meier method.
Results: At Week 48 similar proportions of subjects had snapshot TND in the 2DR and 3DR arms (77% [553/716] vs 73% [525/717]; adjusted difference, 3.8%; 95% CI, −0.6% to 8.2%). Proportions were similar at Weeks 4 (34% vs 32%), 8 (52% vs 49%), 12 (60% vs 57%), 16 (59% vs 56%), 24 (65% vs 63%), and 36 (65% vs 68%). Response rates were similar in subjects with baseline VL ≤100,000c/mL and higher in 2DR vs 3DR subjects with baseline VL >100,000c/mL (64% [90/140] vs 52% [79/153]; adjusted difference, 12.7; 95% CI, 1.4-23.9), with a similar trend in higher VL strata. Median time to TND for 2DR vs 3DR was 57 days for both overall, 57 days for both for baseline ≤100,000c/mL strata, and 113 days vs 169 days for baseline >100,000c/mL subgroup, respectively.
Conclusions: DTG/3TC and DTG+TDF/FTC had similar proportions of snapshot TND at all weeks. Snapshot response rates based on TND status at Week 48 were similar between arms for baseline ≤100,000c/mL subgroup and higher for DTG/3TC for baseline >100,000c/mL category. Median time to TND was similar overall and in baseline ≤100,000c/mL subgroup and less for DTG/3TC vs DTG+TDF/FTC if >100,000c/mL at baseline. These data, utilizing more stringent snapshot criteria, demonstrate the effectiveness and potency of DTG+3TC in treatment-naive subjects.

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