Atlantic Corridor
Medical Student
Research Conference

University College Cork
University of Galway

Atlantic Corridor Medical Student Research Conference 2024

Brookfield Health Sciences Complex
University College Cork

November 8th, 2024

UCC | School of **Medicine**
University College Cork, Ireland
Coláiste na hOllscoile Corcaigh

OLLSCOIL NA GAILLIMHE
UNIVERSITY OF GALWAY

WELCOME MESSAGE FROM THE LOCAL ORGANISING COMMITTEE

Dear Friends and Colleagues,

On behalf of the local organising committee, it is an honour to welcome you all to the 10th Atlantic Corridor Medical Student Research Conference. This intervarsity undergraduate research showcase will provide an opportunity to enjoy presentations on a diverse range of clinical and translational medical research projects completed across two of the 'Atlantic Corridor' medical schools – UCC and UG. The programme includes a stimulating mixture of oral and poster presentations, in addition to a plenary lecture by one of Ireland's most prominent clinician scientists.

We hope that all visiting students and staff enjoy the conference programme, as well as the hospitality of UCC staff during the event.

We would like to acknowledge the generous support of UCC School of Medicine's Research & Innovation Committee for providing support for this event.

Thank you to the MEU research staff for joining the organising committee and supporting this event: Dr. Emer Galvin, Dr. Marah Elfghi, Dr. Deborah Heaphy, Ms. Caoimhe O'Brien, Ms. Claudia Osborne and Mr. Rory Mulcaire.

Dr. Colm O'Tuathaigh & Dr. Anél Wiese

Medical Education Unit, School of Medicine
University College Cork

Atlantic Corridor Medical Student Research Conference Schedule 2024

Schedule – At a Glance

	Oral Presentations in Rm 1.02
10:00 – 10:20	Registration & Refreshments (*served in Jennings Gallery*)
10:20 – 10:35	Opening Address
10:40 – 11.55	Oral Presentations I **Session Chairs: Dr Emer Galvin and Claudia Osborne**
11:55 – 12.15	Coffee, *Jennings Gallery*
12:15 – 13:00	**Plenary Lecture – Rm 1.02** **Prof. Emma Wallace** Professor of General Practice & Head of Department, College of Medicine and Health, University College Cork **Title**: Managing multiple long term conditions in primary care: making sense of the evidence
13.00 – 14.00	Lunch & Poster Session, *Rm 1.01*
14.00 – 15.00	Oral Presentations II **Session Chairs: Dr Marah Elfghi and Rory Mulcaire**
15.00 – 15.15	Break*, Jennings Gallery*
15.15 – 16:00	Oral Presentations III **Session Chairs: Dr Deborah Heaphy and Caoimhe O'Brien**

16.00 – 16:20	Prize-giving and Closing Address

Oral Presentations

	Oral Presentations I – Rm 1.02
10:40	**Presenter**: Mark McCarthy, *University College Cork* **Title**: Investigating Metastatic Potential in Papillary Thyroid Microcarcinoma
10:55	**Presenter**: Rayna Cox, *University of Galway* **Title**: Biomaterial-Aided Cellular Brain Repair for Parkinson's Disease: Therapeutic Validation in an Immunosuppressed Model
11:10	**Presenter**: Ihsan Albakri, *University College Cork* **Title**: Prevalence of Masked Hypertension and White Coat Hypertension in Adult Patients with Chronic Kidney Disease when Evaluated by 24-hour Ambulatory Blood Pressure Monitoring: Systematic Review and Meta-analysis
11:25	**Presenter**: Maria Thomas, *University of Galway* **Title**: Comparative Analysis of Conventional and Aerosolised Transfection Reagents and Storage Methods for Semi-synthetic mRNA Delivery
11:40	**Presenter:** Samin Abrar, *University College Cork* **Title:** Assessing long-term compliance of DAV ratio in prediction of adequately occluded WNBA treated with WEB devices
	Oral Presentations II – Rm 1.02

14:00	**Presenter**: Saniya Kaushal, *University College Cork* **Title**: The Experiences of Imposter Syndrome Amongst Final Year Medical Students: A Qualitative Interview Study
14:15	**Presenter**: Mary Botros, *University of Galway* **Title**: Reproducibility of Magnetic Resonance Spectroscopy measured GABA and GSH in Hippocampus
14:30	**Presenter:** Fodhla Ni Dhalaigh, *University College Cork* **Title:** How do General Practice trainees experience the transition from hospital to general practice: a qualitative study
14:45	**Presenter:** Kevin Lee, *University of Galway* **Title:** In silico Screening and Comparative Profiling of MicroRNAs as Tissue-Specific or Systemic Biomarkers in HER2-Positive Breast Cancer
	Oral Presentations III – Rm 1.02
15:15	**Presenter:** Cathal Smith, *University of Galway* **Title:** Adherence to guidelines for the management of IgA Nephropathy (IgAN) in adults in the West of Ireland
15:30	**Presenter:** Anthony Goodings, *University College Cork* **Title:** Evaluating Physician Attitudes Toward the Use of Tap Water in Colonoscopic Irrigation: Feasibility, Safety, and Barriers to Implementation
15:45	**Presenter:** Faith Lambo, *University of Galway* **Title:** The Screening For and Treatment of Sexually Transmitted Infections In Rural Ireland General Practice

ORAL PRESENTATION ABSTRACTS

O1

INVESTIGATING METASTATIC POTENTIAL IN PAPILLARY THYROID MICROCARCINOMA

McCarthy M.[1], Feeley L.[2], Tuthill A.[3]

University College Cork

Department of Pathology, Cork University Hospital (CUH)

Department of Endocrinology and Diabetes, CUH

Background: PTMCs are papillary thyroid carcinoma nodules measuring ≤1cm. While the 2015 American Thyroid Association (ATA) Guidelines do not recommend biopsy or follow-up for PTMC nodules, classifying it as a benign condition, some individuals develop cervical lymph node metastases (LNM), challenging its benign classification.

Methods: Of 2,000 individuals with thyroid nodules discussed at MDT meetings in Cork University Hospital (CUH) over a 6.5-year cohort, 52 patients with isolated PTMC were identified. Conducting retrospective database review, we stratified patients by presence or absence of LNM, analysing factors associated with metastases using crude tests of association and logistic regression.

Results: Of the 52 patients, 16 (31%) exhibited metastases; 1 (2%) patient exhibited sclerosing metastases to adipose and skeletal muscle tissue, while another demonstrated extra-nodal lymph vascular invasion. 9 (17%) patients with LNM were identified pre-operatively. 7 (13%) patients had incidental PTMC discovery with LNM during surgery for benign conditions. The sizes of metastases ranged from 4mm to 28mm, and the number of positive nodes ranged from 1 to 15. Preliminary crude tests of correlation demonstrated that, nodules ≥5mm, extrathyroidal extension (ETE) and patient age ≤45 years correlated significantly with metastases (p=0.004, p=0.007, p=0.01 respectively). When adjusting for confounding variables through regression analysis, these associations persisted. Furthermore, following this adjustment, a significant association between male gender and metastases was unveiled (OR 6.48, 95% CI 1.11-37.74, p=0.038).

Conclusion: PTMC is a condition possessing malignant potential. Nodules ≥5mm, with extrathyroidal extension in male patients ≤45 years, are more likely to metastasise. Follow-up should be considered for such cases.

O2

BIOMATERIAL-AIDED CELLULAR BRAIN REPAIR FOR PARKINSON'S DISEASE: THERAPEUTIC VALIDATION IN AN IMMUNOSUPPRESSED MODEL

Cox R.[1], Comini G.[2], Crudden S.[2], Patton T.[2], Ryan S.[2], Dowd E.[2]

1 – School of Medicine, University of Galway

2 – Pharmacology and Therapeutics, University of Galway

Background: Induced pluripotent stem cell (iPSC)-derived cell replacement shows promise for Parkinson's disease, yet transplanted cells often struggle to survive. Injectable hydrogels can potentially address this problem by acting as a structural scaffold and neurotrophin reservoir to aid survival. While these beneficial effects have been demonstrated in immunocompromised rats, they were not seen in immunosuppressed rats with one-day cyclosporine preconditioning. This project aimed to determine if the hydrogel could improve the survival of human iPSC-derived dopaminergic neurons in rats with an extended seven-day immunosuppression regime.

Methods: Human iPSC-derived dopaminergic neurons were transplanted into the seven-day cyclosporine-immunosuppressed Parkinsonian rat striatum either alone, with the neurotrophins GDNF and BDNF, in an unloaded collagen hydrogel, or in a neurotrophin-loaded collagen hydrogel. Four weeks after transplantation, immunohistochemistry for human nuclei was performed on the post-mortem tissue to quantify graft survival.

Results: Although quantification of HuNu-positive cells revealed healthy surviving grafts in all groups (iPSCs alone: 29,466 ± 13,683; iPSCs/neurotrophins: 54,140 ± 26,848; iPSCs/hydrogel: 34,772 ± 23,110; iPSCs/neurotrophins/hydrogel: 43,204 ± 25,875) there was no significant beneficial effect of the hydrogel on cell survival at four-week timepoint (Group, $F_{(3, 20)} = 0.22$, $P = 0.88$).

Conclusions: Although beneficial effects of the hydrogel were not seen in this study, the early time-point of four weeks after transplantation may have been too early to observe positive effects on survival, as these grafts require months to mature in the brain. Therefore, further studies are required to determine if this hydrogel approach can be used to improve iPSC-derived brain repair in immunosuppressed transplant recipients.

O3

PREVALENCE OF MASKED HYPERTENSION AND WHITE COAT HYPERTENSION IN ADULT PATIENTS WITH CHRONIC KIDNEY DISEASE WHEN EVALUATED BY 24-HOUR AMBULATORY BLOOD PRESSURE MONITORING: SYSTEMATIC REVIEW AND META-ANALYSIS

Albakri I.[1], Alshami N.[1], Albakri A.[1], Nawar K.[2], Mohammad A.[3], Abdulla M[1]

University College Cork

University of Toronto

Western University

Background: Masked hypertension (MHT) and whitecoat hypertension (WHT) are both harmful to patients with chronic kidney disease (CKD) due to undertreatment and overtreatment respectively, highlighting the need for precise blood pressure monitoring. While clinical blood pressure measurement (CBPM) is commonly used in CKD management, ambulatory blood pressure monitoring (ABPM) offers a more accurate assessment of CKD progression and cardiovascular risk. A 2009 study by Bangash and Agarwal provided an initial estimate of the prevalence of MHT and WHT in adults with CKD. This meta-analysis provides an updated estimate by comparing CBPM to 24-hour ABPM.

Methods: We performed a systematic review and meta-analysis assessing the prevalence and determinants of blood pressure phenotypes using 24-hour ABPM in adults with CKD. Studies were gathered from Academic Search Complete, Medline EBSCO and Medline OVID from January 1, 2000, to September 16, 2024.

Results: Among 10,573 adults with CKD identified in nine studies, the prevalence of MHT was 11% (95% CI 10% to 11%), and WHT was 11% (95% CI 10% to 11%). MHT was 7% (95% CI 7% to 8%) and WHT was 28% (95% CI 27% to 29%) in studies with majority white patients. MHT was 30% (95% CI 28% to 32%) and WHT was 4% (95% CI 3% to 5%) in studies with majority non-white patients.

Conclusions: MHT and WHT remain a challenge in managing adult CKD patients. We found race to be a major determinant of MHT and WHT in adults with CKD.

O4

COMPARATIVE ANALYSIS OF CONVENTIONAL AND AEROSOLISED TRANSFECTION REAGENTS AND STORAGE METHODS FOR SEMI-SYNTHETIC MRNA DELIVERY.

Thomas M.[1], McCarthy S.D.[1,2,3], Laffey J.G.[1,2,3], O'Toole D.[1,2,3]

1- School of Medicine University of Galway

2- SFI Centre for Medical Devices (CÚRAM), University of Galway

3- Regenerative Medicine Institute (REMEDI), University of Galway

Background: Semi-synthetic mRNA technology shows significant potential in vaccine development as highlighted by the COVID-19 pandemic. However, efficient in vivo delivery of mRNA remains a challenge. Various delivery methods have been explored with lipid nano particles (LNPs) emerging as the most efficacious. Additionally, aerosolisation of therapeutics offers numerous advantages such as direct, non-invasive access to pulmonary tissues. This study compares the efficiency of different lipid-based transfection

reagents administered via conventional and aerosolised methods and evaluates the impact of storage conditions.

Methodology: A549 epithelial cells were cultured at 37 °C and 5% CO2 until 80% confluency. Cells were seeded in 96-well plates and incubated for 24 hours. Subsequently, 10 test transfection reagents (FactorBioscienceLtd.) and control Lipofectamine3000 (ThermoFisher) were complexed with GFP mRNA as per manufacturer instructions and applied to cells in both non-aerosolised and aerosolised forms. Another set of the same 11 reagents was lyophilised, and a separate set was snap frozen and stored at -80°C for 4 weeks before application to cells. Transfection efficiency was assessed after 24 hours using fluorescent microscopy and flow cytometry. Statistical analysis was performed using SPSS.

Results: Lyophilisation did not yield GFP expression. Fresh transfection complexes resulted in a mean (SD) GFP signal of 69.98% (25.31) for non-nebulised and 28.76% (12.06) for nebulised samples, with a statistically significant difference (p-value = 6.9x10-10). For snap-frozen complexes, the mean (SD) GFP signal was 62.83% (16.42) for non-nebulised and 56.15% (16.69) for nebulised samples, with a non-significant difference (p-value = 0.19). The difference between non-nebulised fresh and snap-frozen samples of 7.15% was not significant (p-value = 0.25). However, the difference between nebulised fresh and snap-frozen samples was significant (27.39%, p-value = 3.5x10-6).

Conclusions: Semi-synthetic mRNA encoding GFP successfully expressed the GFP protein. Snap freezing proved effective for storage, whereas lyophilisation did not. Although aerosolisation generally reduced transfection efficiency, this effect was less pronounced in snap-frozen samples. These results suggest that new formulations are promising for delivery reagents, and future research should focus on optimising reagent concentrations and nebuliser dosing to improve transfection outcomes.

O5

ASSESSING LONG-TERM COMPLIANCE OF DAV RATIO IN PREDICTION OF ADEQUATELY OCCLUDED WNBA TREATED WITH WEB DEVICES

Abrar S.[1], Sai Popuri R.[1], John Ryan D.[1], Fanning N.[1]

University College Cork

Background: Wide-neck bifurcation aneurysms (WNBAs) pose endovascular treatment challenges. The Woven-Endo Bridge (WEB) addresses these, yet complete occlusion remains elusive. Two-dimensional sizing inadequacies prompt exploration of the Device-to-Aneurysm Volume (DAV) ratio. While short-term occlusion prediction is established, long-term implications are understudied. This research aims to correlate DAV ratio with long-term occlusion, potentially contributing WEB sizing precision through advanced imaging and machine learning.

Aims: 1. Compare CUH's occlusion rates with current European reports 2. Assess DAV ratio's predictive value across three follow-up periods using logistic regression 3. Determine the optimal DAV ratio at each follow-up

Methods: Three follow-up periods (10-14, 20-26, 32-38 months) were defined. Retrospective (2015-2021) and prospective (2021-2023) data were combined. The Beaujon occlusion scale was used to determine if the occlusion was adequate (score: 0-2) or inadequate (score: 3). Chi-squared and ANOVA assessed demographic differences. Individual binary logistic regression modelling was carried out at each of the follow-up visits using demographics, common aneurysm characteristics (volume, size, neck), and DAV ratio as predictors. The optimal DAV ratio at each of the three periods was calculated through ROC analysis and cost-sensitive thresholding.

Results: Sixty, forty-eight, and twenty-nine subjects were included for the first, second, and third follow-up periods, respectively. Adequate occlusion rates were 81.67%, 85.42%, and 72.41%. No age or gender differences were found. DAV ratio significantly predicted occlusion at the 1st (OR = 19.058, p = 0.046) and 3rd (OR = 57.187, p = 0.047) periods but not the 2nd (OR = 8.176, p = 0.200). Optimal DAV ratios were 0.762, 0.749, and 0.887 for the three periods.

Conclusions: CUH's occlusion rates align with current European reports. This study is the first of its kind to assess DAV as a predictor of occlusion status at follow-up beyond 18 months, giving estimated optimal ratios which correlated well with prior papers that investigated short-term follow-ups. The findings support the

utility of DAV as a predictor for future machine learning models (alongside radiomics and computational-fluid-dynamics) that converge on the optimal WEB size for each patient – i.e. a step towards precision medicine.

THE EXPERIENCES OF IMPOSTER SYNDROME AMONGST FINAL YEAR MEDICAL STUDENTS: A QUALITATIVE INTERVIEW STUDY

Kaushal S.[1], Wiese A.[1]

University College Cork

Background: Imposter syndrome (IS) involved individuals feeling out of place and unworthy of their perceived competence and knowledge. They attribute their achievements to error and luck, making them feel like imposters among those who have earned their positions. This adversely affects their well-being, causing shame and inadequacy. Medicine is often described as a breeding ground for IS due to the continuously expanding knowledge base that medical students and physicians must keep up with.

Aim: This qualitative study aims to investigate the experiences of imposter syndrome among final-year medical students at University College Cork using semi-structured interviews.

Method: An email was sent to all UCC final-year medical students with information about this study, inviting them to contact the researcher if interested in participating. Students were then selected based on purposeful sampling. Each participant gave written consent to participate. Interviews were recorded, transcribed, and analyzed using Thematic Analysis by Braun and Clarke.

Results: Participants reported that their experiences of imposter syndrome were triggered by starting new tasks, evaluation periods, group comparisons, and managing large volumes of information. This affects both their personal and professional lives, inducing self-doubt, guilt, and fear. These feelings can negatively impact confidence and performance. Participants attempted to overcome IS through perseverance, positive affirmations, and reflecting on past successes to build confidence.

Conclusion: Imposter syndrome is common among medical students and is often triggered by evaluation periods and group settings. It is associated with feelings of inadequacy and self-doubt. Targeted IS support could greatly benefit students emotionally and academically.

REPRODUCIBILITY OF MAGNETIC RESONANCE SPECTROSCOPY MEASURED GABA AND GSH IN HIPPOCAMPUS

Botros M.[1], DeMayo M.[2], Harris A.[2], Mikkelson M.[3], Bell T.[2], Federico P.[2], Mosher V.[2], Antis G.[2]

1- University of Galway

2- University of Calgary, Canada

3- Department of Radiology, Weill Cornell Medicine, New York, NY, United States

Background: Single voxel magnetic resonance spectroscopy (MRS) utilizes MRI scanners to non-invasively measure brain metabolites in specific regions. Gamma-aminobutyric acid (GABA), the brains primary inhibitory neurotransmitter, and glutathione, an antioxidant, are involved in various diseases and are of interest to researchers. However, measuring these metabolites with MRS is challenging due to their low concentrations and signal overlap from more abundant metabolites, especially in regions like the hippocampus, where B0 inhomogeneities arise from its anatomical position. HERMES, a newer editing technique, allows for shorter acquisition times and simultaneous quantification of both metabolites. Its reproducibility must be validated before clinical adoption. This study evaluates the reproducibility of GABA and glutathione in the hippocampus using HERMES-sLASER.

Methods: Data was collected from 15 volunteers using a 3T GE scanner and HERMES-sLASER sequence. The voxel was placed in the left hippocampus (25 x 40 x 25 mm), and two separate scans were performed, with

participants removed and re-setup between acquisitions. Data was processed using Osprey toolbox. Reproducibility was assessed using the coefficient of variance (CV) between both scans.

Results: We achieved a CV of 12.2±8.8% for GABA+ and 22.4±11.0% for glutathione. Correlations of tissue between scans 1 and 2 were: (cerebrospinal fluid: r=0.723, p=0.001), (white matter: r=0.626, p=0.006), (gray matter: r=0.694, p=0.002).

Conclusion: Data suggests that HERMES-sLASER provides reproducible measures of GABA and glutathione in the hippocampus. Reduced scan time benefits individuals who struggle with longer MRI sessions. Given the significance of GABA and glutathione in the hippocampus, reliable measurement of these metabolites is crucial for advancing neurological research.

O8

HOW DO GENERAL PRACTICE TRAINEES EXPERIENCE THE TRANSITION FROM HOSPITAL TO GENERAL PRACTICE: A QUALITATIVE STUDY.

Ni Dhalaigh F.[1], O'Neill A.[2], Foley T.[3], Daly O.[2], Martin M.[2], McHugh H.[2], Jennings A.[3]

University College Cork

Cork GP Training Scheme

UCC Dept. of General Practice

Background: Specialist training in General Practice in Ireland incorporates both hospital and community-based training. The transition from hospital medicine to General Practice (GP) can be a challenging experience and has yet to be explored in research to date. This study provides insight into GP trainees' experience of this crucial professional transition.

Aim: The aim of this study was to explore GP Registrars' experiences of moving from hospital medicine to General Practice.

Methods: This is a qualitative study. An initial in-person focus group was carried out with fourth year GP Registrars. The results of this focus group informed the development of a topic guide for subsequent one-to-one semi structured interviews with third- and fourth-year GP Registrars from thirteen GP Training Schemes nationally. 15 interviews in total were recorded, transcribed, and analyzed. Data was analyzed using reflexive thematic analysis (Braun and Clarke).

Results: The evolving role of the trainer in supporting the transition was highlighted, as was the trainers' role in navigating clinical uncertainty and in shaping the participants' professional identities. Participants described the contributions of hospital rotations, scheme-directed teaching, and peer support to the development of clinical confidence and autonomy. The nuances of challenges such as time pressure and increased clinical responsibility were discussed. These challenges were exacerbated by the pressure of clinical decision-making and a lack of confidence in applying this judgement in the community setting.

Conclusion: The results of this study will inform the development of improved structures to support GP trainees in their transition from hospital to community-based practice.

O9

IN SILICO SCREENING AND COMPARATIVE PROFILING OF MICRORNAS AS TISSUE-SPECIFIC OR SYSTEMIC BIOMARKERS IN HER2-POSITIVE BREAST CANCER

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2- Discipline of Surgery, Lambe Institute for Translational Research, University of Galway, Ireland

3- University of Galway, School of Medicine

Background: HER2-positive breast cancer is an aggressive subtype of breast cancer with a need for reliable biomarkers to enhance diagnosis and treatment outcomes. MicroRNAs (miRNAs) have emerged as promising

biomarkers due to their role in gene regulation and cancer pathogenesis. This study aims to identify and validate differentially expressed miRNAs in both tumour tissue and matched plasma of HER2-positive breast cancer patients, potentially serving as biomarkers for disease detection, monitoring, prognosis and therapeutic targets.

Methods: The miRNA expression data was obtained from datasets TCGA for tissue samples and GEO for plasma samples along with manual literature findings. Differential expression analysis was conducted using R programming, and overlapping miRNAs between tissue and plasma were identified. Tissue and plasma samples were collected from 7 HER2-positive breast cancer patients and 3 healthy controls. RNA was extracted, followed by cDNA synthesis and real-time PCR to quantify miRNA expression levels from the samples. ΔΔCt values were calculated to compare expression levels relative to control samples.

Results: Three key miRNAs were identified based of data analysis and the literature review: hsa-miR-X, hsa-miR-Y, and hsa-miR-Z. Hsa-miR-X showed slight downregulation in HER2-positive tissues with stable expression in plasma, suggesting its potential tumour-suppressive role localised within the tumour microenvironment. Hsa-miR-Y was downregulated in both tissue and plasma, indicating its systemic involvement in HER2-positive breast cancer and potential as a circulating biomarker. Hsa-miR-Z was upregulated in tissues but significantly reduced in plasma, highlighting its role in cancer progression and its potential as a tissue-specific biomarker.

Conclusion: This study identifies miR-X, miR-Y, and miR-Z as key miRNAs involved in HER2-positive breast cancer, with potential applications as biomarkers. The differential expression patterns between tissue and plasma underline the importance of considering both sample types in biomarker discovery, contributing valuable insights into the molecular mechanisms of HER2-positive breast cancer.

O10

ADHERENCE TO GUIDELINES FOR THE MANAGEMENT OF IGA NEPHROPATHY (IGAN) IN ADULTS IN THE WEST OF IRELAND

Smith C.[1], Griffin M.[2]

1 - *University of Galway*

2 - *Galway University Hospital*

Background: IgA nephropathy (IgAN) is the most common glomerulonephritis and can progress to kidney failure requiring dialysis or kidney transplant. Currently treatments may slow progression but do not fully halt disease. This project aimed to determine the clinical spectrum and adherence to guidelines among patients attending the GUH for treatment of IgAN. The study results will help to understand the frequency of patients with need for novel therapies.

Methods: In this cross-sectional, retrospective study, medical records of all patients attending GUH Nephrology Clinics with biopsy-proven IgAN from 6/23 to 7/24 were reviewed. Dialysis and kidney transplant patients were excluded. Data collected included demographics and most recent blood pressure, serum creatinine, eGFR, uPCR and/or uACR, treatment type and related adverse events.

Results: 84 patients with biopsy-proven IgAN were identified. 18 patients (21.4%) were on no medication. For renin-angiotensin system (RAS) blockade, 20 (23.8%) were prescribed low dose, 25 (29.7%) medium dose and 21 (25%) high dose. 30 (35.7%) were on dual therapy with an SGLT2 inhibitor. Inadequate control of proteinuria, as defined by uPCR >50mg/mmol and/or uACR >30mg/mmol, was present in 29 patients (34.5%). For 15 of these (51.7%), the potential to increase RAS blockade dose and/or introduce SGLT2i was identified. The remaining 11 were on maximum RASi and SGLT2i and, therefore, may be candidates for future clinical trials of emerging therapies.

Conclusion: International treatment guidelines, were adhered to in a proportion of patients with biopsy-proven IgAN but there is scope for increased use of available therapies as well as patient enrolment in clinical trials.

O11

EVALUATING PHYSICIAN ATTITUDES TOWARD THE USE OF TAP WATER IN COLONOSCOPIC IRRIGATION: FEASIBILITY, SAFETY, AND BARRIERS TO IMPLEMENTATION

Goodings AJ.[1], Anderson H.[1], Chhor A.[2], Kajistani S.[1], Pastrak M.[1], Eustaeryan AM.[3]

1 - *University College Cork*

2 - *University of Ottawa*

3 - *Tipperary University Hospital*

Background: In the context of increasing focus on sustainability in healthcare, this study investigates the feasibility and acceptance of using tap water for colonoscopic irrigation, as an alternative to sterile water. We aim to explore attitudes towards safety, cost-effectiveness, and environmental impact among endoscopy-performing physicians.

Methods: A cross-sectional survey was conducted with 33 endoscopy-performing physicians. The survey assessed professionals' views on the viability, safety, and implementation of tap water for colonoscopic irrigation, along with perceived barriers and guidelines.

Results: The majority (97%) of respondents believe that tap water is a viable alternative to sterile water for colonoscopic irrigation, and 94% expressed interest in implementing this practice. Despite the positive outlook, 75% of participants identified a lack of clear guidelines, and an equal percentage highlighted policy barriers as hindering the widespread adoption of tap water. Notably, 71% of respondents had no safety concerns about using tap water. However, 58% reported never having encountered a discussion on the topic within their practice, signaling a need for increased awareness and discourse.

Conclusion: These findings suggest that while there is strong interest in the use of tap water for colonoscopic irrigation, its adoption is limited by the absence of clear guidelines and policy support. Addressing these barriers could facilitate the transition to more sustainable endoscopic practices.

O12

THE SCREENING FOR AND TREATMENT OF SEXUALLY TRANSMITTED INFECTIONS IN RURAL IRELAND GENERAL PRACTICE

Faith Lambo [1], Angela Kearns [1,2], Fiona Kyne [1,2]

1 - *University of Galway*

2 - *Mayo University Hospital*

Background: Sexually transmitted infections (STIs) present a significant public health challenge, and their prevalence in Ireland is rising [1]. The role of general practitioners (GPs) is critical in the detection and management of STIs [2]. However, there is limited understanding of the experiences and practices of GPs regarding STI screening and treatment, especially since the introduction of the national home STI testing service (SH24) in 2022 [3,4]. The aims of this study are to evaluate the indications for STI screening and assess the level of confidence in treating common STI's in General Practice (GP). Also, to examine the impact of SH24 on STI presentations to GPs for screening & management.

Methods: A quantitative Microsoft Forms survey was distributed to 93 individual General Practitioners who are members of the Mayo GP's WhatsApp group in May 2024. This 14-question survey focused on STI screening and management. Quantitative data was analysed using descriptive statistics.

Results: The response rate was 58% (54/93). The main indications for GPs screening were patient requests (92%), symptoms (89%) and high-risk behaviours (76%). Most GPs were confident in treating Chlamydia (90.7% 48/54). However, the confidence was lower for treating Genital warts (53.8%), Genital Herpes (62.5%) &

Gonorrhoea (45.3%). Over 61% of GP's have recommended the SH24 home testing to patients. Since SH24's introduction, 30% of GP's noted a reduction in attendance for STI screening, and 38% of GP's have treated a positive SH24 result.

Conclusion: The study highlights that while a significant majority of GPs are confident in treating Chlamydia, their confidence diminishes for other sexually transmitted infections. Increased education on STI management in general practice is essential, and home testing kits have proven beneficial for screening, warranting further research to evaluate their effectiveness.

	Poster Presentation **Rm 1.01**
P1	**Title:** Make hay while the sun shines: beliefs and behaviours towards UV exposure in Irish farmers. **Author(s):** Cronin D., Murphy M. O'Connor C.
P2	**Title:** Development of an active drug delivery device to improve drug distribution at glioblastoma tumour section sites **Author(s):** Reidy C., Wallace E., Duffy G.
P3	**Title:** Preparedness of Medical Students for the Safe Prescription of Opioids **Author(s):** Uniacke-Lowe S., O'Donnell B.
P4	**Title:** Management of Patients with Cystic Fibrosis Related Diabetes in Galway University Hospital **Author(s):** Nolan A., Reddington L., Dinneen S., O'Keeffe D.
P5	**Title:** Effects of opioid-free versus conventional general anesthesia on postoperative opioid use; a systematic review and meta-analysis. **Author(s):** Anderson H., Iohom G.
P6	**Title:** Can lived experience of a chronic condition be taught? Using lessons from a diabetes elective to inform undergraduate curriculum reform **Author(s):** Feeney N., O'Hara M.C., Cunningham A., Dinneen S.
P7	**Title:** The link between Obesity and Nocturnal Hypoxaemia **Author(s):** Macilwraith P., O'Boyle C., Doherty L.
P8	**Title:** Exploring the limits of short-read Whole Genome Sequencing (WGS) by investigating samples from three population cohorts **Author(s):** McNulty R., Ryan N.
P9	**Title**: An analysis of the relationship between BMI and early development of atrial fibrillation in intensive care unit post-cardiac surgery **Author(s):** Ghori A., Hinchion J., McLoughlin H.
P10	**Title:** Optimisation of an in vitro model for Inflammatory Bowel Disease **Author(s):** Dillane M., O'Neill C., Treacy O.
P11	**Title:** Serological evidence of immunity to vaccine preventable diseases in people living with HIV **Author(s):** Hussain S., Sadlier C.
P12	**Title:** Don't forget about executive dysfunction: investigating the learning slope in schizophrenia **Author(s):** Cafaro Loureiro P., Warren A., Morris D.W., Hallahan B., McDonald C.
P13	**Title:** Sleep Hygiene in Patients with Early-Stage Breast Cancer. **Author(s):** Vallely E., O'Reilly S., Weadick C.
P14	**Title:** Characterizing Cytokine in Human Regulatory T Cell Subpopulations by 12-Color Flow Cytometry Panel **Author(s):** Luo P., Ou Q., Griffin M.D.
P15	**Title:** Examining treatment response to levetiracetam in new-onset epilepsy **Author(s):** Thiyagarajah M., Costello D.
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POSTER PRESENTATION ABSTRACTS

P1

MAKE HAY WHILE THE SUN SHINES: BELIEFS AND BEHAVIOURS TOWARDS UV EXPOSURE IN IRISH FARMERS.

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South Infirmary Victoria University Hospital

Background: Farmers are at higher risk of developing skin cancer due to their outdoor occupation. It is important that they have adequate knowledge related to sun protection. The aim of this study was to determine the beliefs, behaviours, and attitudes of farmers towards sun protection and to examine their knowledge of skin cancer.

Methods: A cross-sectional study was performed using an online and physical questionnaire, distributed among farmers organisations and at local farming events. The questionnaire contained questions related to sun exposure and skin cancer behaviours and had previously been validated in Irish and Norwegian populations.

Results: The questionnaire was completed by 146 respondents. Mean age was 53 years (range 18-85 years). Participants had poor sun protection knowledge with only 62% believing that using sunscreen with a SPF of 15 or more reduces the risk of sunburn. In contrast participants had high perceived concerns about developing melanoma with 95.9% believing that developing melanoma would have serious consequences. The main barrier to photoprotection identified was 'finding it easy to forget' (53.6%). Only 39.6% felt confident about detecting early signs of melanoma. Farmers were less likely to seek the sun to tan (21.4%) compared to the general Irish population (48.9%), p<0.01.

Conclusion: This study emphasises the importance of addressing the gaps in the knowledge of this high-risk group as well as increasing their awareness of early melanoma signs and how to protect themselves. This study also highlights the possibility of cognitive dissonance in this group.

P2

DEVELOPMENT OF AN ACTIVE DRUG DELIVERY DEVICE TO IMPROVE DRUG DISTRIBUTION AT GLIOBLASTOMA TUMOUR SECTION SITES

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Background: Glioblastoma is an aggressive form of brain cancer with a 5-year survival rate of 6.8%. The current standard of care involves surgical resection followed by radiotherapy and chemotherapy, but drug delivery to tumour resection sites is challenging due their location beyond the blood brain barrier. Gliadel, a carmustine-loaded wafer, is the only FDA approved implantable drug delivery system but uses passive diffusion which limits drug saturation at the tumour resection site. This project aimed to develop an active drug delivery device to improve drug distribution at tumour resection sites.

Methods: Drug distribution in a single cannula device was tested at actuation pressures of 0, 0.5, 1, and 3 psi. Additionally, the effect of porosity on drug distribution was tested in single and multi-cannula device configurations. Agarose was used to construct a tumour resection model and methylene blue was used as a drug analogue, to assess drug distribution. Drug distribution was measured in mm² using Spyder software. GraphPad Prism 8.0.1 was used for statistical analysis (p<0.05).

Results: Results showed increased drug distribution at higher actuation pressures in a single cannula device: 0 psi (0.0005 mm²), 0.5psi (222.6 mm²), 1psi (323.4 mm²), 3psi (448.4 mm²). Additionally, porous cannulae improved distribution from 273.9 to 498.3 mm² in single-cannula devices (p=0.0003) and from 227.5 to 716.8 mm² in multi-cannula devices (p=0.0041).

Conclusion: In conclusion, an actuatable drug delivery device was developed to enhance drug release at glioblastoma resection sites. Customisation of actuation regimes allows control of release rates, which is critical for improving outcomes in glioblastoma patients.

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P3

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PREPAREDNESS OF MEDICAL STUDENTS FOR THE SAFE PRESCRIPTION OF OPIOIDS

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Background: As members of the next generation of prescribers, medical students should have adequate knowledge of HSE guidelines and should feel prepared to safely prescribe opioids accordingly. This study aims to evaluate whether medical students have adequate knowledge of how to prescribe opioids safely, whether they have appropriate attitudes to prescribing opioids and whether they feel more opioid prescribing training is required.

Methods: A questionnaire was distributed electronically to all clinical medical students. It consisted of four sections: 1. Demographic data, 2. Knowledge of HSE guidelines, 3. Attitudes towards the opioid epidemic and prescribing, 4. Self-perceived preparedness to prescribe opioids. 123 students returned the questionnaire (21%, N=599).

Results: Final year students felt significantly better prepared than other years (p < 0.05). However, there was no improvement in the knowledge scores of final years compared with other years (p > 0.05). The attitude section showed that the majority of respondents are aware of the opioid abuse issue in Ireland (77%) and agree they have an important role in this issue (79%). The majority of students (98%) reported a need for more education on opioid prescribing. Most (73%) of these students said 'practical, in-person, small group learning with a tutor' would be/has been the most beneficial learning method.

Conclusion: Upon assessing the knowledge, attitudes and self-perceived preparedness of medical students in UCC, there is evidence of inadequate training to safely prescribe opioids. This has exposed gaps in their practical training and opioid prescribing programs should be designed to better prepare our future prescribers.

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P4

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MANAGEMENT OF PATIENTS WITH CYSTIC FIBROSIS RELATED DIABETES IN GALWAY UNIVERSITY HOSPITAL

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Background: CFRD is described as the most common co-morbidity in Cystic Fibrosis patients. This retrospective case review aimed to determine if patients diagnosed with CFRD within Galway University Hospital were receiving treatment in compliance with the latest CFF/ADA/PES CFRD guidelines.

Methods: The Adult Endocrinology Service in GUH had nineteen patients with CFRD diagnoses which were included in this clinical audit. Electronic medical records of each patient who met the inclusion criteria in this clinical audit. Electronic medical records of each patient who met the inclusion criteria were reviewed

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retrospectively using the Evolve and Diamond databased in June 2024. The data was analysed in an encrypted Microsoft excel file. Each patients management was closely analysed against the standard set in the guidelines.

Results: The results outlined a mixed adherence to the CFRD Clinical Care Guidelines. Patients in GUH were reviewed in clinic once or twice a year compared to the recommended quarterly reviews, but they were being seen by a multidisciplinary team with an in depth knowledge of CFRD. The average number of HbA1c measurements taken in GUH was 4.36, which meets half of the recommended measurements set by the guidelines. Regarding pharmacotherapy, all patients were treated with an insulin regimen as per the guidelines. Unfortunately, the recording of microvascular complication screening was complicated in this study and it was difficult to determine if certain tests were being used specifically for screening of diabetic complications.

Conclusions: Overall, GUH portrayed strengths and weaknesses in adhering to the CFRD guidelines. The audit highlighted areas within CFRD management that could be further improved and consequently improve CFRD patient outcomes.

P5

EFFECTS OF OPIOID-FREE VERSUS CONVENTIONAL GENERAL ANESTHESIA ON POSTOPERATIVE OPIOID USE; A SYSTEMATIC REVIEW AND META-ANALYSIS.

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Background: Amidst the opioid crisis, evaluating the role of anesthesia in postoperative opioid consumption is critical. Opioid-free anesthesia (OFA) presents an opportunity to lower post-surgery opioid needs against traditional opioid-based anesthesia (OBA).

Methods: A comprehensive search was conducted in Embase, MEDLINE, Web of Science, Cochrane Library, and SCOPUS for studies focusing on the analgesic type used during induction and subsequent post-operative opioid consumption. Studies that met inclusion criteria were further screened for pain scores, nausea and vomiting, and length of Post-Anesthesia Care Unit stay.

Results: The search resulted in 16 studies including 2381 patients that met inclusion criteria. In total, 1229 patients underwent opiate-free anesthesia, and 1152 patients underwent conventional general anesthesia. Of the patients that required opiates post-operatively, the OFA group showed a decreased morphine equivalent dose (mg) (mean difference -5.23 [-7.87, -2.58]). The incidence of postoperative nausea and vomiting was lower in the OFA group (152 vs 228, RR = 0.67 [0.56, 0.79]). Discharge time (min) from the PACU was similar in both groups (mean difference 5.19 [-0.25, 10.63]). Analysis of pain scores showed minimally lower pain scores for the OFA group (mean difference -0.93 [-1.94, 0.09]).

Conclusion: This systematic review and meta-analysis highlight OFA as a feasible alternative to conventional anesthesia, showcasing its potential in reducing postoperative opioid requirements and nausea/vomiting occurences. Further research such as randomized controlled trials are essential to confirm these results and explore the effects on long-term opioid reduction.

P6

CAN LIVED EXPERIENCE OF A CHRONIC CONDITION BE TAUGHT? USING LESSONS FROM A DIABETES ELECTIVE TO INFORM UNDERGRADUATE CURRICULUM REFORM

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Background: Empathy decreases as students progress through medical school. Prior to the COVID pandemic, the diabetes team in Galway University Hospitals (GUH) delivered a "Lived Experience of Diabetes" Special Study Module (SSM), with the aim of providing insights into the challenges of living with diabetes.

This project reviewed that SSM, with a view to reintroducing elements of it into the revised medical curriculum in University of Galway. Our hypothesis is that by facilitating medical students to 'walk a mile in the shoes' of somebody with diabetes, future doctors will develop greater empathy and become more compassionate in their care delivery.

Methods & Results:

Reviewing the literature on lived experience teaching and learning; lived experience teaching to healthcare students is uncommon. Analysing feedback from students who completed the SSM; feedback was overwhelmingly positive. Preliminary data from Jefferson Empathy Scales suggest an improvement in empathy scores of medical students. Interviewing healthcare professionals involved in delivering the SSM; the diabetes team in GUH in keen to return to delivering the SSM; but the SSM structure needs re-design if it is to be delivered to a full class. Undertaking a component of the lived experience SSM; the summer student's lived experience was enlightening in the context of understanding the challenges of living with diabetes.

Conclusion: Lived experience teaching and learning is valued by those delivering it and those receiving it. This project reinforces the merits of seeking to include lived experience in the undergraduate medical curriculum in Galway.

P7

THE LINK BETWEEN OBESITY AND NOCTURNAL HYPOXAEMIA

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Background: Obesity is considered the main causative factor in obesity-hypoventilation syndrome (OHS). It follows that with increasing Body Mass Index (BMI), evidence of nocturnal hypoxaemia would emerge strongly. We set out to uncover this relationship.

Methods: We undertook a retrospective analysis of 770 patients awaiting bariatric surgery with BMIs ranging between 35-77kg/m2. Variables measured included BMI, average and lowest oxygen saturations (SpO2), the length of time with oxygen saturations less than 90% (T90), and bicarbonate levels.

Results: Using Spearman's correlation analysis, increasing BMI led to lower average SpO2 (r= -0.285), lower lowest SpO2 (r= -0.393), higher T90 (r= 0.419), and an increase in bicarbonate levels (r= 0.246). Separating the group into cohorts of BMI 35-45, 45-60, and >60 kg/m2, the analysis once again revealed worsening average SpO2 (93.4% v 92.6% v 92.6%), worsening lowest SpO2 (82.1% v 77.4% v 71%), and higher T90 values (8.4% v 10.9% v 23.8%) with increasing BMI. The average age and sex breakdown between the groups were similar; mean age 47 (standard deviation of 10.4 years) and 79% female.

Conclusions: There is a relationship between increasing BMI and nocturnal hypoxaemia but the correlation is weak and other factors may also explain the development of OHS.

EXPLORING THE LIMITS OF SHORT-READ WHOLE GENOME SEQUENCING (WGS) BY INVESTIGATING SAMPLES FROM THREE POPULATION COHORTS

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Background: The human genome contains "dark" gene regions that cannot be adequately assembled or aligned using standard NGS short-read sequencing (SRS) technologies, preventing researchers from identifying variants within these regions that may be relevant to human disease. While it is estimated that between 10-15% of the genome is dark or inaccessible to SRS, variability between samples has not been explored. Furthermore, as the human reference genome is known to be biased towards individuals with European ancestry, it is unknown how variable dark-regions may be across individuals from different population backgrounds. The Neuropsychiatric Genetics Research (NGR) group at TCD have generated whole genome SRS data for more than thirty ethnically-diverse pedigrees with a high load of psychiatric illness.

This project aimed to quantify the amount of dark regions present in whole genome SRS data for 57 individuals sequenced by the NGR group, representing three different pedigree population cohorts:

European: 23 individuals from a Swedish mono-zygotic twin study of psychosis

Costa Rican: 16 distantly related individuals from a Tourette syndrome study.

Pakistani: 18 individuals from two pedigrees with a range of psychiatric disorders

Methods: The stability of dark-regions was investigated by quantifying the pair-wise sharing of dark-regions between: i. related individuals; ii. Individuals from within the same population cohort; and iii. Across population cohorts.

Results/Conclusion: This analysis found substantial variability in the overlap of dark-regions across all pair-wise comparisons, including between identical twins. This suggests that issues such as sequencing quality and batch effects may impact dark-regions more than genomic ancestry.

AN ANALYSIS OF THE RELATIONSHIP BETWEEN BMI AND EARLY DEVELOPMENT OF ATRIAL FIBRILLATION IN INTENSIVE CARE UNIT POST-CARDIAC SURGERY

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Background: Postoperative atrial fibrillation (POAF) occurs in 30-50% of cardiac surgery cases. It is associated with increased morbidity, mortality, and prolonged length of hospital stay. Evidence shows that specific co-morbidities, including obesity, may increase the risk of POAF.

Aims: We aimed to investigate whether there was a difference in BMI in patients who developed POAF in the ICU following primary cardiac surgery compared with those who did not.

Methods: A retrospective database review of 331 patients who underwent primary isolated coronary artery bypass grafting was conducted. Age, sex, BMI, diabetes, smoking, number of previous myocardial infarctions, renal impairment, hypertension, hypercholesterolaemia, EuroSCORE II, and SCTS Logistic EuroSCORE were extracted. Independent t-tests, Mann-Whitney U Tests, chi-square tests, and multivariate logistic regression were used to assess the relationship between POAF and independent variables, with a p-value <0.05 considered significant.

Results: Of the 331 patients, 124 (37.6%) developed POAF in the ICU. There was no statistically significant difference in BMI between patients who developed POAF (mean BMI 28.47 kg/m²) and those who did not (mean BMI 29.16 kg/m², p=0.208). However, hypercholesterolaemia (p=0.001) and SCTS EuroSCORE (p=0.005)

were significantly associated with POAF. Age (p=0.051) and increased number of previous myocardial infarctions (p=0.053) showed borderline significance.

Conclusions: The aetiology of POAF is multifactorial. Strategies focused on lowering a patient's preoperative SCTS EuroSCORE could potentially reduce the risk of POAF.

P10

OPTIMISATION OF AN IN VITRO MODEL FOR INFLAMMATORY BOWEL DISEASE

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Background: Inflammatory bowel disease (IBD) is a chronic inflammatory condition of the gastrointestinal tract. This project aims to create a reproducible in vitro model to screen novel therapeutics like inflammation-specific drug delivery systems for IBD prior to in vivo testing.

Methods: Caco-2 cells seeded onto 6.5mm Transwell® inserts, were treated at day 7 with TNF-α and IFN-γ alone or combined, at 10 or 100ng/ml concentrations. Trans-Epithelial Electrical Resistance (TEER) measurements were conducted every second day to assess barrier integrity. At days 7, 11 and 21, Transwells were removed and cells were collected for RT-qPCR analysis. On day 11 and 21, a Lucifer Yellow permeability assay was performed to assess paracellular permeability.

Results: Increased TEER and claudin mRNA expression over the 21-day culture confirmed differentiation of Caco-2 cells into enterocytes and the formation of a robust monolayer. The greatest reduction in TEER was observed when cells were treated with 100ng/ml of tumour necrosis factor (TNF)-α and interferon (IFN)-γ (79%). This reduced TEER correlated with increased expression of cytokine (IL-6, CXCL8, CCL2) mRNA compared to control. At day 21, there was higher relative expression of IL-6 in TNF-α/IFN-γ (100ng/ml) treated cells (RQ=4.7) versus TNF-α/IFN-γ (10ng/ml) treated cells (RQ=1.9). Similarly, there was increased pass-through of Lucifer Yellow across all cytokine-treated groups compared to control [Day21: 1.05% vs 2.6%]. These results confirm significant pro-inflammatory cytokine-induced damage to the monolayer.

Conclusion: This model will be used to test the reparative effects of a novel hyaluronic acid-coated, budesonide-loaded nanoparticle drug delivery system, with a view to reducing systemic side effects and enhancing treatment efficacy.

P11

SEROLOGICAL EVIDENCE OF IMMUNITY TO VACCINE PREVENTABLE DISEASES IN PEOPLE LIVING WITH HIV (PLWH)

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Background: In recent years, there has been re-emergency and outbreaks of vaccine preventable diseases even in highly vaccinated populations. People living with HIV (PLWH) are at increased risk. The aim of this study is to investigate seroprevalence of vaccine preventable infections among PLWH in Ireland, with the objectives of characterizing the profile of this population and identifying factors associated with seroprevalence.

Method: A retrospective cohort study of PLWH was undertaken as Cork University Hospital. The study population includes new HIV positive patients (transfers and new diagnoses) over the age of 18 years presenting between 2022 and 2023. Basic demographic and serological data were collected at routine first patient assessment. Between-group prevalence was compared using Chi-squared tests. P-values of ≤0.05 were considered significant.

Results: Of 115 HIV positive patients included in this study median [SD; range] age was 39 [9; 21-64] years, 62.6% male, 2.6% Irish with 30 countries represented. Serology included hepatitis B negative sAb (51.3%) sAg

(96.5%) and cAb (76.5%), 78.3% mumps IgG positive, 72.2% measles IgG positive, 79.1% rubella IgG positive, 82.6% varicella zoster virus IgG positive, and 6.1% QuantiFERON positive. Majority, 86.1% of patients were virally suppressed on antiretroviral therapy.

Conclusion: This study identifies a significant proportion of PLWH who are susceptible to common vaccine preventable infections. As demographics are changing with migration there have been changes in vaccine uptake and immunity in the population. The results highlight the importance of screening and targeting immunization programmes to ensure protection against vaccine preventable diseases in at-risk groups.

P12

DON'T FORGET ABOUT EXECUTIVE DYSFUNCTION: INVESTIGATING THE LEARNING SLOPE IN SCHIZOPHRENIA

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Background: Schizophrenia (SCZ) is a neurodevelopmental disorder characterized by psychosis and cognitive impairment. Executive dysfunction can secondarily impact memory, ergo people can perform poorly on memory tests due to encoding difficulties, rather than storage/retrieval.

We aim to investigate the difference between the performance of healthy controls (HC) and people with SCZ on executively demanding components of a memory task, differentiating encoding (recall total score [RTS]) from memory itself (learning slope [LS]), considering hippocampal volume (HV).

Methods: N=178 HC (41% female; Age 36.11±12.36) and n=58 people with SCZ (30% female; 42.20±11.16) were recruited. Structural MRI scan used 3T Philips Achieva to find HV. Memory was assessed using Logical Memory (verbal episodic memory), with 3 encoding trials (Story-A, Story-B1, Story-B2), and a LS outcome (B2-B1). Correlations investigated HV to memory paradigms and LS. MANCOVA compared groups across outcomes, controlling for demographics.

Statistically significant group differences showed lower scores on individual and cumulative encoding for SCZ cohort.

Results: No group differences between LS and HV after Bonferroni correction were observed while controlling for demographics. HV positively correlated with LS (r>.20, p<.05), not encoding.

SCZ cohort demonstrated statistically significant deficit in encoding, but not learning slope. This indicates cognitive deficits in memory reside not on storage/retrieval, but on executive elements; correlation between HV and LS, alongside non-significant group difference between HC and people with SCZ, corroborates this.

P13

SLEEP HYGIENE IN PATIENTS WITH EARLY-STAGE BREAST CANCER

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Background: A recent evaluation of sleep patterns in patients with cancer in Ireland demonstrated an insomnia rate twice that of the general population. A breast cancer diagnosis was an independent predictor of insomnia syndrome. We explored this interaction further in a larger cohort of breast cancer survivors using the insomnia severity index (ISI) as a baseline.

Methods: We conducted a cross-sectional study with 315 eligible patients treated over an 8-month period at CUH/UCC Cancer Centre. Eligible patients completed a 40-item questionnaire, consisting of questions regarding the patient's demographics, clinical characteristics and sleep history.

Results: The predominant age group was 55-64, with stage 2 breast cancer being the most prevalent. ISI scores revealed that 33.2% of the population had sub-threshold insomnia, with a further 23% of patients having clinical insomnia.

There was a statistically significant association and a weak negative correlation between increasing age (<65 vs >65) and a higher ISI score (P < 0.001, rs -.228). No statistically significant correlations between any other clinical, lifestyle or demographic factors were identified.

Although 64.2% of patients believed that questions regarding sleep should be part of breast cancer assessment, only 32% recalled being asked about sleep by a healthcare worker. Moreover, only 27.1% of respondents felt their sleeping difficulties were adequately dealt with since their diagnosis.

Conclusion: Over 55% of the studies population have sub-threshold or clinical insomnia. Despite a majority ofizini breast cancer patients recognizing the importance of sleep assessment, a significant gap remains in healthcare providers addressing these concerns effectively.

P14

CHARACTERIZING CYTOKINE IN HUMAN REGULATORY T CELL SUBPOPULATIONS BY 12-COLOR FLOW CYTOMETRY PANEL

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Background: Regulatory T cells (Treg) play a crucial role in maintaining immune regulation, but the differences in cytokine profiles among their subtypes are not well understood. This study aims to examine the cytokine secretion profiles (IL-10, IL-17, IFN- γ), of Treg subtypes (CD45RA+, CD45RA−HLA-DR−, HLA-DR−) in peripheral blood from healthy individuals. By employing intracellular staining and flow cytometry, we aim to identify distinct secretion patterns within these Treg subpopulations.

Methods: Peripheral blood samples from six healthy participants were analyzed. PBMCs were stimulated with PMA/ionomycin, followed by viability staining (zombie red), surface markers (CD4, CD25, CD127, CD45RA, HLA-DR, CD39), and intracellular staining of transcription factors (Foxp3, Helios) and cytokines (IL-10, IL-17, IFN-γ).

Results: CD4+CD25+ CD127− Treg and Treg subtypes were identified. The results indicate that IL-17-secreting, IL-10-secreting, and IFN-γ-secreting Tregs represent distinct populations. The CD45RA−CD39−subtype exhibited the highest levels of IFN-γ secretion, showing statistically significant differences compared to the RA+ and CD39+ subtypes. In contrast, there were no statistically significant differences in IL-10 and IL-17 secretion among the three subtypes. Despite that cytokine-secreting Treg were either Foxp3+ or Foxp3-, all these cytokine-secreting cells were exclusively Helios-.

Conclusions: The study showed the advantage of using flow cytometry to characterizing cytokine profiles of Treg, and reveals that the cytokine-secreting Treg have less stability. In particular, RA-CD39-Treg subtype uniquely secretes higher levels of IFN-γ compared to other subtypes, suggesting this subtype is more likely to be susceptible to include pro-inflammatory T cells.

EXAMINING TREATMENT RESPONSE TO LEVETIRACETAM IN NEW-ONSET EPILEPSY

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Background: Epilepsy is the second most common chronic neurological condition in European adults after stroke. First-line monotherapy for focal onset epilepsy in adults include levetiracetam or lamotrigine. However, despite its status as first-line therapy, including at Cork University Hospital (CUH), levetiracetam has failed non-inferiority to lamotrigine in the recent SANAD II trail. The aim of the study is to characterize treatment response of levetiracetam in new-onset epilepsy in a Rapid Access Seizure Clinic (RASC) cohort.

Method: A retrospective review of patients who presented to RASC at CUH between 2016 and 2019 was conducted. Patients were included if they were 18 years or older, diagnosed with new-onset epilepsy, and prescribed levetiracetam. Patients were excluded if seizures were provoked or if they had a non-epilepsy primary diagnosis. Data was analyzed using SPSS.

Results: 146 charts were reviewed. 77 patients (44.2% female) met inclusion criteria for analysis. 41.6% of patients achieved complete seizure freedom with levetiracetam. 33.8% of patients experienced side effects and 19.5% of patients discontinued levetiracetam before a year due to side effects. 11.7% of patients reported behavioural side effects resulting in discontinuation. A chi-square test showed a significant relationship between female sex and frequency of side effects, χ^2 (1, N=71)=4.5, p=0.034.

Conclusions: The findings in this cohort demonstrated a lower percentage of seizure-freedom and greater discontinuation due to behavioural side effects than reported in the literature. Therefore, levetiracetam may not be the ideal first-line anti-seizure medication. However, further research is needed compare response to subsequent anti-seizure medications.

ASSOCIATION OF CARDIOPROTECTIVE GLUCOSE LOWERING THERAPY WITH DEMENTIA AND COGNITIVE OUTCOMES: A SYSTEMATIC REVIEW AND META-ANALYSIS

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Background: While diabetes is a risk factor for dementia, the effect of glucose lowering therapy for prevention of incident dementia is uncertain. To determine whether cardioprotective glucose lowering therapy (SGLT-2 inhibitors, GLP-1Ras, metformin and pioglitazone), compared to control, was associated with a reduction in risk of dementia or cognitive impairment, and dementia subtypes.

Methods: Search of PubMed and EMBASE for randomised controlled trials (RCTs) comparing cardioprotective glucose lowering therapy to control reported dementia or change in cognitive scores. Cardioprotective glucose lowering therapies were defined as drug classes recommended by guidelines for reduction of cardiovascular events. Random effects meta-analysis models were used to estimate a pooled treatment-effect. The primary outcome measure was dementia or cognitive impairment. The secondary outcomes were primary dementia subtypes; vascular and Alzheimer's dementia, and change in cognitive scores.

Results: Twenty-five randomized clinical trials were eligible for inclusion (n=164,531), of which twenty-three trials (n=142,587) reported the incidence of dementia or cognitive impairment, including 12 trials evaluating SGLT-2 inhibitors, 10 trials evaluating GLP-1Ras, and one trial evaluating pioglitazone. The mean (SD) age of trial participants of 64.4 (3.5) years and 57,470 (34.9%) were women. Overall, cardioprotective glucose lowering therapy was not significantly associated with a reduction in cognitive impairment or dementia (OR,

0.83 [95% CI, 0.59-1.16]). Among drug class, GLP-1Ras were associated with a significant reduction in dementia (OR, 0.53 [95% CI, 0.33-0.85]), but not SGLT-2 inhibitors (OR, 1.20 [95% CI, 0.67-2.17])(p for heterogeneity=0.03). Cardioprotective glucose lowering therapy was associated with a significant reduction in vascular dementia (OR, 0.36 [95% CI, 0.14-0.91]), but not Alzheimer's dementia (OR, 2.07 [95% CI, 0.82-5.21])(p-heterogeneity=0.009).

Conclusion: While cardioprotective glucose lowering therapies were not associated with an overall reduction in all-cause dementia, they were associated with a reduction in vascular dementia, based on meta-analysis of RCTs. Our meta-analysis also suggest a beneficial effect of GLP-1Ras on all-cause dementia.

P17

INVESTIGATING THE WORK-LIFE BALANCE OF FIRST-YEAR MEDICAL STUDENTS

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Background: Medical students are known to experience high levels of anxiety, depression, and stress. Within the current literature, there exists substantial research towards medical students' mental health, however a gap examining their work-life balance (WLB).

The aim of this project is to investigate the WLB of first-year medical students at University College Cork (UCC). This was achieved through: demographic analysis, definition and perception of WLB, and variable analysis.

Method: A single in-person class from the first-year 2023 Direct Entry to Medicine (DEM) and Graduate Entry to Medicine (GEM) classes were visited. An online questionnaire consisting of 23 single-answer and 2 free-text questions were distributed via QR code.

Results: A total of 133 students were surveyed: 88 DEM and 45 GEM students. 69%(n=92) of respondents were female and 51%(n=69) reported their age as between 19-22. Students were more likely to review their current WLB as shifted partially or fully towards school, with only 13.5%(=18) indicating an equal balance. 57%(n=76) of students had not or were unsure if they had received any guidance on maintaining WLB. WLB key theme included "personal life", "social life", and "time management". A significant, strong positive correlation between WLB assessment and the number of hours spent socializing per week (rs= 0.434, p<0.001).

Conclusion: A health WLB is essential for medical students' success. This may be achieved through early interventions targeting aspects such as time management and study skills.

P18

ADVANCING PERSONALISED MEDICINE: DRUG SCREENING FOR HAEMATOLOGICAL MALIGNANCIES

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Background: Haematological malignancies represent a diverse group of blood cancers that originate in the bone marrow or lymphatic system. Despite advancements in clinical management, ongoing challenges remain. Identifying the optimal treatment for relapsed, often elderly patients is one such challenge. Recently, high throughput drug screening (HTS) of patients' cancer cells emerged allowing therapies to be tailored specifically to each patient's unique disease profile, paving the way for functional precision medicine.This project aims to contribute to the advancement of functional precision medicine by developing a HTS assay to predict the best drugs to kill aggressive forms of blood cancers such as relapsed/refractory diffuse large B cell lymphoma (DLBCL).

Methods: DLBCL cells were seeded in a 96 well plate at 6x105 cells/ml, 100 µl in each well. The cells were then treated with a 2-magnitude concentration range of drugs for 48 h. Cell viability was measured at single cell level by flow cytometry using propidium iodide (PI).

Results: HTS conditions were optimised with induction of cell death determined at single cell level thus providing a very sensitive assessment of drug sensitivity. Using the optimised assay, drugs targeting the main cell death pathway, apoptosis were tested. The results showed that different DLBCL samples have very different drug sensitivity profiles, especially regarding kinase inhibitors (Ibrutinib and Idelalisib).

Conclusions: The results demonstrate the potential of a functional drug screening assay to identify effective drug treatments for individual patients and highlights significant differences which are difficult to predict from molecular pathology tests.

P19

ASSESSING MEDICAL STUDENT ANXIETY IN SIMULATION BASED MEDICAL EXPERIENCES (SBME)

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Background: The increasing use of simulation based medical experienced (SBMEs) with defined benchmarks in medical education has important implications for student learning, patient safety, and clinical placement. It has been shown that high-fidelity simulations increase anxiety in medical students. This study explores the factors contributing to medical student anxiety in SBMEs and seeks to determine whether participation in extra-curricular SBME activities, like SimWars, might reduce this anxiety thus improving student simulation preparedness.

Aims:

Determine factors contributing to anxiety in SBME

Determine prevalence of SimWars participation

Determine the impact of SimWars participation on SBME anxiety

Methods: This quantitative questionnaire-based cross-sectional study included first year UCC medical students participating in the curricular ASSERT Emergency Medical simulation. Anxiety quantification was conducted with the State-Trait Anxiety Index (STAI-S and STAI-T) and previous participation in the extra-curricular intervarsity emergency medicine-based simulation, SimWars, was collected.

Results: 13.6%(n=20) of respondents (n=147) previously participated in SimWars. The average difference in pre-simulation state anxiety was 4.95 lower (95% CI=0.58-10.47) in SimWars participants, t(145)=1.77, p=0.079. SimWars participation correlated with self-reported high performance in the ASSERT simulation ($\chi2(1)=5.209,p=0.022$) and was associated with pre- and post- simulation confidence in resuscitation (p<0.001 and p=0.024). Factors influencing SBME anxiety were multi-faceted. Gender-based anxiety differences were a prominent feature with a strong positive correlation between audio/video and peer watching (rs=0.708,p<0.001). Additional sources of student anxiety included medication-prescribing, resuscitation, and ISBAR.

Conclusion: Overall, demographic, preparatory, and simulation-based factors underlie medical anxiety in SBME. Extra-curricular SBME activities, such as SimWars, serve an important purpose for introducing students to clinical simulation.

EXAMINING THE POTENTIAL FOR COMBINATORIAL ENDOTHELIAL COLONY FORMING CELLS AND MESENCHYMAL STROMAL CELLS THERAPY FOR CHRONIC LIMB THREATENING ISCHEMIA

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Background: Chronic limb-threatening ischemia (CLTI) involves chronic ischemic rest pain, ulceration, or gangrene from peripheral artery occlusion. In 15-20% of CLTI patients, revascularization is ineffective, categorizing them as "no-option" CLTI. Endothelial colony-forming cells (ECFCs) are adult endothelial progenitor cells which form vessels in vitro. When combined with the proangiogenic supportive properties of mesenchymal stromal cells (MSCs), they could improve limb salvage and serve as a potential treatment for no-option CLTI patients. We hypothesize that MSC conditioned media will promote ECFC angiogenesis. Furthermore, foetal bovine serum (FBS) is commonly used in cell culture media; however, human platelet lysate (hPL) is a safer alternative from a translational perspective. However, hPL forms a gel that hinders cell growth, so we investigated the concentration of heparin to prevent gelling, thereby facilitating cell growth.

Methods: ECFCs were seeded in well plates with different media (EGM2, α-MEM, and conditioned media), where conditioned media was harvested from MSCs grown in full serum α-MEM and serum-free α-MEM, and then assessed via the scratch wound and Matrigel assays. Heparin concentrations were varied in EGM2 optimal concentration of heparin, ECFCs were cultured with varying concentrations of exogenous heparin and imaged in subsequent days.

Results: ECFCs showed wound closure in MSC conditioned media harvested from MSCs grown in full serum α-MEM but less so with MSC conditioned media harvested from serum free α-MEM subjected to hypoxia and normoxia over 24, 48, 72 hours. In the Matrigel assay, ECFCs successfully formed vascular-like tubes when seeded in MSC-conditioned media. Furthermore, no gelling of media was observed at heparin concentrations ≥0.5 IU/mL.

Conclusion: MSC condition media with FBS promoted angiogenesis by ECFCs as evident from the wound closure and tube formation of ECFCs tested by the scratch wound assay and Matrigel assay. Future work will optimize the conditioned media isolation process and assess the effects on ECFC angiogenesis.

MELATONIN AS A REACTIVE TREATMENT FOR POST-OPERATIVE DELIRIUM IN PATIENTS IN THE CARDIAC ICU: A RETROSPECTIVE COHORT STUDY

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Background: ICU delirium is a significant issue in post-operative cardiothoracic patients, contributing to longer ICU stays, extended hospitalizations, and increased mortality. Pharmacological treatments like benzodiazepines and antipsychotics carry adverse effects, highlighting the need for safer alternatives. Previous studies have shown melatonin's effectiveness as a prophylactic agent for delirium in ICU patients.

Method: This study aimed to evaluate melatonin as a reactive treatment for post-operative delirium in the Cardiac ICU. A retrospective cohort analysis was conducted with 127 patients diagnosed with delirium via a positive CAM-ICU score. The cohort was divided into those receiving melatonin (n=57) and those who did not (n=70). The primary outcome was delirium regression, indicated by a negative CAM-ICU score, with secondary outcomes including ICU stay, hospital stay, and ventilation duration.

Results: Delirium regression was slightly higher in the melatonin group (42.1%) compared to the non-melatonin group (32.9%) (p=0.283). Binomial regression analysis showed an odds ratio of 0.845 (95% CI: 0.329-2.172, p=0.727), suggesting no significant association between melatonin and delirium regression. However, ICU length of stay (OR: 1.126, p=0.003) and mechanical ventilation (OR: 0.897, p=0.004) were statistically significant predictors.

Conclusion: These findings indicate melatonin may not be effective as a reactive treatment for post-op delirium in cardiac ICU patients. Further research with larger sample sizes and better control of confounding variables is recommended.

P22

THE IMPACT OF HERV-K KNOCKDOWN ON GENE EXPRESSION AND DRUG RESPONSE IN TRIPLE NEGATIVE BREAST CANCER

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Background: TNBC is the most aggressive subtype of breast cancer, often leading to poor clinical outcomes. An emerging area of interest is the increased expression of Human Endogenous Retrovirus K (HERV-K), reported in various cancers, suggesting it may serve as a biomarker and potential therapeutic target.

Aims: This study aimed to investigate the effect of HERV-K knockdown on TNBC drug response and gene expression.

Methods: Short hairpin RNA targeting HERV-K was used to create knockdowns in the MDA-MB-231 and HCC1806 TNBC cell lines. Clinically relevant HERV-K-regulated genes, based on previous RNA sequencing of the MDA-MB-231 cell line, were validated by PCR. Drug response to Adriamycin and Cisplatin was assessed using Alamar blue viability assay over 7 days.

Results: HERV-K expression did not significantly impact drug response, however there was a trend towards increased Adriamycin sensitivity in HCC1806 knockdowns. Gene expression analysis revealed trends towards upregulation of PLEKHA7, AGR2 and ID3, and downregulation of PDL1 following HERV-K knockdown. Altered expression of MAL2 and THSB2 due to HERV-K expression was seen in the MDA-MB-231 in comparison to the HCC1806.

Conclusion: There is a trend toward increased resistance to Adriamycin in HCC1806 cells expressing HERV-K, highlighting its potential as a biomarker for drug response. HERV-K also dysregulates gene expression with PLEKHA7 expression linked to increased Adriamycin sensitivity in the literature. These findings suggest HERV-K could be a biomarker for chemotherapy response, particularly to anthracyclines. Further research is required into the underlying mechanisms of HERV-K's impact on drug response and gene expression.

P23

ARE HEALTH AND SOCIAL CARE PROFESSIONALS AWARE OF THE IMPACT OF STIGMA AND REDUCED SOCIAL CONNECTEDNESS ON QUALITY OF LIFE AND LIFE SATISFACTION IN PEOPLE LIVING WITH PARKINSON'S DISEASE?

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Background: Parkinson's Disease (PD) is a progressive neurological disorder wherein patients develop motor and autonomic symptoms. While there has been prior research into public attitudes toward PD, it is unclear if health & social care professionals (HSCPs) understand the emotional impact on people with PD, and its social consequences.

Aims: To determine i) the level of awareness of HSCPs of the stigma that people with PD face in their lives and the social consequences; ii) whether HSCPs might have their own bias.

Method: The Microsoft Forms platform was used to administer an online anonymous survey nationwide to doctors and nurses who care for people with PD.

Results: Of 227 usable responses, 75.8% strongly believed that people with PD feel disconnected from the world. However, 57.7% erroneously believed that people with PD aren't perceived to be experiencing a negative emotion due to facial masking and almost 25% didn't take part in awareness raising activities. 57.7% of respondents were unsure if they would be willing to work with someone with PD and 54.2% unsure if

someone with advanced PD should be employed. 63.0% of respondents believe those with PD 'can rarely handle whatever comes their way'.

Conclusion: HSCPs display a degree of awareness around the stigma people with PD face, but this could be improved. HSCPs also display some biases of their own about PD. Initiatives to further educate HSCPs on the stigma people with PD endure and the consequences of these would be appropriate as a first step to tackling it.

P24

THE VALSALVA MANOEUVRE – TYPES, FACTORS AFFECTING THE RESPONSE, DIAGNOSTIC AND THERAPEUTIC USES, LIMITATIONS AND CONTRAINDICATIONS – A LITERATURE REVIEW

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Background: The Valsalva Manoeuvre (VM) involves forced expiration against a closed glottis, utilizing the baroreceptor reflex that alter heart rate and blood pressure. It is the first-line therapy for Supraventricular Tachycardias (SVTs). However, all its diagnostic and therapeutic applications have not been documented much.

Two new variations emerged over the past decade: The modified VM (mVM) and reverse VM (rVM). This review complied the range of the VM's uses, compared the types, outlined factors affecting the VM's effectiveness and identified shortfalls in the current literature, offering future recommendations.

Methods: Current literature searches were performed using PubMed and Google Scholar. Articles written only in English were taken, prioritising more recent articles within the last two decades. Intraoperative studies were excluded, to focus on clinical uses outside the operating theatre.

Results: Diagnostically, the VM aids in autonomic function testing, murmur identification and heart failure detection, using the Pulse Amplitude Ratio to identify elevated pulmonary capillary wedge pressure with 91% sensitivity and 100% specificity. Therapeutically, the mVM is indicated to treat SVTs, despite its variably low success rate of 5-20%. Responses to the VM are influenced by factors like resting blood pressure, age, and sex, two theories explaining which are estrogen's effects and raised baroreceptor sensitivity in females. Contraindications include patients with retinopathies or congenital heart diseases due to the risk of exacerbated symptoms.

Conclusion: Further reviews are needed to better determine the sVM and mVM's success rates. An RCT comparing the rVM to the mVM must also be conducted, to evaluate its true relative clinical efficacy.

P25

EXPLORING THE INTERPLAY BETWEEN ASTHMA AND VITAMIN D: INSIGHTS FROM AN IRISH POPULATION STUDY

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Background: Vitamin D is thought to influence asthma control due to its anti-inflammatory properties, but studies have yielded conflicting results. This study aimed to assess the association between vitamin D levels and asthma control in an Irish adult population.

Methods: A retrospective review was conducted on the first 100 patients attending the CUH asthma clinic with both Asthma Control Questionnaire (ACQ) scores and vitamin D levels, working back from December 2022. Vitamin D levels were collected within ±30 days of the ACQ. A total of 195 data points were analyzed, as some patients had more than one set of values. Cross-sectional and longitudinal analyses were performed to explore the relationship between vitamin D and asthma control.

Results: 25% of patients had inadequate vitamin D levels, and 7% were vitamin D deficient. ACQ scores were significantly higher in patients with inadequate vitamin D, indicating poorer asthma control (P=0.04).

Longitudinal analysis showed no significant association between changes in vitamin D levels and ACQ over time (P=0.33). Lung function (FEV1) correlated with asthma control (P<0.001), but no association was found between vitamin D levels and FEV1 (P=0.66). Vitamin D levels did not vary significantly with time of year, and those supplementing vitamin D did not have significantly improved asthma control.

Conclusion: Inadequate vitamin D levels were associated with poorer asthma control, but longitudinal changes in vitamin D did not significantly impact asthma outcomes. Further research is needed to evaluate the role of vitamin D supplementation in asthma management.

P26

PRODUCTION OF EXTRACELLULAR VESICLES IN A 3D DYNAMIC HOLLOW FIBRE BIOREACTOR

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Background: Metastatic breast cancer has a poor five-year survival rate of <30%. Engineered Extracellular Vesicles(EVs) present a novel treatment for advanced disease. Standard 2D culture systems will not produce sufficient EVs. Bioreactors can potentially produce high EV yields. This study aimed to isolate EVs produced in a 3D dynamic bioreactor and characterise size distribution and concentration.

Methods:Bone marrow-derived Mesenchymal Stromal Cells(MSCs) in serum-free media were inoculated in a 20kD FiberCell hollow fibre bioreactor. Media containing EVs was harvested from the extra-capillary space. At Day 28, EV-depleted Foetal Bovine Serum(FBS) was incorporated into the media. EVs were isolated by Size Exclusion Chromatography. Each sample yielded seven fractions and EV size distribution and concentration were characterised by Nanoparticle Tracking Analysis(NTA).

Results: EVs were isolated from 48 media harvests collected over 51 days, yielding 336 fractions for NTA. Only samples with 20-50 particles/frame were considered for further analysis. Fraction(F) 2 and F3 yielded the greatest concentration (mean particles/mL F2 5.05×10^8; F3 5.13×10^8) and optimal EV size distribution (mean ± SEM: F2 183 ± 4 nm; F3 180 ± 4 nm). Introducing EV-depleted FBS markedly increased EV concentration with F2 and F3 mean particles/mL increasing 2.7 and 2-fold respectively (F2 5.00×10^8 increased to 1.33×10^9; F3 4.58×10^8 increased to 9.27×10^8).

Conclusions: This study demonstrates the feasibility of repeated harvests of high-yield MSC-derived EVs in continuous 3D dynamic culture. Serum-free conditions were suboptimal for MSCs and incorporating EV-depleted FBS increased EV yield.

P27

AN AUDIT EXAMINING THE COMPLIANCE OF 'AS REQUIRED' PRESCRIPTION ORDERS TO HOSPITAL PRESCRIBING STANDARDS FOR ADULT INPATIENTS OF AN IRISH TEACHING HOSPITAL.

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Introduction: Illegible and incomplete prescription orders can be a source of medication error for hospital inpatients. To improve patient safety, hospitals establish prescribing standards to define the required criteria of a legible and complete prescription order.

Aim: To evaluate the compliance of 'as required' prescription orders in an Irish teaching hospital against the Joint Commission International (JCI) Standard MMU 4.2.

Method: A clinical audit, in the form of a cross-sectional chart review, was conducted from September to November 2023. Fifty charts of inpatients aged ≥18 years were randomly selected from five wards. 'As required' prescription orders were analyzed with the primary outcome measure being the level of compliance to the JCI Standard MMU 4.2 in terms of legibility and completeness criteria. A Plan-Do-Study Act (PDSA) cycle

was conducted, which included a targeted educational intervention for prescribers. A reaudit of ten charts was performed three months post-intervention. Descriptive statistics were conducted.

Results: A total of 187 'as required' prescription orders were analyzed. Of these, 177 (94.7%) were deemed legible, while only 25 (13.4%) were considered complete. Of the ten criteria for a 'complete' prescription order; three key areas of poor compliance were identified: the inclusion of 'time' (n=80, 42.8%), 'maximum dose' (n=28, 15%), and 'indication for use' (n=43, 23%). Post-intervention, a reaudit of 42 'as required' prescription orders demonstrated improvements in legibility (+5.3%) and completeness (+24.7%); with notable improvements in 'time' (+19.1%), 'maximum dose'(+37.8%), and 'indication for use'(+34.1%).

Conclusion: These findings emphasize the importance of continued audit and education to optimize prescribing practices, enhancing patient care and safety outcomes. As compliance remains below 100%, further investigation into factors affecting compliance is warranted.

P28

OPTIMIZED PHARMACOTHERAPY IN NSTEMI/STEMI PATIENTS UNDERGOING CORONARY ANGIOGRAPHY WITH OR WITHOUT PCI IN ACCORDANCE WITH EUROPEAN SOCIETY OF CARDIOLOGY GUIDELINES.

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Background: According to studies, each year approximately 6,000 individuals are admitted to Irish hospitals with myocardial infarction. Of these, around 25% experience ST-elevation myocardial infarction (STEMI). Despite this, only 79% of STEMI patients receive primary PCI treatment, and just 74% are prescribed appropriate secondary prevention medications, falling short of the 90% target. Optimizing pharmacotherapy for both NSTEMI/STEMI, irrespective of PCI, remains crucial for reducing recurrence rates and mortality. To address this issue, we conducted a retrospective study to evaluate the adherence to ESC guideline-recommended cardioprotective medication regimens in patients with NSTEMI/STEMI undergoing coronary angiography, with or without PCI. Globally, to our knowledge, this study is the first such investigation conducted.

Method: A convenience sample of 100 patients (62% male, 38% female) was selected from a cohort of 1780 individuals with elevated Cardiac Troponin T (cTnT) levels of 100 ng/l or higher, categorized into three groups (G1: 100-500 ng/l, G2: 500-1000 ng/l, G3: 1000+ ng/l). Data were obtained from electronic medical records, discharge summaries, and laboratory results. Only patients with clinical features of ACS were included, and those with cTnT levels below 100 ng/l were excluded. Patients with confounding conditions like CKD (ClCr ≤30 ml/min/1.73m2), pulmonary embolism, and sepsis were also excluded.

Results: Of the 100 patients who had PCI (n=43), 98% received aspirin and antiplatelets, 99% received statins, 96% received beta blockers (BB) and 93% received ACEi/ARBs. In the group without PCI (n=57), 97% received aspirin, 57% received antiplatelets as loading dose for angiogram, 92% received statins, 86% received BB and 81% received ACEi/ARBs.

Conclusion: In the PCI group, adherence to ESC-recommended medications is generally good, but ACE inhibitors/ARBs use could improve. For non-PCI patients, medication regimens are personalized, but uptake of ESC cardioprotective medications, especially beta blockers and ACE inhibitors, could be increased if no contraindications exist.

P29

EVALUATING RUPTURE RATES AND FUNCTIONAL RECOVERY OF ZONE I/II FLEXOR TENDON INJURIES FOLLOWING REPAIR AFTER CHANGES IN REHABILITATION PROTOCOL AT CORK UNIVERSITY HOSPITAL.

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Background: Flexor tendon injury is a common injury of the hand, necessitating urgent repair to salvage function. Rupture of tendon and functional recovery indicated by active range of motion following repair have been identified as important outcome measures. Evidence suggests that in addition to surgical technique, postoperative rehabilitation also plays a substantial role in outcomes.

Method: Using retrospective database review, a total of 70 digits with Zone I/II flexor tendon injury were identified. To account for potential data interdependence, the most radial digit was selected in patients with multiple digits injured. Clinical outcomes were compared between Modified Belfast protocol and Manchester protocol, focusing on incidence of tendon rupture and postoperative functional recovery. Ruptures were analyzed through chart review. Functional recovery was measured using Strickland digital scoring system at 12 weeks post-injury. The χ^2 test, Fisher exact test and Student t test were used to evaluate outcomes.

Results: While overall outcomes were still Poor/Fair as per the Strickland digital scoring system, a significantly greater proportion of Good/Excellent grades as well as a lower proportion Poor/Fair grades were found in patients rehabilitated as per the Manchester protocol compared with Modified Belfast protocol ($p = 0.047$). A higher rupture rate was found in those rehabilitated as per Manchester protocol (relative risk [RR] = 1.83, 95% confidence interval [CI] = 0.81-4.11, $p = 0.14$), without reaching significance.

Conclusion: The Manchester protocol may enhance functional recovery following Zone I/II flexor tendon injury, without significant effect on rupture rate. Future work with larger sample size is suggested for further evaluation.

P30

PREVALENCE OF COPD-OSA OVERLAP SYNDROME IN MAYO UNIVERSITY HOSPITAL

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Background: Overlap Syndrome (OS) describes to co-existence of Obstructive Sleep Apnoea (OSA) and Chronic Obstructive Pulmonary Disease (COPD). Reported prevalence of OS ranges from 10-65% (1-3). Patients often experience more profound nocturnal desaturations compared to those with OSA or COPD alone. The subsequent hypoxia and systemic inflammation increase exacerbation and cardiovascular disease risk, thereby increasing OS-associated mortality (4). Our goal was to determine the prevalence of OS in Mayo University Hospital (MUH) and analyse clinical characteristics associated with OS.

Methods: Retrospective data was collected between January 2013 and December 2023. Patients diagnosed with moderate to severe OSA (AHI³15) by limited sleep study (LSS) were included in the analysis. Charts and PFTs reports were reviewed to confirm a coexisting diagnosis of COPD.

Results: In total, 506 patients underwent LSS, 224 confirmed moderate-to-severe OSA. Patient cohort was predominantly male (n=166,74%) with elevated BMI, (M=39.5kgs/m2, SD=8.4). They were divided into 3 groups; Group1, OS confirmed(n=56,25%), Group2, OS not confirmed (n=130, 58%), and Group3, OSA only(n=38, 17%). In Group 1, mean FEV1 was 64.9%, GOLD Stage 2 COPD. Group 2 smokers (n=19) were highlighted as high-risk OS.

Conclusion: The results show prevalence of 25%, confirmed OS within MUH cohort. It is crucial for clinicians to diligently evaluate high-risk patients for OS as treatment reduces symptoms, exacerbations, and improves quality of life.

Disclosures: The authors declare that they have no conflict of interest

P31

EVALUATING MEDICAL STUDENTS' OPINIONS ON THE USABILITY OF MIXED REALITY (HOLOLENS 2) FOR TEACHING AND LEARNING FROM CLINICAL ENCOUNTERS

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Background: Clinical teaching during encounters with real patients lies at the heart of medical education. Mixed reality (MR) enhanced education using a Microsoft HoloLens 2 (HL2) has shown significant improvement in student engagement and retention in other sectors. HL2 offers the potential to improve medical training and addresses several challenges encountered in medical education.

Methods: This mixed-methods prospective, observational study examined students' attitudes on the use of the HL2 in facilitating a live two-way broadcast of a clinician-patient encounter, which was delivered to them remotely. System Usability Scale (SUS) Scores were elicited from participants. A modified Evaluation of Technology-Enhanced Learning Materials: Learner Perceptions Questionnaire (mETELM) was also completed. Semi-structured interviews were conducted with a sample of students.

Results: 47 medical students participated. The mean SUS score was 71.4, indicating good usability. The mETELM Questionnaire using a 7-point Likert Scale demonstrated MR was perceived to be more beneficial than a PowerPoint presentation (Median=7). Opinion amongst the student cohort was divided as to whether the MR tutorial was as beneficial for learning as a live patient encounter would have been (Median= 5). The three semi-structured interviews elicited generally positive feedback and a desire to see more MR tutorials in future. Negative comments included issues with Wi-Fi, poor sound quality and poor camera angles.

Conclusions: The study findings indicate that students perceive MR teaching using the HL2 as a usable modality for providing education in a clinical setting, that incorporation of MR into medical education in future is desirable amongst students, and that MR is favorable to certain traditional teaching methods currently in practice. Practical concerns surrounding Wi-Fi connection and audio quality remain a constraint to the delivery of MR teaching.

P32

GP AWARENESS OF THE DEMENTIA ADVISER SERVICE IN CORK AND KERRY

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Background: Dementia exacts biopsychosocial tolls on patients, reducing lifespan and independence. The Dementia Adviser Service (DAS) was established by The Alzheimer Society of Ireland to provide informational support to people living with dementia and their carers, while collaborating with healthcare professionals including GPs. However, GP understanding of the DAS is not well understood. This project seeks to determine GP awareness of the DAS and explore GP perspectives on how to better integrate the DAS with general practice.

Methods: This cross-sectional study used an adapted mixed-methods questionnaire, which was distributed to a random sample of 500 GPs currently practicing in Cork and Kerry.

Results: Of included respondents (N = 119), 84.0% reported being previously unaware of the DAS, while 11.8% were aware, and 4.2% were unsure. 8.4% of total respondents reported contact with the DAS. Using Fisher's exact test, years of practice, gender, age, county of practice, community type, and number of patients with dementia at the practice were not significantly associated with GP awareness of the DAS. GPs believed the quality and integration of the DAS with general practice might be improved with better dissemination of

information, feedback to GPs regarding patients' interactions with the DAS, and clear and improved referral processes. Inductive thematic analysis highlighted themes of improved communication and ease of access. Awareness of the DAS among GPs was low, and was not associated with demographic factors.

Conclusions: Responses indicated the importance of improved communication in integrating the DAS with primary care.

THE CLINICAL IMPACT OF THE ONETOUCH APPLICATION IN PATIENTS WITH GESTATIONAL DIABETES IN MAYO UNIVERSITY HOSPITAL

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Background: Gestational diabetes mellitus (GDM) is a major complication of pregnancy which is associated with a range of maternal and neonatal adverse outcomes. These complications may potentially be prevented by tight glycaemic control. Telemedicine assumes a pivotal role which can be used to enhance maternal health and self-management of GDM. This study aimed to investigate the clinical impact of the OneTouch smartphone application on maternal and neonatal outcomes in Mayo University Hospital.

Methods: This was a retrospective cohort study. Data was collected from hospital patient records and analysed using SPSS. For categorical data chi squared tests were used, whereas independent t tests were used to analyse continuous variables. A binary logistic regression was performed for each outcome adjusting for maternal age, BMI, parity and ethnicity.

Results: A total of 201 women were in the application group and 178 women were in the pre-application group. Application use was associated with decreased macrosomia, 8.3% (n=17) compared to 16.1% (n=29) (p=0.02). Several outcomes had very few cases (poly/oligohydramnios, placenta previa, hypertension, intrauterine growth restriction, congenital abnormalities etc). When analysed together, however, all adverse outcomes were reduced in the application group 9.8% (n=20) vs 20.0% (n=36), OR=0.44, 95% CI [0.24, 0.80], p=0.01. There was an increase of insulin and/or metformin use within the application group 68.8% vs 58.4% in the pre-application group (OR=1.66, 95% CI [1.07, 2.57], p=0.03). A total of 54.2% (n=109) of women delivered via cesarean section in the application group vs 41.6% (n=74) in the pre-application group (OR=1.94, 95% CI [1.26, 2.98], p=0.01).

Conclusions: The OneTouch application provides a patient-monitored service with real-time results accessible to healthcare providers electronically. The results indicate the application to be an effective clinical method of monitoring glycaemic control allowing for fast intervention and improving maternal and neonatal outcomes.