BMC Proceedings (2025) 19:5
https://doi.org/10.1186/s12919-025-00314-8

BMC Proceedings

MEETING ABSTRACTS

Open Access

Abstracts from the 13th International Conference for Healthcare and Medical Students (ICHAMS)

Dublin, Ireland. 15-17 February 2024
Published online: 03 March 2025

Plenary sessions

PLS1

IRF4 expression associated with response to Ibrutinib in Mantle cell lymphoma

Madison Facchini[1], John Burthem[2], Karen Rees-Unwin[2]
[1]University College Cork, Cork, Ireland; [2]University of Manchester, Manchester, United Kingdom
BMC Proceedings 2025, **19(2):**PLS1

Introduction: Mantle cell lymphoma (MCL) is an incurable, aggressive form of non-Hodgkin lymphoma. Many patients experience relapse and recurrence after first-line treatment requiring development of targeted therapies. Targeting Bruton's tyrosine kinase (BTK), a signalling protein involved in B-cell receptor signalling, has been an effective treatment. However, long term use of these inhibitors results in resistance in one-third of patients. The aim of this study was to investigate the mechanisms underlying BTK inhibitor sensitivity or resistance and identify novel therapeutic targets or biomarkers of resistance or response.
Methods: Two in-vitro patient cell lines with MCL were used that were sensitive or resistant to ibrutinib. Patient cell lines and control groups were treated with different concentrations of ibrutinib and monitored over at 24, 48, 72, and 96 hours. Actin staining and flow cytometry were used to determine cell activity and death from ibrutinib treatment. Western blotting and electrophoresis were used to determine interferon regulator factor 4 (IRF4) expression in all cell lines and controls followed by densitometry. Mass spectrometry and bioinformatic analysis were used to analyse differential protein expression and signalling pathways following ibrutinib treatment in each model.
Results: The sensitive REC1 cell line showed apoptosis, inhibition of BTK signalling and downregulation of IRF4 in response to ibrutinib. Conversely, the resistant G519 cell line showed no significant reduction in apoptotic signals or IRF4 downregulation. Furthermore, proteomic and bioinformatic assessment of IRF4 protein interactions in ibrutinib-treated REC1 and G519 cells identified the association of proteins involved in MAPK and PI3K/Akt/mTOR pathways potentially associated with resistance to ibrutinib treatment.
Conclusion: Results suggest that IRF4 could be a biomarker of ibrutinib sensitivity in MCL and proteins involved MAPK and PI3K/Akt/mTOR pathways may be potential new therapeutic targets to overcome ibrutinib resistance in MCL.

PLS2

Identifying micro-RNA biomarkers and associated messenger-RNA interactions in cell lines representing subtypes of lung neuroendocrine neoplasms

Greg Eriksen[1], Neil Renwick[2], Kathrin Tyryshkin[2]
[1]Royal College of Surgeons in Ireland, Dublin, Ireland; [2]Queen's University, Kingston, Canada
BMC Proceedings 2025, **19(2):**PLS2

Abstract: Lung neuroendocrine neoplasms (NENs) constitute a distinctive subset of pulmonary tumours, encompassing atypical carcinoids (AC), typical carcinoids (IC), small cell lung carcinomas (SCIC), and large cell neuroendocrine carcinomas (LCNEC). Despite their histological and morphological heterogeneity, differential diagnosis remains challenging and invasive, prompting an exploration into the role of microRNAs (miRNAs). MiRNAs are short non-coding RNA molecules (19–24 nucleotides) known for modulating gene expression. This study analysed miRNA and messenger RNA (mRNA) expression profiles across eight cell lines, representative of lung NEN subtypes, lung adenocarcinomas (LA), non-small cell lung cancer (NSCLC), and lung epithelial controls. Employing classification models, we achieved 95% accuracy in distinguishing all eight cell lines and specifically discriminating carcinoids from carcinomas. Highlighting the significance of miRNA signatures, miR-29a, −105, −155, −483 , and −615 were identified as significantly differentially expressed between carcinoids and carcinomas. Furthermore, the consistent expression of miR-375 and −21 across all lung NENs reinforced existing literature. MiR-375 was a notable discerning factor between lung NENs and non-NEN cancers (LA and NSCLC). Investigating miRNA-mRNA interactions, we applied

the computational prediction tool TargetScanHuman. We uncovered miR-7 as a repressor of EPHA3, a gene associated with neuroendocrine carcinomas. We also confirmed the interaction between miR-18a and IRF2, an interaction previously described in lung cancer. While these findings contribute to the understanding of miRNA regulation in lung NENs, the study acknowledges the limitation of a modest sample size. Robust validation is imperative to cement the reliability of these molecular insights. This research lays groundwork for a comprehensive understanding of the molecular landscape of lung NENs, offering avenues for future refinement and expansion of this knowledge.

PLS3

Digital ways of working in paediatrics in Ireland: how (in)efficient are we?

Shaina D'Cunha[1], Markus Hesseling[2]
[1]Royal College of Surgeons in Ireland, Dublin, Ireland; [2]University College Dublin, Dublin, Ireland
BMC Proceedings 2025, **19(2):**PLS3

Introduction: Clinicians work with inefficient digital infrastructure and systems. There is international evidence for time and money lost but none from an Irish Healthcare setting. This study aimed to quantify delays in the compilation of patient data due to inefficient or lacking digital systems.
Methods: Over 6 weeks, doctors of varying seniority in an Irish Children's Hospital– both in an emergency and inpatient department setting - were observed for 5 hours a day. Time loss was recorded using a stopwatch. Data collected was compiled into an Excel database and thematic commonalities were established.
Results: The data revealed that 19.25 hours out of 46.54 hours were lost in clinical documentation due to inefficient working practices. Translated into an 8-hour shift, consultants, registrars and SHOs lost 73, 58 and 70 minutes respectively or 17 days when looking at annual loss. Consultants and registrars lost time in system disjointedness (multiple logins, data duplication) (33.87% and 36.34% respectively) whereas SHOs struggled with finding/filling prescription pads (30.75%). Clinicians on the wards lost 26.05% of time in manual duplication of data while the ED clinicians lost 31.85% owing to system disjointedness. When comparing the average of 10 equivalent documentation events in the ED against IPD, we found that 46.09% of time was saved per patient on typing patient notes into the Symphony system as opposed to using paper charts.
Discussion: Paper-based methods were resented by clinicians and contributed to time loss. Where digital systems are present, delays occurred due to numerous logins and data duplication. Implementation of digital solutions like single sign-on systems are known to reduce time loss and disjointedness with a reduction in password entry frequency. This study supports the need for efficient digital infrastructure and systems and provides evidence for the cost savings achievable in an Irish healthcare setting.

Oral session

OS1

The psychological impact of parental suicide on surviving children: a systematic review

Sarah Patterson[1], Gerard Leavey[2]
[1]University of Maastricht, Maastricht, Netherlands; [2]Ulster University, Belfast, United Kingdom
BMC Proceedings 2025, **19(2):**OS1

Background: Children bereaved by parental suicide (PDBS) are underresearched. This systematic review aimed to examine (a) the prevalence of psychological disorders among children following PDBS; and (b) to examine potential associations with age at exposure to PDBS and the sex of the parent and child.
Methods: A systematic search of scientific and grey literature was performed using databases PubMed, Embase, PsychINFO and Google search engine; final search 25.07.23. Inclusion criteria: full text must be available, English language, human studies, published 2003–2023, epidemiological study designs including observational studies (i.e., cross-sectional, longitudinal, administrative, case-control and cohort studies) and studies must examine the relationship between exposure to PDBS during years 0–18 of offspring's life and their psychological outcomes. ROBIS and Newcastle-Ottawa risk of bias tools were applied. The review was conducted using PRISMA and registered on PROSPERO 22.08.2023 CRD42023455460.
Results: A total 1162 articles were returned. All abstracts were screened, leaving 63 full-text papers. Further screening left 15 articles for review. Studies between 2003 and 2023 examined how parental suicide affects offspring across Europe, USA, and Taiwan; using various designs and outcomes such as suicide, self-harm, and mental disorders with data from population registers and clinical records. Exposure to PDBS during childhood or adolescence was consistently associated with an increased risk of suicide and other psychological disorders. Namely depression, bipolar disorder, PTSD, and substance use disorders. Additionally, there is an increased likelihood of developmental, behavioural, and emotional disorders and higher risks of violent crimes and deliberate self-harm.The prevalence of mental disorders differed depending on the offspring's sex and age of exposure to PDBS.
Conclusion: This study emphasises the increased risk of psychological disorders in offspring following parental suicide specifically, underscoring the need for age and sex-specific interventions and support from policymakers, healthcare providers, and educators to provide personalised care for this population.

OS2

Exploring the breastfeeding journey: emotions, circadian variations, and the impact of support on mothers' experiences breastfeeding

Sofia Hempelmann Perez[1], Elizaveta Solomonova[2], Sophie Smith[3], Christina Isaicu[3], Natasha Binder[4], Ian Gold[5], Suparna Choudhury[2], Radhika Raturi[6], Charlotte Little[3], Marie Pennestri[7]
[1]University College Dublin, School of Medicine, Dublin, Ireland; [2]Department of Psychiatry, McGill University, Montreal, Canada; [3]Department of Cognitive Science, McGill University, Montreal, Canada; [4]Department of Psychology, McGill University, Montreal, Canada; [5]Department of Philosophy, McGill University, Montreal, Canada; [6]Department of Law, Northwestern University, Chicago, United States; [7]Department of Counselling and Educational Psychology, McGill University, Montreal, Canada
BMC Proceedings 2025, **19(2):**OS2

Introduction: Breastfeeding mothers report experiencing a wide range of emotions. This variation may be more pronounced between daytime and nighttime breastfeeding sessions due to time of day and sleep deprivation. External factors, including social support, may further contribute to the cognitive and emotional experiences of breastfeeding mothers. Our specific hypotheses were:

- Mothers will experience differences in emotions between the daytime and nighttime breastfeeding sessions, with nighttime sessions being characterized by overall more negative emotional tone;
- Mothers who have stronger social support will report more positive emotional experiences when breastfeeding, both during the day and at night.

Methods: 107 Breastfeeding mothers, M(of mothers)=32.71 ±4.37 years, M(of children) 6.71±45.66 months. Mothers completed demographic, daytime (12am-3pm) and nighttime (12am-3am) online surveys. Emotional experiences were measured by the Discrete Emotions Questionnaire and compared by paired-sample t-test; cognitive thoughts, imagery and emotions were reported as free text which were qualitatively scored; and perceived support levels from family members were measured on a 9-point Likert-type scale analyzed by stepwise linear regression.
Results: Mothers reported more positive emotional experiences in daytime reports. Daytime cognition reports contained more planning

for the future and more positive perceptions of themselves as mothers. In contrast, during the night participants reported more negative views of themselves as mothers. During the day, positive emotions were most strongly predicted by perceived degree of family's support, followed by mental health, sleep quality, child's age, mother's age and immigrant status. Positive emotions during the nighttime were associated with better mental health.
Discussion: Our study is the first to date to show a variation in the emotional tone of breastfeeding mothers at different points in the circadian period. Results also highlight the importance of social support on a mother's breastfeeding journey. Maternal emotional experience needs to be understood as an interplay between mental health and social context.

OS3

Emergency department care experiences among 2SLGBTQQIA+ patients: a mixed methods study

Sidonie Chard[1], Sawyer Karabelas-Pittman[2], Kel Martin[2], Elliot Chapple[2], David Messenger[3], Susan Bartels[3], Melanie Walker[3]
[1]Royal College of Surgeons in Ireland, School of Medicine, Dunlin, Ireland; [2]Queen's University, Kingston, Canada; [3]Department of Emergency Medicine, Queen's University, Kingston, Canada
BMC Proceedings 2025, **19(2):**OS3

Introduction: Equity-deserving groups (EDG), including those who identify as Two-Spirit, lesbian, gay, bisexual, transgender, queer, questioning, intersex, and/or asexual (2SLGBTQQIA+), are disproportionately treated in the Emergency Department (ED). This study aimed to understand ED care experiences of 2SLGBTQQIA+ individuals compared to those who do not identify as equity-deserving in Kingston, Canada, ultimately aiming to enhance inclusivity and better meet healthcare needs.
Methods: Data were collected through a mixed qualitative/quantitative cross-sectional study using a novel electronic survey tool (Spryng.io), which purposely integrates qualitative and quantitative data, while minimising researcher bias. A community-based participatory approach was employed to involve community stakeholders. Participants were recruited from the Kingston Health Sciences Centre's ED, Urgent Care Centre, and at community-based organisations. Quantitative data were analysed using chi-squared tests, while qualitative data underwent thematic analysis. Results were triangulated. Focus group discussions with community partners were then undertaken to contextualise findings.
Results: Compared to the control group (n=949), 2SLGBTQQIA+ individuals (n=118) felt their identity had a more negative impact on their care (P<0.0001), and experienced more judgment and disrespect from healthcare providers (HCPs) (p<0.0001). Four themes emerged from convergence of qualitative and quantitative data: (1) mixed emotions regarding ED care; (2) transgender and non-binary health care considerations; (3) unmet mental health needs; and (4) lack of patient-centred care for 2SLGBTQQIA+ patients.
Discussion: This study highlights the need for 2SLGBTQQIA+-specific competency training for ED HCPs to provide effective, patient-centered care. 2SLGBTQQIA+ individuals often face unmet mental health care needs, requiring tailored mental health care provision in the ED. Intersectionality within the 2SLGBTQQIA+ population underscores the importance of trauma-informed care. Strategies to improve 2SLGBTQQIA+ healthcare include implementing safer spaces, clear feedback mechanisms, referrals to gender-affirming specialists, and privacy in triage. Further research evaluating the impact of educational interventions on HCP knowledge and patient experiences in the ED is warranted.

OS4

Using artificial intelligence to generate medical literature for patients: a comparison of three different large language models

David Pompili[1], Yasmina Richa[1], Patrick Collins[2], Derek Hennessey[2]
[1]School of Medicine, University College Cork, Cork, Ireland; [2]Department of Urology, Mercy University Hospital, Cork, Ireland
BMC Proceedings 2025, **19(2):**OS4

Introduction: Large language models (LLMs) are artificial intelligence (AI) that use deep learning techniques to understand, summarize and generate content. The potential of LLMs in healthcare is predicted to be vast. This study aims to examine the usefulness of LLMs in generating patient information leaflets (PILs).
Methods: Prompts were created to generate PILs for 4 topics in urology (circumcision, nephrectomy, overactive bladder syndrome, and transurethral resection of the prostate). Prompts were given to 3 LLMs: ChatGPT-4, PaLM 2 (Google) and Llama-2 (Meta). PILs were evaluated using a validated assessment checklist by blinded reviewers and a 5-point Likert scale. Readability assessments for leaflets were conducted using the Average Reading Level Consensus Calculator.
Results: PaLM 2 had the highest overall average score (3.575), followed by Llama-2 (3.3375) and ChatGPT-4 (3.08). PaLM 2 generated PILs were of the highest quality in all topics except one and was the only AI to include images. Medical accuracy of leaflets was mixed, with all LLMs generating content containing minor errors and some instances of major error. Readability analysis identified PaLM 2 PILs as the easiest to read with an average reading level of age 14–15 (slightly difficult). Llama-2 leaflets were the most difficult with an average reading level of age 16–17 (fairly difficult).
Conclusions: LLMs can generate PILs that will help reduce the workload on healthcare professionals. However, the content generated requires human input for appropriateness and factual content. The content is also generated at a reading age above the average level for adults.

OS5

A new potential therapeutic target in inflammatory retinopathy

Inez Bosnyak[1], Alexandra Vaczy[2], Balazs Meresz[2], Dorottya Molitor[2], Krisztina Kovacs[3], Bela Kocsis[4], Dora Reglodi[2], Tamas Atlasz[5]
[1]Medical School, University of Pecs, Pecs, Hungary; [2]Department of Anatomy, University of Pecs, Pecs, Hungary; [3]Department of Biochemistry and Medical Chemistry, University of Pecs, Pecs, Hungary; [4]Department of Medical Microbiology and Immunology, University of Pecs, Pecs, Hungary; [5]Department of Sportbiology, University of Pecs, Pecs, Hungary
BMC Proceedings 2025, **19(2):**OS5

Background: Retinal inflammation may lead to visual impairment, even blindness in most severe cases. The disease is triggered by bacteria, viruses, fungi, or systemic autoimmune problems. Pituitary adenylate cyclase activating polypeptide (PACAP) is a neuropeptide, which has strong neuroprotective and general cytoprotective effects. It can also be found in the eye and it is involved in several ocular processes. It is protective in diabetic-, ischemic retinopathies, in retinopathy of prematurity, in glaucoma, in age-related macular degeneration and in case of corneal damage. Three receptors can be distinguished, however the specific PAC1 receptor plays the key role in its well-known protective mechanisms. Our aim is to investigate the effectiveness of a specific, exogenous PAC1 receptor agonist agent, maxadilan, in inflammatory retinopathy.
Methods: Inflammation was induced by bacterial lipopolysaccharide in mice. Maxadilan was administered by intravitreal injection. Optical coherence tomography was used to follow the changes in thickness of all retinal layers. Change of ganglion cell number was evaluated after Durcupan resin embedding and toluidin blue staining. Electroretinography provides information of the functionality of photoreceptor, bipolar and horizontal cells. Expression level of forty different types of cytokines was also analyzed.

Results: Our data show that maxadilan is able to prevent the decrease of the outer nuclear layer, the outer plexiform layer, the inner nuclear layer, the inner plexiform layer and the photoreceptor layer in inflammatory retinopathy. In addition, it improves the functional outcome. Significant ganglion cell degeneration was observed in inflamed group. However, ganglion cell number remained similar to control group after maxadilan treatment. Based on our results, PAC1 receptor-mediated signaling pathways significantly influence the level of several cytokines and chemokines.
Conclusion: The specific, exogenous PAC1 receptor agonist maxadilan prevents the morphological and functional damage in inflammatory retinopathy. Based on our results PAC1 receptor is a new possible therapeutic target in this disease.

Poster sessions

PS1

A prospective pilot study to investigate physical activity levels during pregnancy in an Irish cohort

Lea Stuart[1], David Gaul[2], Zara Molphy[3], Niamh Daly[4]
[1]Royal College of Surgeons in Ireland, Dublin, Ireland; [2]School of Business, Technological University Dublin, Dublin, Ireland; [3]Department of Obstetrics and Gynaecology, Rotunda Hospital, Dublin, Ireland; [4]The Rotunda Hospital, Dublin, Ireland
BMC Proceedings 2025, **19(2):**PS1

Background: Physical activity (PA) during pregnancy has been associated with decreased risks of adverse health outcomes for the pregnant woman and their babies. However, attitudes toward and engagement in PA during pregnancy vary considerably among women and the course of pregnancy. Despite the health benefits for mothers and babies, considerable numbers of women fail to achieve the recommended levels of PA during pregnancy. The objective of this pilot study was to examine the level and types of PA participation during each trimester of pregnancy and whether research subjects meet ACOG guidelines of "moderate intensity exercise on most days of the week".
Methods: Of 107 recruited, 90 low-risk women attending antenatal midwifery-led clinics in a tertiary maternity unit in a diverse socio-economic catchment area were included (17 incomplete questionnaires). The International Physical Activity Questionnaire (IPAQ) was administered to (i) evaluate how many expectant mothers meet ACOG guidelines for PA, (ii) investigate if levels of participation in PA change over the course of pregnancy, and (iii) examine whether the type of activity which expectant mothers engage in changes from conception. Chi-squared and linear analysis were conducted.
Results: Of 90 women over three trimesters, only 16/90 (17.8%) women met ACOG exercise recommendations. Moderate exercise reduced from 30% to 20% to 16% over the first to third trimesters respectively (p=0.14). While walking rates over pregnancy did not change (and were not moderately vigorous) rates of cycling, swimming and yoga decreased. As recommended, all contact sports ended in trimester 1.
Conclusion: This prospective pilot study identified that most women do not meet the ACOG guidelines for PA during pregnancy. This pilot programme highlights the need for a larger study to gain additional understanding of PA patterns in a low-risk Irish community to develop future interventions and also highlights the urgent need for education programmes on PA in early pregnancy.

PS2

Demographics, risk factors, and pre-hospital delay in acute coronary syndrome patients: an observational study in a tertiary care hospital in Central India

Chinmay Guralwar[1], Harshwardhan Khandait[2], Vinod Khandait[1], Prabhav Tekam[1], Antara Agrawal[1], Rashi Mahajan[1], Nandita Gawande[1]
[1]Government Medical College and Hospital, Nagpur, India; [2]Trinitas Regional Medical Center/RWJ Barnabas Health, Elizabeth, NJ, United States
BMC Proceedings 2025, **19(2):**PS2

Background: Acute Coronary Syndrome (ACS) is one of the leading causes of mortality worldwide. Thus, this study was planned to determine the patient demographics and risk factors associated with ACS, and determine the factors causing the prehospital delay.
Methods: The study was conducted using a cross-sectional design and a questionnaire-based approach at the Department of Medicine, Government Medical College and Hospital, Nagpur. The study population consisted of patients who were hospitalized due to ACS. All patients were interviewed face-to-face using a self-designed, semi-structured, open-ended questionnaire.
Results: The sample consisted of 73 males (81.1%) and 17 females (18.9%), with the participants comprising 86.6% STEMI (n=78), 10% NSTEMI (n=9), and 3.33% Unstable Angina (n=3). Smoking, diabetes, hypertension, and a history of cardiovascular events were identified as common risk factors for ACS. Angina (73.3%) was the most commonly reported first symptom by patients, with Morning (43.3%) being the most frequent time of symptom onset. Males were more likely to have an anterior wall MI, while females were more likely to have an inferior wall MI and a posterior wall MI. Patients who were referred to more hospitals tended to use ambulances to reach the Tertiary care hospital, while patients who were referred to fewer hospitals tended to use private vehicles or friend's/relative's vehicles. Individuals from rural areas had to go to at least one more hospital prior to arriving at our Tertiary care center. The majority (76.67%) of participants in our study were managed with thrombolysis.
Conclusion: Patients faced significant economic burdens and delays in seeking medical help, with rural residents having to visit more hospitals before arriving at a Tertiary care center. The study draws attention to the need for reducing the door-to-needle time for thrombolysis in STEMI patients to improve treatment outcomes and the need for improved Emergency Medical Services (EMS) in the country.

PS3

Use of probiotics in the prevention of clostridioides difficile infections during antibiotic exposure: a systematic review and meta-analysis

Veronica Dabrowski
University of Limerick, Limerick, Ireland
BMC Proceedings 2025, **19(2):**PS3

Introduction: Clostridioides difficile infections (CDI) are a leading cause of hospital-acquired infections, associated with substantial morbidity and mortality rates. Given the increasing body of evidence surrounding probiotics, investigating their role in preventing CDI is imperative.
Methods: A comprehensive systematic review of randomized controlled trials (RCTs) from the past decade was undertaken. The focus was on high-risk patients for CDI, such as those with prolonged antibiotic use or previous CDI episodes. Selection criteria for the trials were stringent: (1) Probiotics used as the primary intervention, (2) Definitive confirmation of C. difficile presence via stool sample testing, and (3) In-depth documentation of the employed probiotic strains, dosages, and administration duration. For consistency, data extraction was centered on primary outcomes, notably the incidence rate of CDI, and secondary outcomes, especially adverse events linked to probiotic consumption.
Results: Out of the 20 scrutinized trials, none indicated any adverse safety outcomes directly tied to probiotics. A significant 70% of these trials manifested a substantial reduction in CDI incidence when patients were administered probiotics, as opposed to placebo or standard care groups. The remaining trials, while not achieving statistical significance, showcased tendencies towards reduced CDI rates. Different probiotic strains were in play across these studies, with strains of Lactobacillus and Bifidobacterium emerging as the most common choices.

Discussion: The evident safety profile and promising results of probiotics in the selected trials advocate for their potential as a preventive measure against CDI. Particularly in high-risk patients, probiotics could be an essential tool. However, given the variability in strains, dosages, and treatment durations across trials, there's a pressing need to establish standardized guidelines. Further research is imperative to pinpoint the most effective strains and treatment protocols, ensuring optimized patient outcomes and minimizing CDI incidence in healthcare settings.

PS4

A risky comeback home of varicella zoster virus in patients with RA on DMARDs

Alexia Urtoi
University of Medicine and Pharmacy, Iasi, Romania
BMC Proceedings 2025, **19(2):**PS4

Introduction: The reactivation of Varicella Zoster virus (VZ) occurs in patients with rheumatoid arthritis (RA)on disease-modifying antirheumatic drugs (DMARDs). The persistence of VZ in the dorsal root-ganglia, decades after the first infection, appears as Herpes Zoster (HZ), due to declining immunity, increasing age or immunosuppression.
Methods: This review is based on 10 cohort studies published in PubMed, and other International publications and databases in the past 15 years. It aims to identify the risk categories, factors and the incidence of cases of HZ in patients with RA and on DMARDs creating a strong basis regarding the medical management of the VZ drug-induced resurgence. The extracted data includes a variety of treatments for HZ, comparisons between the RA and non-RA patients and along-term analysis of secondary effects of DMARDs.
Results: There is a common and significant indication in all studies that the HZ incidence rate is higher in RA than in non-RA (14.28 versus 7.36 events per 1000 person-years) and that RA increases the risk at the 1-year follow-up. The incidence is also higher in women than men (86.5 %) and patients aged $\geq$ 65 years are the most susceptible to HZ infections occuring in sDMARDs use of Methotrexate (synthetic DMARD) and Hydroxychloroquine, the fold-increasing being 1.58, remaining a viable treatment option when comparing with the effects of JAK inhibitors (JAKi), with an incidence rate 3.66 times higher.
Conclusion: Regardless of the few studies existing on this topic, the findings point out that there is a high risk and a probability that patients suffering from RA can have multiple episodes of VZ reactivation, based on the immune affected mechanisms by the virus and also the DMARDs. Still, disease- modifying antirheumatic drugs remain a preferred treatment by the physicians.

PS5

Investigation of cardiovascular risk factors, metabolic parameters, and body composition in celiac patients

Mira Zsofia Peresztegi[1], Zsofia Vereczkei[2], Nelli Farkas[3], Judit Bajor[4]
[1]Medical School, University of Pécs, Pécs, Hungary; [2]Institute for Translational Medicine, University of Pécs, Pécs, Hungary; [3]Institute of Bioanalysis, University of Pécs, Pécs, Hungary; [4]Department of Medicine, University of Pécs, Pécs, Hungary
BMC Proceedings 2025, **19(2):**PS5

Introduction: Celiac disease is an immune-mediated condition triggered by gluten, affecting approximately 1% of the population. The cardiovascular and metabolic effects of the disease and the gluten-free diet used for its treatment are not well understood. In the ARCTIC prospective multicenter study, we examined the cardiovascular risk factors of celiac patients on a gluten-free diet and present our preliminary findings.
Methods: In our research, we investigated the body composition and cardiovascular risk-related metabolic parameters, quality of life, and adherence to Mediterranean and glute-free diets in celiac patients. Abdominal ultrasound was performed to assess hepatic steatosis. Spearman's rank correlation, Kruskal-Wallis and Fisher tests were applied to analyze our data, mean $\pm$ standard deviation or median (IQR) were provided.
Results: Data from 46 patients (37 females, 9 males, mean age 39$\pm$14 years) were analyzed. Only 60% of our patients adhere to a strict gluten-free diet, and merely 15% follow the principles of the Mediterranean diet. However, diet adherence did not influence body composition parameters. The average InBody score was 72.15$\pm$8.16, waist-hip ratio averaged 0.86$\pm$0.10, skeletal muscle mass was 27.10$\pm$7.38 kg, body fat percentage was 28.88$\pm$9.98%, and visceral fat area was 97.61$\pm$51.95 cm^2. The average LDL levels were 2.96$\pm$0.75 mmol/l, and triglyceride levels were 1.02$\pm$0.70 mmol/l. Hepatic steatosis was detectable in 26% of patients, and it was associated with higher visceral fat area in cases of higher ultrasound grade ($p=0.006$).
Conclusions: Adherence to a gluten-free diet in celiac patients is suboptimal, but the quality of the diet does not affect body composition parameters. Although the average of the InBody scores suggests an average body composition, the high body fat percentage, increased visceral fat area, and frequent hepatic steatosis may indicate higher cardiovascular risk despite the young age of the patients.

PS6

Temporal determination of monomer, initiator, and inhibitor dissolution from various types of dental resin composites

Anna Wagner[1], Edina Lempel[2], Katalin Böddi[3]
[1]Medical School, University of Pécs, Pécs, Hungary; [2]Department of Restorative Dentistry and Periodontology, Medical School, University of Pécs, Pécs, Hungary; [3]Department of Biochemistry and Medical Chemistry, Medical School, University of Pécs, Pécs, Hungary
BMC Proceedings 2025, **19(2):**PS6

Introduction: Cytotoxic components of resin-based dental composites (RBC) are prone to dissolution in the moist environment of the oral cavity. The released molecules can exert their effect both locally and systemically. The temporal dynamics of solubility of individual RBC types are less known. The purpose of this investigation was to determine the quantity and temporal changes of monomers, inhibitors, photo-, and co-initiators eluted from conventional, bulk-fill, and thermoviscous RBCs.
Methods: Cylindrical 4-mm thick bulk-fill and 2x2 mm thick layered conventional RBC samples were prepared. The thermoviscous bulk-fill RBC was preheated to 65°C before polymerization. Polymerized samples were stored in 75% ethanol for 20 weeks. The solvent was refreshed at the 1st, 2nd, 4th, 8th, and 20th weeks. The quantity of eluted components was determined using high-performance liquid chromatography after identification with standard molecules at the end of each soaking period. One-way ANOVA, Tukey post-hoc tests and generalized linear model statistics were used to analyze the data.
Results: The highest amount of monomer was dissolved at the first week, significantly lower ($p<0.001$) quantities were detected later on. Even in the 20th week, detectable components were released from all the investigated RBCs. Although the dissolution showed a decreasing tendency, the amount of eluted components increased significantly in the 4th and 20th weeks. Significantly more monomer eluted from conventional, layered samples compared to the bulk-fill RBCs ($p<0.01$). Both RBC type and soaking time significantly influenced the elution ($\eta p^2=0.99$; $p<0.001$). Conclusions: Depending on the composition and application type of RBCs, molecules dissolved to varying degrees even after 20 weeks. Emphasis should be taken to increase the monomer conversion with optimal polymerization parameters during clinical use, thereby reducing the amount of free monomers that can be released into the oral cavity.

PS7

What are the predictors of improved quality of life outcomes after cochlear implantation in adults?

Darragh O'Brien O'Leary[1], Emma Giles[2], Lesley Gilvarry[2], Peter Walshe[2], Fergal Glynn[2], Cristina Simoes-Franklin[2]
[1]Royal College of Surgeons in Ireland, Dublin, Ireland; [2]National Hearing Implant & Research Centre, Beaumont Hospital, Dublin, Ireland

BMC Proceedings 2025, **19(2):**PS7

Introduction: It is well established that cochlear implantation (CI) improves the quality of life (QoL) of adults, possibly independent of their audiological performance. However, previous studies have inconsistent inclusion criteria, outcome measures, and small sample sizes. The purpose of this study was to investigate if pre-specified factors were associated with improved QoL in adults >18 years of age, post-CI.
Methods: Clinical audit of 327 adult patients who received a CI between January 1, 2009, and November 31, 2019, at National Hearing Implant and Research Centre in Ireland. Prospectively collected data was extracted from patient records. Predictor variables included: age at implantation, gender, speech audiometry scores (pre- and post-operation), pre-lingual deafness, and pre-operative goals. Modified Glasgow Benefit Inventory (GBI-5F) was used as the metric of QoL.
Results: The large majority of patients, n=308/327 (94.2%), demonstrated a positive total GBI-5F score, post-CI. Post-operative speech audiometry scores, and the change from pre to post-operative scores, were positively correlated with GBI-5F scores ($p<0.01$). Pre-lingual deafness was negatively correlated ($p=0.04$). No association was found between gender, age at implant, or pre-operative speech scores, and GBI-5F scores. The most common goal of patients was to hear better in family and group situations (n=173/183, 94.5%).
Discussion: Improved QoL post-CI is not associated with age, gender, or pre-operative speech audiometry scores. It is positively associated with post-operative speech audiometry scores and the change from pre-operative to post-operative speech audiometry scores, and negatively associated with pre-lingual deafness.

PS8

Investigating the impact of SGK3 Inhibition on the stability of the D-bifunctional enzyme, 17βHSD4

Jordan Vaarsi, Stephanie Abgana, Marie McIlroy
Royal College of Surgeons in Ireland, Dublin, Ireland
BMC Proceedings 2025, **19(2):**PS8

Background: Endocrine therapies targeting estrogen synthesis have been gold-standard 1st line treatment for post-menopausal breast cancers since the early 2000's. Unfortunately, ~40% of patients will suffer from a recurrence >5 years after their initial diagnosis. We hypothesize that the predominately androgenic steroid environment, arising from aromatase inhibitor (AI) therapy, may play a role in mediating resistance. We have previously identified androgen mediated changes in gene expression, specifically serum/glucocorticoid regulated kinase family member 3 (SGK3), to be associated with poor response to endocrine therapy in post-menopausal breast cancers. In previous works, we demonstrated that androgens can increase expression of SGK3 in AI resistant breast cancer cells. Importantly, SGK3 activity has been linked with the stability of the steroidogenic enzyme 17βHSD4, suggesting that SGK3 will have an impact on the tumour steroid microenvironment. [(1)] Understanding the impact of SGK3 loss on this process could identify novel mechanisms of resistance to current endocrine therapies.
Methods: To further investigate this, we looked at the levels of AR, Phospho-SGK3, SGK3, and 17βHSD4 proteins in isogenic endocrine sensitive (MCF7) and endocrine resistant (LetR) cell lines. [(2)] We were able to quantify and visualize protein levels in the cell lines using Western blot analyses and immunofluorescent microscopy.
Results: After running an unpaired T-test on the data, there appears to be increased SGK3 and 17βHSD4 protein levels in LetR cells, however, there is no statistical significance; even though 17βHSD4 levels are approaching significance (p-value = 0.075).
Conclusions: The two cell lines, MCF7 (estrogen responsive, AI sensitive) and LetR (androgen responsive, AI resistant), are genetically identical but, LetR cells seem more affected by SGK3 inhibition. This could mean that SGK3, based on preliminary information from these experiments, may have an important role in androgen induced AI therapy resistance.

PS9

Measuring outcomes in lamellar corneal transplantation

Addon Teye-Botchway[1], Conor Murphy[2]
[1]Royal College of Surgeons in Ireland, Dublin, Ireland; [2]Royal Victoria Hospital, Dublin, Ireland
BMC Proceedings 2025, **19(2):**PS9

Objective: The aim of this study was to compare the improved visual acuity outcomes seen in keratoconus (KC) patients with DALK in relation to published standards.
Methods: This was a retrospective cohort study of KC patients who had undergone DALK corneal transplantation at the Royal Victoria Eye and Ear Hospital in Dublin, Ireland. Retrospective chart reviews were conducted on DALK recipient KC patients (2016–2022). Key outcome data included post-op visual acuity (VA) and post-op intraocular pressure (IOP), graft complications, post-op refraction, post-op corneal topography keratometry, and treatment drops.
Results: There were 29 cases (eyes) operated on. Mean age was 33.2 years. Specific DALK techniques included successful big bubble (65.5%) or manual dissection (34.5%). 1 case (3.4 %) of corneal graft failure was recorded in this cohort. 57.1% were seen to have a better Best Corrected Visual Acuity (BCVA) post op.
Conclusions: Some positive VA trends can be seen in DALK recipient keratoconus patients from this cohort. However, more cases with longer follow up periods will be needed for more reliable data as it relates to VA outcomes.

PS10

Management of patellar tendinopathy in adolescents: a systematic review

Benjamin Blackman, Iqbal Lidder, Hannah Polley, Liam Glynn
University of Limerick, Dublin, Ireland
BMC Proceedings 2025, **19(2):**PS10

Introduction: Patellar tendinopathy (PT) involves inflammation and degeneration of the patellar tendon from overuse. Despite the high prevalence of PT in athletes, there remains little consensus on ideal management in adolescents. We hypothesized that exercise-focused treatment would be the most prevalent intervention, resulting in improved pain scores.
Methods: Four online databases, PubMed, MEDLINE, CINAHL, and EMBASE, were searched from inception to October 13, 2023. Data pertaining to intervention, return to sport, and pain were recorded. Quality assessment of Randomized Controlled Trials (RCTs) was performed using the ROB2 tool. A meta-analysis was not possible due to heterogeneity of presentation and interventions used.
Results: Four studies, including three case RCTs and one prospective cohort study comprising 133 patients with a mean age of 15.1 (12–19), were examined. The mean follow-up was 5.11 months (1.91–12.0). Two studies examined patients with diagnosed PT, and two studies assessed athletes with in-season patellar tendon pain. Management included slow repetition high-load training, eccentric slant board training, and high and low-frequency eccentric, isometric, and stretching regimens. The study on daily eccentric training reported a mean Victorian Institute of Sport Assessment-Patella (VISA-P) improvement of 5.7 over 5.52 months. The two studies examining patellar tendon pain reported mean VISA-P improvements of 1.2 and 5.3 at 12 and 4.6 months, respectively. The study comparing high frequency eccentric/isometric regimen with low frequency eccentric regimen showed that the high-frequency group returned to sport on average 9 days quicker and had significantly fewer pain-related interruptions ($p=0.002$).
Discussion: Management of PT in adolescents focused on exercise regimens incorporating eccentric and isometric training. This review revealed that progressive loading of the patellar tendon through eccentric and isometric training can reduce patellar tendon pain. Further long-term comparative studies involving other interventions, such as injections or arthroscopy, are needed to elucidate the ideal management of PT in adolescents.

PS11

Complexity assessment of interventions to address loneliness and social isolation in community pharmacy settings using the iCAT_SR

Sahana Rajesh, Frank Farrell, Sarah Larney, Fabian Sweeney
School of Pharmacy and Biomolecular Sciences, RCSI University of Medicine and Health Sciences, Dublin, Ireland
BMC Proceedings 2025, **19(2):**PS11

Objective: Loneliness and social isolation are strongly associated with reduced wellbeing, increased incidence of chronic disease and increased mortality (1). However, there is currently a poor understanding as to how these risk factors can effectively be addressed in community pharmacy settings. A scoping review has been conducted previously to identify interventions that aimed to address loneliness and social isolation within community pharmacy settings. To further characterise these interventions a complexity assessment was conducted using the iCAT_SR framework.
Methods: Six interventions were assessed for complexity using the Intervention Complexity Assessment Tool for Systematic Reviews (iCAT_SR) (2). Interventions were evaluated against ten dimensions, comprising of six core dimensions and four optional dimensions. Two assessors independently assessed each intervention, assigning a level of complexity for each dimension as described in the iCAT_SR. Disagreements were resolved through discussion to arrive at final complexity assessments.
Results: High levels of complexity were noted across all interventions in terms of the number of intervention components and the number of recipient behaviours targeted. Interventions were in general moderately to highly tailored to their specific context, with substantial dependency on setting and individual related factors.
Conclusion: These finding suggest that introducing interventions aimed at addressing loneliness and social isolation to community pharmacy settings may require substantial changes to existing practice. Effective replication of these approaches, or development of novel interventions, may require meaningful engagement with multiple local stakeholders and substantial adaptations of interventions to reflect local circumstances.

PS12

An assessment of Anki flashcards use in comparison to alternative study methodologies in first year graduate entry medical students

Colleen Haughey, Sten Kajitani, Maria Buckley, Mawadda Mohamed, Mark Rae, Elizabeth Brint
University College Cork, Dublin, Ireland
BMC Proceedings 2025, **19(2):**PS12

Abstract: First year graduate entry to medicine (GEM) students require highly effective personalised study techniques in order to learn significant amounts of factual information. This study analysed study methodologies utilised by a cohort of first year GEM students and their perception of the utility of these and, in particular, their use of the spaced-repetition learning app, Anki. In addition, this study examined assessment outcomes in this cohort of students and correlated assessment performance with study methodology. 45 students completed all three components of the study: a pre- module test to assess base-line knowledge of the module content, a post-module test and a survey questionnaire. 53 students completed the survey. The main findings of this study are that a diverse range of learning and study methodologies were used by students. Perception of usefulness of students' chosen study methodology, in terms of satisfaction rating, preparedness for exams and time management, was generally very positive irrespective of the specific study methodology used. Whilst 80% of study participants reported using Anki, the number of Anki cards used and daily usage varied significantly amongst users. Overall, there was no statistically significant benefit for Anki users in terms of performance outcome compared to those who did not use Anki when the module was considered as a whole. A slight significant benefit however was noted in two categories: for those who used Anki extensively compared to those who did not engage with it consistently and for those who used Anki to study physiology.

PS13

Cpn60 amplicon sequencing reveals a proportional reduction of Akkermansia muciniphila in the transgenic sAPPα mouse model of autism

George-Paul O'Byrne[1], Champika Fernando[2], Janet Hill[2], Darrell Mousseau[3], Maa Quartey[4], Jennifer Nyarko[4], Ryan Heistadt[4]
[1]University of Limerick, Limerick, Ireland; [2]Hill Lab, Western College of Veterinary Medicine, Saskatoon, Canada; [3]Department of Psychiatry, University of Saskatchewan, Saskatoon, Canada; [4]University of Saskatchewan, Saskatoon, Canada
BMC Proceedings 2025, **19(2):**PS13

Introduction: A bidirectional relationship has been demonstrated between the gut microbiome and the central nervous system. Though this field of study is still nascent, the so-called 'Gut-Brain Axis' (GBA) has been implicated as a major factor in neurological and psychiatric disease. TgsAPPα mice, which carry the transgene for human soluble amyloid precursor protein alpha, exhibit behavioral, neurochemical, and immunological phenotypes analogous to Autism Spectrum Disorder (ASD).
Methods: To further investigate the relationship between ASD and the GBA, we profiled the gut microbiomes of 3-month old heterozygous TgsAPPα mice and age- and sex-matched wildtype littermates, using cpn60 barcode sequencing.
Results: Pooled male and female data revealed differences in the proportional abundances of *Bacteroides coprophilus, Pseudoflavonifractor capillosus, Bacteroides caecimuris*, and *Akkermansia muciniphila* between TgsAPPα and wildtype groups. Stratifying the data for sex revealed a decrease in the proportional abundance of *Prevotella dentalis*, *Lachnoanaerobaculum umeaense*, and *Clostridium amygdalinum* in TgsAPPα males (cf. wildtype males) and an increase in the abundance of *Flavonifractor* sp. in TgsAPPα females (cf. wildtype females). The proportional decrease of *Akkermansia muciniphila* observed was maintained in TgsAPPα mice, regardless of sex.
Discussion: Decreases in the proportional abundance of *Akkermansia muciniphila*, a mucin-degrading commensal bacteria, has previously been demonstrated in microbiome studies of humans with ASD; and experimental studies have shown that AM may be able to influence the production of serotonin within the GI tract — a neurotransmitter which is consistently elevated in the serum of people with ASD.
Conclusion: Our observations reinforce established links between *Akkermansia muciniphila* and ASD, and support the future use of TgsAPPα mice as a translational model for the development of microbiota-bases therapies for ASD.

PS14

Report: Investigating the role of FTO gene in oestrogen receptor positive (ER+) endocrine resistant breast cancer

Laith Bedri, Daniella Ottaviani, Fiona Bane
Royal College of Surgeons in Ireland, Dublin, Ireland
BMC Proceedings 2025, **19(2):**PS14

Abstract: Endocrine therapy is one of the most effective treatments for ER+ breast cancer, however, most tumours will develop resistance to endocrine therapy as the cancer progresses. The pathogenesis of tumour progression has been found to be influenced by RNA methylation, most noticeably N6-methyadenosine (m6A). Aberrantly

expression of FTO, a methyl eraser, has been found to be associated with poor outcomes in ER+ breast cancer. In this work, we investigated the functional role of FTO in ER+ breast cancer by the genetic knockdown of FTO in one endocrine sensitive cell model(MCF7) and one endocrine resistant cell model (LY2), followed by RNA sequencing. Pathway analysis revealed that FTO was involved in the regulation of cell cycle progression, DNA repair and cell survival of tumour cells, while pathways which promoted cell death such as apoptosis and hypoxia were found to be unregulated upon FTO knockdown. Our results supported an oncogenic role for FTO in ER+ breast cancer cell models. These findings raises the potential to discover new therapeutic strategies to treat endocrine resistant breast cancer cells.

PS15

An audit of daratumumab, weekly bortezomib and dexamethasone (DVD) in relapsed/refractory multiple myeloma (RRMM)

Rawa Alfarsi[1], Rahina Karim[1], James Dillon[2], Philip Murphy[2], Dawn Swan[2], Patrick Thornton[2], Jeremy Sargent[2], Siobhan Glavey[2], John Quinn[2]
[1]Royal College of Surgeons in Ireland, School of Medicine, Dublin, Ireland; [2]Department of hematology Beaumont hospital, Dublin, Ireland
BMC Proceedings 2025, **19(2):**PS15

Background: In recent years the treatment landscape for multiple myeloma has seen significant advancements with the development of new drug regimens, resulting in improved overall survival rates. However, despite these developments, the disease remains incurable(1–3). On foot of the CASTOR randomised phase III clinical trial, the daratumumab, bortezomib and dexamethasone (DVD) regimen has been approved for patients with relapsed refractory multiple myeloma (RRMM)(4,5).
Aims: The primary objective of this audit was to evaluate the effectiveness and tolerability weekly bortezomib (DVD) in real-world patients with relapsed refractory multiple myeloma (RRMM), along with number of prior treatment lines, and different types of treatments received.
Methods: This audit was conducted in Beaumont hospital and data was collected from MM patients who underwent DVD treatment between 2020 and 2023. Importantly, DVD was administered according to national cancer control programmed (NCCP) weekly protocol: Daratumumab (1800 mg IV), Bortezomib (1.3mg/m2 SC),(unlike the CASTOR trail where Bortezomib was given twice weekly), and dexamethasone (40mg orally) (6).
Results: Sixteen patients with a median age of 71.5 years were included in the audit. A primary objective was to evaluate the response rates based on the International Myeloma Working Group (IMWG) criteria(7). One patient achieved a VGPR, six patients achieved PR, and two patients had stable response. Adverse events were evaluated using the Common Terminology Criteria for Adverse Events (CTCAE) v5, with most events being grade 2 or lower. Only one case of infusion reaction (grade 2) and two cases of peripheral neuropathy (grade 1) were reported (8).
Conclusions: In conclusion, this audit was conducted in small heterogenous patient group with limited follow up. Despite the limitations of a small sample size and limited follow-up, the audit showed encouraging efficacy for DVD treatment with weekly bortezomib therapy. The results demonstrate favourable response rates and tolerability. However, to validate these results, larger-scale studies are necessary.

PS16

A scoping review of the literature related to the availability and validity of smartphone-based apps designed to measure speech-in-noise comprehension

Junjie Guo, Colm O'Tuathaigh
University College Cork, Cork, Ireland
BMC Proceedings 2025, **19(2):**PS16

Abstract: Hearing loss is a pervasive challenge transcending geographical boundaries. The rise of smartphone-based speech-in-noise applications offers a promising avenue, allowing individuals, including older adults, to self-administer hearing tests conveniently. However, a gap exists in the literature concerning the information available on apps tailored for older adults and the reliability of speech-in-noise hearing tests. This project seeks to shed light on self-administered mobile applications targeting age-related hearing loss through a scoping review. The review delineated eligibility criteria, app interventions, and comparative analyses of evidence and efficacies in speech-in-noise tests. Grey Literature and medical resources, such as PubMed, were systematically explored, resulting in the identification of 1972 articles. Rigorous screening narrowed down the selection to relevant articles meeting specific criteria. The subsequent data charting process organized pertinent information into two tables, capturing details of the search and profiling six mobile applications available on iOS and Android platforms. This profile includes developer details, operating system compatibility, subscription costs, efficacy, and other pertinent features. In conclusion, the limited availability of speech-in-noise apps underscores the need for further research. Bridging this gap not only enhances awareness of hearing loss but also holds the potential to improve the efficiency of hearing tests, especially for older adults.

PS17

Colonoscopies during the COVID-19 pandemic recovery period: Are we caught up on colorectal cancer detection and prevention? A Single Institution Experience

Marylise Boutros[1], Christian Guindi[2], Hafssah Alnajem[3], Alex Chen[3], Sarah Faris[3], Jessica Holland[3], Georgia Rigas[3], Huseen Alibrahim[3], Haroon Munir[3], Ali Safar[3]
[1]McGill University Division of General Surgery, Montreal, Canada; [2]Royal College of Surgeons in Ireland, School of Medicine, Dublin, Ireland; [3]McGill University, Montreal, Canada
BMC Proceedings 2025, **19(2):**PS17

Introduction: The COVID-19 pandemic resulted in a shutdown of endoscopy in many healthcare centers, followed by a ramp-up period. This study aims to assess the efficacy of the following colonoscopy recovery period (September-December 2020) on colorectal cancer (CRC) detection and screening.
Methods: The endoscopy database at an academic center in Montreal, was used to include colonoscopies performed during the recovery period of the COVID-19 pandemic. The recovery period (September-December 2020) was compared to its equivalent in 2019 (pre-pandemic) to assess how close to pre-pandemic norms we were in terms of indications, CRC and adenoma detection rates, and the prioritization of urgent procedures. The entire pandemic year (March-December 2020) was also compared to the pre-pandemic year (March-December 2019) to assess if a recovery was made post-shutdown.
Results: In the recovery period, 1968 colonoscopies were performed, compared to 2,481 in the same period in 2019. Urgent and inpatient colonoscopies increased (238 (12.2%) vs. 122 (5.1%), p=0.04) while surveillance and high-risk screening colonoscopies remained significantly lower (750 (38.6%) vs 1249 (52.7%), p<0.01). However, during the recovery period, cancer detection rates (47 (2.4%) vs 71 (2.9%), p=NS) and adenoma detection rates (533 (27.4%) Vs 633 (26.4%), p=NS) were preserved. This resulted in a reduction in adenoma removal in 138 patients. Overall, for the entire pandemic year, 3,273 colonoscopies were performed, compared to 6,324 in the pre-pandemic year. Urgent and in-patient colonoscopies increased, while surveillance and high-risk screening colonoscopies remained lower (1126 (34.4%) vs. 3118 (49.3%), p=0.03). This represents a reduction in adenoma removal in 860 patients and cancers undetected in 52 patients.
Discussion: The lack of colonoscopy during the pandemic resulted in reduced screening and surveillance of high-risk patients, and CRCs diagnosed. Despite all efforts to ramp up and recover, CRC detection and prevention has not caught up to pre-pandemic levels.

PS18

Structured assessment of antipsychotic side effects for adolescents: a retrospective chart review

Isabel Azu[1], Dolores Keating[2], Judith Strawbridge[1], Caroline Hynes[2]
[1]Royal College of Surgeons in Ireland, Dublin, Ireland; [2]Saint John of God Hospital, Dublin, Ireland
BMC Proceedings 2025, **19(2):**PS18

Introduction: Antipsychotic medications are increasingly prescribed for adolescents to treat mood disorders, schizophrenia, and psychotic symptoms amongst many other indications. Antipsychotic medications are associated with many side-effects. To ensure the safety and tolerability of these medications, monitoring and management of these side-effects is crucial. Despite the vulnerability that adolescents have to adverse effects of medications, comprehensive assessments of antipsychotic side-effects are not routinely conducted in clinical practice. The objective of this study is to evaluate the use of the Glasgow Antipsychotic Side-effects Scale (GASS) to assess the side-effects of antipsychotic medication in adolescents.
Methods: This was a quantitative study using a retrospective chart review which was carried out at an independent psychiatric hospital in Dublin, Ireland. All eligible participants taking an antipsychotic had their side-effects systemically assessed using the Glasgow Antipsychotic Side-effects Scale (GASS).
Results: 33 systematic assessments for antipsychotic side-effects were included in this study. 97% of participants reported side-effects. The most common side-effects were daytime drowsiness (81.8%), akathisia (57.5%), dizziness (42%), constipation (36%), polyuria/polydipsia (36%) and sedation (30%). 21% of patient assessments reported at least one side-effect that caused them to experience distress. Side-effects reported as distressing included constipation, nausea/vomiting, dystopia, daytime drowsiness and headache.
Discussion: An assessment tool provides a comprehensive way for side-effect surveillance and management. Side-effect burden is one of the most significant risk factors for medication non-adherence for patients taking psychotropic medicines. Therefore, surveillance and management of side-effects is crucial to support adherence to medicines. The distress associated with side-effects should be a priority when making interventions to minimize side-effect burden and patient distress.

PS19

Efficacy of cathodal transcranial direct current stimulation over the left temporoparietal area to improve insight into illness in schizophrenia, a systematic review and meta-analysis

Yasaman Kambari[1], Joanne E Plahoura[2], Jianmeng Song[1], Aron Amaev[1], Ali Abdolizadeh[1], Edgardo Torres-Carmona[1], Fumihiko Ueno[1], Teruki Koizumi[1], Ariel Graff-Guerrero[1], Philip Gerretsen[1]
[1]University of Toronto, Toronto, Canada, School of Medicine; [2]University of Limerick, Limerick, Ireland
BMC Proceedings 2025, **19(2):**PS19

Introduction: Impaired insight into illness significantly contributes to poor treatment outcomes among individuals with schizophrenia. Pharmacological approaches are effective for the positive symptoms of schizophrenia, like hallucinations and delusions, but less so for the treatment of insight impairment. Transcranial direct current stimulation (tDCS) is a non-invasive therapy, which may be used as an add-on to pharmacotherapy to treat insight in schizophrenia. A recent meta-analysis on the efficacy of tDCS suggested that improvement in insight may be attributable to the inhibitory effect of cathodal tDCS over the temporoparietal regions (TPA). In this systematic review and meta-analysis, we aimed to investigate whether cathodal tDCS over the TPA is efficacious in improving insight in schizophrenia when compared to other tDCS montages.
Methods: Three databases; EMBASE (1947–2023), MEDLINE (1946–2023), and PsycINFO (1806–2023), were searched for keywords related to tDCS, insight, and schizophrenia. Studies met our inclusion criteria if they were sham-controlled, involved patients with schizophrenia, and assessed insight before and after treatment with tDCS. A risk-of-bias assessment was completed using the Revised Cochrane risk-of-bias tool for randomized trials (RoB 2, 2019). A systematic review and meta-analysis will be completed to investigate the effects of cathodal tDCS over the TPA on insight in schizophrenia.
Results: The database search identified 312 citations; EMBASE (n=184), MEDLINE (n=48), and PsycINFO (n=80). Thirteen studies (586 participants) will be included in the meta-analysis. The standardized mean difference will be used as a measure of effect size. One study had a high risk-of-bias.
Discussion: Traditional treatment approaches have limited efficacy in treating insight among individuals with schizophrenia. Improvement in insight can lead to better clinical outcomes. Although previous studies have evaluated the efficacy of tDCS on insight in schizophrenia, further research is warranted to specifically investigate the effects of cathodal tDCS over the TPA in improving insight in schizophrenia.

PS20

Numerical modelling of transcranial focused ultrasound using new apple silicon computers

Deborah Shinyanbola[1], Samuel Pichardo[2], Beatriz Garcia-Diaz[3]
[1]Royal College of Surgeons in Ireland, Dublin, Ireland; [2]University of Calgary, Calgary, Canada; [3]Webber Academy, Calgary, Canada
BMC Proceedings 2025, **19(2):**PS20

Introduction: Focused ultrasound (FU) neuromodulation can be used for the predictive diagnosis and for treatment for many diseases and disorders, and is found in different intensities. For the scope of this project there is a focus on low intensity focused ultrassound for the excitement and inhibition of the brain. With the implementation of focused ultrasound modelling for the prognosis of what the ultrasound should resemble in the brain, it will allow the fore seal of possible areas of high acoustic intensity. The goal of this study is to implement the required mathematical models for the use of transcranial focus ultrasound (tFUS) by using the combined GPU and CPU processors present in MacBook Silicon Computers with M2 chips, allowing for the expansion of models to be see on wider scopes, enabling rapid anticipated diagnosis and treatment.
Methodology

1. Utilisation of Rayleigh Kernel Code translated to PyOpenCL library for tFUS Model
2. Rayleigh Kernel Code translation to Metal Compute library for the creation of Metal Compute Model Code and Modelling
3. Comparison amongst the Metal Code tFUS propagation Model and the PyOpenCL FU propagation Model

Results: The Metal Compute Code and models were successfully created to model FU propagations, showing no discrepancies when compared to older PyOpenCL models. Other transducers types demonstrated, with simplistic manipulation, the new code allowed more complexity in FU propagation modelling.
Discussion: The modelling of focused ultrasound has led to the continuation and evolution of predictive diagnosis as well as treatment. Moving the modelling of tFUS onto Apple Silicon M2 computers with the new metal code will allow for a maximal amount of memory to model focused ultrasound, and will allow for the expanded model to be shown on a 3D perspective. This in turn, will avoid possible negative implications from areas of unwanted high acoustic intensity concentrations.

PS21

Pain and quality of life outcomes following stereotactic body radiotherapy compared to celiac plexus block for pain management in pancreatic cancer: a systematic review

Harpriya Khela[1], Niall O'Dwyer[2], Aisling Barry[2]
[1]Royal College of Surgeons Ireland, Dublin, Ireland; [2]Department of Radiation Oncology, Cork, Ireland

BMC Proceedings 2025, **19(2):**PS21

Background: Pancreatic cancer (PC) pain is commonly associated with celiac plexus (CP) infiltration, resulting in belt like abdominal pain distribution with a reduction in health related quality of life (HRQOL) (2). Current management options include opioids, CP block, systemic therapy and low dose palliative radiotherapy. Stereotactic Body Radiotherapy (SBRT) use in the management of PC is evolving, it aims to deliver high doses of non-invasive radiation and has yet to be compared to the more commonly used CP block in the management of CP pain.
Methods: Published studies (randomized controlled trials, prospective and retrospective cohort studies and case reviews (including at least 5 patients)) of patients who received SBRT and/or CP block for PC, and who reported pain and HRQOL outcomes were included. The primary outcome was assessment of pain response post intervention and the secondary outcome was change in HRQOL from baseline. The systematic review was registered with the International Prospective Register of Systematic Reviews (PROSPERO CRD42023437609).
Results: A total of 33 studies were identified with 17 studies eligible for inclusion. 5 studies were randomized controlled trials, 4 prospective cohort studies and 4 retrospective studies. 102 patients received SBRT treatment and 243 CP block. Median follow-up was 2 (range x – y) months.The primary outcome of pain response was assessed using two different scales - the visual analog score (N=8) and brief pain inventory (N=2). The secondary outcome of HRQOL was assessed using a variety of questionnaires - FACT-G (N=1), EORTC global quality of life score (N=3), QLQ-C15 (N=1), SF36 (N=3), FACT-PA (N=1) and the Dartmouth COOP WONCA scale (N=1).
Discussion: SBRT is a promising, increasingly accessible non-invasive intervention for patients with PC associated CP pain, with limited associated side-effects. Prospective randomized controlled trials are needed to further compare to the current more commonly used techniques.

PS22

Effect of anti-tumour therapy of aged and young mice bearing glioblastoma

Harpriya Khela[1], David Synder[2], Daniel Wilkinson[2], Sarah Cook[2], Mustafa Khasraw[2]
[1]Royal College of Surgeons in Ireland, Dublin, Ireland; [2]Duke University, North Caroline, United States
BMC Proceedings 2025, **19(2):**PS22

Background: Glioblastoma (GBM) is fatal with an overall survival of 18–21 months. There is currently no promising cure. A contributing factor may be that GBM preclinical trials are conducted upon young mice, while the average age of onset for GBM is 64 years. To further investigate the effect of age on GBM treatment efficacy, we have intracranially injected CT2A tumours into young and aged mice, and monitored the response with various treatment types.
Methods: Young (6–8 week) or aged (11 months+) C57BL/6 mice were intracranially implanted with orthotopic CT2A tumors in methylcellulose. Mice received either no treatment, 5 Gy of total body irradiation (TBI) using caesium irradiator, or intraperitoneal injection of either 60mg/kg standard dose (SD) or 400 mg/kg dose intensified (DI) temozolomide (TMZ) chemotherapy. Mice weights were measured over time and mice were monitored for survival through humane end-point detection.
Results: Without treatment, median overall survival (mOS) for young mice is ~23 days, but for aged mice is ~17 days. mOS increased slightly for both young and aged mice in the TBI (28 and 31 days, respectively) and DI-TMZ (25 and 30 days, respectively) groups. The largest effect came with SD-TMZ treatment, where young mice mOS is reduced to ~20 days, yet aged mice increased to ~50 days. There are no differences between young and aged mice in weight changes, until young mice succumb to tumour with DI- TMZ treatment.
Conclusion: Without treatment, mOS is reduced in aged mice. Surprisingly aged mice treated with SD-TMZ had a highly improved mOS compared to young. However, with TBI and DI-TMZ, mOS in aged and young mice are similar. Further experiments will determine the efficacy of TMZ treatment in the aged GBM human population. Altogether this data gives us insight into the effect of aging on anti-tumour therapy.

PS23

Vasoplegic syndrome - risk predictors and evolving treatment strategies post coronary artery bypass graft : a systematic review

Arathi Nair[1], Edite Vartina[2]
[1]Riga Stradins University, Riga, Latvia; [2]Riga Stradins University, Riga, Latvia
BMC Proceedings 2025, **19(2):**PS23

Introduction: The complexity of Vasoplegic Syndrome (VS), characterized by refractory hypotension and diminished systemic vascular resistance, poses a considerable hurdle in Coronary Artery Bypass Grafting (CABG) procedures. This review aims to synthesize recent evidence on risk predictors and emerging treatment modalities for VS in CABG patients thereby improving postoperative outcomes.
Methods: A comprehensive search across PubMed (MEDLINE and PubMed Central), Google Scholar, and the Cochrane Library identified studies published in the last 5 years. Inclusion criteria focused on randomized controlled trials, meta-analyses, prospective analyses, grey literature, observational and Cohort studies specific to VS and CABG patients. Three independent reviewers assessed eligibility using PRISMA methodology.
Results: From 873 studies, only 15 met eligibility criteria. Early risk predictors for VS include miRNA profiles (miRNA-30d and miR-770-5p), genetic polymorphisms (Arg389-β1AR variant), endothelial glycocalyx alterations with lower syndecan-1 levels, and the lack of an early response from CD34+ and CD34+CD133+ hematopoietic stem cells. These markers not only reveal dysregulation but also influence inotropic support duration, emphasizing genetic variability's impact on post-CABG hemodynamics. Adding complexity, preoperative variables like renal failure, history of previous cardiac surgery, combined procedures, and prolonged aortic cross-clamp with cardiopulmonary bypass contribute. In these scenarios, pharmacological strategies with antioxidant potential, Terlipressin and early methylene blue, show efficacy in patients treated with angiotensin II receptor antagonists during CABG. Angiotensin-II usage demonstrates positive outcomes, increasing mean arterial pressure and reducing norepinephrine requirements. Moreover, evidence suggests Glibenclamide with Sevoflurane anesthesia may benefit high-risk patients undergoing CABG.
Conclusion: This systematic review highlights the necessity of modified techniques in maintaining stable hemodynamics and shortening surgical duration. There is a significant demand for additional research, to validate and establish new evidence-based guidelines. Ultimately, the findings unfold intricate interplay of genetic and clinical factors influencing the occurrence and management of VS during CABG procedures.

PS24

Introduction of an echocardiographic workaround for a beginner-friendly or retrospective diastolic function assessment in mice

Michael Marterstock[1], Antje Schauer[2], Peter Dieterich[1], Susanne Kämmerer[3], Annett Opitz[3], Peter Mirtschink[4], Irakli Kopaliani[5], Andreas Deußen[5]
[1]Institut für Physiologie, TU Dresden, Dresden, Germany; [2]Labor für experimentelle und molekulare Kardiologie, TU Dresden, Dresden, Germany; [3]Institut für Pharmakologie und Toxikologie, TU Dresden, Dresden, Germany; [4]Institut für klinische Chemie und Laboratoriumsmedizin, TU Dresden, Dresden, Germany; [5]Institut für Physiologie, TU Dresden, Dresden, Germany
BMC Proceedings 2025, **19(2):**PS24

Background: Due to increasing research of heart failure with impaired diastolic function in human patients, mouse models with different levels of systolic and diastolic dysfunction have been established for respective basic research. However to date, diastolic function

assessment in mouse echocardiography relies usually on a pulsed wave (PW) Doppler measurement of mitral valve flow in the apical-four-chamber-view (A4C), a measurement which requires an expert level of experience in echocardiography.
Aim: This study aims to perform full-scale diastolic function assessment using brightness-mode (B-mode) cine loops of the parasternal-long-axis-view (PSLAX), the arguably most common view in rodent echocardiography.
Methods: Comprehensively, three parameters are defined for assessment of diastolic function (left atrial area, reverse longitudinal strain rate, isovolumetric relaxation time (IVRT). Of these only the IVRT cannot be determined from PSLAX B-mode images, but traditionally depends on the A4C PW-Doppler. Using a framewise speckle-tracking analysis for continuous volume measurement of the left ventricle (LV) LV-volume-change/time curves were created in which isovolumetric intervals were timed, thus permitting IVRT assessment. This strategy was applied in comparison to the "gold standard" of IVRT assessment to three groups of mice with i) normal heart function, ii) heart-failure-with-reduced-ejection-fraction (HFrEF) and iii) heart-failure-with-mildly-reduced-ejection-fraction (HFmrEF) (n=8 for each group). The assessments were evaluated using Bland-Altman analysis and Pearson´s correlation.
Results: In mice without heart failure the bias of the new approach for IVRT measurement was 3.5% (r^2=0.6952, p-value=0.0101) compared to the "gold standard". In HFrEF mice it was −12.1% (r^2=0.7809, p-value=0.0036) and in HFmrEF −6.2% (r^2=0.9088, p-value=0.0022). In all groups together the bias was −4.9% (r^2=0.9335, p-value<0.0001).
Conclusion: Thus, IVRT assessment is possible using PSLAX B-mode images, hence offering a full protocol for diastolic function assessment with this single approach. This procedure enables researchers to conduct diastolic function studies without excessive training and opens the possibility to re-analyze previous studies.

PS25

Heart rate control efficacy in participants of post-myocardial infarction managed care program

Michalina Ciurla[1], Katarzyna Paluch[1], Agata Antoniak[1], Julia Haponiuk-Skwarlińska[2], Gabriela Makulec[1], Karolina Domosud[1], Dominika Klimczak-Tomaniak[1], Maciej Janiszewski[3]
[1]Medical University of Warsaw, Warsaw, Poland; [2]Medical University of Warsaw, Warsaw, Poland; [3]Medical University of Warsaw, Warsaw, Poland
BMC Proceedings 2025, **19(2):**PS25

Introduction: Managed Care in Acute Myocardial Infarction (MC-AMI) is a Polish program dedicated to patients after myocardial infarction (MI) applied to improve patients' prognosis. The program consists of; regular cardiological outpatient visits, a series of non-invasive tests such as echocardiography, Holter monitoring and rehabilitation within the first 12 months after MI. Achieving the optimal heart rate (HR) is one of the crucial goals in the care of post-AMI patients. The study assessed the frequency of beta-blocker (BB) usage and the effectiveness of HR control in post AMI patients.
Methods: The data was collected from patients who participated in the MC-AMI program. The analyzed data included 24-hour Holter tests performed within 12 months from the MI, BB therapy, and clinical characteristics. Patients with previously diagnosed arrhythmia or other antiarrhythmic drugs were excluded.
Results: 82 patients (male=64%, aged 62±8.9y.o.) of which 36 (44%) suffered from STEMI were analyzed. 63 patients (76%) were treated with BB (bisoprolol 44%, nebivolol 49%, metoprolol 6%). The median (interquartile range) daily doses were 2.5 (1, 5) mg for bisoprolol, 5 (2, 5) mg for nebivolol, and 25 (25, 81.25) mg for metoprolol. The MHR was 66±7 bpm in all patients, 66±8 bpm in patients treated with BB, and 66±6 bpm in patients without BB, p=0.733. Only 20 (24%) patients achieved the target MHR of 60 bpm. We found no significant differences in clinical characteristics of patients who achieved target MHR vs others.
Discussion: Patients participating in the MC-AMI rarely achieve the target MHR. Even though 3/4 of the patients were receiving BB, only 1/4 achieved the target MHR. In everyday clinical practice BB were administered in low or moderate doses, which made it difficult to demonstrate their potential therapeutic benefits.

PS26

Development of an advanced platform to detect and isolate circulating tumour cells for therapeutic strategy

Michaela Moriarty[1], Sharon O'Toole[2,3], Cara Martin[2], John J. O'Leary[1], Bashir M. Mohamed[2,3]
[1]Trinity College Dublin, Dublin, Ireland; [2]Department of Histopathology, Trinity College Dublin, Dublin Ireland; [3]Department of Obstetrics and Gynaecology, Trinity College Dublin, Dublin, Ireland
BMC Proceedings 2025, **19(2):**PS26

Introduction: Circulating tumour cells (CTCs) are a critical intermediate step in the process of cancer metastasis. Reliability of CTC isolation/purification has limited the potential to report on metastatic progression and the development of therapeutic intervention. Most current CTC isolation technologies are associated with either non-sterile conditions or lengthy procedures that result in reduced viability of CTCs. We hypothesised that super magnetic Iron Oxide Nanoparticles (IONPs) could be functionalised with CTC-specific antibodies and used to gently isolate CTCs.
Methods: For cancer cell isolation, we conjugated IONPs with EpCAM, PAR-1, HER-3, and EGFR antibodies. Metastatic ovarian cancer (OC) cells isolated from ascites of OC patients were expanded for ten passages. 400 cells were spiked into seven mL of matched female donor blood.
The isolation protocol comprises:

1. Red blood cell lysis
2. Application of CD45-functionalised IONPs
3. Discarding of PBMCs
4. Addition of EGFR-, HER-3-, EpCAM-, and/or PAR-1-functionalised IONPs
5. Isolation of OC cells by magnetic separation

Results: The isolation protocol enabled successful isolation of OC cells spiked in donor blood. Cells were then microscopically counted and the percentage of recovered OC cells using EGFR-IONPs, HER-3-IONPs, EpCAM-IONPs, and/or PAR-1-IONPs were 30,35,36 and 40% respectively. These cells were successfully cultured and expanded for a period of two weeks. A subset of CD45-IONP targeted immune cells which were attached to OC cells were also isolated, providing an additional avenue of OC cell isolation.

PS27

An audit of preoperative skin decolonisation and prophylactic antimicrobial use in elective neurosurgical procedures

Hadeer Alrubh, Robert Brennan
RCSI, Dublin, Ireland
BMC Proceedings 2025, **19(2):**PS27

Post-operative infections form a great threat to the patient's health, resulting in increased morbidity, mortality and healthcare cost. Hence, preventive measurements such as prophylactic antibiotics are implemented in Beaumont Hospital Neurosurgical unit. This research aims to evaluate the quality of prophylactic antimicrobial use and compliance in neurosurgical procedures. An initial audit was conducted over a six-week period to establish a baseline of the compliance with infection prevention protocols in the neurosurgical unit. Data was collected from drug kardexes, surgical and anaesthetic notes, taking into consideration antibiotic agent, timing, dosage, number of doses and rates of subsequent SSIs. Data was collected from 83 patients from May 24th 2023 to June 27th 2023. Cefuroxime was the most commonly prescribed prophylaxis accounting for 81.9%(n=68). Patients with penicillin allergy were administered Teicoplanin, 3.6%(n=3). 40.9% of patients(n=34) were given one dose only but 24.1%(n=20)

were administered more than 3 doses peri-operatively. There were 14.4%(n=12) of patients who received prophylaxis with incorrect timing only and 2.4%(n=2) of patients received prophylaxis with incorrect number of doses only. 8.4%(n=7) had both incorrect timing and number of doses. 14.4%(n=12) did not receive any prophylaxis, in only two of these cases, prophylaxis was not indicated. In regards to SSI rates, 16.9%(n=14) of patients developed post-operative infections, of these, 8.4%(n=7) also received incorrect prophylaxis or did not receive prophylaxis at all. Relative risk for these patients is 2.2, which is significant. Based on the results, compliance to prophylactic antimicrobial use in neurosurgical procedures is relatively high. However, further intervention is required to ensure adherence to prevent SSIs. Hence, a re-audit will be conducted to assess the effect of the intervention and their impact on the compliance rates. The goal of the project is to improve the patient health by reducing the incidence of SSIs through improved adherence to infection prevention protocols.

PS28

The Death Café as a method for teaching dying, death, and bereavement for a culturally diverse undergraduate medicine population

Meghan Gipson[1], Eric Clark[1], Valerie Smith[2]
[1]Royal College of Surgeons in Ireland, Dublin, Ireland; [2]Irish Hospice Foundation, Dublin, Ireland
BMC Proceedings 2025, **19(2):**PS28

Abstract: The Death Café (DC) was developed to "increase awareness of death while helping people make the most of their finite lives." With the incorporation of Transforming Healthcare Education Project (THEP) into the Royal College of Surgeons in Ireland (RCSI) curriculum, a course on Dying, Death, and Bereavement (DDB) was developed as a Student Engagement Partnership initiative. An innovative component of this module, the DC, a first at an Irish University, was implemented. The RCSI module has adapted the DC for medical students to discuss personal wishes and experiences around death, as well as clinical encounters of death under the guidance of senior students. The goal of this study is to report on the students' perceptions on the DC as a component of the module, with the goal of strengthening the basis of support for this subject in an under-researched area of medical education. The development of the module on DDB was evidence based, for which a literature review on death and end of life education in medical curricula was completed. The DC is an innovative strategy encountered in the research. It was implemented into the course in partnership with the Irish Hospice Foundation, and year 4–5 clinical medical students from the RCSI Palliative Care Society. This novel event has attracted national attention in the press and has also been held again in RCSI. Student feedback on the implementation of the DC into the THEP2 curriculum has been positive. RCSI and external staff have also shown support. By reflecting on their personal experiences with death, the DC provides a unique opportunity for students to begin sharing in conversations and experiences of death and bereavement, which will aid them in their careers as doctors. The diversity of the RCSI medicine classes makes the DC a valuable cultural training opportunity for students.

PS29

Hyperthermic intraperitoneal chemotherapy in epithelial ovarian cancer: a bibliometric analysis of the literature

Maen Alrawashdeh[1], Mohammad Said[1], Yazan Qasem[1], Zaid Fraihat[1], Nasser Kasasbeh[2], Saoirse O'Malley[1], Ibrahim Aboukathir[1], Alaa Owais[3], Gordon Daly[4], Gavin Dowling[5]
[1]Royal College of Surgeons in Ireland, Dublin, Ireland; [2]Jordan University, Amman, Jordan; [3]Mutah University, Karak, Jordan; [4]Department of Surgery, Royal College of Surgeons in Ireland, Dublin, Ireland; [5]Department of Surgery, Beaumont Hospital, Dublin, Ireland
BMC Proceedings 2025, **19(2):**PS29

Introduction: Ovarian cancer is notorious for spreading into the peritoneum, hence "Hyperthermic Intraperitoneal Chemotherapy" (HIPEC) was proposed as a method of increasing peritoneal chemotherapy concentration and uptake. This study aims to analyze the trends in the literature regarding HIPEC in the treatment of ovarian cancer.
Methods: The Web of Science Core Collection (Clarivate Analytics, Boston, MA, USA) was used to identify the top 100 most cited articles. The search strategy involved using the terms "Ovarian Cancer", "Ovarian Neoplasm", "HIPEC" and "Hyperthermic Intraperitoneal Chemotherapy". The results were then analyzed on Microsoft Excel 2019 (Microsoft Corporation, Redmond, WA, USA) and VOS Viewer 1.6.16 software (Leiden University, Leiden, the Netherlands).
Results: The top 100 articles had a total of 5372 citations, the most cited paper being "Hyperthermic Intraperitoneal Chemotherapy in Ovarian Cancer" published in January 2018 in the New England Journal of Medicine with 798 citations. 2019 was the year with the most documents published (n= 13). The authors with the most documents were Dr Anna Fagotti and Dr Giovanni Scambia both with 11 documents. The Catholic University of the Sacred Heart was the most productive institution, being affiliated with 12 of the top 100 articles. The journal of Gynaecologic Oncology had the highest number of documents with a total of 13. Italy had the most contributions with 29 publications. On bibliographic coupling analysis with a minimum threshold of 3 documents, Dr Giovanni Scambia had the greatest total link strength (n= 3483). For co-citation analysis of authors with a minimum threshold of 20 citations C William Helm had the greatest total strength link n= (1625).
Conclusion: HIPEC interest seems to have peaked in 2019 and has fallen in the last few years. Italy, Italian authors and Italian institutions being the most influential was an interesting trend noted during out study.

PS30

The effect of conventional and experimental taxanes at the level of gene expression in mouse models with pancreatic cancer

Kamila Koci[1], Tomas Sychra[1], Radka Vaclavikova[2], Ivona Krus[2], Alzbeta Spalenkova[2], Karolina Seborova[2], Marie Ehrlichova[2], Iwao Ojima[3], Martin Oliverius[4], Pavel Soucek[2]
[1]Third Faculty of Medicine, Charles University, Prague, Czech Republic; [2]Toxicogenomics Department, National Institute of Public Health, Prague, Czech Republic; [3]Institute of Chemical Biology and Drug Discovery, State University of New York at Stony Brook, Stony Brook, United States; [4]Department of General Surgery, University Hospital Kralovske Vinohrady, Prague, Czech Republic
BMC Proceedings 2025, **19(2):**PS30

Abstract: Pancreatic cancer (PC) is predicted to become the second leading cause of death by 2030, with a 5-year survival rate below 20%. Surgical resection, the sole curative option, applies only at early stages. Unfortunately, 80% of patients present at an unresectable stage, necessitating chemotherapy. This study compared standard chemotherapy with paclitaxel (PTX), and experimental chemotherapy, Stony Brooke taxanes, SB-T-121605 (SB-T-05), and SB-T-121606 (SB-T-06), on the expression of crucial genes — KRAS, TP53-45, TP53-49, TP53-53, and PIK3CA. The central question: How do gene expression profiles of these critical genes differ after exposure to six treatment modalities, using SB-T-05, SB-T-06, and PTX? Thirty mice received subcutaneous injections of 3 × 10^6 PaCa-44 cells under inhalation anesthesia. Upon tumor growth, xenografts were divided into six groups, each comprising five mice. Taxanes were administered intraperitoneally twice a week for two weeks. Gene expression of targeted genes (KRAS, TP53-45, TP53-49, TP53-53, PIK3CA), and three housekeeping genes were measured using real-time PCR. Consistent upregulation of TP53-45 was observed in all taxane treated groups compared to the control group, with the most notable upregulation in the 7 mg/kg PTX + 3 mg/kg SB-T-06 group (5.6 - fold change, $P < 0.01$), as well as in the 7 mg/kg PTX + 3 mg/kg SB-T-05 group ($P < 0.01$). The SB-T-05 and SB-T-06 group at 3 mg/kg also resulted in the downregulation of KRAS and PIK3CA, with statistical insignificance ($P > 0.05$). Stony Brooke taxanes showed efficacy in higher concentrations with PTX, notably

upregulating the TP53-45 pathway, more than PTX monotherapy. However, other pathways show no or statistically insignificant change under the chosen therapies. Given the complexity of PC, exploring additional genes and a broader spectrum of chemotherapeutics is crucial in identifying the most effective treatment.

PS31

Collagen-nanohydroxyapatite scaffolds as 3D breast cancer models that mimic the bone metastasis environment

Julia Matwiejczuk[1], Caroline Curtin[2]
[1]Royal College of Surgeons in Ireland, School of Medicine, Dublin, Ireland; [2]Tissue Engineering Research Group, Department of Anatomy and Regenerative Medicine, RCSI, Dublin, Ireland
BMC Proceedings 2025, **19(2):**PS31

Breast cancer is the most common cancer affecting women globally with bone being the most common site of breast cancer metastasis. Triple negative breast cancer (TNBC) is the most aggressive subtype of breast cancer with high metastatic potential. Traditionally, cancer research has been performed in monolayer culture but this fails to accurately mimic the tumour microenvironment. We hypothesis 3-dimensional (3D) collagen-nanohydroxyapatite (Col-nHA) scaffolds can be used to better mimic the tumour microenvironment by simulating the bone environment and thus, can be used to study the pathophysiology of metastasis. The aim of this study was to assess the effect of TNBC cells on the bone forming capacity of early and late-stage osteoblasts in 3D Col-nHA scaffolds. Mesenchymal stem cells were cultured in osteogenic media to become osteoblasts for either 7 (early) or 21 days (late) prior to the addition of MDA-MB-231 TNBC cells. Cells were co-cultured for a further 14 days before analysing calcium content using a Stanbio calcium assay, histology staining for Alizarin Red and DNA content using a DNA PicoGreen assay. Controls included monocultures of Day 14 MDA-MB-231 cells, Day 21 osteoblasts and Day 35 osteoblasts. A breast cancer bone metastasis model was successfully developed. Calcium and DNA content was significantly decreased in the Day 21 and Day 35 coculture groups when compared to the respective estimates of the combined Day 21 and Day 35 monoculture groups as demonstrated using a calcium assay, histological staining and DNA assay. This indicated TNBC cells significantly impact osteoblast cell growth and calcium deposition. Overall, the use of Col-nHA scaffolds allows for more accurate representation of the cell-to-cell interactions which take place in the 3D tumour microenvironment. This 3D breast cancer bone metastases model has potential to be used to evaluate other tumour cell interactions or as a test-bed for novel treatment therapies.

PS32

Morbidity and mortality associated with Enterobacter bugandensis infections in the NICU: a systematic review

Anoushka Sharma[1], Daniel O'Reilly[2], Naomi McCallion[2], Richard Drew[3]
[1]Royal College of Surgeons in Ireland, Dublin, Ireland; [2]Department of Neonatology, Rotunda Hospital, Dublin, Ireland; [3]Department of Clinical Microbiology, Temple Street Children's University Hospital, Dublin, Ireland
BMC Proceedings 2025, **19(2):**PS32

Objective: This study aims to comprehensively investigate the existing literature and empirical evidence pertaining to *Enterobacter bugandensis*, a subset of the Enterobacter Cloacae Complex, in the context of neonatal infections.
Methods: We conducted a rigorous systematic review of the available literature using specific search terms, "*Enterobacter bugandensis*" and "Neonate/Neonates." Studies exclusively focused on in-vitro identification or animal models were deliberately excluded from our analysis.
Results: Our initial search yielded a total of 65 articles. Following a meticulous review of titles, 42 relevant articles were identified. Subsequently, upon screening abstracts and eliminating duplicates, we identified six articles that met our search criteria, all of which explored the clinical impact of *Enterobacter bugandensis* in neonatal units. The studies collectively described 56 infants affected, with a significant number of cases recorded in Tanzania and France. In five out of six studies, outbreaks were documented, and antimicrobial resistance was frequently observed (in 3 out of 6 studies). Mortality rates, reported in three out of six studies, were alarmingly high, ranging from 35% to 100% among affected infants.
Conclusion: The available data on *Enterobacter bugandensis* in Neonatal Intensive Care Units (NICUs) remains limited. However, where it has been reported, this pathogen is associated with high mortality, antibiotic resistance, and the potential for outbreaks. We recommend investing in enhancing clinical laboratories' capabilities to accurately subtype Enterobacter Cloacae complex subtypes, as this can significantly aid in prognosis and outbreak management related to *Enterobacter bugandensis.*

PS33

Investigating the role of FTO gene in estrogen receptor positive (ER+) brain metastatic breast cancer

Anoushka Sharma, Daniella Ottaviani
Royal College of Surgeons in Ireland, Dublin, Ireland
BMC Proceedings 2025, **19(2):**PS33

Endocrine treatment is the current most successful treatment for ER-positive breast cancers. However, endocrine resistance is a common clinical problem, as breast cancer can metastasize to the brain, worsening the condition of the patient. Post-transcriptional modification of RNA, like m^6A methyl marks, may play an important role in cancer progression and metastasis. FTO, a mA demethylator, has recently been associated with breast cancer progression. However, the role of FTO in breast cancer brain metastases (BCBM) requires further exploration. This study aims to evaluate genes and pathways under FTO regulation in BCBM cell models by analysis of RNA-sequencing following FTO inhibition genetically and pharmacologically. Pathway analysis was conducted using EnrichR, and significantly downregulated and upregulated pathways were identified by using adjusted p-values<0.05 as the cut-off. FTO was found to be involved in the regulation of MYC oncogenic pathway, pathways related to cell growth as mTORC1, hypoxia and RNA binding. On the other hand, FTO inhibition induced upregulation of pathways like apoptosis and focal adhesion. Altogether, these results suggest that FTO could be a potential therapeutic target for BCM as inhibition of FTO results in apoptosis and inhibition of oncogenic pathways such as MYC. Further investigation into FTO and its mechanism of action in BCM is required to better understand the biological consequences observed in this research project.

PS34

Management of paediatric atopic dermatitis/eczema by healthcare workers in the South of Ireland

Adina Elena Zagoneanu[1], Caoimhe Marie Cronin[1], Regina Walsh[2], Yukta Ramesh[1], Juan Trujillo[3]
[1]Department of Paediatrics and Child Health, Cork University Hospital, Cork, Ireland; [2]Department of Dermatology, South Infirmary Victoria University Hospital, Cork, Ireland; [3]Cork University Hospital, Irish Centre for Maternal and Child Health Research (INFANT), HRB Clinical Research Facility Cork (CRF-C), Cork, Ireland
BMC Proceedings 2025, **19(2):**PS34

Background: Atopic dermatitis (AD), also commonly known as eczema is a chronic, inflammatory skin condition which affects 20–30% of children worldwide(1). Globally conducted studies show that familiarity with AD diagnostic criteria and disease management is inadequate and needs revisiting, to allow for better disease diagnosis, management and improve patient wellbeing (2)(3). AD can be diagnosed and managed based on a variety of researched and regularly updated national and international guidelines. The main steps of treatment include, moisturisers, topical corticosteroids, antihistamines, the use of wet wraps, milton baths and/or antibiotics and topical calcineurin inhibitors.

Materials & Methods: This is a multi-centre, observational, cross-sectional study conducted via an online questionnaire, to assess the knowledge of healthcare professionals working in hospitals and primary care, in Cork and Kerry, of paediatric atopic dermatitis diagnosis and first line management, and comparing it to national and international guidelines (n=44).
Results: The majority of participants (77.27%) were not familiar with any diagnostic criteria of atopic dermatitis/eczema. Regarding paediatric AD/eczema management, only 84.1% of participants would recommend moisturisers for the maintenance phase of treatment 100% of the time, while the remainder of participants would recommend it 75% (12.63%) of the time and 50% of the time (2.27%). Almost a third of participants (29.55%) of participants would not recommend the use of Milton baths for infected eczema. More than half (57.14%) of participants would never recommend the use of wet wraps and almost a quarter (23.81%) of participants would not prescribe oral antihistamines for the management of paediatric AD/eczema. Only 58.5% would not recommend the use of oral corticosteroids in paediatric AD/eczema while 39.02% would never prescribe topical calcineurin inhibitors.
Conclusion: Our study shows a need for re-familiarisation of healthcare professionals on paediatric AD/eczema diagnosis and management, which would result in improved patient treatment and wellbeing.

PS35

Medical student's perceptions of empathy and compassion in their psychiatry rotation

Valerie Rozwadowski[1], Harshita Kamal[1], Niamh Quigley[1], Yara Alemi[1], Caragh Behan[2], Niamh Mullen[1], Caitriona Cahir[1]
[1]Royal College of Surgeons in Ireland, Dublin, Ireland; [2]Department of Psychiatry, Royal College of Surgeons in Ireland, Dunlin, Ireland
BMC Proceedings 2025, **19(2):**PS35

Published studies of reflection in psychiatry show psychiatry rotations can be uniquely challenging for medical students as the patient population they encounter are suffering in a markedly different way to the general patient population. Compassion is a core aspect of healthcare professionalism and is highly valued by patients. There is evidence that compassion is a skill that can be taught. Professional modelling of empathic and compassionate care is one way for students to learn how to operate from a compassionate space. This project objective was to explore medical students' perceptions of empathy and compassion during their psychiatry rotation. This would establish a sense of students' understanding of empathy and compassion in healthcare with a view to developing a compassionate healthcare toolkit. We conducted a qualitative study using the interpretative phenomenological approach (IPA). Twelve students participated in interviews and data were analysed focusing on themes using iterative analysis. The RCSI ethics committee granted ethical approval. The analysis revealed variable understanding of the terms empathy and compassion, instances of compassionate care such as active listening, exploration of patient's concerns, humanising interactions, and looking beyond medical interventions and care. Factors were identified that enhanced and enabled compassion, or were barriers to compassion. This in-depth evaluation of medical students' understanding of the terms empathy and compassion showed many of the actions seen to be compassionate were simple and easily done activities. There was a sense of integrity, that these actions came across as genuine and caring. In opposition to the published literature, many students felt strongly that compassion was an innate quality and could not be taught. However, other students had various ideas for better understanding and teaching around compassion in healthcare. This research supports the development of a compassionate healthcare toolkit for medical students to better serve our collective community as healthcare professionals.

PS36

Exploring the relationship between fibromyalgia, neurodiversity, pain sensitivity and sensory sensitivity

Lauren Wilkinson, Jagjeet Jutley-Neilson
University of Warwick, Coventry, England
BMC Proceedings 2025, **19(2):**PS36

Introduction: Fibromyalgia is a chronic pain condition affecting up to 9.3% of the general population. Recent research has identified a relationship between fibromyalgia and neurodiversity due to shared symptoms, comorbidity, and possible connected aetiology. Additionally, both conditions share an increase in pain sensitivity and sensory sensitivity. Therefore, we aim to investigate the relationships between fibromyalgia, neurodiversity, pain sensitivity and sensory sensitivity in this study. We hypothesise that there will be a difference in pain and sensory sensitivity between those with fibromyalgia and a neurodivergent condition compared with those with fibromyalgia and are neurotypical.
Method: Participants diagnosed with fibromyalgia (neurodivergent n = 26, neurotypical n = 44) were recruited to complete a series of questionnaires consisting of the revised fibromyalgia impact questionnaire, the pain sensitivity questionnaire, and the revised scoring of the sensory perception quotient.
Results: Pearson's correlations found that the severity of fibromyalgia symptoms was positively correlated with both pain sensitivity and sensory sensitivity. Additionally, independent t-tests revealed statistically significant differences between neurotypical participants and neurodivergent participants regarding pain sensitivity and hypersensitivity. People with fibromyalgia and a neurodivergent condition had a lower sensitivity to pain, and an increased hypersensitivity compared to neurotypical people with fibromyalgia.
Discussion: These findings highlight the difference between neurodivergent and neurotypical individuals in relation to chronic pain however there is currently a lack of research due to being from different areas of speciality. Neurodivergent individuals have been identified to be at a higher risk of developing chronic pain conditions such as fibromyalgia and an increase in awareness of this relationship is needed as there is currently a lack of deeper understanding of neurodivergent conditions and they are often neglected in a clinical setting. An increased understanding will allow the development of more personalised healthcare and treatment.

PS37

The role of histone deacetylases in breast cancer brain metastasis and their potential as a therapeutic target

Samer Mina, Lara Luzietti, Gabriela Gomez
Royal College of Surgeons in Ireland, Dublin, Ireland
BMC Proceedings 2025, **19(2):**PS37

Breast cancer metastasis to the brain (BCBM) has the highest risk of mortality due to the limited treatments that are available. Histone deacetylases, which are responsible for gene regulation, seem to contribute to the development and/or spread of cancer. Histone deacetylase inhibitors (HDACis) are thought to keep genes transcribable allowing cancer regression. Western blot was performed on different cell lines taken from the breast cancer cells in the brain and the breast to find the cell lines with good HDAC1 protein expression. It was also performed on cells with the HDAC1 gene knockout (silenced) to make sure they were not expressing HDAC1. Cell line MDA231 (triple negative) was chosen. Cells were incubated in a mixture of DMEM high glucose solution and nuclease-free water and treated with HDAC1i (Vorinostat) for 5 days, then MTS was added to allow for quantification and calculation of the number of living cells. Results showed that the treatment was more effective on the brain breast (BR) cells than the cells taken from the breast (PT). Hence, more experiments must be conducted to draw a conclusion regarding the effectiveness of this treatment.

PS38

Comparison of childbirth outcomes for resolving pregnancy with and without the use of labor induction methods

Jelizaveta Antonika, Margarita Pukite, Julija Dmitrijeva, Anna Pimanova
University of Latvia, Riga, Latvia
BMC Proceedings 2025, **19(2):**PS38

Background: Induction of labor is a medical process that has become a frequently used procedure in Latvia for pregnant women. Based on statistical data, the number of labor inductions used in Latvia is increasing. In 2016, in 19.4% of births in the Riga Maternity Hospital labor induction was used (Miltiņa, 2017). In this research the author made a comparison of possible risks due to use of medical labor induction.
Aim: The aim of the study was to compare childbirth outcomes for resolving pregnancy with and without the use of labor induction methods.
Materials and Methods: The study used a retrospective descriptive study design. Two distinct samples were created: the first comprised 68 delivery histories, representing 50% of patients who underwent medically induced childbirth, and the second included 68 delivery histories as a control group, reflecting instances where childbirth occurred without induction. The study assessed childbirth outcomes and the average duration of labor as key criteria. The acquired data was analysed in MS Excel and IBM SPSS 28.0.
Results: Labor induction demonstrated an average duration of 5.81 hours (SD+3.8), slightly exceeding the average of 5.63 hours (SD+3.1) observed in non-induced childbirths. Complications during childbirth were notably higher in cases involving induction, with 44% (n=30) experiencing issues, compared to 18% (n=12) in non-induced cases. Childbirths using induction/stimulation showed an elevated occurrence of Caesarean section procedures (12%, n=8) and perineal tears (34%,n=23) in contrast to those without induction.
Conclusions: The duration of childbirth varied from approximately 1.5 hours (n=1) to 19 (n=1) hours in the comparable study groups, depending on the specific case. The research results indicate that complications during childbirth (Caesarean section, perineal tears, vaginal tears, uterine distress) were more frequently observed when labor induction was used. The frequency of delivery outcomes in the study groups shows no statistically significant differences (p=0,977).

PS39

Descriptive cross-sectional study of disease markers and gene expression profiling for risk stratification in Multiple Myeloma

Colm O'Brien O'Leary[1], Izabela Drozdz[2], Roisin McAvera[2], Siobhan Glavey[2]
[1]Royal College of Surgeons in Ireland, Dublin, Ireland; [2]Department of Pathology, Royal College of Surgeons in Ireland, Dublin, Ireland
BMC Proceedings 2025, **19(2):**PS39

Background: Multiple myeloma (MM) is a haematological malignancy characterised by abnormal clonal plasma cell proliferation in the bone marrow resulting in renal damage, anaemia, osteolytic lesions, and hypercalcaemia. SKY92 classifier is a novel gene-expression-profiler that is thought to accurately classify patients as high-risk (HR) with an expected survival-time of less than 2 years from the date-of-diagnosis. The International Staging System (ISS), utilizes β_2-microglobulin and albumin levels to provide a prognosis, staging patients as stage I, II, or III.
Aims: The aims of this study were to 1) Report the proportion of patients that are SKY92 HR among MM-patients 2) Report the prevalence of end-organ disease (anaemia, renal insufficiency, hypercalcemia) at point of diagnosis 3) Comparing levels key markers of MM (calcium, creatinine, haemoglobin, and Free-Light-Chain ratio) between HR and standard-risk (SR) patients. 4) Compare the classification of patients according to ISS to that of SKY92.
Population: MM patients from all cancer referral sites across Ireland, <75 years of age (N=38). Descriptive statistics, including the Student t-test, were used as appropriate. In the sub-cohort tested using SKY92 classifier (N=22), the prevalence of HR was 46% (10/22). The end-organ disease prevalence was as follows; 71% (27/38) anaemia, 18% (7/38) renal insufficiency, 11% (4/38) hypercalcemia. No statistically significant difference was found in the levels of other MM disease-markers between HR and SR patients. Thirty-three-percent (2/6) of SKY92 HR patients were not categorized as ISS stage III and 29% (2/7) of SKY92 SR patients were categorized as stage III.
Conclusion: The prevalence of HR MM is higher in this study than that reported in other studies, indicating a possible increased prevalence in this specific cohort or Ireland as a whole. The discrepancy between ISS and SKY92 suggests that they are selecting for separate, but overlapping populations, and supports the use SKY92 and ISS in conjunction.

PS40

Prognosis of patients with oral cavity cancer who have an early recurrence before starting radiotherapy

Abiha Javed[1], Fatimah Alfaraj[2]
[1]Royal College of Surgeons in Ireland, Dublin, Ireland; [2]British Columbia Cancer Centre, Vancouver, Canada
BMC Proceedings 2025, **19(2):**PS40

Introduction: Oral squamous cell carcinoma (OSCC) is a common malignant tumour of the head and neck region and the most important prognostic factor in patients with this cancer is recurrence of the tumour either locally, regionally, or distally. In this study we explored factors and outcomes associated with recurrence.
Methods/Materials: A retrospective review of 56 BC cancer clinic patients with OSCC who received post operative radiotherapy (PORT) following curative intent surgery between 2000 and 2019 was performed. The recurrence factors were determined using a univariate analysis and the outcomes of recurrence, such as the overall survival analysis and disease free survival analysis, were established using the Kaplan Meier product limit method and the log rank test. A Cox Hazards model was used as well to determine poor prognostic factors.
Results: Our analysis showed that none of the factors studied had an effect on recurrence of OSCC as the p value was greater than 0.05 for all factors. There was also no significant effect of the factors on overall survival, however, tumour thickness (mm) did have a significant association with disease free survival time (p=0.0118).
Discussion: We discussed the significance of postoperative multidisciplinary assessment with all possible diagnostic/treatment tools to prevent recurrence. Further study is required to improve predictors and outcomes of patients in this group.

PS41

The influence of age on outcomes following robotic lumbar spine surgery

Aubrie Sowa[1], Salman Keraidi[2], Conor McNamee[3], Jake M. McDonnell[4], Julia Wall[5], Stacey Darwish[6], Joseph S. Butler[7]
[1]University College Dublin, School of Medicine, Dublin, Ireland; [2]University College Dublin, School of Medicine, Dublin, Ireland; [3]National Spinal Injuries Unit, Mater Misericordiae University Hospital, Dublin, Ireland; [4]Trinity Centre of Biomedical Engineering, Trinity College Dublin, Dublin, Ireland; [5]National Spinal Injuries Unit, Mater Misericordiae University Hospital, Dublin, Ireland; [6]Department of Orthopaedics, St. Vincent's University Hospital, Dublin, Ireland; [7]National Spinal Injuries Unit, Mater Misericordiae University Hospital, Dublin, Ireland
BMC Proceedings 2025, **19(2):**PS41

Background: Robotic-assisted spine surgery (RASS) represents an innovative technique that can improve patient outcomes. The majority of studies on this topic involve general populations and little is known regarding the impact of age on outcomes following RASS.
Methods: A retrospective review was carried out of patients who underwent lumbar RASS at our institution since the implementation of the ExcelsiusGPS® (Globus Medical, Audubon, PA, USA). Records were reviewed via a local surgical database. Demographic, intra- and postoperative data were collated and compared for patients <65 years versus those ≥65 years at the time of surgery.

Results: 75 patients underwent lumbar RASS at our institution. The mean age was 63.7 years. 51 operations were single-level, while 24 were multi-level. There was no correlation between age and extent of fusion (r=0.08, p=0.48). Patients aged <65 experienced less mean blood loss (80.0ml vs 137.86ml), slightly longer mean operating time (117.6min vs 113.53min), and shorter mean length of stay (3.2d vs 7.2d, p=0.05). Improvements in European Quality of Life 5-Dimensions index (EQ5D) (0.50 vs 0.47, p=0.43) and Oswestry Disability Index (ODI) (14.6 vs 22.0, p=0.21) at 6 weeks versus baseline were equivalent between the groups.
Conclusion: Intra/post-operative outcomes and complications were similar for both cohorts who underwent lumbar RASS. Further studies with larger samples are warranted to validate these findings.

PS42

Single- vs multi-level fusion outcomes following robotic spine surgery

Aubrie Sowa[1], Salman Keraidi[2], Conor McNamee[3], Jake M. McDonnell[4], Julia Wall[5], Stacey Darwish[6], Joseph S. Butler[7]
[1]University College Dublin, School of Medicine, Dublin, Ireland; [2]University College Dublin, School of Medicine, Dublin, Ireland; [3]National Spinal Injuries Unit, Mater Misericordiae University Hospital, Dublin, Ireland; [4]Trinity Centre of Biomedical Engineering, Trinity College Dublin, Dublin, Ireland; [5]National Spinal Injuries Unit, Mater Misericordiae University Hospital, Dublin, Ireland; [6]Department of Orthopaedics, St. Vincent's University Hospital, Dublin, Ireland; [7]National Spinal Injuries Unit, Mater Misericordiae University Hospital, Dublin, Ireland
BMC Proceedings 2025, **19(2):**PS42

Background: Multilevel fusion leads to longer operating times and increased intra- and post-operative complications due to a greater degree of tissue dissection needed to optimise the visual field. Robotic-assisted spine surgery (RASS) has the potential to reduce the prevalence of post-operative complications, however, there is a paucity of evidence to date.
Methods: We performed a retrospective review of patients who underwent lumbar RASS at our institution since the implementation of the ExcelsiusGPS® (Globus Medical, Audubon, PA, USA). Records were reviewed via a local surgical database. Demographic, intra- and post-operative data were collated and compared for patients who received single versus multilevel fusion.
Results: 75 patients were included. The average age was 63.7. 51 fusions were single-level, 22 were two-level and 2 were three-level. Fusion length did not correlate with age (r=0.08, p=0.48). Mean blood loss in the single-level group was lower than in the multilevel group (104.2ml vs 126.7ml, p=0.19). Recorded mean operative times were identical (115min vs 116.3min, p=0.40). The mean length of stay was shorter in the single-level group (4.25d vs 10d, p=0.26). There was no significant difference observed in total postoperative complications, residual neurological deficits rate, or improvements in EuroQol-5 Dimensions and Oswestry Disability Index at the 6-week mark.
Conclusion: Single-level fusion was associated with a shorter length of stay and decreased intraoperative blood loss. Further studies are necessary to further elucidate the efficacy of RASS across the field of orthopaedics and also to compare it against traditional free-hand techniques.

PS43

Aortic valve replacement via mini-sternotomy: results of a single centre analysis

Joey Harrington[1], Seán Barrett[2], JD Kehoe[2], Amber Downes[2], Nadeem Anjum[2], Eileen Duggan[3], Kishore Doddakula[2]
[1]School of Medicine, University College Cork, Cork, Ireland; [2]Department of Cardiothoracic Surgery, Cork University Hospital, Cork, Ireland; [3]Medical Education Unit, University College Cork, Cork, Ireland
BMC Proceedings 2025, **19(2):**PS43

Introduction: The traditional method of aortic valve replacement (AVR) is via full sternotomy with a long midline incision. However, this incision may not heal properly, cause significant pain and be associated with prolonged recovery. Recently, minimally-invasive approaches have been adopted, including mini-sternotomy and -thoracotomy. These have gained popularity due to a smaller incision, reducing surgical trauma. The hypothesis is that AVR via mini-sternotomy is a safe alternative to full sternotomy. The objective was to analyse and describe results of patients who have undergone the procedure. We aim to describe the peri-operative factors that promote use, and to analyse post-operative outcomes and compare to international standards.
Methods: A retrospective review was performed on a patient database who underwent AVR via mini-sternotomy between September 2016 and December 2022 in CUH Exclusion criteria included patients who had an aortic procedure concurrently, such as ascending aorta replacement. Independent variables included age, weight, comorbidities and valve size/type. Dependent variables included length of hospital/ICU stay, cardio-pulmonary bypass time, cross-clamp time and post-operative complications. Results for variables such as age were expressed as a mean. Chi-squared tests were used to investigate association between categorical variables, such as comorbidities and post-operative complications. Pearson's correlation was used to determine relationships between two variables, such as length of ICU stay and cardio-pulmonary bypass time.
Results: 93 patients were included, average age was 68. Average bypass and cross-clamp times were 92 and 73 minutes respectively. Median post-operative length of stay was 8 days, and median ICU length of stay was 3 days. There were no in-hospital mortalities.
Discussion: AVR via mini-sternotomy has cosmetic advantages and is particularly useful in frail/older patients who may suffer from a conventional sternotomy and associated morbidities. It is shown to be a safe alternative with comparable intra- and post-operative outcomes to those described internationally.

PS44

Evaluating the proportion of patients with NSCLC and melanoma treated with immunotherapy who develop skin toxicities, and the range of presentations of these toxicities

Passant Saad, Jarushka Naidoo, Gregg Murray
RCSI Beaumont Hospital, Dublin, Ireland
BMC Proceedings 2025, **19(2):**PS44

Introduction: This is an audit which analysed a single-centre retrospective study based in Beaumont Hospital, examining cutaneous toxicities arising in patients with melanoma and non-small cell lung cancer (NSCLC) undergoing immune checkpoint inhibitor (ICI) therapy. ICIs are a class of drugs that inhibit checkpoint proteins such as CTLA-4 and PD-1 on immune cells, optimizing the immune response against cancer by preventing cancer cells from evading immune detection and destruction. The use of ICIs has shown efficacy in cancer treatment and has significantly improved survival rates in advanced cases. However, interestingly, the success of ICIs against cancer is accompanied by severe immune-related skin toxicities. The investigation aims to shed light on the prevalence and nature of these toxicities.
Methods: The study spans a decade, encompassing 300 cancer patients undertaking immunotherapy, with a focus on 208 patients diagnosed with melanoma and NSCLC. A comprehensive database was thoroughly analysed on Microsoft Excel, excluding areas outside the scope of the audit. Information on patient demographics, type of cancer, and cutaneous toxicities was meticulously collected.
Results: The data revealed that 44 out of 208 patients reported skin toxicities. Melanoma patients exhibited a notably higher incidence of cutaneous toxicities (68%) compared to NSCLC patients (32%). The common skin toxicities observed were pruritus, dermatitis, psoriasis, vitiligo, maculopapular rash, neutrophilic dermatoses, and lichenoid eruption. Among the observed skin reactions, pruritus was the most recurrent (48%), often coupled with maculopapular rash. Melanoma-associated vitiligo was identified, correlating with improved survival rates.

Discussion: The study highlights the need for further research to understand the causes, mechanisms, and prognostic implications of these toxicities. It emphasizes the importance of onco-dermatology consultation and specialized clinics for effective management. Prospective multicentre studies are needed to investigate the range of skin toxicities associated with ICIs in different cancers.

PS45

Alpha-1 antitrypsin deficiency: evaluating the effectiveness of health-related quality of life data in tracking disease severity and progression

Mariam Ghoneem[1], Tomas Carroll[2]
[1]Royal College of Surgeons in Ireland, School of Medicine, Dublin, Ireland; [2]Alpha-1 Foundation, Dublin, Ireland
BMC Proceedings 2025, **19(2):**PS45

Background: Alpha-1 antitrypsin deficiency (AATD) is an inherited disorder that often causes lung disease, particularly COPD [1]. AATD significantly impacts health-related quality of life (HRQoL) [2]. While spirometry and radiology are commonly used to assess disease severity in AATD [3], HRQoL measures are often overlooked. This project aimed to compare objective clinical investigations with HRQoL measures in determining disease severity and progression.
Methods: Patients with confirmed ZZ, SZ and MZ phenotypes (n=516) enrolled in the national AATD registry were selected. A cross-sectional analysis and a longitudinal study were conducted, comparing demographics, forced expiratory volume in one second (FEV_1), carbon monoxide diffusing capacity (DLCO), and the St. George's Respiratory Questionnaire (SGRQ).
Results: SGRQ mean total scores were highest in ZZ patients for active, past and never smokers when compared to SZ and MZ. SGRQ scores significantly correlated with FEV_1% predicted ($r = -0.3272$, $p=0.0069$) and DLCO% predicted ($r = -0.4818$, $p<0.001$). Patients receiving augmentation therapy have a mean SGRQ score change of −15.5 over a mean time of 7.39 years.
Discussion: Subjective HRQoL measures can complement objective clinical assessments in assessing lung disease severity in AATD.

PS46

Phenotypic and genotypic variability in Fanconi Bickel syndrome: a systematic review of case reports and observational studies

Helen Huang[1], Narjiss Aji[2], Kusumita Chhabra[3], Goshen David Miteu[4], Adele Mazzoleni[5], Zarish Hussain[6], Mainak Bardhan[7]
[1]School of Medicine, Royal College of Surgeons in Ireland, Dublin, Ireland; [2]Faculty of Medicine and Health, McGill University, Montreal, Canada; [3]Sri Ramachandra Institute of Higher Education and Research, Chennai, India; [4]Department of Biomedical Science, School of Medicine and Health Sciences, University of North Dakota, Grand Forks, United States; [5]Queen Mary University of London, Barts and the London School of Medicine and Dentistry, London, United Kingdom; [6]Royal College of Surgeons in Ireland, Medical University of Bahrain, Manama, Bahrain; [7]Miami Cancer Institute, Baptist Health South Florida, Miami, United States
BMC Proceedings 2025, **19(2):**PS46

Introduction: Fanconi-Bickel syndrome (FBS) is a rare genetic disorder caused by GLUT2 variants. Because FBS is phenotypically variable, there is no consensus regarding the definitive clinical features. This systematic review aims to summarise the phenotypic and genotypic expression in FBS.
Methods: A search for case reports and observational studies on patients <16 years old diagnosed with FBS was done with PRISMA 2020 guidelines. PubMed, SCOPUS, and EMBASE were queried from inception till February 2023 using boolean logic. Two reviewers conducted screening in Endnote 2020 library and data was summarised using descriptive statistics. Subgroup analyses used an unpaired T-test for continuous variables and a chi-square test for categorical variables, with a $p<0.05$ for significance using R version 4.1.2.
Results: From 5,199 studies, 42 studies were included in the final review with a total of 80 FBS patients. The predominant ancestry was Middle Eastern (37%). The mean age is 35 months, with an average age of their first presenting symptoms at 11 months. Around 82% of these patients came from a consanguineous family. Hepatomegaly was the most common feature (90%) followed by the presence of rickets (81.2%) and failure to thrive (80%). The majority exhibited metabolic acidosis (96.8%). A urinalysis revealed glucosuria in almost 92% of patients. Liver biopsies revealed glycogen accumulation for 78.4% of participants. Genetic testing was completed in 86.8% patients, all of which carried a pathogenic *GLUT2* variant. After stratifying for gender, males exhibited higher mean triglycerides and A1C compared to females ($p<0.05$). In addition, there were statistically significant differences in cases of polydipsia, proteinuria, and aminoaciduria in patients over 12 months of age compared to those below ($p<0.05$).
Discussion: This is the first systematic review reporting the wide array of phenotypes and genotypes in FBS. This conditions is rare and may benefit from early intervention.

PS47

Racial and ethnic disparities on clinical outcomes for Takotsubo cardiomyopathy: a systematic review and meta-analysis

Helen Huang[1], Keith Sai Kit Leung[2], Gary Tse[3]
[1]Royal College of Surgeons in Ireland, School of Medicine, Dublin, Ireland; [2]Hull University Teaching Hospitals, National Health Service Trust, Hull, United Kingdom; [3]Tianjin Institute of Cardiology, Second Hospital of Tianjin Medical University, Tianjin, China
BMC Proceedings 2025, **19(2):**PS47

Introduction: Takotsubo cardiomyopathy (TC) is a condition characterized by transient ventricular impairment preceded by emotional or physical stress. Racial differences play a crucial role in various cardiovascular conditions, but its overall effect on TC remains unknown. The aim is to evaluate the representation of ethnicity in TC studies, as well as identifying differences in co-morbidities and clinical outcomes across ethnic groups.
Methods: We conducted a literature search in PubMed, Embase, and Scopus from inception until April 2023 to identify observational studies containing TC patients >18 years old. A pre-defined MeSH search term was used: ('takotsubo cardiomyopathy' AND ('ethnic*' or 'racial' or 'race' or 'Asian*' or 'Caucasian*' or 'white' or 'Hispanic*' or 'African*' or 'black')). Two reviewers assessed eligibility using PRISMA. Meta-analyses were performed on a pooled analysis comparing Europeans and non-European groups (African American, Hispanic, Asian), with significance defined as $p<0.05$.
Results: The database search yielded 1241 studies, of which 6 studies met the inclusion criteria. Five of these studies were conducted in the United States. A total of 100,143 patients with TC were identified with a mean age of 68.0 +/- 4.8. Around 91% were European, while 8% were African American and less than 1% were Asian and Hispanic. The analysis revealed a statistically significant association between ethnicity and co-morbidities such as hypertension, diabetes, smoking history, hyperlipidaemia, physical and emotional stressors ($p<0.0001$). Non-Europeans were more likely to suffer from these co-morbidities compared to Europeans (OR>1). Amongst clinical outcomes, non-Europeans were at a significantly higher risk of in-hospital mortality ($p<0.0001$, OR: 1.2, 95%CI[1.1–1.3]) but there were no differences in cardiogenic shock.
Conclusion: Ethnic minorities are severely underrepresented in TC research, despite significant racial disparities in co-morbidities and clinical outcomes. Inclusive practices and barrier identification should be prioritised in these groups.

PS48

Exploring carotid plaque volume differences between symptomatic and asymptomatic groups using VR-segmented 3D models of internal carotid artery stenosis

Tofunmi Oluwajuyigbe, Teresa Flaxman
Ottawa Hospital Research Institute, Ottawa, Canada

BMC Proceedings 2025, **19(2):**PS48

Introduction: Carotid artery disease is a major cause of ischaemic cerebrovascular diseases (CVDs) [1, 2]. The principal aim was to evaluate the differences in carotid plaque volumes (CPV) between asymptomatic and symptomatic patients with stenosis of the left internal carotid artery (ICA) using 3D model segmentation.
Methods: A total of 53 cases were selected from a larger Swedish CTA study [3]. Of the 53 cases, (29) were symptomatic and (24) asymptomatic patients. Symptomatic was defined as patients who presented with ipsilateral cerebrovascular event 6 months after initial CTA, while asymptomatic was defined as presenting with other symptoms at the time of CTA. Plaque volume was determined by segmenting 3D models of CTAs on a VR software; Elucis. Plaque volumes to artery volumes were assessed using independent t-tests ($p<0.05$ level).
Results: The results of this study showed no significant differences between the mean of total plaque: artery ratios of the symptomatic group (0.62 +/- 0.03|p=0.42) versus (0.61 +/- 0.03 |p=0.42) for the asymptomatic group. In addition, no significant volume differences were found between male and female CPVs within these. In the symptomatic group, the mean total plaque: lumen ratio was (0.62 +/−0.04 |p=0.38) for males versus (0.64 +/−0.04 |p=0.38) for female groups. In the asymptomatic group, the mean total plaque: lumen ratio was (0.64 +/−0.01 |p=0.32) for males versus (0.60 +/−0.01 |p=0.32) for female groups.
Discussion: Accurately assessing carotid artery plaques is fundamental in assessing stroke risk in treatment planning and follow-up [4].

PS49

Investigating the prevalence of medication prescriptions for atopic conditions during pregnancy: a cross-sectional linkage study

Rohan Gupta[1], Utkarsh Agrawal[2], Adeniyi Francis Fagbamigbe[3]
[1]The University of Edinburgh, Edinburgh, United Kingdom; [2]University of Oxford, Oxford, United Kingdom; [3]Division of Population and Behavioural Sciences, School of Medicine, University of St Andrews, St Andrews, United Kingdom
BMC Proceedings 2025, **19(2):**PS49

Multimorbidity (MM), people with two or more long-term diseases are common in women and associated with socioeconomic differences in the general population. Few studies have looked at the prevalence of multiple medication use amongst pregnant women and the consideration of MM is limited. This work aims to investigate the prevalence and adherence of medication prescriptions for atopic conditions (Asthma, Allergic Rhinitis, Atopic Eczema) in pregnant women in Scotland. It was hypothesized that there would be a decrease in atopic medication adherence due to the complexities of pregnancy. The data was collected from all pregnant women in Tayside and Fife, Scotland between January 2014 to December 2018 and who had been residents in the area for at least 1 year before the index pregnancy date. Secondary care data identified from the Maternity Inpatient and Day Case, Scottish Morbidity Record (SMR02) datasets with linked community prescribing data were used. A total of 27,771 pregnant women aged 15–49 were included in the study, in which a cohort of 1829 women with atopic conditions were studied. The prevalence of MM was 20.0% in the atopic cohort compared to 16.8% in the total cohort. By the end of the third trimester, there was a 46.2% discontinuation of medication prescriptions for Asthma, a 79.9% drop for Eczema, and a 76.7% drop for Allergic Rhinitis. For the total atopic cohort, there was an overall 60.7% drop in prescriptions by the third trimester. The results show that MM is prevalent in pregnant women with a prevalence of atopic conditions. The data also confirms the hypothesis of a high prevalence of nonadherence to atopic medications in pregnant women. Overall, this study provides healthcare professionals with a better understanding of how MM can impact pregnant women and signifies the need for holistic approaches to improve atopic medication adherence during pregnancy.

PS50

Inactivation of pathogenic bacteria by UV-C driven oxidation processes

Imogene Mohammed[1], Andrea Naziri[2], Popi Karaolia[2], Iakovos Iakovidis[2], Despo Fatta-Kassinos[2]
[1]Royal College of Surgeons in Ireland, Dublin, Ireland; [2]University of Cyprus, Nicosia, Cyprus
BMC Proceedings 2025, **19(2):**PS50

Background: The escalating concern surrounding the rise in antimicrobial-resistant pathogenic bacteria in real urban wastewater has prompted an investigation into their inactivation through specific disinfection methods. In this study, the inactivation of clinically relevant bacteria (ESKAPE pathogens), in particular *Pseudomonas aeruginosa,* which is commonly associated with antibiotic resistance, was explored.
Methods: This was achieved through UV-C irradiation employing a bench-scale collimated beam apparatus, in the presence of an oxidant, specifically Hydrogen Peroxide (H_2O_2). The use of UV-C/H_2O_2 disinfection has demonstrated effectiveness in previous studies. The efficiency of inactivation was examined by varying parameters such as the pH of the matrix used, and levels of UV-fluence (mJ/cm^2). Microbiological analysis of the treated samples involved performing DNA extraction with duplicates stained with Propidium monoazide(PMA) dye, followed by using quantitative polymerase chain reaction (qPCR) on the extracted DNA for the quantification of the pathogen of concern.
Results: Ultimately, the inactivation of *P. aeruginosa* proved more effective at higher UV Fluences compared to lower ones across all pH levels, in both the presence and absence of H_2O_2. At UV Fluences 2.5, 7.5 and 20 mJ/cm^2, the average percentage of inactivated bacteria was higher at a pH of 7.5 (98.63%) when compared to pH 6.5 (73.13%) and 8.5 (88.95%) in the presence of H_2O_2. However, in the absence of H_2O_2, the percentage of inactivated bacteria was higher at pH 6.5 and 8.5 compared to pH 7.5.
Discussion: The experimental results on the UV-C and UV-C/ H_2O_2 inactivation of ESKAPE pathogens at different UV Fluences, pH conditions, and even other matrices and oxidant concentrations may be useful in designing an effective disinfection process for these bacteria. It should be noted that in addition to the antibiotic-resistant bacteria, components such as antimicrobial-resistant genes may be further investigated to analyse and address the emerging spread of antibiotic resistance.

PS51

Optimization of hormonal therapy and assessment of relapse risks among patients after surgical interventions on the thyroid gland

Sofia Chala[1], Yevheniia Bozhko[1], Yurii Royenko[2]
[1]Bogomolets National Medical University, Kyiv, Ukraine; [2]Kyiv City Clinical Endocrinological Center, Kyiv, Ukraine
BMC Proceedings 2025, **19(2):**PS51

Introduction: The postoperative period after thyroid gland surgery requires competent hormonal correction to maintain the optimal functioning of the endocrine system. In this context, we consider it appropriate to analyze the impact of hormonal therapy and assessment of relapse risks among patients after subtotal thyroid resection.
Methods: In this retrospective cohort study, we analyzed the medical records of 40 hospitalized patients after thyroid gland surgery and the management of such individuals at the Kyiv City Clinical Endocrinological Center. The Fisher's angular transformation method applied for CI evaluation, and the absolute risk of a relapse, reduction, and ratio were calculated.
Results: The frequency of detection of relapse one year postoperative for patients (of these individuals, there were 30 females with a mean age 46,4 years (CI 95% 40,3–52,5) and 10 males with a mean age 42,1 years (CI 95% 31,3–52,8)) who had undergone hormonal therapy was compared. It was found that among the patients (without taking into account gender) after subtotal thyroid resection (n=20), the

correlation in a dose of thyroxine in the first months and the next 2–6 months in the postoperative period does not affect the disease recurrence in 1 year. For patients who had undergone hormonal therapy with further decreasing doses of thyroxine (n=15), the relapse rate was 26,7% (95% CI 6,9–53,4). For comparison, in patients with constant levels of hormonal correction (n=5), the relapse rate was 20% (95% CI 0–78,2).
Discussion: This research determined that there is no statistically significant reduction in the risk of a disease recurrence connected to the correction of a thyroxine dose in the postoperative period in the first month and 2–6 months (p=0.775). Overall, this study provides the basis for a comprehensive discussion on enhancements of hormone therapy in clinical practice.

PS52

Antipsychotic use amongst women in Ireland; an overview using Primary Care Reimbursement System (PCRS) data

Precious Olatunji[1], Frank Moriarty[2], Judith Strawbridge[2], Mary Clarke[3], Dolores Keating[3]
[1]RCSI, Dublin, Ireland; [2]School of Pharmacy and Biomolecular Sciences, RCSI, Dublin, Ireland; [3]Saint John of God Hospital, Dublin, Ireland
BMC Proceedings 2025, **19(2):**PS52

Background: Antipsychotics are routinely used in the treatment of mental health conditions. However, it is increasingly recognised that response to treatment may vary between men and women. Physiological differences between men and women e.g., body composition, genetics, metabolism, and varying hormone levels in women may impact response to and tolerability of antipsychotic medication. (1) To provide a comprehensive picture of antipsychotic prescribing patterns amongst women in Ireland, this study aims to investigate the pharmacoepidemiology of antipsychotic use in the Irish population using Health Service Executive Primary Care Reimbursement System (HSE-PCRS) data.
Methods: This study utilises a retrospective analysis of data obtained from the HSE-PCRS, including patients aged 16–65 years who are eligible for the General Medical Services scheme. Data were analysed using SPSS V28 and Microsoft Excel. Outcomes evaluated were the prevalence of antipsychotic prescribing in men and women, and their distribution across various age groups and local health office areas.
Results: Among women, quetiapine (38.18%) emerges as the most frequently dispensed followed by olanzapine (23.69%), then aripiprazole (19.14%). For men, quetiapine (30.45%), olanzapine (28.73%), and risperidone (17.48%) are the most dispensed drugs. Furthermore, the study reveals that the highest number of prescribed antipsychotics in women is observed in the 55–64 age range, while in men, it is in the 35–44 age range.
Conclusion: This research utilises PCRS data to reveal disparities in antipsychotic prescribing trends between men and women. It provides baseline data that will assist in the improvement of treatment regimens, particularly for women. A key strength of this study is that the PCRS is regarded to be very accurate as the data must exact to be validated.

PS53

Augmented reality for aneurysm intervention planning

Katelyn Hudak[1], Vanessa Chan[1], Liam Wong[1], Lisa Stallwood[1], Amin Feizpour[2], Nicoel Cancelliere[3], Vitor Mendes Pereira[3]
[1]Unity Health Toronto, Toronto, Canada; [2]Philips, Innovation and Strategy, Research, Cambridge, United States; [3]Department of Neurosurgery, St Michael's Hospital, Toronto, Canada
BMC Proceedings 2025, **19(2):**PS53

Introduction: Endovascular interventions for intracranial aneurysms lower morbidity and mortality rates, yet effective treatments require detailed understanding of patient anatomy to support proper planning. We sought to determine whether augmented reality (AR) can provide enhanced visualization of neuroanatomy and improve user confidence in aneurysm intervention planning.
Methods: Staff and trainees with various clinical expertise and experience levels were recruited from St. Michael's Hospital in Toronto, Canada. Participants were asked to obtain morphological measurements and working projections for five aneurysm cases using an AR headset with proprietary software, displaying the aneurysm in a 3D mixed reality environment. Participants completed pre-training, inter-training and post-training surveys to assess their perceptions towards the use of AR in aneurysm intervention planning.
Results: A total of 23 participants were included in the study. Case 4 was reported as most difficult, and case 5 as the easiest. Despite this, staff interventionalists reported case 4 measurement tasks as significantly easier than students and fellows (p=0.0030 and 0.0351), and working projection tasks as significantly easier than fellows (p=0.0033) using AR. Similarly, the 40+ age cohort found it significantly easier to obtain measurements in case 4 than the 20–29 year-old cohort (p=0.0467). Post-training, 69% (16/23) of participants were satisfied with image quality, and 87% (20/23) of participants reported a faster and/or deeper understanding of cerebrovascular anatomy in an AR environment. Ultimately, 69% of participants indicated they would like to see AR used in the operating room in the future, compared to 43% pre-training (16/23 vs.10/23).
Discussion: Despite a learning curve, the results of this study indicate that age and conventional experience are not barriers to AR use. Overall, users felt comfortable completing intervention planning tasks using AR. This underscores the value in conducting further studies to assess the efficacy and accuracy of this tool in pre-operative aneurysm intervention planning.

PS54

Formation of a three-dimensional in vitro model of hepatocellular carcinoma

Tejas Sawant[1], Katja Breitkopf-Heinlein[2], Haristi Gaitantzi[2]
[1]Royal College of Surgeons in Ireland, Dublin, Ireland; [2]Medical Faculty Mannheim, Heidelberg University, Heidelberg, Germany
BMC Proceedings 2025, **19(2):**PS54

Introduction: Hepatocellular carcinoma (HCC), the most common type of liver cancer, is a deadly disease with a high incidence rate. Three dimensional models called organoids which closely resemble the morphogenetic profile of the liver tissue can enhance in vitro studies of HCC. We generated liver organoids to mimic both the healthy and cancerous states using upcyte® hepatocyte cells (a modified form of primary hepatocytes) and HLE (a cancer cell line for HCC). We also assessed these organoids to analyse the role of BAMBI (BMP and Activin Membrane-Bound Inhibitor homolog), which is involved in the pathophysiology of HCC via the TGF-b (Tumour Growth Factor beta) pathway.
Methods: Cellular monolayer cultures and organoids were generated in Matrigel® using upcyte® hepatocyte cells and HLE cells. To assess the role of BAMBI, HLE cells were transfected with a lentiviral construct to overexpress BAMBI. The morphology of monolayer cultures and organoids was studied using light microscopy and H&E staining. The gene expression profiles of various markers was analysed across the different organoids using quantitative PCR.
Results: Co-culture of upcyte® hepatocytes and HLE cells yielded organoids, whose morphology and gene expression profile differed from the monolayer cultures of the respective cell types. The HLE cell monoculture modified to overexpress BAMBI showed a significantly increased expression of MKi67 (marker for cellular proliferation) as opposed to control monocultures. The organoids comprising upcyte® hepatocytes and HLE cells (both control and modified) did not show statistically significant difference in the expression levels of MKi67.
Discussion: We provide a promising three-dimensional in vitro organoid model to mimic the morphology and gene expression profile of healthy and HCC liver tissue. Our model can be enhanced using further analyses to better understand the pathophysiology and progression of HCC.

PS55

Camouflaging explains much of the diagnostic differences between the sexes in autism spectrum disorder

Olivia Lupin, Frank Sullivan
University of St Andrews, St Andrews, United Kingdom
BMC Proceedings 2025, **19(2):**PS55

For every three boys diagnosed with Autism Spectrum Disorder (ASD), only one girl is diagnosed. Research has aimed to decipher if this is due to a true biological difference, or to alternative factors. In recent years, the presence of a female autism phenotype has been suggested. If this is true, then our current gold-standard diagnostic tool, based on a 'male model', could be inherently biased. The objective of this study was to discover the extent and types of sex differences present in ASD, to assess whether there is an underdiagnosis in females, and to determine what implications such differences might have on current diagnostic criteria. A scoping review of relevant literature was undertaken using two different medical databases and a set of specific search terms. Selected literature was subject to a screening process using a PRISMA extension for Scoping Reviews (PRISMA-ScR), synthesised, and critically appraised using the Joanna Briggs Institute appraisal checklist for diagnostic studies. Of 17 potentially relevant studies, 15 fulfilled the protocol criteria and were evaluated. Results showed multiple sex differences in ASD presentation. Female camouflaging was found, resulting in less obvious autistic traits and, therefore, reduced identification and diagnosis in females. Camouflaging was a significant indicator for the presence of an underdiagnosis. Multiple studies show evidence of a higher threshold for which females phenotypically present with ASD, including an increased threshold for genetic mutations to be expressed in traits, in comparison with males. Due to their different presentation and camouflaging abilities, it is harder for females to obtain a diagnosis and they may be overlooked in the referral system. This study indicates the need for creation of a female-specific set of diagnostic criteria as modification of the present ASD criteria, to more equally match and balance sensitivity of the diagnostic criteria as relates to both sexes.

PS56

Exploring endovascular management of May-Thurner Syndrome

Stephen Petropoulos[1], Imran Alam[1],Danyal Ahmed[1], Kevin Sheahan[2]
[1]Royal College of Surgeons in Ireland, Dublin, Ireland; [2]Guy's and St Thomas' NHS Foundation Trust, London, United Kingdom
BMC Proceedings 2025, **19(2):**PS56

Learning Objectives

1) Educate reader on the presentation and complications of individuals with May-Thurner Syndrome (MTS)
2) Provide an overview on the types of endovascular management used in patients with MTS

Background: May-Thurner syndrome is a disorder of anatomical malposition, in which the right common iliac artery compresses the left common iliac vein into the lumbar spine, resulting in partial obstruction of venous outflow. This outflow hindrance creates an ideal site for thrombus formation and may precipitate the development of extensive ipsilateral deep vein thromboses (DVT). While MTS is present in only 2–5% of recognized DVT cases, the suspicion of a higher prevalence is raised by the disproportionately greater incidence of left-sided DVTs, and the presence of fibrous spurs in up to a third of cadavers. Common presentations of MTS include leg pain, swelling, and venous ulcers. The condition may be complicated by sequelae such as PE, and (in the setting of recurrent DVTs) postphlebitic syndrome. Interventional Radiology can play a role in managing acute complications of MTS as well as long term management.
Procedure Details: This exhibit will discuss 1) the vascular anatomy of patients with MTS and resulting consequences, 2) imaging modalities to aid diagnosis, 3) the indications and goals of various endovascular interventions with a brief mention of relevant procedural steps 4) results of studies and potential adverse events. The endovascular interventions to be discussed will include catheter directed thrombolysis (CDT), DVT thrombectomy, left iliac venous stenting (LIVS), inferior vena cava (IVC) filter placement, thromboaspiration (TA), and venoplasty.
Conclusion: May-Thurner syndrome, though rare and often overlooked, can significantly alter the management of deep vein thrombosis and the prevention of adverse events such as pulmonary embolism when identified as an underlying factor. This exhibit demonstrates that endovascular management is a mainstay of treatments for symptomatic MTS.

PS57

The variety of prostate cancer screening strategies assessed in cost-effectiveness models: using systematic review to understand existing comparisons

Vidushi Sharma[1], Brielle Thomas[2], James F O'Mahony[3]
[1]School of Medicine, Trinity College Dublin, Dublin, Ireland; [2]School of Health Sciences, University of South Dakota, Vermillion, United States; [3]School of Economics, University College Dublin, Dublin, Ireland
BMC Proceedings 2025, **19(2):**PS57

Introduction: There is a wide variety of possible screen configurations in prostate screening due to potential variation in: screening frequency; screen start and stop ages; the quantitative test cut-off within prostate-specific antigen (PSA) testing; the choice and sequence of triage tests. It is known that choosing a narrow set of strategies for comparison within simulation studies will bias cost-effectiveness analysis (CEA) results. This review's objective is to determine if the choice strategies compared in prostate screening CEAs is sufficiently complete to offer decision makers clear guidance regarding what prostate cancer screening strategy is optimally cost-effective.
Methods: We systematically searched for simulation-based prostate screening CEAs using PubMed, Embase and Web of Science. We examine the extent to which screening attributes were varied within each CEA.
Results: We assessed 22 CEAs. Over half (n=13, 59%) did not vary the screening interval. Of those that did, only 4 considered intervals longer than four years. Under half (n=10, 45%) did not vary the screening age range. Only one featured a broad and systematic examination of alternative age ranges. All but one CEA reported the PSA cut-off simulated, of those over half (n=15, 68%) did not vary the cut-off simulated. Those that varied the cut-off did not do so while holding other factors constant. Just over half of CEAs only investigated one test and triage combination (n=12, 54%).
Discussion: We find a pronounced lack of variation in strategies simulated over different screening attributes. Insufficient variation in strategy attributes compromises the ability of CEAs to generate comprehensive and unbiased cost-effectiveness estimates. We clearly conclude the present prostate screening CEA evidence does not offer clear guidance regarding what strategies are likely optimally cost-effective. A clear implication is that future analyses should systematically vary all known relevant screening attributes, data constraints permitting.

PS58

Pigtail catheter drainage of parapneumonic effusions in pediatric patients

Natalie South[1], Imran Alam[1], Kevin Sheahan[2]
[1]Royal College of Surgeons in Ireland, Dublin, Ireland; [2]Guy's and St Thomas' NHS Foundation Trust, London, United Kingdom
BMC Proceedings 2025, **19(2):**PS58

Learning Objectives: To educate the reader on the Technique, Benefits, and Downsides of Pigtail catheter Drainage of Exudate in Parapneumonic Effusions.
Background: A parapneumonic effusion occurs when exudative fluid accumulates in the pleural space alongside pneumonia. Pediatric Patients are susceptible to pneumonia from different organisms to adults and as a result of their distinctive anatomy, they must be managed and monitored differently. Parapneumonic effusion is a common complication of pneumonia in children. The fluid in the pleural space can be identified using chest radiography and CT scans and can be categorized based on the size and complexity of the effusion. Larger effusions, may be treated via thoracentesis, the conventional treatment for draining pleural fluid and air in the United States; however, the pigtail catheter is now used as a reliable treatment for effusions in hospitals.
Procedure and Clinical Findings: This exhibit will include: 1) The specifications of pigtail catheters and details of the procedure for pleural drainage in parapneumonic effusion. 2) The benefits of pigtail catheter pleural drainage in paediatric cases, such as a shorter procedure time, smaller scars, shorter hospital stay, cost effectiveness, and a less painful procedure. 3) Complications of the procedure which include haemothorax, pneumothorax, kinking or dislodging of the tube. More of these complications occur with infants under 5kg. 4) Using recent studies, the implications of this procedure, specifically in pediatric parapneumonic effusions will be explored, along with adjuvant fibrinolytic therapies.
Conclusion: Pigtail catheter drainage of parapneumonic effusions in pediatric patients is a safe and effective choice in many cases. This could aid in multi-disciplinary decisions for the best mode of drainage in parapneumonic effusion for each patient, thus improving the quality of care. However, more research is needed in the pediatric population to support the use of pigtail catheters in cases complicated by viscous empyema.

PS59

Lenalidomide maintenance therapy prescribing post-ASCT for multiple myeloma at an Irish Tertiary Hospital

Julia Potocka[1], Dante Scardillo[1], Catherine Duane[2], Philip Murphy[2], Dawn Swan[2], Patrick Thornton[2], Jeremy Sargent[2], Siobhan Glavey[2], John Quinn[2]
[1]Royal College of Surgeons in Ireland, School of Medicine, Dublin, Ireland; [2]Department of Haematology, Beaumont Hospital, Dublin, Ireland
BMC Proceedings 2025, **19(2):**PS59

Introduction: While multiple myeloma (MM) remains an incurable malignancy, there have been significant therapeutic advances in the recent decade. In 2017, the EHA-ESMO clinical practice guidelines recommended Lenalidomide maintenance therapy (LenM) following autologous stem cell transplant (ASCT) in younger and fitter MM patients, based on a meta-analysis published by McCarthy et al, which demonstrated significantly prolonged overall survival (OS). Thus, we carried out an audit in an Irish tertiary hospital to evaluate LenM therapy prescribing. We also assessed the associated adverse effects to determine safety and tolerability.
Methods: We conducted a retrospective audit of MM patients undergoing ASCT at an Irish hospital from 2012–2022. Endpoints included the rate of LenM prescribing and the prevalence of associated adverse effects. Key clinical information was obtained through a review of medical charts and electronic records.
Results: The audit included 79 out of 172 identified patients (median age: 61). Within the cohort, 60% received LenM post-ASCT. Of note, there was an increase in the use of LenM from 41% (2012–2017) to 86% (2018–2022) Of the 51 patients who received LenM, 8% of patients experienced adverse effects requiring dose reduction. LenM was discontinued in 16% of patients due to serious adverse events such as pulmonary embolism (4%) and recurrent severe infections (2%), as well as drug intolerance (2%), and disease relapse (8%). There were 3 reports (5.9%) of secondary primary malignancy (SPM), specifically lung adenocarcinoma, squamous cell carcinoma in-situ, and head and neck carcinoma.
Conclusions: Our findings demonstrate increased prescribing of LenM post-ASCT in the 10-year period studied. This coincides with the publication of large trial data supporting its use. The results demonstrate compliance with EHA-ESMO Clinical Practice guidelines. Associated adverse events are an important consideration and require frequent monitoring. However, our data suggests overall good tolerability and a reasonable safety profile associated with LenM.

PS60

Unravelling the molecular basis of CDKL5 deficiency disorder: proteomic insights and present findings

Judith Esther Linares Gómez[1], Subash Raj Susai[2], Mona Heiland[3], Jordan Higgins[4], David C. Henshall[3,5], Amaya Sanz Rodríguez[3,5], Elena Langa[3,5], Omar Mamad[1]
[1]Royal College of Surgeons in Ireland, Dublin, Ireland; [2]Department of Psychiatry, RCSI, Dublin, Ireland; [3]Department of Physiology & Medical Physics, RCSI Dublin, Ireland; [4]Department of Physiology & Medical Physics, RCSI, Dublin, Ireland; [5]FutureNeuro SFI Research Centre, RCSI, Dublin, Ireland
BMC Proceedings 2025, **19(2):**PS60

Background: CDKL5 Deficiency Disorder (CDD) is a rare developmental epileptic encephalopathy characterised by infantile-onset epilepsy, with an incidence of 1 in 40,000 to 60,000 newborn children. Even though it is classified as the most common type of epilepsy in infants, there hasn't been to this date any development of disease-modifying therapies to treat patients suffering from this condition. The affected gene in this disease is CDKL5, essential for neurodevelopment, hence why it mainly affects the nervous system, presenting with hyperexcitability and behavioural deficits. In our research we seek to understand the molecular groundworks of CDD, specifically its proteomic dysregulations in the brain.
Methods: We processed the left hippocampi of female, adult CDKL5 mice (n=10 WT and Het) for protein extraction. Then we proceeded to analyse the protein levels with highly sensitive reversed-phase liquid chromatography coupled nanospray tandem mass spectrometry (LC−MS/MS), for which we used a LTQ-Orbitrap Mass Spectrometer to explore the hippocampal proteomic landscape in CDKL5-deficient mice.
Results: Using Mass Spectrometry, 233 significantly upregulated proteins and 86 significantly downregulated proteins were identified in the heterozygous mice compared to the wildtype female CDKL5 mice. These proteins identified are known to execute critical tasks in control of neurodegeneration, long-term potentiation, synaptic vesicle cycling, oxidative phosphorylation, phagosome-related pathways, and neurotransmitter metabolism. Furthermore this research fortified the link between CDD and the mTOR pathway, as results showed the Serine/Threonine-protein Kinase mTOR pathway being significantly downregulated in CDKL5-deficient mice.
Discussion: There is a significant upregulation and dysregulation in the expression of proteins in CDKL5 Deficiency Disorder which affects the biological pathways involved in neurodevelopment. Hence there's the hope that these protein pathways could have the potential to serve as biomarkers for disease progression and therapeutic targets for treatment in the future.

PS61

Unravelling the molecular basis of CDKL5 deficiency disorder: proteomic insights and present findings

Judith Esther Linares Gómez[1], Subash Raj Susai[2], Mona Heiland[3], Jordan Higgins[4], David C. Henshall[3,5], Amaya Sanz Rodríguez[3,5], Elena Langa[3,5], Omar Mamad[1]
[1]Royal College of Surgeons in Ireland, Dublin, Ireland; [2]Department of Psychiatry, RCSI, Dublin, Ireland; [3]Department of Physiology & Medical

Physics, RCSI, Dublin, Ireland; [4]Department of Physiology & Medical Physics, RCSI, Dublin, Ireland; [5]FutureNeuro SFI Research Centre, RCSI, Dublin, Ireland
BMC Proceedings 2025, **19(2):**PS61

Background: CDKL5 Deficiency Disorder (CDD) is a rare developmental epileptic encephalopathy characterised by infantile-onset epilepsy, with an incidence of 1 in 40,000 to 60,000 newborn children. Even though it is classified as the most common type of epilepsy in infants, there hasn't been to this date any development of disease-modifying therapies to treat patients suffering from this condition. The affected gene in this disease is CDKL5, essential for neurodevelopment, hence why it mainly affects the nervous system, presenting with hyperexcitability and behavioural deficits. In our research we seek to understand the molecular groundworks of CDD, specifically its proteomic dysregulations in the brain.
Methods: We processed the left hippocampi of female, adult CDKL5 mice (n=10 WT and Het) for protein extraction. Then we proceeded to analyse the protein levels with highly sensitive reversed-phase liquid chromatography coupled nanospray tandem mass spectrometry (LC−MS/MS), for which we used a LTQ-Orbitrap Mass Spectrometer to explore the hippocampal proteomic landscape in CDKL5-deficient mice.
Results: Using Mass Spectrometry, 233 significantly upregulated proteins and 86 significantly downregulated proteins were identified in the heterozygous mice compared to the wildtype female CDKL5 mice. These proteins identified are known to execute critical tasks in control of neurodegeneration, long-term potentiation, synaptic vesicle cycling, oxidative phosphorylation, phagosome-related pathways, and neurotransmitter metabolism. Furthermore this research fortified the link between CDD and the mTOR pathway, as results showed the Serine/Threonine-protein Kinase mTOR pathway being significantly downregulated in CDKL5-deficient mice.
Discussion: There is a significant upregulation and dysregulation in the expression of proteins in CDKL5 Deficiency Disorder which affects the biological pathways involved in neurodevelopment. Hence there's the hope that these protein pathways could have the potential to serve as biomarkers for disease progression and therapeutic targets for treatment in the future.

PS62

The incidence of primary spinal tumours in a single neurosurgery unit in Ireland over a five-year period

Jaifar Alomairi[1], Suzanne Murphy[2], Nektarios Mazarakis[2], Stephen Clare[2], George-Paul O'Byrne[2], Deirdre Nolan[2], Paula Corr[2]
[1]Royal College of Surgeons in Ireland, Dublin, Ireland; [2]Department of Neurosurgery, Beaumont Hospital, Dublin, Ireland
BMC Proceedings 2025, **19(2):**PS62

Introduction: Primary spinal tumours are rare, yet they represent a complex and challenging aspect of neurosurgical practice. These tumours originate directly from the spinal cord, spinal nerve roots, or the spinal meninges.
Objectives: The primary goal of this study is to determine the incidence of primary spinal tumours in a single neurosurgery unit in Ireland over a five-year period. We looked at tumour types, location, and demographics, over a five-year period.
Methods: We retrospectively reviewed the data of all patients who underwent surgical resection of spinal tumours in Beaumont Hospital over a five-year period from 2018 to 2022. This study exclusively included patients over the age of 18 years at the time of their surgery. We excluded paediatric cases and metastatic spinal tumours focusing solely on primary spinal tumours within the specific timeframe.
Results: A total of 157 patients who underwent resection of a primary spinal tumour in our institution between 2018 and 2022 were included in the analysis. Out of these cases, 90 patients were female (57.3%), while 67 were male (42.7%). The age range of the patients was between 19 and 88 years, with a mean age of 52 years. The commonest primary spinal tumours were ependymoma (30% of all cases) followed by schwannoma and meningioma (both 22% of all cases), and other primary spinal tumours (26% of all cases). Among the patients, the thoracic spine (48%) was the most common location of the tumours, followed by the cervical spine (22%) and lumbar spine (22%).
Conclusion: This study provided a description of the incidence and characteristics of primary spinal tumours in Ireland. Further comprehensive studies involving larger populations are needed to gain a better understanding of the epidemiological characteristics of this disease.

PS63

The public health and harm reduction impact of naloxone reclassification and opioid receptor antagonist regulation in Ireland

Daire Scully
School of Pharmacy and Biomolecular Sciences, RCSI, Dublin, Ireland
BMC Proceedings 2025, **19(2):**PS63

Introduction: Opioid addiction is a global public health challenge, demanding innovative strategies for harm reduction. This study critically examines the potential impact of reclassifying Naloxone, an essential opioid receptor antagonist, from a prescription-only medicine to an over-the-counter (OTC) treatment in Ireland. The urgency for intervention is underscored by the severity of opioid misuse. Citizen training in Naloxone administration has proven effective globally, fostering a network of potential first responders beyond medical settings.
Methods: A systematic review was conducted, employing a comprehensive search strategy across databases, including Google Scholar, PubMed, and drugs.ie. Government websites were consulted for up-to-date legislative information. Inclusion criteria prioritized studies exploring the regulatory frameworks of opioid receptor antagonists, focusing on Naloxone, published in English and providing international comparisons.
Results: Current prescription-only limitations on Naloxone create accessibility barriers during emergencies, hindering its utilization. Global approaches, such as the U.S.'s widespread Narcan distribution and Australia's successful OTC programs, provide valuable insights into harm reduction. Studies affirm the cost-effectiveness and positive health benefits associated with Naloxone programs.
Discussion: The study addresses legal challenges associated with advocating for OTC Naloxone, emphasizing the need for clear regulations. International perspectives highlight diverse approaches, offering a rich tapestry of harm reduction strategies. The considerations for safe administration, side effects, and risk-benefit analysis underscore the necessity of robust training programs, aligning with EMCDDA recommendations. The reclassification of Naloxone to OTC status emerges as a crucial step toward empowering communities, complementing existing harm reduction strategies, and contributing to the global focus on targeting opioid misuse.
Conclusion: This comprehensive review advocates for the decriminalization of Naloxone and its OTC availability, providing a nuanced understanding of the global landscape, legal implications, and considerations for effective implementation. The study contributes to ongoing discussions on tailoring interventions to Ireland's specific context and challenges in addressing the opioid crisis.

PS64

Adherence to antihypertensive prescription guidelines in older adults: a cross-sectional study using data from the Mitchelstown cohort re-screen study

Tarun Das[1], Edel Burton[2], Margaret Bermingham[3], Patricia M Kearney[2]
[1]University College Cork, Cork, Ireland; [2]School of Public Health, University College Cork, Cork, Ireland; [3]School of Pharmacy, University College Cork, Cork, Ireland.
BMC Proceedings 2025, **19(2):**PS64

Background: Hypertension guidelines aim to reduce cardiovascular morbidity. This study assesses prescriber adherence to the National Institution of Healthcare and Excellence (NICE 2011) hypertension guidelines and achievement of target blood pressure (BP).
Methods: We conducted a cross-sectional analysis of hypertensive patients age ≥ 55 years, recruited to the Mitchelstown Cohort Re-screen (MCR) Study 2015 with hypertension; where Hypertension was defined as BP of ≥140/90 mmHg. Participants were divided into three categories: normotensive prescribed anti-hypertensive medications, hypertensive prescribed medications, and hypertensive and prescribed no medications. Adherence was assessed using four hypertension treatment steps outlined in the guidelines, recommending initiation at BP ≥135/85 mmHg. Univariable and multivariable logistic regression models assessed factors affecting prescriber guideline adherence and its impact on reaching the BP goal <140/90 mmHg.
Results: In a sample of 675 hypertensive participants (mean age 66.3±5.0 years, 53.4% male), 59.6% had systolic BP ≥135 mmHg, 31.8% had diastolic BP ≥85 mmHg. 42.4% were normotensive on antihypertensives, 23.7% hypertensive on medications, and 33.9% hypertensive without medications. 16.5% were prescribed ARBs, 3.3% CCBs. Only 8% adhered to guidelines (Step 1: 3.3%, Step 2: 1.8%, Step 3: 2.3%, and Step 4: 0.16%). Regression showed total medications prescribed as the only variable associated with guideline adherence ($p<0.001$). No association was found between guideline adherence and BP control.
Conclusion: The results suggest non-adherence to 2011 NICE hypertension guidelines, at the time of the study. A high prevalence of ARBs was prescribed over CCBs, despite being the recommended first line treatment in the age group studied. The relationship between total number of medications prescribed and increased guideline adherence may arise from greater interaction of polypharmacy patients with healthcare systems. A strength of this study involved the use of a stroke survivor. However, further exploration is required into explanations for hypertension guideline non-adherence.

PS65

Difference in outcome of pediatric traumatic brain injury cases operated during daytime versus on-call time

Riham Khalid Al-Zadjali[1], Jawaher Qais Al-Balushi[1], Lubna Sultan Almaawali[2], Hind Muhammed Alhanini[2], Alazhar Almaghadari[3], Yasmine Rashid Albalushid[1], Areej Musabah Al-Mamari[2], Sharifa Issa Alsalhi[2], Fatema Dawood Almualem[4], Hashim Alibrahim[1], Tariq Dhiyab Alsaadi[5,6]
[1]Sultan Qaboos University, Seeb, Oman; [2]Oman Medical Specialty Board, Seeb, Oman; [3]RCSI, Dublin, Ireland; [4]Ain Shams University, Cairo, Egypt; [5]Khoa Hospital, Muscat, Oman; [6]McGill University, Montreal, Quebec, Canada
BMC Proceedings 2025, 19(2):PS65

Introduction: Traumatic brain injury (TBI) has been associated with life-long morbidity and mortality in pediatric age group, mostly attributed to surgical complications .The aim of this study is to explore the repercussion of the timing of surgery in sequel.
Methods: Data were collected from medical records of Khoula hospital from July 2011 to December 2020 . 116 admitted patients to the neurosurgery ward below 12 years with diagnosis of TBI who received surgical management were included in the analysis. Descriptive and multivariate analysis are used to demonstrate the consequences of timing of interventions on the patients.
Result: There is no significant correlation between time of surgery and outcome measures like GCS discharge, number of follow up visits, duration of follow up visit, follow-up GCS and re-operation ($p< 0.05$). Patients who had craniotomy during the daytime had the longest period of stay in hospital with mean of 60 days with 95% CI. While during the on-call time patients who underwent burr hole had the longest period of stay in the hospital with mean of 40 days with 95 % CI. Furthermore, prolonged hospitalization (^ 181. 228days) and prolonged ICU stay (^ 181.1 days) had been linked with daytime surgeries.
Conclusions: The aftermath of time of surgery is comparable and no superiority of a time to another, however the causes of prolonged hospital stay in due to daytime surgeries require further investigations .

PS67

19 cases of infective endocarditis identified at connolly hospital blanchardstown: a review of diagnosis, management and outcomes

Lina Adil[1], Robert Trueick[2], James O'Neill[2]
[1]RCSI, Dublin, Ireland; [2]Department of Cardiology, Connolly Hospital Blanchardstown, Dublin, Ireland
BMC Proceedings 2025, **19(2):**PS67

Abstract: Infective Endocarditis (IE), defined as the infection and inflammation of any surface within the heart, arising from bacteria, fungi, viruses, and chlamydia. Since 1990, the incidence has risen from 478,000 to 1,090,530 in 2019, increasing its global burden. Risk factors include the usage of intravenous lines and intracardiac devices, degenerative valvular heart disease, cardiac transplant recipients with development of valvulopathy, hemodialysis, HIV infection, diabetes mellitus, intravenous drug use and natural ageing. From August 2015 to January 2023, 19 patients were identified at Connolly Hospital - Blanchardstown (CHB) with a diagnosis of Infective Endocarditis. Relevant data was extracted from the patient charts (N=19) and analyzed. Mitral valve endocarditis was the most common amongst the cohort, detected in 68.4% of the patients. Amongst the 19 patients in this study, the mean delay between admission and diagnosis was calculated as 14 days, and the mean length of stay was calculated as 67 days. The patient cohort at CHB identified with infective endocarditis showed patterns that aligned with what can be found in the literature. A larger patient population needs to be reviewed to further understand the effects of IE on the Irish population.

PS68

Hospital initiation of opiods and long-term prescribing among older adults in primary care - a cohort study

Aaron Daunt[1], Edward McMahon[1], Molly Mattsson[1], Tom Fahey[2], Mary E. Walsh[3], Frank Moriarty[1]
[1]School of Pharmacy and Biomolecular Sciences, RCSI, Dublin, Ireland; [2]Department of General Practice, RCSI, Dublin, Ireland; [3]School of Public Health, University College Dublin, Dublin, Ireland
BMC Proceedings 2025, **19(2):**PS68

Background: The upwards trend in opioid prescribing poses concern for older adults given risks associated with prolonged opioid use.[1] With patients 65 years or older being predominantly prescribed stronger opioids, it is imperative to consider the increased risks of falls, fractures and increased hospital stay.[2] This study aims to assess long-term opioid prescribing in opioid-naïve patients initiated on opioid therapy in hospital, and patient and discharge prescription factors associated with long-term opioid prescribing.
Methods: This is a retrospective cohort study of approximately 40,000 patients aged ≥65 years from 44 GP practices during 2012–2018 in Ireland. Using GP records and hospital discharge data, individuals initiating an opioid at hospital discharge who were opioid naïve (no opioid in the previous 365 days) were identified. Among non-cancer-related hospitalisations, Cox regression analysis assessed associations between patient and discharge prescription factors (opioid drug, duration, tapering instructions, as needed use specified) with the duration of opioid continuation post-discharge. Results: Overall, 975 non-cancer related opioid-naïve patients were initiated on opioids at discharge (48.4% male, mean age 77.9 years). Of the 975 patients, 141 (14.5%) were prescribed 2 opioids and 10 (1.0%) were prescribed 3 opioids. Forty-one percent (n=403) continued opioid therapy following discharge, and 8.2% (n=80) were continually prescribed for >365 days. Of those who discontinued therapy within 365 days, the mean time to discontinuation was 106 days. Initial prescription factors including morphine (HR 0.43, 95%CI 0.23–0.80); duration ≥14 days (HR 0.58, 95%CI 0.39–0.86); and no duration stated (HR 0.46, 95%CI 0.32–0.66) had statistically significant associations with long-term opioid therapy among those with non-cancer hospitalisations, adjusting for other factors.

Conclusion: Opioid type and initial prescription characteristics such as duration were associated with longer duration of use. This study highlights the prescribing factors which may be modifiable to reduce their contribution to prolonged opioid therapy post-discharge.

PS69

Epidemiology of air pollution exposure and skin aging in the Rotterdam Study (RS)

Sindhuja Naidoo[1], Luba Pardo[2], Trudy Voortman[3]
[1]RCSI, Dublin, Ireland; [2]Department of Dermatology, Erasmus MC Cancer Institute, Rotterdam, The Netherlands; [3]Department of Epidemiology, Erasmus MC Cancer Institute, Rotterdam, The Netherlands
BMC Proceedings 2025, **19(2):**PS69

Introduction: Skin aging is the result of intrinsic, lifestyle, and environmental factors, contributing to the breakdown of skin physiology. Air pollution and UV-radiation are well known risk factors for skin aging. The aim of this study is to investigate skin aging phenotypes that are associated with air pollution and UV exposure in a large prospective Dutch cohort Study.
Methods: The Rotterdam Study (RS) is an ongoing, prospective population-based cohort study following 14,926 participants aged $\geq$45 years in Ommoord, a suburb of Rotterdam in the Netherlands, since 1990. Skin examinations were conducted by trained physicians while standardized high resolution 3D facial photographs were collected. Telangiectasia was quantified digitally through semi-automated image analysis. Age and BMI were collected through a population survey at the onset of the RS. Using continuous monitoring data and GIS-based modeling techniques, exposure to air pollution was assessed based on location, considering spatial and temporal variation. Results A clear positive trend was seen between pAge and Wrinkle Area (R^2=0.423). A difference in mean values of telangiectasia area can be seen between sexes (F>M). Both wrinkle area and perceived skin values were higher in males than females. Furthermore, tanning bed use showed increased wrinkle area and telangiectasia area, but no significance on perceived skin. The pollution data had minimal variation. Therefore, associations between these predictor variables and skin aging could not be measured.
Conclusions: Positive associations between sex, tanning bed use, and skin aging phenotypes were depicted on scatterplots produced. Insufficient data collection of PM_{10}, $PM_{2.5}$, NO_x and NO_2 pollutants between various locations in Rotterdam impacted comparisons with skin aging phenotypes, yielding no strong associations. Furthermore, associations between ethnicity, pollution and skin aging can be further explored as more data is collected through the Rotterdam Study, and as global warming continues to increase rapidly

PS70

Targeting the inflammasome in hypoxic-ischemic encephalopathy

Manar Alroidan[1], Jennifer Dowling[2]
[1]Royal College of Surgeons in Ireland, Dublin, Ireland; [2]Department of Immunology and Biotherapeutics, Royal College of Surgeons in Ireland, Dublin, Ireland
BMC Proceedings 2025, **19(2):**PS70

Background: Hypoxic-ischemic encephalopathy (HIE) is a common form of neonatal encephalopathy characterised by inadequate blood flow and oxygen during delivery or in close proximity to birth, resulting in cerebral dysfunction and structural damage. This study focuses on the role of inflammation, specifically the inflammasome, in HIE. The aim is to investigate the therapeutic potential of MCC950, a potent inhibitor targeting the NLRP3 inflammasome.
Model: The study uses a pre-clinical model of HIE in 7-day-old neonatal C57Black6 mice. These mice undergo either MCC950 treatment or saline injection prior to the induction of hypoxic-ischemic (HI) injury through the ligation of the right common carotid artery, followed by exposure to hypoxic conditions. Samples from diverse brain regions were collected at various time points for subsequent analysis.
Method: Quantitative polymerase chain reaction (qPCR) is used to measure the expression levels of inflammasome components and inflammatory cytokines in samples collected 24 hours post hypoxia-ischemia (HI).
Results and Discussion: The results show that there was no statistically significant reduction in pro-inflammatory markers 24 hours post the injury. However, in a previous study conducted in the same laboratory, a significant decrease in pro-inflammatory cytokines was observed after 72 hours. This difference in timing suggests a potential delayed therapeutic effect of MCC950. These findings emphasize the importance of extending the observation periods in future studies to thoroughly evaluate the long-term benefits of this treatment in HIE.

PS71

National "Snap-Shot" of multiple myeloma treatment patterns in Ireland

Omar Abdelzaher[1], Izabela Drozdz[2], Jimmy Abdelnour[3], Ali Al Baghdadi[4], Kateryna Prykhodko[3], Anna Dyszkiewicz[3], Janusz Krawczyk[3], Cian McEllistrim[4], Dawn Swan[5], Hayat Amjad[3], John Quinn[5], Philip Murphy[5], Siobhan Glavey[5]
[1]Royal College of Surgeons in Ireland, Dublin, Ireland; [2]Department of Pathology, Beaumont Hospital, Ireland, Dublin, Ireland; [3]Galway University Hospital, Galway, Ireland; [4]Limerick University Hospital, Limerick, Ireland; [5]Department of Hematology Beaumont Hospital, Dublin, Ireland
BMC Proceedings 2025, **19(2):**PS71

Introduction: Multiple Myeloma (MM) is characterized by the proliferation of plasma cells in the bone marrow. Approximately 400 patients are diagnosed with MM in Ireland annually, accounting for 10% of blood cancer patients. This study aimed to audit the use of anti-MM therapies nationally in Ireland. To date, no national data on treatment patterns of MM in Ireland, in the era of novel agents, exists.
Methods: Conducted over three months in Irish hospitals (Beaumont Hospital, Galway University Hospital, and Limerick University Hospital), this national audit included 262 MM patients. Collected data underwent deidentification and pseudonymization.
Results: Data were collected for 265 patients; 262 patients had full data available for inclusion in the study at the time of writing. The average age was 69 (range 40–91). 47.3% of patients were below the age of 70, and 59% of patients had undergone autologous stem cell transplant. Among the patients, 44.6% were on first-line therapy (including lenalidomide maintenance following ASCT), while 22.5%, 12.4%, 10.9%, and 5.4% of patients were receiving 2nd, 3rd, 4th, and 5th line treatment, respectively. Leaving 9.6% of patients on the 5th or greater line of treatment, illustrating increasing treatment complexity. A noteworthy finding was that 29.4% were identified as triple-class refractory (TCR), defined as disease progression during or after treatment with an immunomodulatory drug and proteasome inhibitor and monoclonal antibody. Of the TCR patients, 22.1% were penta-exposed. Encouragingly, 6.5% participated in clinical trials, aligning with National Cancer Strategy objectives.
Conclusion: This data provides the most comprehensive picture to date of MM treatment patterns using novel agents in Ireland. With increasing overall survival for MM patients, the population of TCR and penta-refractory patients is rapidly expanding, and there remains an unmet need for access to T-cell-directed therapies such as antibody-drug conjugates, bispecific T-cell therapies, and CAR-T therapies for these patients.

PS72

Awareness of obesity/overweight as a risk factor for cancer among the adult Irish population

Daaniyaa Selvaraju, Maria Quraishi
Royal College of Surgeons in Ireland, Dublin, Ireland
BMC Proceedings 2025, **19(2):**PS72

Abstract: Cancer is a leading cause of mortality worldwide. The WHO states that 30–50% of cancers can be prevented through managing preventable risk factors (1). This study examines the knowledge of being obese/overweight as a risk factor for cancer amongst a representative sample of the Irish adult population.
Secondary data from a survey conducted on behalf of the National Cancer Control Programme in Ireland in 2022 was examined using descriptive analysis (2). Participants were asked prompted/unprompted about their awareness of overweight and obesity as a risk factor for cancer. The percentage of awareness and comparisons between demographic groups in relation to knowledge were examined. Chi-square statistics were performed using Jamovi software. The overall awareness of obesity as a risk factor for cancer was 72%. Results by age groups found that the highest level of awareness was in the 35–64 year age group (75.7% agreed that obesity is a risk factor for cancer) with the youngest age group (18–34 years) having the lowest agreement rate (70.4%). When comparing knowledge across genders, 74.6% men and 73.2% of women agreed that it is a risk factor. Smoking status of participants was associated with knowledge ($p=0.04$), as was work status ($p<0.001$). Of those who didn't smoke, 74.5% agreed obesity was a risk factor and of those who smoked daily, 73% agreed it was a risk factor. 75.7% of employed participants agreed, whilst those who were unemployed, looking for work or unable to work, 60.7% agreed it was a risk factor. 77.7% of participants who had obtained a degree or higher agreed that obesity was a cancer risk factor. The association between ethnicity and awareness of obesity was also examined. The findings suggest that knowledge on overweight/obesity as a risk factor for cancer among the public was high and that it was influenced by demographic factors.

PS73

Post-transplant lymphoproliferative disorder following solid organ transplant: an audit from the National Centre for Renal Transplantation

Walid Nabilsi[1], Meghan Wootton[1], Laura McDonald[1], Siobhan Glavey[2], Philip Murphy[2], Jeremy Sargent[2], Patrick Thornton[1,2], Dawn Swan[1], Mary Keogan[2], Peter Conlon[3], Dilly Little[4], John Quinn[2]
[1]Royal College of Surgeons in Ireland, Dublin, Ireland; [2]Department of Hematology Beaumont hospital, Dublin, Ireland; [3]Department of Immunology Beaumont Hospital, Dublin, Ireland; [4]Department of Urology Beaumont Hospital, Dublin, Ireland
BMC Proceedings 2025, **19(2):**PS73

Posttransplant lymphoproliferative disorder (PTLD) is a rare disease that describes a range of plasmacytic or lymphoid proliferations following a solid organ or haematopoietic stem cell transplant. This retrospective audit studied 42 patients diagnosed with PTLD between 2000 and 2023 in Beaumont Hospital and reviewed their pre-PTLD characteristics, histopathology, treatment regimens and outcomes. Diagnostics and treatment were compared to the 2021 BSH guideline "Front line management of PTLD in adult solid organ transplant recipients". The median age at PTLD diagnosis was 54 years (range 19–73). The median duration of immunosuppression was 13 years (1–30), the median number of immunosuppressive agents was 3 (2–4). Monomorphic B-cell neoplasms were the most common histological subtype, with 19 DLBCL, three plasma cell neoplasms, and two Burkitt lymphoma. Fourteen patients were classified as having other B-cell neoplasms. Rarer histological subtypes included T-cell neoplasms (3) and classical Hodgkin lymphoma (1). EBV status was assessed in 24 patients, and 5 were positive. Treatment regimens varied and included reduction in immunosuppression (RIS), immunotherapy, chemotherapy, radiation and palliative care. The median number of treatments was 3 (range 2–4), with R-CHOP chemotherapy being most common (65%). RIS was implemented in all cases, but was inadequate as patients required a subsequent line of therapy. 19 patients were alive at the time of analysis, median OS was 4.9 years. Patients classified as other B-cell neoplasms had the poorest median OS (11 months), followed by Burkitt Lymphoma (11.5 months). Plasma cell and T-Cell neoplasms had a median OS of 3.2 years and 4 years respectively. Median OS for DLBCL and HL were much longer (9.3 years and 14 years respectively). This audit demonstrates the heterogeneity of PTLD with regards to its presentation, histopathology and response to treatment. Overall survival for patients with aggressive subtypes is poor, therefore necessitating a consensus on optimal treatment regimens.

PS74

Profiling the rehabilitation journey of patients admitted to a stroke unit with moderate to severe disability

Dalia Chahien[1], Sarah Burke[2], Sonya McConnell[2], Frances Horgan[3]
[1]Royal College of Surgeons in Ireland, Dublin, Ireland; [2]Beaumont Hospital, Dublin, Ireland; [3]Department of Physiotherapy, Royal College of Surgeons in Ireland, Dublin, Ireland
BMC Proceedings 2025, **19(2):**PS74

Background: Stroke is the leading cause of disability and death in Ireland. Recent medical therapies like thrombolysis and thrombectomies have impacted the proportion of deaths and extent of disability caused by stroke. Patients with severe stroke can have varied rehabilitation journeys.
Objective: To profile the rehabilitation journey of acute stroke patients with moderate to severe disability, identify challenges in the rehabilitation process and gain insight into the complexity of rehabilitation in this patient cohort.
Methods: Retrospective chart analysis of patients admitted to the Beaumont stroke service during 2022 for acute stroke with moderate to severe impairment. Terms used to identify severe stroke patients were "dense weakness", "mRS >/= 4", "NIHSS > 5", "severe". 45 charts were selected from the initial screening and reviewed for inclusion. Only 13 of the charts were retrieved (3 from the year 2023) for data extraction and analysis.
Results: The average LOS for patients <60 was 97 days (range 24–216), with an average NIHSS score on admission of 13.5 (range 2–20). The average LOS for patients >/= 60 was 113 days (range 32–208), with an average NIHSS score of 16 (9, 25).One patient's NIHSS score was not documented. Eleven patients had hypertension and seven had >/= three comorbidities. Challenges documented throughout patients' length of patient stay were mood (77%), poor engagement/ declining to participate in rehab (31%), cognitive deficits (23%), stroke related motor deficits (31%), spasticity (23%), communication (23%) and gastrointestinal problems (31%).
Conclusion: Patient level challenges include low mood, post-stroke complications and fatigue. They had a longer LOS (median LOS 8 days in 2021 hse.ie), and the majority were referred for ongoing rehabilitation after discharge. Limitations of the study included include its retrospective design, small sample size and the lack of detail regarding outcome of rehabilitation at other rehabilitation hospitals for this patent group.

PS75

Exploring the significance of chromatin remodeling gene mutations in colorectal cancer: a comprehensive analysis of KDM6A, KDM6B, KDM7A, and PHF8 mutations

Meghana Dugyala
Royal College of Surgeons in Ireland, Dublin, Ireland
BMC Proceedings 2025, **19(2):**PS75

Abstract: Colorectal cancer (CRC) is the third most prevalent cancer and the second leading cause of cancer-related deaths worldwide, as

of 2018 (1). CRC is a complex disease often characterized by genetic and epigenetic alterations in colonic epithelium, culminating in the development of colorectal adenomas and invasive adenocarcinomas. Recent research recognises the significance of chromatin remodelling gene mutations in CRC. By understanding the repercussions of these mutations on chromatin accessibility and gene expression patterns within CRC tumours could potentially unravel the mechanisms underlying tumour development and progression. In this study the focus was placed on the group of genes KDM6A, KDM6B, KDM7A and PHF8, which are involved in the demethylation of histone H3 lysine 27(H3K27). Demethylation of H3K27 and subsequent acetylation promotes an open chromatin structure, potentially affecting downstream gene expression, further influencing genomic instability, and tumour progression. In this research study, the aim was to identify how the frequency of mutations occur in the genes KDM6A, KDM6B, KDM7A and PHF8 and to visualize the mutations in genes. This study obtains data from the TCGA database, specifically the TCGA-COAD (Colon Adenocarcinoma) and TCGA-READ (Rectum Adenocarcinoma) datasets. The R software package Maftools was employed for analysis and visualisation. The findings reveal an elevated frequency of mutations in chromatin remodelling genes in CRC, prominently in KDM6B, followed by KDM6A, KDM7A, and PHF8. Missense mutations are prominent, impacting DNA interactions and transcription factor binding. These frequent mutations underline the potential roles of KDM6A, KDM6B, KDM7A, and PHF8 as therapeutic targets in CRC. Understanding the implications of these mutations on chromatin remodelling and gene expression could help develop targeted therapies to restore normal chromatin structure and gene regulation in cancer. By countering the effects of these mutations, it may be feasible to normalize the epigenetic landscape, hindering uncontrolled tumour growth and increasing survival.

PS76

HUGS@Home: also relevant for medical students?

Muneeb Quidwai[1], Brian Doyle[2], Anna Tjin[2], Angeline Traynor[2], Claire Mulhall[2], Walter Eppich[2,3], Michelle O'Toole[2]
[1]RCSI, Dublin, Ireland; [2]RCSI SIM Centre for Simulation Education and Research, RCSI, Dublin, Ireland; [3]Dentistry and Health Sciences, The University of Melbourne, Victoria, Australia
BMC Proceedings 2025, **19(2):**PS76

Abstract: First responders experience duty-related trauma that contributes to some of the worst mental health outcomes compared to other occupation groups. There is under-representation and cultural stigma associated with communicating mental health needs. The HUGS@Home study brings together family members, friends and first responders to explore their lived experiences in their roles. 7 focus groups were conducted. Thematic analysis was used to identify themes within the data. Notable quotes included – "*they're so well trained in every single other aspect of their job, bar dealing with the fallout*" and "*you put all of your emotions in a backpack, you go to the next incident, throw that in your backpack, and you don't deal with it, and you get home and the backpack overflows*." The focus groups highlighted the lack of training first responders and their family receive for their wellbeing, as well as a lack of support services available.Throughout the study it became evident that many similarities exist between the fundamental problems faced by first responders and medical students such as increased stress levels and under-representation in communicating mental health needs. Subsequently, the relevance of HUGS@Home towards medical students was further explored. Studies were identified which demonstrated that medical students have been associated with higher levels of stress compared to the general population alongside a lack of supports available[1]. One research study among medical students in Syria showed that out of a total of 1472 medical students 1200 had significant mild or moderate stress levels[2]. Many similar studies showed similar patterns. Many of the quotes and themes identified from focus groups can resonate within medical students. Using a similar approach to the HUGS@Home project, future research should explore the lived experience of medical students and identify their mental health support needs particularly with the lasting impact of the Covid-19 pandemic.

PS77

Systemic treatment for brain metastatic triple negative breast cancer: a systematic review

Linh Vu, Gordon Daly, Gavin Dowling, Sherlissa Thompson, Oluwapelumi Ogunlowo
RCSI, Dublin, Ireland
BMC Proceedings 2025, **19(2):**PS77

Aim: Patients with advanced metastatic triple negative breast cancer (TNBC) develop brain metastases (BM) in nearly 50% of cases. Management of this patient population is varied, involving a combination of local therapy and/or systemic treatment. Despite substantial advancements in systemic therapies targeting HER2-positive and hormone receptor-positive BM, drug development for brain metastatic TNBC (TNBCBM) remains primitive, with few having reached clinical trials and even fewer currently approved. This systematic review summarises and evaluates approved and emerging systemic therapies for patients with TNBCBM.
Methods: Systematic search was conducted using databases PubMed, Clarivate Analytics/Web of Science, Embase.com and the Wiley/Cochrane Library. Eligible articles included clinical trials, prospective, and retrospective studies reporting on median progression free survival (mPFS), median overall survival (mOS), and/or objective response rate (ORR) of different systemic therapies in patients with TNBCBM.
Results: 13 studies fulfilled inclusion criteria. These studies report on a range of systemic therapies, including chemotherapy, immunotherapy, antibody-drug conjugate, and tyrosine kinase inhibitors. Lu et al. assessing Bevacizumab administration prior to Etoposide and Cisplatin (BEEP regimen) reported the highest CNS-ORR of 100%. Chang et al. retrospective analysis of patients treated with a range of BBB-crossing and non-crossing chemotherapeutic agents yielded the highest mPFS of 32.8 months, while Du et al. demonstrated the highest mOS of 23.9 months for patients treated with immune-checkpoint inhibitors.
Conclusion: This is the first comprehensive systematic review on the clinical efficacy of currently available and emerging systemic treatment options for TNBCBM. When used in combination with local treatment modalities, systemic therapies were shown to provide marked benefit in controlling extra-cranial disease and preventing additional seeding to the brain. However, the small number of studies and heterogeneity of data emphasize the urgent need for further inclusion in clinical drug trials of this subgroup of patients.

PS78

The mechanisms and implications of remdesivir-induced increase in hERG expression

Megan Bethell, Mark Szendrey, Jun Guo, Shetuan Zhang
Queen's University,Kingston, Canada
BMC Proceedings 2025, **19(2):**PS78

The onset of the COVID-19 pandemic has necessitated the investigation of many antiviral drugs for its treatment, including chloroquine, hydroxychloroquine, and remdesivir. Since some of these drugs are reported to carry risk for QT prolongation, and blocking the current of the cardiac potassium channel encoded by the *human ether-a-go-go-related gene* (*hERG*) is the primary cause of drug-induced QT prolongation, our lab previously studied the effects of COVID-19 drugs on hERG current and found that remdesivir chronically increases wild-type hERG current by two-fold, as well as increases mature hERG channel expression. Given that loss-of-function mutations in *hERG* are responsible for most cases of type-2 congenital long-QT syndrome (LQT2),

and each specific mutation acts through different mechanisms to decrease hERG current and expression, the present study investigated the mechanisms underlying the remdesivir-induced increase in hERG expression. The results of this study showed that, relative to untreated control cells, remdesivir did not appear to alter the rate of mature hERG channel degradation upon Western blot analysis; however, 30 μM remdesivir treatment resulted in a significant (p=0.02) increase in relative *hERG* mRNA expression by approximately 2-fold upon real-time qRT-PCR analysis, compared to untreated control cells. Taken together, these results suggest that remdesivir acts to increase hERG expression through a mechanism of increasing *hERG* transcription. Future studies will be needed to confirm the present data in a larger sample size and to elucidate the factors involved in the upregulation of transcription by remdesivir. Furthermore, these results may have clinical implications concerning the rescue of LQT2-causing *hERG* mutants with remdesivir, warranting further study with guidance from the present findings.

PS79

Development and characterisation of methacrylated gelatine (GelMA) and methacrylated hyaluronic acid (MeHA) hydrogels for regeneration of zonal articular cartilage

Katelyn Grace Rosal
Royal College of Surgeons in Ireland, Dublin, Ireland
BMC Proceedings 2025, **19(2):**PS79

Abstract: Articular cartilage promotes low friction movement and absorbs mechanical forces at joints, due to a highly specialised extracellular matrix arranged into deep, intermediate and superficial zones. Cartilage degeneration due to injury or disease (e.g., osteoarthritis) causes debilitating pain and disability in >500 million people globally. Existing therapies are often ineffective due to factors like age-related cell activity decline and the formation of functionally deficient fibrocartilage. While regenerative biomaterials offer an alternative, engineering biomaterials with cartilage-like properties and structure is challenging. Therefore, the project aims to engineer composite biomaterials that recreate the zonal, load-bearing properties of cartilage while providing softer cell regenerative environments to promote repair. Under the RCSI Research Summer Programme, I investigated the development and physicochemical characterisation of methacrylated gelatin (GelMA) and methacrylated hyaluronic acid (MeHA) hydrogels, with the aim of manufacturing hydrogels that mimic the three cartilage zones. This approach design enhances cartilage cell regeneration and produce tissue with the properties required to replace degenerated cartilage by synthesizing and characterising GelMA, MeHA, and GelMA/MeHA blend hydrogels physicochemically and biologically. Hydrogel concentration variations produced varying ranges of properties suitable for cartilage regeneration. With greater in-vitro testing using donors' cells, these hydrogels could be combined with a polycaprolactone (PCL) scaffold.

PS80

Targeting JAM-A dimerization with novel peptides: a future therapeutic strategy against multiple myeloma?

Nawf Alshkeili[1], Ann Hopkins[2], Niamh McAuley[2]
[1]Royal College of Surgeons in Ireland, Dublin Ireland; [2]Royal College of Surgeons in Ireland, Dublin, Ireland
BMC Proceedings 2025, **19(2):**PS80

Background: Upregulation of the protein Junctional Adhesion Molecule-A (JAM-A) has been implicated in the progression of several cancers, including multiple myeloma (MM). As JAM-A dimerization may have implications for treatment resistance, our research focuses on novel peptides designed to inhibit dimerization, aiming to uncover new methods for therapeutic intervention in MM.
Methods: We utilized recombinant human JAM-A (rJAM) and histidine-tagged JAM-A (HisJAM) as bait to test binding of novel anti-JAM-A peptides at varying concentrations. Non-reducing gel analyses were performed to evaluate the oligomeric state of recombinant JAM-A.
Results: Non - reducing Gel analyses showed recombinant JAM-A not in dimer form, with rJAM suggesting trimers and HisJAM indicating dimers and monomers. Anti-JAM-A peptide incubation did not change rJAM/HisJAM mobility, indicating limited binding. Ligand binding assays suggested more effective interaction with recombinant JAM-A at a medium peptide concentration of 1 μM, as evidenced by lower absorbance, compared to the higher peptide concentration of 10 μM.
Discussion: Limited binding of novel anti-JAM-A peptides to the recombinant JAM-A bait protein in gel electrophoresis experiments highlights the potential limitations of using recombinant JAM-A for binding assays with these peptides. Direct binding assay outcomes, while suggestive of an interaction, warrant further investigation to clarify the binding dynamics.
Conclusion: Preliminary results suggest novel peptides interact with JAM-A protein, a potential target in cancer therapy, including MM. While specific targeting of the JAM-A dimerization interface is promising, the connection between binding affinity and functional effect needs further validation. Upcoming studies will aim to reinforce these findings and assess their significance in MM treatment.

PS81

Association of Guillain-Barré Syndrome with Covid-19

Conor Rankin[1], Lorcan Lalor[1], Nicholas Armstrong[2], Kristen Wiemken[3]
[1]University of Limerick, Limerick, Ireland; [2]University of Buffalo, Buffalo, United, States; [3]University of British Columbia, Vancouver, Canada
BMC Proceedings 2025, **19(2):**PS81

Abstract: Guillain-Barré Syndrome is a neurological condition commonly presenting as an ascending sensorimotor neuropathy with acute onset. Diagnosis of GBS is made by a combination of clinical features, lumbar puncture and electroneurography. GBS is well established to present post-infection, most commonly from *Campylobacter jejuni*. The mechanism leading to attack of peripheral nerves by anti-ganglioside antibodies is thought to be evoked by molecular mimicry. The aim of this literature review was to identify populations at risk, patterns of clinical presentations and investigation findings to aid in diagnosis, common treatments employed, outcomes of Covid-19-GBS patients, and areas in need of more research. The majority of Covid-19-GBS patients had classic clinical findings. All Covid-19-GBS patients who were tested were negative for SARS-CoV-2 RNA in CSF. Treatment with IVIG was used for many of these cases which is the same as non-Covid-19-GBS cases. Uncertainties remain about the association of GBS and Covid-19 as the quantity and quality of data required to properly answer these questions is lacking. Further data is crucial to gain better insight into the association of Covid-19 variants and GBS which may potentially facilitate quicker diagnosis, treatment, and improvement of outcomes in adult, paediatric and at-risk populations.

Publisher's Note