



# Selected Abstracts from the 2021 Atlantic Corridor Medical Student Research Conference

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## ORAL PRESENTATIONS

### O1: Surgical Management of Luminal Breast Cancer in the West of Ireland

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**Background:** Luminal breast cancer accounts for 70–80% of new diagnoses. The cornerstone of breast cancer management involves surgical resection, with judicious use of chemo-endocrine and radiotherapies. The aim was to assess breast conservation surgery (BCS) and mastectomy outcomes for patients diagnosed with luminal breast cancer.

**Methods:** Consecutive female patients with luminal breast cancer managed in a single institution between 2005–2015 were included. Descriptive statistics were used as appropriate to outline clinic-pathological and treatment data. Survival analyses were performed, using Cox regression and log-rank Kaplan-Meier analyses.

**Results:** 2304 patients were included with a median age of 58.0 ± 12.1 years (range: 21–95). Median follow-up was 98.2 months. Overall, 69.2% of patients underwent BCS (1595/2304) and 30.8% underwent mastectomy (709/2304). Furthermore, sentinel lymph node biopsy was performed in 1322 of cases (57.4%), and axillary lymph node dissection in 982 cases (42.6%). Older age at diagnosis ( $P=0.006$ ) increased tumour size ( $P<0.001$ ), grade 3 disease ( $P<0.001$ ) and nodal status ( $P<0.001$ ) were all associated with mastectomy. Patients undergoing BCS had enhanced disease-free survival (DFS) and overall survival (OS) (both  $P<0.001$ ) than those undergoing mastectomy. Patients undergoing mastectomy had worse DFS (hazard ratio (HR): 2.739, 95% confidence intervals (CIs): 2.189 – 3.427,  $P<0.001$ ) and worse OS (HR: 2.003, 95% CIs: 1.616 – 2.482,  $P<0.001$ ).

**Conclusion:** The surgical management of breast cancer depends on routine clinic-pathological parameters, such as patient age, tumour grade, and tumour and axillary staging. In luminal breast cancers, BCS remains the gold standard where feasible.

**Disclosure:** Funding from Breast Cancer Research.

### O2: Defining the Therapeutic Potential of Class Specific Histone Deacetylase Inhibitions in an In Vitro Neuroinflammation Model of Parkinson's Disease

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**Background:** Parkinson's disease (PD) is a neurodegenerative disorder resulting from the progressive degeneration of midbrain dopamine neurons. Given the lack of disease modifying therapies, it is crucial to identify new neuroprotective agents. Neuroinflammation is a core aspect of PD pathology and a growing evidence base implicates a pathological imbalance in epigenetic regulation. To identify potential therapeutic targets, we performed gene co-expression analysis of the human substantia nigra (SN) to identify genes in these pathways that were co-expressed with midbrain dopaminergic (mDA) neuron markers. Subsequently we hypothesized that the neurotrophic factor GDF5, and the class IIa specific histone deacetylase inhibitor MC1568, would protect dopaminergic neurons from proinflammatory cytokine-induced degeneration.

**Methods:** To test this hypothesis we used human SH-SY5Y cells which are a widely used model of human dopaminergic neurons. These were cultured with 100ng/ml GDF5, with or without 10ng/ml of TNF $\alpha$  or IL-1 $\beta$ , for 72h. SH-SY5Y cells were additionally cultured in the presence of 0.1 $\mu$ M MC1568, with or without increasing concentrations of TNF $\alpha$  or IL-1 $\beta$ , for 72h. We used neurite growth as a single cell readout of neurotrophic action.

**Results:** GDF5 or MC1568 co-treatment prevented the detrimental effects of TNF $\alpha$  and IL-1 $\beta$  on neurite length.

**Conclusion:** In summary these data show that GDF5 and MC1568 protect against proinflammatory cytokine-induced neurite degeneration in a model of human dopaminergic neurons. Given that axonal degeneration is now recognised as a crucial neuropathological event in PD, these data are an important first step in rationalising the use of these agents as novel therapies for PD.

**Disclosure:** None

### O3: Sun Protection Practices in a Cohort of Renal Transplant Recipients

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**Background:** Renal transplant recipients (RTRs) have an increased risk of skin cancer (SC). This study aimed to explore sun protection practices in RTRs in the West of Ireland.

**Methods:** RTRs completed a questionnaire regarding their sun protective behaviours, SC risk factors, and understanding of the risks of organ transplantation. Results were cross-referenced with their medical records for SC history. Ethical Approval was obtained from the Galway Clinical Research Ethics Committee and funding from the Health Research Board.

**Results:** Sixty-six RTRs participated: 70% were male, average age 55 years  $\pm$  13.6. Mean years since transplant was 13.5  $\pm$  10.1. Most had fair Fitzpatrick skin types (type 1: 30%, 2: 42% and 3: 27%), and 19% had a family history of SC. Seventeen (26%) RTRs had SC (15 non-melanomatous SC and 2 other). 56% of participants had not attended a dermatologist in the last year. 47% of participants had sun exposure >3 hours per day. All recalled getting sun protective advice, but  $\geq$ 80% of participants could not recall receiving electronic information or being told of the dermatological implications of transplantation before surgery. While 91% of participants described regularly using sunscreen, only 51% reported using sunscreen all year round, and 40% did not reapply sunscreen throughout the day. 42% of general medical services (GMS)-eligible participants were unaware that the cost of sunscreen products is reimbursed for transplant recipients with GMS eligibility by the HSE.

**Conclusion:** This study highlights the need for further education of RTRs surrounding sun protection, skin cancer risk, and reimbursement of sunscreen, which could be provided by both renal and dermatological physicians; as well as the need for a dermatology referral protocol specifically for RTRs.

**Disclosure:** Funding from Health Research Board of Ireland, and Dr Griffin received support from the City of Dublin Skin Cancer Hospital Charity while participating in this work.

#### O4: Evaluation of the Opinion of Women on Prenatal Screening Tests for Fetal Trisomy

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 O4 published: <https://doi.org/10.1002/pd.6016>

#### O5: Investigating the Presence of Vascular Endothelial Growth Factor in Circulating Extra-cellular Vesicles in Breast Cancer

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**Background:** Late-stage diagnosis of breast cancer results in poor patient prognosis. Novel biomarkers are urgently needed to facilitate early detection to support better outcomes for all patients. Extracellular vesicles (EVs) are released by all cells and are thought to represent the fingerprint of the cell from which they were released. This suggests biomarker potential for tumor secreted EVs in the bloodstream. The aim of this study was to isolate and characterize serum EVs from tumourbearing mice and investigate whether they contain Vascular Endothelial Growth Factor (VEGF), a proangiogenic protein with an important role in cancer.

**Methods:** EVs were isolated from murine serum samples using centrifugation, microfiltration, and Size Exclusion Chromatography (SEC). Nanoparticle Tracking Analysis (NTA) was used to determine the size distribution and concentration of EVs (n=35). VEGF was detected by Enzyme-linked Immunosorbent Assay (ELISA).

**Results:** EV were successfully isolated from serum samples using SEC, separated based on size into 7 fractions each from 5 samples (total n=35). NTA revealed that fractions 1-3 contained the target population of EVs of <200nm in size, and those EV fractions were pooled from each individual sample. EV size in these fractions ranged from 104 - 160.3nm with a concentration range of 3.97 x 10<sup>8</sup> - 5.53 x 10<sup>9</sup> particles/ml. EVs were then applied to ELISA which identified the presence of VEGF in all samples analyzed.

**Conclusion:** The interesting data presented shows that VEGF is encapsulated in EVs. This has important implications for intercellular

communication in cancer progression and for EVs as biomarkers for breast cancer.

**Disclosure:** Funding from Health Research Board of Ireland.

#### O6: Characteristics and Assessment of Potential Concussive Events in the English Premier League

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 O6 published: <https://doi.org/10.1016/j.jns.2021.118235>

#### O7: Geospatial Analysis of Accessibility to Primary Percutaneous Coronary Intervention Centres in Ireland

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**Background:** Mortality in patients with myocardial infarction is directly related to time to reperfusion, with Irish guidelines recommending patients be directly transferred to hospitals within their catchment area for primary percutaneous coronary intervention (pPCI) under 90 minutes. However, geographical accessibility to pPCI centres have only been estimated by simple travel time coverage analysis. This study aims to provide a better assessment of the geographical accessibility to pPCI and assess for disparities in age-structure access to care.

**Methods:** Modelling using a geographic information system, this study mapped 6 designated pPCI centres in relation to age-structured population data, with spatial ancillary data on roads, elevation, and land cover to estimate travel time within 90 minutes. Hospital catchment area was defined by community healthcare organization (CHO) regions.

**Results:** The percentage of population with access to pPCI within 90 minutes range between 44-54% for all CHO regions excluding region 1 (Sligo, Donegal, Monaghan). Mean percentage of population with access to pPCI is 49.5% with standard deviation of 2%. The burden of access to pPCI nationally in all-age population is 2.92 million, with the highest level of access occurring in CHO regions with 1 or more pPCI centre, and lowest level of access in regions without any designated centre. It is estimated that 426,149 people >65 do not have access to pPCI.

**Conclusion:** This study highlights regions with greatest burden of access for pPCI in Ireland. Given the age-distribution assumptions made for this study, the true burden of access for population >65 is likely greater.

**Disclosure:** None

#### O8: Prevalence and Outcomes of Delirium in the Intensive Care Unit in Sligo University Hospital – A Retrospective Study”

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**Background:** Delirium is an acute and fluctuating disturbance of consciousness that is common in severely ill patients. The prevalence of delirium in the intensive care unit (ICU) is as high as 83.3%, and it is associated with a variety of adverse outcomes.

**Methods:** This project was part of a larger retrospective study examining data from those admitted to ICU in Sligo University Hospital (SUH). Anonymous data was extracted from electronic healthcare records.

Those admitted between October 2019 and March 2020 with a Confusion Assessment Method–Intensive Care Unit (CAM-ICU) assessment recorded were included. This is a screening tool used for delirium in ICU. Demographic variables and outcomes were recorded. Descriptive statistics, a Chi-Square and Mann-Whitney U test were carried out using SPSS. Ethics approval for this study was obtained from the Sligo Research and Ethics Committee.

**Results:** Of 204 patients, 152 (74.5%) underwent at least 1 CAM-ICU assessment and were therefore included. The median age was 68 and 77 (50.7%) were female. The prevalence of delirium was 17.1%. There was no statistically significant difference in discharge outcomes between delirious and non-delirious patients. There was a statistically significant ( $p < .0001$ ) difference in mean rank ICU length of stay between these two groups. The median length of stay was higher for those with delirium (5 days) compared to those without (2.23 days).

**Conclusion:** The prevalence of delirium was low compared to previously reported figures. This could be because there is no High Dependency Unit in SUH, or due to the fact that 25.5% of patients did not undergo a delirium assessment. Perhaps this cohort of patients had a higher prevalence of delirium but they were more difficult to assess.

**Disclosure:** Funding from NUI Galway School of Medicine.

### O9: An Investigation on Proteolysis of the ACE2 Receptor and its Involvement in the Cellular Uptake and Transmission of SARS-CoV-2

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**Background:** The renin-angiotensin system (RAS) regulates blood and tissue homeostasis in humans. Angiotensin-converting enzyme 2 (ACE2) mediates protective RAS signalling as it antagonises Angiotensin II (Ang II), the major vasoactive peptide of the RAS that can be dysregulated and overactive in disease states. ACE2 is a type I transmembrane protein that also functions as a viral receptor, as it has recently been identified as the host receptor for severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2). ACE2 undergoes ectodomain shedding by host cell proteases, resulting in the release of its catalytic ectodomain into the extracellular space and the C-terminal fragment (CTF) secured in the membrane. Ectodomain shedding is a prerequisite for further cleavage by gamma-secretase in a two-step mechanism known as regulated intramembrane proteolysis, a common fate of many known receptors that function as viral pathogens.

**Methods:** Given the structural similarity of ACE2 to other known substrates of gamma-secretase, sequence analysis and motif mutagenesis were performed to delineate the cleavage profile of ACE2 for both ectodomain shedding and gamma-secretase proteolysis. A panel of pharmacological inhibitors were used to explore proteolysis of ACE2 in both endogenous and exogenous models.

**Results:** Here, we show that the ACE2 CTF products of both ADAM17- and TMPRSS2-mediated shedding are subsequently cleaved by gamma-secretase to produce an intracellular domain (ICD) that is released within the cell. Pharmacological inhibition of gamma-secretase prevents ACE2 ICD generation and leads to the accumulation of the membrane-anchored ACE2 CTF lacking the catalytic ectodomain.

**Conclusion:** These observations demonstrate that ACE2 is a substrate for gamma-secretase proteolysis, providing a novel pathway for cellular trafficking of ACE2 that may have therapeutic potential in protective RAS signalling or antiviral immunity.

**Disclosure:** None

### O10: Treatment Planning Using a 3D Simulated Environment to Guide and Inform Precision Delivery of Thermal Therapy to Aldosterone Producing Adenomas

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**Background:** Radiofrequency and microwave thermal ablation offer minimally invasive therapy for primary aldosteronism, however current thermal ablation systems are optimised for the treatment of malignancy in large organs. Using the software “3D Slicer”, this research investigated the potential role of 3D reconstruction of adrenal glands and the surrounding tissues in treatment planning for thermal ablation and identified safe pathways for thermal probe insertion.

**Methods:** 9 Segmentations were performed using diagnostic images (particularly 11C-metomidate PET/CT scans) from patients, recruited under informed consent, with known bilateral adrenal hyperplasia or adrenal nodules. 3D models were constructed of the adrenal glands, intra-adrenal tumour and adjacent organs using the software “3D Slicer”. Critical structures were identified and the safest path for probe insertion was established in each model taking into account the surrounding anatomy and the specific size and shape of each target adrenal gland.

**Results:** Models were completed to a high standard and independently reviewed by a radiographer. Three probe insertion options were identified, although they were not all feasible in every patient. Probe insertion options included through the skin, through the liver and through the base of the lung. These 3D models can be integrated into simulation software and used in the further development and research of the delivery of thermal therapy to aldosterone producing adenomas.

**Conclusion:** Safe pathways for probe insertion to reach intra-adrenal tumours can be established using 3D models created from diagnostic images, specifically 11C-metomidate PET/CT scans. This can help to maintain minimal damage to surrounding tissues and to assist in complete and safe destruction of intra-adrenal nodules in a minimally invasive manner. These models can be further integrated into simulation software to aid in the development of thermal probes, heat maps and predict patient outcomes.

**Disclosure:** Funding from School of Medicine, NUI Galway.

### O11: Potential Alcohol Use Disorder (AUD) Among Men who Have Sex with Men (MSM) in Ireland – Findings from the European MSM Internet Survey (EMIS) 2017

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O11 published: <https://doi.org/10.1016/j.drugalcdep.2021.108698>

### O12: Polypharmacy and Dementia – A Cross Sectional Study of Patients with Dementia Attending Psychiatry of Old Age and Geriatric services in the Northwest of Ireland

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**Background:** Polypharmacy in people with dementia (PwD) can be problematic. It can negatively impact their cognition, functional ability, and adherence. Psychotropic polypharmacy in PwD has also been linked to an increased risk of adverse events. The aim was to examine the medication data of patients on the dementia case register, identify the prevalence of polypharmacy and psychotropic polypharmacy, and explore factors that may contribute to patients in this cohort taking an excess of medications.

**Methods:** A database of 496 patients, compiled by the Sligo/Leitrim Psychiatry of Old Age Team in 2019 was used for the analysis. Medication data for 313 (63.1%) patients was included. Statistical analysis included Chi-square, Mann-Whitney U, and Kruskal Wallis tests and was conducted using SPSS 27 software.

**Results:** The median age of patients involved was 80 years. Polypharmacy was recorded in 72.2% of patients. The mean number of medications prescribed to each patient was 7.86. 37.4% of patients were taking 5–9 medications, while 34.8% were taking 10 or more. 41.0% of patients were taking 2 or more psychotropic medications (excluding anti-dementia drugs); when anti-dementia drugs were included, this rose to 61.2%. Significant factors contributing to increased risk of polypharmacy included referral by a GP (rather than a geriatrician), living in long-term care, vascular dementia, and comorbidities such as atrial fibrillation and hypertension ( $p < 0.05$ ). As expected, patients with a formal psychiatric diagnosis were at much higher risk of psychotropic polypharmacy ( $p < 0.001$ ).

**Conclusion:** Polypharmacy and psychotropic polypharmacy are widespread in this patient group. There is a need for healthcare providers to be aware of this when prescribing, and to monitor and reduce polypharmacy if possible.

**Disclosure:** Funding from School of Medicine, NUI Galway.

## POSTER PRESENTATIONS

### P1: A comparison of mental health and well-being of sexual minority and heterosexual adolescents in Ireland

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**Background:** Sexual minority youth (SMY) are disproportionately affected by mental health problems, but there is much less evidence on factors that empower them to live happy and balanced lives. This study explored various aspects of mental health of 12 to 17-year SMY in Ireland, compared to their heterosexual peers.

**Methods:** A nationally representative subsample of 1090 adolescents (mean age:  $15.64 \pm 1.21$ , percentage girls: 64.8%) participating in the 2018 Health Behaviour in School-aged Children study was investigated. We tested associations between self-reported attraction and mental health outcomes including well-being and life satisfaction using binary logistic regression. An iterative case-control matching technique was used to control for gender, age group and social class of SMY with matched heterosexual youth. The study was approved by the Research Ethics Committee of NUI Galway.

**Results:** Adolescents reporting both-gender attraction (OR = 2.73, 95% CI: 2.08–3.60) and same-gender attraction (OR = 1.62, 95% CI: 1.14–2.32) had significantly higher odds of poor life satisfaction than their heterosexual peers. Likewise, SMY groups had higher odds of experiencing multiple psychosomatic symptoms (OR = 1.48, 95% CI: 1.02–2.15 and OR = 2.82, 95% CI: 2.11–3.76, respectively). SMY were more likely to report poor body image and mental health issues, but not more likely to perceive high levels of everyday stress compared to their heterosexual peers.

**Conclusion:** Adolescents who identify as both- and same-gender attracted reported poorer mental health outcomes compared to their heterosexual peers, signifying SMY mental health inequalities in Ireland.

**Disclosure:** Funding from School of Medicine, NUI Galway.

### P2: The Analgesic Efficacy of Different Techniques Surrounding Regional Anesthesia of the Lumbar Plexus and its Terminal Branches for Hip Fracture Surgeries

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**Background:** Many techniques for regional anesthesia of the lumbar plexus and its terminal branches have evolved; including psoas compartment block (posterior lumbar plexus block), iliacus block, 3-in-1 block (anterior lumbar plexus block), PENG (pericapsular nerve group) block, etc. These techniques are frequently used for hip fracture patients due to the opioid-sparing effects. However, due to the rapid pace in the development of these new techniques, confusion exists in literature and in practice regarding the definition and efficacy of one technique in comparison to another. Research Question: (1) Does regional anaesthesia of the lumbar plexus and its terminal branches enhance analgesic outcomes following hip fracture and hip fracture surgery? (2) Does the evidence point toward one techniques superiority over another?

**Methods:** Six databases were searched on October 12th, 2020 (EMBASE, PUBMED, SCOPUS, EBSCO (CINAHL and MEDLINE), WEB OF SCIENCE, COCHRANE LIBRARY). Studies were selected based on inclusion of: Study Design: Prospective Randomized Controlled Trials (RCT), Population: Adults (18+ years) undergoing hip fracture surgery, Intervention: femoral nerve block (FNB), fascia iliaca compartment block (FICB), psoas compartment block (PCB) and/or pericapsular nerve group (PENG) block, Comparison: Another intervention of interest, Placebo, Non-intervention, Systemic analgesics (Opioids, NSAIDs, Paracetamol), Outcome: Analgesic efficacy (Pain scores measured by Numeric Pain Rating Scale (NRS) or Visual Analogue Scale (VAS)). Studies were excluded if: Unavailable in full-text, Non-human studies, Not RCT, Surgery unrelated to hip fracture.

**Results:** 1. FICB vs Opioid: pain scores at rest at 24h were lower in the FICB group (-0.79 [-1.34, -0.24],  $P = 0.005$ ). Pain scores on movement at 12h were lower in the FICB group (-1.91 [-2.5, -1.3],  $P < 0.00001$ ). No difference between groups in other times. 2. FNB vs Opioid: Initial pain scores at rest were lower in FNB (-0.58 [-0.104, -0.12],  $P = 0.01$ ). 3. FICB vs FNB: No difference between groups at rest. Pain scores on movement: initial scores following block, and at 24 hours were lower in the FNB group (initial: 0.53 [0.21, 0.86],  $P = 0.001$ , 24 h: 0.61 [0.29, 0.94],  $P = 0.0002$ , results not estimable for 12h (not enough data)).

**Conclusion:** Both femoral nerve block and fascia iliaca compartment block enhance analgesic outcomes following hip fracture and hip fracture surgery, superior to the use of systemic analgesics such as opioids. FNB may be more efficacious at reducing pain following hip fracture surgery when compared to FICB.

**Disclosure:** None

### P3: A Longitudinal Evaluation of the Impact of the COVID-19 Pandemic on a Cohort of Patients Treated with Clozapine

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**Background:** Previously, it was demonstrated that 3 months into the COVID-19 pandemic the impact on individuals with treatment-resistant psychotic disorders was modest, with reduced social functioning most evident. Here, we examined if the COVID-19 pandemic was associated with a differential effect over time in relation to its psychosocial impact on the same cohort.

**Methods:** Semi-structured interviews were conducted, in-person or by telephone, with 54 individuals (85.7% response rate) in June and July, 2021, 12 months after initial interviews. Participants' subjective experience of the impact of the pandemic on their anxiety symptoms and

functioning was measured using the same Likert scales at both time-points, with anxiety symptoms additionally measured using subjective (Beck Anxiety Inventory) and objective (Hamilton Anxiety Rating Scale) psychometric instruments. Paired-t-tests or the Wilcoxon-ranked-tests compared parametric or non-parametric data over-time. Free-text data pertaining to perspectives on the impact of COVID-19 was grouped into themes. Ethical approval was obtained prior to commencement.

**Results:** No statistical difference in symptomatology over time was noted in relation to anxiety symptoms, functioning, or quality of life. Depressive symptoms, however, were prevalent at follow-up (Mean 3.76 (SD=2.81) v. 2.96 (SD=2.72),  $t=2.315$ ,  $p=0.024$ ). Six themes were identified, the most prevalent relating to (i) positivity regarding vaccination, and (ii) social isolation from family members.

**Conclusion:** No significant overall change in symptomatology or functioning was noted for individuals with pre-existing treatment-resistant psychotic disorders, with positive views demonstrated pertaining both to vaccination and optimism for the future.

**Disclosure:** Funding from School of Medicine, NUI Galway.

#### P4: The Uptake of the Pneumococcal Polysaccharide Vaccine in a GP Surgery in Ireland: A Clinical Audit

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**Background:** *Streptococcus pneumoniae* is transmitted via direct contact with respiratory secretions. Invasive pneumococcal disease (IPD) can cause life-threatening bacterial infections such as pneumonia, meningitis & septicaemia<sup>1</sup>. The risk of IPD increases with age, affecting 10.7 per 100,000 individuals in Ireland per year<sup>2</sup>. In observational studies, the pneumococcal polysaccharide vaccine (PPV23) has been shown to reduce mortality by 40% by preventing acquisition of pneumococcal pneumonia and reducing severity of illness and morbidity in those who are vaccinated but still acquire the disease<sup>3</sup>. Though randomized control studies are limited, reductions in pneumococcal pneumonia compared to placebo are as high as 63%<sup>4</sup>.

**Methods:** Standard: As per HSE recommendations, 100% of patients  $\geq 65$  years old should be vaccinated. Primary Indicator: The clinic's  $\geq 65$  year cohort who accepted or declined the vaccine. Target: 95%. Methodology: Inclusion criteria consisted of patients  $\geq 65$  years old registered with Woodview Family Doctors. Exclusion criteria included persons without an appointment for  $\geq 12$  months and patients within one year of 65 who have not had an opportunity to become vaccinated.

**Results and Conclusion:** First round results: 80% ( $n=388/484$ ) in January 2020. Action plan: Distributed personal list of unvaccinated patients to physicians. Encouraged providers to educate patients and encourage vaccination. Second round results: 90% ( $n=429/476$ ) in February 2021. Action plan: Added electronic medical record (EMR) reminders for providers and sent SMS to eligible patients. Third round results: 92% ( $n=442/483$ ) in August 2021. Action plan: Identified and contacted eligible patients monthly to encourage vaccination with the practice nurse. Discussed barriers to vaccination with providers and assessed patient knowledge of PPV23.

**Disclosure:** None

#### P5: Optimization of Macromolecular Crowding in Human Umbilical Cord Mesenchymal Stromal Cell Culture for the Development of a Wound Healing Cell Therapy Product

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**Background:** Human umbilical cord derived mesenchymal stromal cells (hUC-MSCs) have shown promising therapeutic effects in the treatment of

diabetic wound healing<sup>[1]</sup>. However, direct cell injection may cause rapid cell death and poor cell localisation. Macromolecular crowding (MMC) has been shown to enhance cell matrix deposition in human MSC cultures, without affecting cell behaviour. MMC enables the generation of a cell sheet with good cell localisation, high cell matrix deposition, and retention of cell function<sup>[2]</sup>. Carrageenan MMC has been used to enhance collagen deposition in MSCs. However, the optimal concentration of carrageenan in hUC-MSCs has yet to be assessed. The aim was to optimize the MMC concentrations for hUC-MSC and assess the cell viability and collagen type I deposition of hUC-MSCs with MMC treatment.

**Methods:** hUC-MSCs were seeded in 24 well plates and cultured with media containing carrageenan at various concentrations (0,10,25,50 $\mu$ g/ml). Cell morphology, viability, metabolic activity, proliferation, and deposited ECM proteins were analysed after 3 days of MMC treatment.

**Results:** SDS-PAGE and immunocytochemistry revealed an increase in collagen type I deposition in the presence of 25 $\mu$ g/ml  $\lambda$  carrageenan. Live/Dead assay revealed no significant difference in cell morphology and viability between MMC concentrations.

**Conclusion:** These results indicate that 25 $\mu$ g/ml  $\lambda$ -MV carrageenan is an optimal concentration for ECM deposition and maintenance of cell morphology in hUC-MSCs.

**Disclosure:** Funding from Health Research Board of Ireland.

#### P6: Neo-adjuvant Chemotherapy Prescription in Luminal Breast Cancer in the West of Ireland

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**Background:** Luminal breast cancer is a hormone sensitive disease, responds well to endocrine therapies, and carries favourable prognoses. Recently, there has been a vogue to prescribe neo-adjuvant chemotherapy (NAC) for patients diagnosed with luminal breast cancer. The aim was to assess NAC prescription in patients diagnosed with luminal breast cancer to assess the survival advantage of achieving a pathological complete response (pCR) to NAC.

**Methods:** Consecutive female patients treated with NAC for luminal breast cancer managed in a single institution between 2005-2015 were included. Descriptive statistics were used as appropriate to outline clinic-pathological and treatment data. Miller Payne Grade (MPG) was used to assess response to NAC. Survival analyses were performed using Cox regression and log-rank Kaplan-Meier analyses.

**Results:** 308 patients were included with a median age of  $51.8 \pm 12.6$  years (range: 21-87). Median follow-up was 86.3 months. MPG was available for 229 patients; 26 achieved a pCR (MPG 5) to NAC (11.4%), 134 patients had a good response to NAC (MPG 3-4) (58.5%) and 69 had a poor response (MPG 1-2) (30.1%). Using Kaplan Meier analyses, MPG failed to predict disease-free survival (DFS) ( $P=0.100$ ) or overall survival (OS) ( $P=0.274$ ). However, patients achieving a pCR had enhanced DFS ( $P=0.004$ ) and OS ( $P=0.033$ ). Furthermore, successfully achieving a pCR predicted enhanced DFS (hazard ratio (HR): 0.098, 95% confidence intervals (CIs): 0.014 – 0.702),  $P=0.021$ ) and OS (HR: 0.245, 95% CIs: 0.060 – 0.998),  $P=0.049$ ).

**Conclusion:** There is a varying response to NAC in patients diagnosed with luminal breast cancer. In-vivo data obtained from NAC may inform patient prognostication in luminal breast cancer.

**Disclosure:** None

#### P7: Outcome Predictors for Oral Food Challenges in Children

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### P8: Evaluating the Effectiveness of a Postmenopausal Bleeding Track to Rule Out Endometrial Cancer: A Prospective Audit

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**Background:** Despite its increasing incidence, a national time-frame for the diagnosis of endometrial cancer is absent. The revised Postmenopausal Bleeding (PMB) track at Mayo University Hospital (MUH) aims to improve the triage and appointment system, expediting patient care in the Ambulatory Gynaecology clinic (AGC). This study evaluated the PMB track, assessing performance against regional and international standards.

**Methods:** This prospective clinical audit included patients with PMB or abnormal endometrial imaging in MUH from January 2021 to June 2021 (n=123). Patient data was collected through electronic medical records, triangulated with hospital laboratory systems and analysed using SPSS. Ethical approval was granted from MUH Research Ethics Committee.

**Results:** Eighty-four referrals were identified through the triage system, while an additional 45 patients bypassed this system. There was no significant difference in waiting time for both groups, with a combined median of 22 days. 72.6% (85/117) meet the Saolta target of 28 days, but this decreases significantly (19.6%, 23/117) when measured against the UK standard. 27% (6/17) of patients did not meet the regional target of 48 days when diagnosis necessitated a general anaesthesia procedure, from the time of their first AGC appointment. Just 3 patients (20%, 3/17) met the Australian and UK standard of 14 days.

**Conclusion:** Our findings show that the PMB track can be further improved despite meeting regional standards as it falls short of other national standards. Current barriers to reducing waiting times include inequitable cancer pathways in Ireland, theatre capacity and triage process refinement. This audit serves as a baseline reference in the development of the new national guideline on PMB.

**Disclosure:** None

### P9: A Descriptive Study: Vitamin D Levels in Women with Gestational Diabetes Mellitus (GDM)

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**Background:** Increasing prevalence of Gestational Diabetes Mellitus (GDM) among pregnant women is an emergent health concern. Incidence of GDM in Ireland is increasing from 2008 to 2017, from 3.1% to 14.8%. One of the factors hypothesised to increase risk of GDM is low vitamin D. This study aims to investigate vitamin D status of GDM patients in a cohort of Irish population.

**Methods:** This is a retrospective database study conducted in Cork University Maternity Hospital. Data was obtained from CUMH clinical database of GDM patients collected for ongoing audit. All GDM patients from January 2019 to January 2020 were included for analysis. Study measures include age, ethnicity, BMI(kg/m<sup>2</sup>), gestation at sampling, HbA1C levels, serum 25(OH)D (nmol/L), need of GDM treatment and seasonality.

**Results:** 547 patients were identified, 59 patients excluded due to missing data. 488 patients were the final sample size. Mean age of participants is 33.84 ± 4.92 years. The median 25(OH)D level was 56.5 nmol/L (IQR: 38 nmol/L). 43 (8.8%) participants were classified as vitamin D deficiency, 167 (34.2%) insufficiency, 157 (32.2%) adequate, 111 (22.7%) optimal and 10 (2.0%) has risk of excess. Non-Caucasian have lower vitamin D levels compared to Caucasian (p value=0.05) while those sampled during summer to autumn exhibit higher levels of vitamin D (p value=0.00). BMI, HbA1C and need of GDM treatment shows no significant relationship with vitamin D.

**Conclusion:** Results from this study provide novel data on high prevalence of GDM patients with suboptimal vitamin D levels in an Irish population. Further prospective research comparing with a non-GDM group and a wider national population is recommended.

**Disclosure:** None

### P10: The Paediatric Outpatient Experience in the Covid-19 Era

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**Background:** Paediatric outpatient visits (POV), by necessity, have been modified by the Covid-19 pandemic. This study evaluated current experiences of parents at POV and their virtual clinic (VC) experience over the past year.

**Methods:** Parents attending review POV at Mayo University Hospital (MUH) completed prospective anonymous voluntary surveys over 5 weeks. Data including child's age, diagnosis, duration attending clinic was recorded. Parent values, in-person and VC experiences were assessed using binary and Likert scoring questions; using a 1 "not at all" and 6 "definitely". Mean Likert and positively skewed Likert 5/6 were calculated.

**Results:** 226 (92%) parents completed surveys. Child ages were: (11%) 0-1 years; 64 (28%) 1-5 years; 69 (31%) 6-10 years; 67 (30%) >10 years. 148 (66%) attended general clinic. Specialised clinics included complex care (n=8), cystic fibrosis (n=3), asthma (n=33), diabetes (n=21), trisomy 21 (n=10). Mean attendance duration 3.17 years. Parents prioritised timeliness, rapport and investigations with mean Likert scores 4.4, 5.4, 5.0 respectively. In-person attendance difficulties included work loss 74 (33%), school loss 151 (67%), childcare 66 (29%) and waiting times 43 (19%). 75 (33%) experienced VC. For 54 (74%) it was sufficient; 34 (47%) agreed VC was as good as in-person; 44 (64%) reported 'less hassles with VC'. Advantages included timeliness, reduced Covid risk, need for childcare and travel. Disadvantages included lack of communication, physical exam and investigations. 42 (57%) preferred in-person combined with VC. 30 (41%) preferred in-person. 2 (3%) preferred VC. 19 (25%) were satisfied with VC compared to 51 (68%) with in-person (p<0.001, Fisher's exact test).

**Conclusion:** While for parents traditional POV are satisfactory, specific training in conducting VC is required for doctors.

**Disclosure:** None

### P11: A Study of Cardio-Pulmonary Resuscitation (CPR) Knowledge and Understanding in Primary School Children

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**Background:** Out-of-hospital cardiac arrests are time-critical emergencies. Early provision of bystander Cardio-Pulmonary Resuscitation (CPR) improves survival. To increase bystander CPR rates, many post-primary schoolchildren are learning CPR. No CPR training program exists in Irish Primary Schools. The primary objective was to capture existing CPR knowledge amongst children (aged 9-12 years) in an Irish Primary School. We sought to elicit participants' interest in learning CPR. Participant demographics were correlated with their pre-existing CPR knowledge and differences based on age were investigated.

**Methods:** A multiple-choice questionnaire comprising of 7 knowledge-based CPR questions adapted from the 'ABC for Life' study was used for data collection. Also asked were questions regarding CPR experience and attitudes towards learning CPR.

**Results:** Of 126 participants, 81.7% had previously heard about CPR. Only 11.9% had experienced formal CPR training. Interest in learning

CPR was high - 88.9% of children expressed a willingness to undergo formal training. No differences in scores achieved from a maximum of 7 existed between children based on age. Girls achieved statistically higher scores (mean = 5.93) than boys (mean = 5.53.)

**Conclusion:** Knowledge about CPR within this population is high. A large interest exists in receiving CPR training in the future. There are no differences in pre-existing CPR knowledge between 9- and 12-year-olds, while female students have a statistically higher level of pre-existing CPR knowledge than their male counterparts. Following this study, further research is needed into practical CPR training for this population.

**Disclosure:** None

### **P12: Man v Machine: A Retrospective Observational Study of Automated External Fibrillator versus Manual Mode Use of Defibrillators in the Emergency Department**

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**Background:** Successful resuscitation of patients in cardiac arrest requires chest compressions with minimal interruption and the provision of appropriate shocks. Defibrillators can be used in 2 ways: manual mode which requires rhythm analysis and decision to shock by the team leader, or automated external fibrillator (AED) mode which advises when a rhythm check is due and analyses the rhythm to decide if a shock is appropriate. The aim was to investigate whether using the AED mode would result in less time off the chest compared to manual mode and the human factors affecting the choice between modes.

**Methods:** A retrospective review was performed of the case notes, and the data downloaded from the defibrillators (Physio Control Lifepak 20) using Code-Stat software, for 27 cardiac arrests in the Emergency Department (ED). Interviews were conducted with the team leader after simulated cardiac arrests to investigate the human factors affecting their choice of mode.

**Results:** 27 cardiac arrests were analysed – 7 manual and 20 AED. Time on the chest was 82% in both groups. Compression rate was within the recommended range in both groups. Team leaders almost all responded that they prefer manual mode and felt that AED mode cause delayed rhythm analysis. They commented that they liked the prompts in AED mode.

**Conclusion:** AED and manual mode had similar amounts of time off the chest. Team leaders prefer using manual mode. The most important factor is familiarity with the mode in use and its benefits and limitations. There should be a focus on this during training.

**Disclosure:** None

### **P13: A Retrospective Study of Uterine Artery Embolisation in Managing Symptomatic Fibroids**

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**Background:** Fibroids are common benign gynaecological tumours. Although the majority are asymptomatic, some patients experience symptoms that affect their quality of life. Uterine artery embolization (UAE) is an emerging intervention for symptomatic fibroids which involves blocking the blood supply to fibroids, leading to their shrinkage. However, there is limited evidence on the effectiveness of this intervention. This study aimed to analyse the success rate of UAE for symptomatic fibroids and to investigate the factors that may affect the outcome of UAE.

**Methods:** This study was a retrospective dataset review of patients that underwent UAE from July 2015 to June 2020. Information regarding age, symptoms, number of fibroids, mean diameter and location of the largest

fibroid before intervention was recorded. Patients had 2 follow-up appointments; one within the first month, and the second within 4 months post-UAE. Changes in symptoms, pregnancy, and additional interventions post-UAE were recorded. Factors potentially affecting the outcome of UAE were analysed using independent t-test or Fisher's exact test.

**Results:** 21 patients were included in this study. The mean age was 46.05. 95.2% experienced symptom improvement at first follow up, decreasing to 71.4% at second follow-up. 3 pregnancies were reported. 9.5% had tranexamic acid and 19.0% had progesterone post-UAE. 4.8% had hysterectomy post-UAE. There was a significant association between the location of the largest fibroid and the outcome of UAE. The number and mean diameter of the largest fibroid were not significantly associated with the outcome.

**Conclusion:** UAE is effective in managing symptomatic fibroids and can be offered as alternative.

### **P14: Growth Kinetics Analysis and Optimisation of Western Blotting for the detection of eNOS in ECFCs from patients with Peripheral Artery Disease**

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**Background:** Peripheral artery disease (PAD) is the narrowing of arteries in the limbs due to plaque formation. Endothelial colony forming cells (ECFCs) are capable of growing new blood vessels in vivo. Endothelial nitric oxide synthase (eNOS) is a protein found in ECFCs and is involved in vascular health. It can become dysfunctional in disease states. We hypothesise that this dysfunctionality will be observed in ECFCs from PAD patients. Targeting eNOS maybe a therapeutic avenue to treat PAD. ECFC proliferation was compared in healthy and PAD patients to determine the presence of any disease related dysfunction. A western blot protocol was optimised to compare eNOS levels of ECFCs between the donor groups.

**Methods:** ECFCs from healthy (n=3) and PAD (n=3) patients were seeded and cell numbers were recorded over the 8-week period to calculate proliferation rates. Protein extraction was optimised and subsequently carried out on all donors. Protein was quantified with BCA assay. A Western blot protocol was optimised, and eNOS and GAPDH antibodies were tried. Ethical approval was obtained from the Clinical Research Ethics Committee.

**Results:** There was no significant difference in proliferation rates of PAD and healthy ECFCs (maximum cumulative population doubling number, population doubling time (p=0.29, p=0.94)). Optimisation of western blot suggests that a lower GAPDH antibody concentration would be sufficient in future tests.

**Conclusion:** Results suggest that PAD had no significant effect on the growth kinetics of ECFCs, however a larger sample size is needed to support this data. Further titration of GAPDH and eNOS antibodies is required before selecting an optimal antibody concentration. Results of this study have contributed to a larger investigation.

**Disclosure:** Funding from Health Research Board of Ireland.

### **P15: Prevalence of Drug-drug Interactions in Older Adults at the Point of Hospital Admission**

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**Background:** Drug-drug interactions (DDIs) are common in older adults and are associated with increased risk of adverse events and hospitalisation. A standardised list of significant DDIs, specifically relevant to adults aged  $\geq 65$  years has recently been compiled and validated,

called the 66-item DDI list. The objective was to determine the prevalence of DDIs according to the 66-item DDI list, at the point of admission, in patients aged  $\geq 65$  years, with  $\geq 3$  comorbidities and  $\geq 5$  medications.

**Methods:** 77 participants admitted to Cork University Hospital (June–August 2021) were consented. Medication reconciliations were conducted within 48 hours of admission. Medications were confirmed with two or more of the following sources: the patient, the patient's family, the community pharmacist, or general practitioner. Drug charts were manually screened for DDIs according to the 66-item DDI list.

**Results:** 45 participants (58.44%) had  $\geq 1$  listed DDIs. 24 (31.17%), 15 (19.48%), 2 (2.60%) and 4 (5.20%) participants had one, two, three and four simultaneous DDIs respectively. The most commonly identified DDI was concomitant use of  $\geq 3$  centrally acting drugs i.e. opiates, anti-psychotics, benzodiazepines, antidepressants, and antiepileptics, which increases the risk of falls and impaired cognition; this DDI was identified in 18 patients (23.28%).

**Conclusion:** The majority of older people had  $\geq 1$  DDI at the point of admission. Almost one quarter were prescribed  $\geq 3$  centrally acting drugs. Given the high prevalence of DDIs in this vulnerable patient population, frequent review and rationalisation of medications is required to minimize DDIs and thereby enhance medication safety.

**Disclosure:** None

#### P16: Cell-by-Cell Morphomolecular Assessment in Molecular Pathology

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**Background:** Molecular tests used to inform treatment decisions for cancer patients require a certain amount of tumor DNA in samples to be considered suitable. Accurate quantification of tumor content in histopathology slides is vital to prevent production of false results as these tests can be sensitive. The aim of this study was to mathematically model tumor content across several histology levels by precisely and manually counting cells and quantifying tumor DNA.

**Methods:** Ethical approval was granted and 12 sections from four anonymized colorectal cancer cases were cut over a span of 36 microns. Sections at levels 1, 4, 8 and 12 were H&E stained to check for differences in tumor DNA. Cells were manually counted and annotated precisely. DNA content and volumes of various cells were estimated based on literature findings. Gillooly et al reported that an average lymphocyte holds 7.1 picograms of DNA.

**Results:** We have demonstrated that quantity of tumor DNA can differ significantly within a span of 12 microns. A mucinous case, Case 3, altered by 1% between levels. Whereas another case showed a change of 33% between level 1 and 4.

**Conclusion:** Our study expresses that tumor DNA quantity can significantly change within a space of 12 microns. This is vital as it is a standard extraction procedure for tumor content when applying molecular tests. Thus, precision in quantifying tumor DNA is crucial as a change of 33% in a suitable sample can produce false negatives and affect further treatment.

**Disclosure:** Funding from PathSoc Undergraduate Bursary.

#### P17: To Investigate if Preoperative Anaemia in Patients Undergoing Hip Arthroplasty is Associated with Postoperative Blood Transfusions

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**Background:** Total hip arthroplasty (THA) is a very common surgery in Ireland, with approximately 4500 occurring here each year. It is

performed predominantly on the elderly, with an average patient age over 60, many of whom are anaemic. Postoperative blood transfusions occur in a considerable number of patients who undergo THA.

**Methods:** This study consisted of a retrospective chart review of all patients who underwent THA surgery in 2019 in SIVUH, Cork. Patients were identified using the hospital database, and files requested from the Medical Records Office for review.

**Results:** 291 patients were included in our study. 8.9% of the sample who underwent THA had preoperative anaemia, 19.2% of which had a subsequent postoperative blood transfusion, compared to just 1.5% of patients who were not anaemic preoperatively. The odds of receiving a blood transfusion in the preoperative anaemic group was 15.5 times greater compared to those who were not anaemic preoperatively. Our study also found statistically significant associations between increasing age, and American Society of Anaesthesiology (ASA) scores with preoperative anaemia, and postoperative blood transfusions. Ultimately, our research suggests a strong link between preoperative anaemia and postoperative blood transfusions.

**Conclusion:** Preoperative anaemia is common in the cohort who undergo THA. Preoperative anaemia, increasing age and ASA scores are all statistically associated with increased rates of postoperative blood transfusions. Increasing ASA scores, age and postoperative blood transfusions have all been associated statistically with increased length of hospital stay in patients who undergo THA.

**Disclosure:** None

#### P18: The Role of Coastal Sediments in the Persistence of and Transmission of Antimicrobial Resistance

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**Background:** Antimicrobial resistance (AMR) is one of the greatest threats facing humanity. It is imperative that a One Health approach is taken to adequately address this global challenge. The aim was to examine the role of sea sediment in the transmission and persistence of AMR, and compare findings to a parallel assessment of aquaculture sediments.

**Methods:** Sediment samples were collected at 3 locations, at different distances, extending away from a wastewater treatment plant (WWTP) discharge point on 10 separate days. Antimicrobial sensitivity testing was performed on all Enterobacterales isolated, and PCR to determine the resistance mechanism on relevant isolates.

**Results:** In total, 32 Enterobacterales were isolated from 30 samples, 28 of which were collected from samples closest to the WWTP discharge point. The majority of isolates retained good sensitivity to the antibiotics tested with the highest levels of resistances observed to ampicillin (45%) and cefoxitin (26%). Two isolates (*Citrobacter freundii* and *Enterobacter bugandensis*) were multidrug resistant which included resistance to ertapenem.

**Conclusion:** The findings suggest that the WWTP is contaminating the surrounding sediment. Water samples collected from the same location contained relatively high levels of antibiotic resistant bacteria (Mahon, B.M, et al. 2019), indicating that sediment is not contributing to this phenomenon. Aquaculture sediments examined in a parallel study was associated with a higher level of AMR which suggests that aquaculture presents a possible route of transmission of AMR.

**Disclosure:** Funding from Health Research Board of Ireland

#### P19: HbA1c Evaluation Predicting Hyperglycemia and Avoiding Morbidity in Steroid Initiation

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**Background:** Steroids can precipitate significant hyperglycemia and Diabetes Mellitus (DM) in vulnerable populations including DM, pre-DM and the elderly. Steroid risks include deterioration in DM, glucose toxicity, HONK and HHS. This may be avoided by a simple screening HbA1c, which could prompt a ‘safeguard algorithm’ for the patients including instruction in glucose monitoring. The ‘at risk’ cohort is identified, and a surveillance regime is implemented.

**Methods:** We conducted a pilot study, assessing the prevalence of HbA1c screening pre-steroid commencement. This was a prospective study, identifying all patients (medical, surgical and oncological admissions / inpatients) in the BSH Cork, commencing oral steroids from July 19 – August 1, 2021. We reviewed if any had HbA1c screening within the preceding three months.

**Results:** Of all inpatients, 49 were commenced on steroids. 8/49 (16%) patients had an HbA1c measurement pre-treatment, ranging from 45–134 mmol/mol.

**Conclusion:** The results highlight low level HbA1c testing pre-steroids. 94% of steroid induced hyperglycemia develops within 48 hours of initiation (1), when most patients are still inpatients. 41/49 patients were not tested and are at risk for steroid induced hyperglycemia. Of those tested, all were in ‘at-risk category’ (HbA1c > 42 mmol/mol). This may suggest a limitation in our study, in so far as, all those tested may have been known to be hyperglycaemic and the true screening value may be lower. Nonetheless, a simple HbA1c will identify those ‘at-risk’ for targeted glucose monitoring on steroids, ideally in hospital. This may minimize the risk of readmission and morbidity with HONK/HHS.

**Disclosure:** None

<sup>1</sup> Fong AC, Cheung NW (2013) The high incidence of steroid-induced hyperglycaemia in hospital. *Diabetes Res Clin Pract* 99:277–80.

#### **P20: Treat to Target (T2T) Pathway in Inflammatory Arthritis Patients - Do Certain Groups Respond to Treatment Differently?**

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**Background:** T2T strategy in inflammatory arthritis helps achieve early remission rates or low disease activity. Commencing disease modifying anti-rheumatic drugs (DMARD) therapy and glucocorticoids early and titrating therapy as appropriate improves clinical outcomes. The aim is to analyse ACR20 response within different subgroups of inflammatory arthritis patients enrolled in the T2T programme.

**Methods:** Data collection was performed by assessing electronic medical records of 374 inflammatory arthritis patients who participated in T2T pathway for inflammatory arthritis between 2014 to 2020. 374 patients were enrolled in T2T inflammatory pathway led by rheumatology ANP with consultant supervision. Majority of the patients had diagnosis of rheumatoid arthritis per ACR/EULAR criteria. Criteria considered were serology, diagnosis, age, gender, smoking status, administration route for metho-trexate and starting dose. ACR20 was analysed with a majority (61%) seen at week 6 for their visit 1 after starting T2T pathway while all patients seen by week 20.

**Results:** ACR20 response rate was the same among patients aged under and over 50 (67% responders). There was no significant difference in ACR20 response among females and males (66.9% response). 75% responded to treatment in rheumatoid factor (RF) + group vs 60% in RF - group. Higher response rates were seen among non-current smokers vs active smokers (70% vs 65%). ACR20 response was greater in patients on SC methotrexate. 65% achieved remission within 15 months of starting T2T pathway while remaining achieved low disease activity.

**Conclusion:** T2T strategy helps rheumatologists identify subgroups who responds better to treatment to achieve remission or low disease activity.

**Disclosure:** Funding from Irish Society for Rheumatology.

#### **P21: Complementary and Alternative Medicine and Healthcare Education: Evaluating Healthcare Students’ Knowledge, Attitudes and Interest**

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**Background:** Complementary and alternative medicine (CAM) represents a growing sector of healthcare, putting increasing burden on healthcare professionals. CAM is currently underrepresented in undergraduate healthcare curricula across Europe. Previous studies have assessed medical students’ knowledge, attitudes and interest in CAM, however further research is required to assist educational systems in addressing this gap. The aim of this study is to assess level of knowledge, interest in and attitudes of medical, midwifery and nursing students towards CAM.

**Methods:** Cross-sectional quantitative study using a pre-validated online questionnaire tool. Results analysed using SPSS. All UCC undergraduate medical, midwifery and nursing students were invited to participate (approximately 1700).

**Results:** This preliminary report includes 270 responses (51.9% medical, 7.8% midwifery and 40.4% nursing). Majority were female (78.5%), from Ireland (71.5%) and ranged from 18–50 years old. Most (88.5%) reported they believe knowledge of CAM is important to their future careers, however, 90.7% reported having obtained insufficient knowledge in their current programs. Furthermore, 84.1% believe CAM should be included in their program curricula. Most appropriate time to learn proposed was pre-clinical years (47.8%), with lectures being the most supported teaching method (40.4%). When comparing interest level, attitude towards and willingness to include in their future practice, nursing students had significantly higher ranks than medical students ( $p < 0.05$ ).

**Conclusion:** This study provides evidence that healthcare students in Ireland understand the importance of CAM to their future careers, and support incorporating it into their program curricula.

**Disclosure:** None

#### **P22: Impact of Fluphenazine Decanoate Discontinuation – A Retrospective Cohort Study in a Community Mental Health Setting**

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**Background:** Fluphenazine Decanoate (Modecate) is a first generation antipsychotic (FGA). Primarily used as a maintenance treatment for those with psychotic illnesses, Modecate was available in a long-acting injectable (depot) format. Previously, discontinuation of FGA’s have resulted in relapse of psychosis in formally well patients<sup>(1)</sup>. The aim was to ascertain if patients demonstrating mental health stability experienced a relapse in psychosis following discontinuation of Modecate in a West of Ireland catchment region.

**Methods:** 14 participants were recruited to the cohort study. Semi-structured interviews were conducted by telephone utilising the Beck Anxiety Inventory, the Global Assessment of Functioning, and the Clinical Global Impression. Informed consent was obtained for the review of clinical notes, with ethical approval granted by Saolta Clinical Research Ethics Committee. Statistical Package for Social Sciences 27.0(2) was utilised for statistical analysis.

**Results:** We found that 71.4% of participants experienced a clinically significant relapse of symptoms following Modecate discontinuation. Of those who relapsed, 28.6% were of moderate severity. 57.2% of our study population had a diagnosis of Paranoid Schizophrenia. Our analysis

discovered that further interventions were required for 50% of participants whose initial alternate treatment was considered inadequate.

**Conclusion:** Our study suggests a correlation between Modecate discontinuation and relapse of psychosis. Of the participants who relapsed in their symptoms, 40% had been clinically stable for over 10 years prior to Modecate withdrawal. Our analysis highlights the relationship between disease stability, effective treatment and the need for careful planning around change of treatment for those maintained on depot medications.

**Disclosure:** Funding from NUI Galway School of Medicine.

### P23: How Hot is Too Hot? Towards Identifying Wound Bed Temperature Indicative of Wound Infection Status

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**Background:** To identify the wound bed temperature of a chronic infected or suspected of being infected wound. Our ultimate goal is to aid the early recognition of wound infection so that timely, appropriate treatments may prevent more serious complications.

**Methods:** Prospective observational study design. Photographs and thermal images of wounds from 31 patients with diabetic foot ulcers (DFU) or venous leg ulcers (VLU) were recorded using a Flir thermal camera. Patients were recruited from August 2021 – Sept 2021 from diabetic foot clinics and vascular clinics.

**Results:** 31 patients (24 male), mean age 67 were recruited: 21 had DFU, 6 had VLU, and 4 had other aetiology; 7 were infected, 13 not infected, and 11 undetermined; Wound temperatures ranged from 22.51–36.38 degrees Celsius; mean 31.56 degrees Celsius, standard deviation 3.75; Further detailed statistical analysis using software programming is currently being conducted by the Physics Department.

**Conclusion:** Temperature varies significantly across all wounds based on infection status and aetiology. A temperature of 22.51 degrees Celsius is significantly colder than core body temperature and may not be conducive to wound healing. Understanding therapeutic thresholds.

**Disclosure:** Funding from Health Research Board of Ireland.

### P24: Patient Reported Medication Adherence to DOACs and Warfarin – A Systematic Review and Meta-Analysis of Observational Studies

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**Background:** Oral anticoagulation therapy is indicated for a broad array of thromboembolic conditions, with warfarin remaining the cornerstone of therapy for decades. The abstract of Direct Oral Anticoagulants (DOACs) has revolutionised the landscape of oral anticoagulation. There appears, however, to be a dearth of observational data comparing patient reported adherence of both DOAC and warfarin users. This meta-analysis sought to summarise the observational evidence on patient reported adherence to both DOACs and warfarin.

**Methods:** A systematic database search using the PRISMA guidelines was performed. Articles published between 2011 and 2021 that assessed patient reported adherence to oral anticoagulant drugs using the Morisky Medication Adherence Scale (MMAS-8) were included. Methodological quality was assessed using the NIH tool.

**Results:** Eleven studies with a total of 4,276 patients were included. A random-effects DerSimonian-Laird meta-analysis of proportions was

conducted. This yielded a pooled proportion of adherence of 81.5% (95% CI: 71.16–88.74, I<sup>2</sup>: 88.99%) for warfarin patients and 90.32% (95% CI: 73.91–96.85, I<sup>2</sup>: 82%) for DOACs. A pooled proportion of 43.17% (95% CI: 30.87–56.39, I<sup>2</sup>: 92%) of included subjects were highly adherent to warfarin while 61.49% (95% CI: 49.62 – 71.14, I<sup>2</sup>: 77%) were highly adherent to DOACs.

**Conclusion:** Synthesis of the observational data suggests medication adherence was high (>80%) for both DOACs and warfarin. Pooled proportions of highly adherent patients was considerably greater in DOAC patients (61.49%) compared to warfarin patients (43.17%), providing valuable observation evidence to support DOAC use in clinical practice.

**Disclosure:** None

### P25: The Impact on Loneliness of Targeted Psychological Interventions Delivered on a Digital Platform – A Rapid Systematic Review

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**Background:** The COVID19 pandemic highlighted an array of public health concerns, including loneliness. Stringent COVID19 measures were imposed on older adults, a population already sensitive to loneliness. Evidence supports the use of psychological interventions to relieve the burden of loneliness. The pandemic accentuated a need for effective remotely delivered loneliness interventions. This rapid systematic review aimed to identify effective psychological interventions to reduce loneliness delivered on a digital platform.

**Methods:** Database searches in MEDLINE, PsychINFO, CINAHL, Embase and Web of Science were conducted from inception to July 2021. Eligibility criteria included RCTs reporting on digitally delivered psychological interventions for all ages with loneliness level as the primary outcome. Two authors used the PICO framework and Cochrane Risk of Bias Tool to assess articles.

**Results:** From 1327 screened articles four RCTs met eligibility criteria. These included a total of 576 participants (female 67.5%), with an average age of 43.1. Only one study focused specifically on older adults with a mean age of 74.9. Interventions included WhatsApp groups, online CBT intervention and a mindfulness-based mobile app. All interventions were effective in reducing loneliness compared to a control group.

**Conclusion:** This review identifies 4 digital psychological interventions delivered on a digital platform effective in reducing loneliness. However, our review highlighted a lack of research exploring effective remotely delivered loneliness interventions for older adults. Given the adverse health outcomes associated with loneliness, future research should focus on determining the type of digital interventions to reduce loneliness that are effective, feasible and acceptable in older adult populations.

**Disclosure:** Funding from NUI Galway School of Medicine.

### P26: Breastfeeding Initiation and Duration Among Female Physicians: A Systematic Review and Meta-analysis

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**Background:** Breastfeeding (BF) offers optimal nutrition from birth to 6 months. Many BF initiatives conducted worldwide rely on physicians for BF advocacy to improve BF rates. However, there remains a literature gap on BF practices among physician mothers who may themselves have suboptimal BF rates.

**Methods:** We conducted a systematic review and meta-analysis of female physicians' BF prevalence and duration and synthesized the literature on physician mothers' BF barriers and facilitators. Primary outcomes: (1)

Breastfeeding initiation prevalence (2) Prevalence of any BF at 6 months postpartum. Secondary outcomes: (1) Exclusive BF at 6 months postpartum (2) Prevalence of any BF at 12 months postpartum.

**Results:** Database searches (PubMed, EMBASE, CINAHL, Web of Science) yielded 21,697 titles. A preliminary count of 32 studies were identified for qualitative synthesis and 19 for quantitative synthesis. Studies originated from the United States, Canada, Turkey, Pakistan, and Australia. High variability in measurements and reporting of BF practices existed. Breastfeeding initiation rates were high with most mothers initiating BF (median 95%, range: 80% to 100%). Breastfeeding practice rates decreased at 6 months (median: 68%, range: 6% to 85.5%). Barriers included return to full-time employment, lack of pumping facilities and protected time to pump at work, and feelings of burden placed on medical colleagues.

**Conclusion:** Despite high BF awareness, findings reveal physician mothers have lower BF prevalence compared to non-physicians. Physician mothers may hold custodian roles in BF advocacy among their patients. However, targeted efforts may be needed in health services to overcome barriers to BF among physicians.

**Disclosure:** None.

### P27: Assessment of Depression, Delirium and Dementia in Elderly Patients who Present to the Acute Medical Unit: A Study of Age-specific Prevalence

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**Background:** Depression, delirium and dementia are common conditions among elderly patients. They are linked with poorer outcomes, including increased length of admission, mortality rates and costs of care. These outcomes can be improved by early recognition and treatment. Screening for these conditions in the acute medical unit (AMU) may be a useful method of intervention for these co-morbidities. The aim was to establish the prevalence of delirium, dementia and depression by providing mental health and cognitive screening of elderly patients who present to the AMU at University Hospital Galway.

**Methods:** This is a cross-sectional study. Patients aged 60 and older assessed at the AMU were invited to participate. Data collection was conducted over a 4-week period. This included socio-demographic and clinical data, the Geriatric depression Scale (GDS), 4AT and Montreal Cognitive Assessment (MoCA). Data were analysed using SPSS.

**Results:** 63 patients were recruited. The mean age was 74.6 (SD 8.4) years. Only 10 (16.4%) were on psychotropic medications at time of presentation, and the most common diagnosis was depressive episode (n=6, 9.8%), and 3 patients (4.9%) had an established diagnosis of dementia. The mean score on GDS was 2.63 (SD 2.3), and 7 (11.1%) screened positive for likely depressive episode. Only 8 (12.7%) screened positive for delirium on 4AT, while more than half (n=40, 63.5%) screened positive for cognitive impairment on MoCA. MoCA score was associated with depressive scores on linear regression (p=0.046).

**Conclusion:** Cognitive impairment in individuals with a negative 4AT is common in this population. This suggests that medical admissions represent an opportunity to intervene with potential evolving dementia. Further work is needed to develop clinically useful pathways for management.

**Disclosure:** Funding from Health Research Board of Ireland.

### P28: An Investigation into the Transmissibility of COVID-19 from Vaccinated, Unvaccinated and Partially Vaccinated cases in Southwest Ireland 2021

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**Background:** As the COVID-19 pandemic continues globally, key questions pertaining to the transmissibility of the virus remain unanswered. One major consideration to future health policy worldwide is an understanding of the extent that vaccines might reduce the likelihood of transmission from infected cases who are fully vaccinated compared with unvaccinated or partially vaccinated cases. An understanding of how transmissibility may be influenced by the severity of symptoms in infected cases may also inform pragmatic approaches to risk reduction in the future.

**Methods:** A retrospective cohort study was undertaken to ascertain the transmissibility of COVID-19 from randomized adult samples from the regions of Cork and Kerry to compare the effective R numbers of index cases between groups and relative risk of close contacts contracting the virus from randomized groups of vaccinated (n=74), partially vaccinated (n=100), and unvaccinated (n=100). Data was extracted from the National Case Tracker Customer Relationship Management (CRM) system.

**Results:** Fully vaccinated cases were associated with 56% fewer secondary cases compared to unvaccinated adults (95% CI 0.28 – 0.70). Being a close contact of a fully vaccinated positive case carries a 42% lower risk of contracting COVID-19 compared to being a close contact of an unvaccinated case (95% CI 0.35 – 0.97). There were no differences observed between unvaccinated and partially vaccinated cases.

**Conclusion:** The findings of this study enhance the understanding of the effect vaccination may have on transmission of COVID-19 by indicating the benefits that immunisation appears to confer on the vaccinated compared to the unvaccinated.

**Disclosure:** None

### P29: A Stereological Analysis of Nuclear Morphology and Ki-67 Expression in Lobular Breast Carcinoma

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**Background:** The Ki-67 index is a prognostic biomarker in breast cancer. Yet, there is limited reproducibility in determination of this index due to lack of a standardised counting method. Ki-67 has a role in cellular proliferation. We therefore hypothesise change in nuclear morphology of cells that express it. Stereological methods can be used to estimate the volume and provide information about the morphology of the nucleus. The objective of this study is to use stereological tools to determine the volume fraction (%) of Ki-67 positive nuclei, and other volume estimates of nuclei in four anonymised samples of lobular breast carcinoma. We aimed to compare aspects of nuclear morphology between in situ and invasive areas and between Ki-67 positive and negative nuclei.

**Methods:** Four fully anonymised breast samples were sectioned and stained for Ki-67. Random sampling was used to collect light microscopy images at 400x magnification. Point grids, point sampled intercept and nucleator grids were overlaid on these images and used to estimate volume fraction (%), volume weighted mean volume and number weighted mean volume respectively.

**Results:** Mean volume fraction ( $\pm$  SD) of Ki-67 positive nuclei was significantly greater in nuclei of invasive areas 11.8 $\pm$ 2% than of in situ areas 5.3 $\pm$ 0.8%. Mean volume weighted mean volume ( $\mu$ m<sup>3</sup>) was significantly greater in nuclei of invasive areas (846.1) than of in situ areas (700.1). Mean number weighted mean volume ( $\mu$ m<sup>3</sup>) was significantly greater in Ki-67 positive nuclei (176.0) than in Ki-67 negative nuclei (135.8).

**Conclusion:** Through use of stereological techniques, we identified differences in the morphology of nuclei which are Ki-67 positive versus

negative and differences between those which are from in situ and invasive areas of the tumour.

**Disclosure:** Funding from Health Research Board of Ireland.

**P30: Exploring the Transmissibility of COVID-19; The Impact of Symptom Status on Transmission from Index Cases to Close Contacts**

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**Background:** The emergence of SARS-CoV-2 in 2019, subsequently triggered a global pandemic in 2020. Symptomatic infection amplifies dissemination of viral particles when compared to asymptomatic infection. Symptomatic and pre-symptomatic cases may therefore exert greater influence in the transmission of SARS-CoV-2 compared to asymptomatic cases. The hypothesis, is that symptomatic and pre-symptomatic cases may therefore exert greater influence on the transmission of SARS-CoV-2 compared to asymptomatic cases. The aim was to examine and compare the transmissibility of COVID-19 for symptomatic vs asymptomatic (unvaccinated) index cases (18+ years) in terms of: 1. Relative risk of close contacts acquiring COVID-19 from index cases (RR); 2. Number of secondary cases generated from index cases to give R Number Ratio (RNR).

**Methods:** Retrospective cohort study. A randomised selection of eligible unvaccinated PCR positive cases from Co.Cork and Co.Kerry, Republic

of Ireland, was extracted from the Health Service Executive's National Case Tracker Customer Relationship Management (CRM) system. Index cases identified between (01/03/2021) - (15/06/2021) were classified as asymptomatic or symptomatic (n=100 per group). Close contacts of each group, were assessed for symptom development up to 2 weeks post exposure, until (30/06/2021). Statistical analysis was performed using SPSS version 27, where p-value < 0.05 was considered statistically significant for all analyses. Demographic information was reported for the whole group as well as for each sub-group separately.

**Results:** RNR: Symptomatic index cases generate 3 times as many close contact positive cases compared to asymptomatic index cases (95% CI 1.93 – 4.65, p < 0.001).

RR: If one is a close contact of a symptomatic person, one is twice as likely to become infected and positive, compared to a close contact with an asymptomatic person (95% CI 1.23 – 3.24, p = 0.005).

**Conclusion:** These results suggest that symptomatic infection appears to substantially facilitate greater transmission of COVID-19 among the population, compared to asymptomatic infection. This information will help inform public health risk assessments, as societies further learn, to live with COVID-19.

**Disclosure:** None

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