



Abstracts from the
Student Medical Summit 2026

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Article Title: Role of Frailty in Determining Indication for Sentinel Lymph Node Biopsy in Older Melanoma Patients Aged ≥ 60 Years

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Aim

This study aimed to evaluate the relationship between frailty and key SLNBx-related management decisions in older melanoma patients.

Methods

A retrospective cohort study was conducted of patients ≥ 60 years with melanoma stage $\geq T1b$ at Galway University Hospital (2020-2025). Frailty was assessed using the Clinical Frailty Scale (CFS) pre-operatively and post-operatively. Primary outcomes included CFS scores, SLNBx utilisation and complications.

Results

Among 184 patients (median age 72), 87% (n=160) underwent SLNBx. SLNBx use declined with increasing frailty: 92.2% (n=94) in CFS 1–3 versus 54.6% (n=6) in CFS ≥ 6 . Complications were similar across groups (16.7% [n=17] vs 9.1% [n=1]). Overall, 16.3% (n=30) experienced worsening frailty, more common in CFS ≥ 6 (27.3%, n=3).

Discussion

Frail patients were less likely to undergo SLNBx. Post-operative deterioration in frailty was more common in high frailty groups despite comparable complication rates. Routine frailty assessment may support surgical decision-making for older melanoma patients.

Article title: Age-Based Comparison of Patient Experience in the Catheterization Laboratory assessed using the PATCATH Questionnaire

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Aim

With coronary angiography and PCI being common interventions for coronary artery disease, improving patient experience in the catheterization laboratory is essential. This study aimed to assess differences in patient experience based on age using the PATCATH questionnaire across pre-, intra-, and post-procedural stages.

Methods

A cross-sectional study was conducted using the PATCATH questionnaire, developed by the EAPCI with European Society of Cardiology (ESC) Patient Forum. Patients were recruited post-procedure in the recovery area, and anonymised responses were analysed in Microsoft Excel. Participants were grouped as ≤ 65 years and ≥ 65 years. Descriptive statistics were used to evaluate response trends.

Results

A total of 150 patients participated, with 62% aged ≥ 65 years and 38% ≤ 65 years. Coronary angiography was the most common procedure in both groups (86% in ≥ 65 years; 16% underwent PCI). Younger patients reported more positive experiences during pre- and intra-procedural stages, while older patients gave higher ratings post-procedure. Non-responses were common post-procedure, often because patients had not yet met their doctor.

Discussion

This study highlights the need for age group specific communication strategies tailored to different procedural stages. Future studies should explore these strategies in more depth to enhance patient satisfaction and engagement.

Article title: Causes and outcomes of severe hyperglycaemia in adult hospitalised patients: a retrospective observational study at TUH

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Aim

Severe inpatient hyperglycaemia is associated with adverse outcomes, yet its causes and clinical consequences in the general hospital population remain incompletely characterised. We aimed to examine the aetiology and outcomes of severe hyperglycaemia (blood glucose concentration [BGC] >20 mmol/L) in hospitalised adults.

Methods

We conducted a retrospective observational study at Tallaght University Hospital including 771 admissions with BGC >20 mmol/L and 2,334 comparator admissions with lower BGC between July 2024 and May 2025. Data collected included diabetes history, suspected precipitants, HbA1c, and ketone levels. Outcomes assessed were length of stay (LOS), mortality, and intensive care unit (ICU) admission. Multivariable analyses were performed to adjust for confounding.

Results

Severe hyperglycaemia was associated with a significantly prolonged LOS (mean +3.4 days, $p=0.022$), which persisted after adjustment ($\beta=0.26$, $p<0.001$). Mortality did not differ significantly after adjustment. Severe hyperglycaemia showed a borderline association with lower ICU admission rates ($p=0.056$), while ketonaemia was strongly associated with ICU admission ($p=0.0002$). Causes varied significantly by diabetes type ($p<0.001$), with diabetic ketoacidosis predominating in type 1 diabetes and infection or steroid exposure in type 2 and non-diabetic patients.

Discussion

Severe inpatient hyperglycaemia is independently associated with longer hospitalisation. While ketone levels and HbA1c may assist in risk stratification for higher levels of care, they are poor predictors of mortality.

Article title: Artificial intelligence-generated patient education material on arthroplasty: a systematic review

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Aim

Total joint arthroplasty (TJA) restores limb function and improves quality of life in patients with advanced joint pathology. With rising TJA volumes and increasing patient use of artificial intelligence (AI) for health information, access to accurate and reliable patient education materials (PEM) is essential. This systematic review evaluates the accuracy, quality, reliability, and readability of AI-generated responses to common patient questions regarding hip, knee, ankle, and shoulder arthroplasty.

Methods

A systematic search of Web of Science, PubMed, Embase, and Scopus was conducted in accordance with PRISMA guidelines. Two independent reviewers applied inclusion and exclusion criteria. Eligible studies assessed de novo AI-generated PEM on joint arthroplasty, included primary data generation, and evaluated quality or readability using validated tools e.g., DISCERN.

Results

Eleven studies met inclusion criteria (six hip/knee, four shoulder, one ankle), all evaluating ChatGPT. Eight studies assessed accuracy and completeness using varied outcome measures and found responses generally satisfactory, requiring minimal clarification. Reliability was assessed in five studies using DISCERN, with a mean score of 52.2 ± 7.78 . Six studies evaluated readability, reporting PEM levels ranging from high school to postgraduate.

Conclusion

ChatGPT shows promise in generating accurate and comprehensive PEM for TJA. Variability in quality and limited readability warrant cautious clinical integration.

Article title: Identification of Aortic Valve Stenosis by Artificial Intelligence-Enabled Focused Cardiac Ultrasound Scanned by Novices

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Aims

Aortic valve stenosis (AS) is a common life-threatening condition, particularly in older adults, yet remains undiagnosed until symptoms become severe. Developing a low-cost, scalable screening approach is essential for early detection and timely intervention.

Methods

1,299 prospectively enrolled adults, underwent focused 2D ultrasound (FoCUS; Philips Lumify) performed by 1 of 9 novices (no clinical or imaging experience) with imaging guided by Artificial Intelligence (AI; UltraSight). FoCUS scans were interpreted by AI to detect $\geq$ moderate AS. The abnormal or non-feasible AI scans were overread by experts. Results were compared to the gold standard of a comprehensive echocardiogram performed by sonographers and read by echocardiologists performed within 15 mins of the FoCUS scan.

Results

Median age 64 (IQR 57-75) years; 766, (59%) male; BMI range 15-57 kg/m². Diagnostic images of the aortic valve were obtained on FoCUS in 97.2%. Average imaging time was 5 $\pm$ 3 mins. The prevalence of $\geq$ moderate AS was 47 (3.6%). 1170 (90.1%) scans required no human review (AI negative). The remaining (86 positive and 42 not analyzable were secondarily reviewed). The overall sensitivity to detect $\geq$ moderate AS was 89.4% (95% CI 76.9-96.5), specificity 99.7% (95% CI 99.2-99.9) and accuracy 99.3% (95% CI 98.7-99.7).

Discussion

AI-guided cardiac ultrasound by novice users is highly feasible and accurate for the detection of AS suggesting a low-cost screening tool for at risk populations.

Article title: Prevalence of Chemotherapy-induced Hematotoxicity Among Pediatric Patients with Acute Lymphoblastic Leukemia

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Aims

This observational retrospective study aims to address the high burden of acute lymphoblastic leukaemia (ALL) in the Middle East by assessing chemotherapy induced toxicities among paediatric patients with ALL during the induction phase of the treatment protocol.

Methods

The study was conducted on paediatric Omani patients with ALL treated at Sultan Qaboos University Hospital between 2013 and 2023. Electronic medical records (TrakCare) were reviewed to obtain demographic, clinical, and laboratory data. Toxicities were classified according to CTCAE v5.0 and analysed statistically using SPSS, applying descriptive and inferential tests with significance defined at $p < 0.05$.

Results

A total of 130 patients were included (53.8% males, 46.2% females). By week one of induction, thrombocytopenia deteriorated, with Grade 3 increasing from 24% to 35% and Grade 4 from 12% to 25%. Neutropenia intensified, with Grade 4 rising from 42% to 65%. Anemia improved, with normal haemoglobin increasing from 16% to 87%, while Grade 2-3 anemia declined from 78% to 11%.

Discussion

These early trends correspond to anticipated induction phase toxicity driven by agents such as vincristine and 6-mercaptopurine. The findings highlight the importance of vigilant monitoring and targeted supportive care to lessen early treatment related myelosuppression.

Article title: The Role of Communication in the Operating Theatre: Attitudes of Anaesthesia Trainees

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Aim

Extensive research has examined communication from the perspectives of consultant anaesthetists and surgeons; however, anaesthesia trainees have received less attention. This study explores anaesthesia trainees' attitudes towards communication and leadership in the operating theatre.

Methods

A cross-sectional, questionnaire-based study was conducted among anaesthesia trainees in Irish hospitals, using an adapted version of the Operating Room Management Attitudes Questionnaire (OMRAQ). Data collected included demographics, attitudes toward communication and leadership, perceptions of team dynamics and communication-related errors. Responses were analysed using descriptive statistical analysis.

Results

Seventy-four trainees participated. Majority supported collaborative leadership, with 95% of trainees favouring junior staff participation in decision making. Despite this, gaps in communication practices were reported: 69% reported pre-operative briefings were lacking, and 84% said post-operative debriefings were uncommon. Communication errors were widely recognised, with 85% acknowledged making errors due to poor communication and 55% reporting witnessing such errors from other members of theatre. Trainees supported the need for confidential error-reporting systems but expressed hesitation about open reporting.

Conclusion

Trainees value teamwork and communication but perceive gaps between best practices and current theatre processes. These findings highlight the need for structured communication

training, leadership development, and stronger psychological safety within theatre. Targeted interventions could strengthen communication behaviours and reduce errors.

Article title: Hybrid Operating Rooms can allow for Better Achievement of Sufficient Minimal Ablation in comparison to Traditional Operating Rooms

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Aims

The Intervention Centre (IVS) at Oslo University Hospital utilises hybrid operating rooms to conduct intraoperative imaging during procedures such as image-guided thermal ablation of liver tumours. Adequate minimal ablation margins are essential, as insufficient tumour margins are closely linked with local tumour progression (LTP). This study aims to retrospectively evaluate liver ablation margin sufficiency in 20 consecutive patients treated in the IVS compared to traditional operating rooms (OR).

Methods

Liver ablations were analysed via the MyAblationGuide software. Tumours were located & segmented in the pre-CT scan. Target margins were established at 5 mm for hepatocellular carcinoma (HCC) & 10 mm for colorectal liver metastases (CRLM) & other lesions. To evaluate marginal coverage, pre-and post-CTs were fused, & ablation areas were segmented.

Results

Poorly fused images were excluded, leaving 18 patients per cohort with 21 total treated tumours in each group. 3 HCC tumours in traditional ORs & 4 CRLM tumours in the IVS achieved sufficient target margins. The IVS cohort exhibited a higher mean minimal margin (5.39 mm) than the OR group (3.17 mm). Independent samples median tests demonstrated significance ($p < 0.001$). Four cases of LTP in normal ORs and two cases in the IVS were seen, all exhibiting insufficient margins. In two OR cases, full tumour coverage was not observed.

Discussion

These results highlight the efficiency of Hybrid ORs over conventional ORs in attaining minimal marginal coverage. Recent studies suggest 5mm margins may be sufficient for CRLM, optimising IVS results. Reduced risk of LTP in centres such as the IVS may positively impact patient outcomes.

Article title: Perceptions and Experiences of Interprofessional Education (IPE) Among Health Profession Students, Clinical Supervisors and Educators Involved in the One Team One Family (OTOF) Program

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Aim

As healthcare systems evolve, interprofessional collaboration is vital to delivering good quality, patient-centred care. Interprofessional education (IPE) is becoming a recognised way of preparing healthcare students for this, yet its implementation in low-and-middle income countries (LMICs) remains under-researched. This study aims to explore how health profession students, clinical educators and clinical supervisors perceive and experiences IPE through the 'One Team, One Family' (OTOF) program, a community-based program implemented across Indonesia.

Methods

Through semi- structured interviews with three main participant groups, an exploration was undertaken to gain insights using the Communities of Practice (CoP) framework. Nineteen participants were included- health profession students (n=13), clinical educators (n=4) and clinical supervisors (n=2). Interviews were transcribed verbatim and analysed using reflexive thematic analysis.

Results

Five themes were identified: mutual engagement, joint enterprise, shared repertoire, contextual influences, and perceptions of IPE. The findings reveal that whilst the OTOF program fostered an environment of meaningful collaboration, challenges such as professional hierarchies and limited curriculum integration harboured its potential.

Discussion

This study illustrates that for IPE to be sustainable, it requires cultural and structural shifts within educational settings, as well as continued flexible innovation. This highlights the

importance of engaging multiple participant perspectives to inform the development of IPE initiatives.

Article title: Mapping Compassion: A Scoping Review of Volunteer Impact in Rehabilitation Care

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Aims

With an ageing population and rising demand for rehabilitation services, healthcare systems face pressure to adapt their workforce. Volunteers often play a vital role in supporting healthcare delivery in rehabilitation settings, so this scoping review aims to examine volunteers engagement in rehabilitative care and their impact.

Methods

Following JBI and Arksey and O'Malley guidelines, literature searches were conducted across PubMed, CINAHL, EMBASE, SCOPUS, Web of Science, Ovid, and ProQuest. Studies were systematically screened and analysed according to scoping review standards. Articles were included if they reported on volunteer involvement in rehabilitation settings.

Results

To date, 6,127 records have been identified, 356 full texts screened, and 24 studies included in the preliminary analysis. Volunteers contributed across multiple roles, including emotional support and peer mentoring, often in partnership with therapists and clinical teams. In several studies, stroke survivors who volunteered as peer mentors helped others regain confidence during recovery. Volunteer involvement was associated with reduced loneliness and psychological well-being. Most evidence focused on stroke rehabilitation, highlighting the need for broader investigation across diverse populations.

Discussion

This ongoing review reinforces the importance of integrating volunteer roles into rehabilitation strategies. Engaging volunteers can enhance patient outcomes and extend workforce capacity. Findings are transferable to diverse rehabilitation and integrated care systems internationally, where volunteer engagement offers a sustainable approach to workforce development and improved care quality.

Article title: Minimum 10 Year Survivorship and Risk Factors for Failure Following Reverse Total Shoulder Arthroplasty

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Aim

To evaluate 10-year survivorship following reverse total shoulder arthroplasty (RTSA) and identify risk factors for long-term failure.

Methods

A retrospective cohort study was performed using the PearlDiver Mariner database to identify patients who underwent RTSA from 2010 to 2013. Patients required active medical records at least 10 years postoperatively. Kaplan–Meier analysis estimated survivorship at 1, 5, and 10 years. Multivariate logistic regression identified independent predictors of failure. Primary outcomes were survivorship and time to revision; secondary outcomes included demographic and clinical risk factors.

Results

A total of 5,269 RTSA patients met inclusion criteria, of whom 273 (5.2%) underwent revision. Survivorship at 1, 5, and 10 years was 97.8% (5,154/5,269), 95.7% (5,042/5,269), and 95.0% (5,006/5,269), respectively. Mean time to revision was 928 days (2.54 years), and 50% of revisions occurred within 509 days (1.39 years). On multivariate analysis, male sex (OR 1.58, $p < 0.001$), prior rotator cuff repair (OR 1.49, $p = 0.046$), and a primary diagnosis of glenohumeral osteoarthritis (OR 1.34, $p = 0.02$) were associated with higher odds of failure, while increasing age was protective (OR 0.96 per year, $p < 0.001$). Charlson comorbidity index, diabetes, tobacco use, proximal humerus fracture, and socioeconomic variables were not associated with revision risk.

Discussion/conclusion

RTSA demonstrates excellent long-term survivorship with low 10-year revision rates. Most failures occur early, within 2 years of surgery. Male sex, younger age, prior rotator cuff repair, and osteoarthritis diagnosis are independent risk factors for long-term failure.

Article title: Overcoming Radial Access Limitations for Large-Bore Mechanical Thrombectomy Using the Novel Zebra Laser-Cut Guide Catheter

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Aim

Transradial mechanical thrombectomy offers reduced complications compared to transfemoral approach but has been limited by the inability to safely deliver large-bore aspiration catheters through a radial sheath. The FDA-cleared Zebra laser-cut catheter with 7F (0.087" inner diameter; 0.096" outer diameter) and 6F versions (0.074" inner diameter; 0.083" outer diameter) addresses this limitation.

Methods

We conducted a retrospective review of 26 patients undergoing transradial mechanical thrombectomy for acute ischemic stroke using the Zebra catheter through radial sheaths at two centers (January-August 2025). Primary outcomes included radial access success, recanalization (TICI 2b-3), and access-site complications.

Results

Mean age was 65.04±12.82, mean NIHSS was 20.88±7.87. Radial access success rate was 96.2% (25/26). One conversion to femoral occurred due to catheter herniation at acute innominate-left common carotid angulation with aberrant right subclavian anatomy; the procedure was completed successfully via femoral route using the same system. Successful recanalization (TICI 2b-3) occurred in 88.5% (23/26) of patients. Zebra accommodated aspiration catheters ranging 0.055-0.071" inner diameter and navigated complex anatomy including tortuous carotid origins with subclavian elevation up to 15mm. No access-site complications occurred. Mean fluoroscopy time was 23.07±18.24 minutes with 88.5% (23/26) of procedures rated "easy" by the operator. Acute aortic branch angles represented the primary anatomical limitation, while distal tortuosity and moderate subclavian elevation were manageable.

Conclusion

Zebra enabled transradial mechanical thrombectomy with high recanalization rates without access-site complications. Zebra succeeded across complex anatomy and demonstrated compatibility with various large bore suction catheters, allowing uniform utilization for thrombectomy in radial versus femoral access.

Conflict of Interest: Dr. Omar Choudhri reports consultant fees from Balt Group, Medtronic Neurovascular, Stryker Neurovascular, Siemens Healthineers, Q'apel Medical, Terumo Neuro. All other authors report no conflict of interest.

Article title: Multi-Centre Audit of Guideline Adherence for ADHD Management in Primary Care

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Aim

This audit aims to assess adherence to NICE guidelines for baseline physical health evaluations of patients prescribed methylphenidate for ADHD management and ongoing six-monthly assessments.

Method

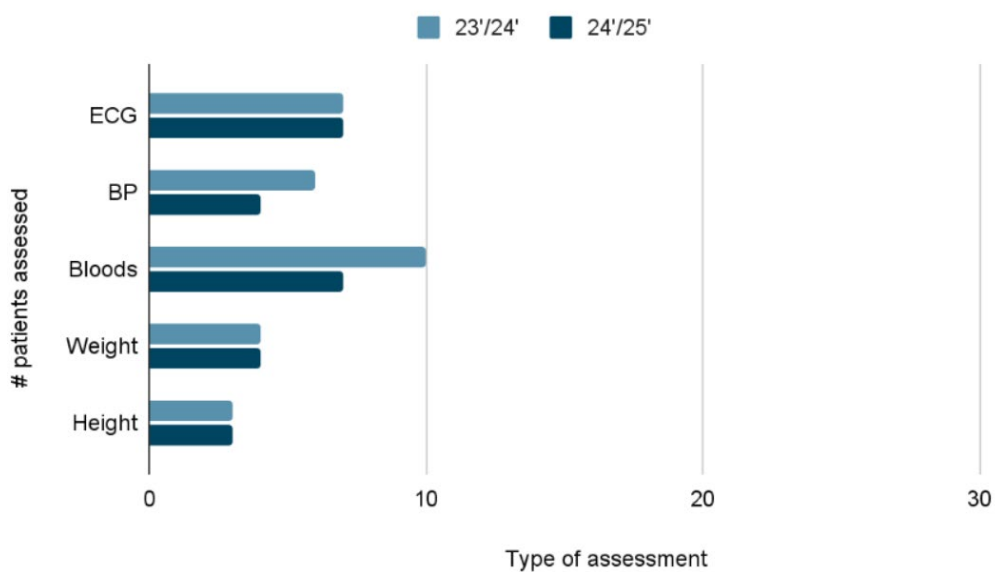
A first-cycle retrospective audit was conducted using electronic patient records on Socrates software from four GP practices across Cork City & county. All patients prescribed methylphenidate between 24/04/2023 and 24/04/2025 were included. Data was extracted including age, medication, baseline investigations (height, weight, blood pressure, blood tests and ECG), and follow-up monitoring. Monitoring rates were analysed across two twelve-month periods and compared against NICE guideline NG87 standards.

Results

Twenty-nine charts were reviewed in 2023–2024 and thirty-three in 2024–2025, with the majority aged ≥ 18 years. In 2023–2024, regular monitoring rates were low; height: 3(10.3%), weight: 4 (13.8%), blood pressure: 6(20.7%), bloods: 10(34.5%), and ECG: 7(24.1%). In 2024–2025, monitoring declined further, with height: 3(9%), weight: 4(12.1%), blood pressure: 4(12.1%), bloods: 7(21.2%), and ECG: 7(21.2%).

Age	Number
10 years old or younger	3
Older than 10 and younger than 18 years old	10
18 years old and above	20

6-monthly monitoring in patients prescribed methylphenidate



Discussion

This audit demonstrates poor and declining adherence to NICE monitoring guidelines for patients prescribed methylphenidate. Given the cardiovascular and metabolic risks associated with stimulant medication, regular physical health monitoring is essential. Implementing structured follow-up systems like chronic disease management programmes, may improve compliance and patient safety.

Article title: Claiming Superiority: A Decade of Evidence Behind AI-Generated Compounds in Cancer Drug Discovery

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Aim

As artificial intelligence (AI) advances in drug discovery, many studies suggest that AI-generated anticancer molecules outperform benchmark compounds. This study systematically examines how often such claims are made and the type of supporting evidence, providing a foundation for validating existing models and guiding future generative research in oncology.

Methods

A PRISMA-guided systematic review of PubMed (2015–2025) identified 57 studies using generative AI or machine learning for de novo anticancer compound design. Extracted variables included comparator type, evidence form (docking, binding free energy, IC₅₀/EC₅₀, in-vivo), and outcome classification (superior, equal, or not compared).

Results

Twenty-four studies (42%) reported AI-generated molecules as superior to benchmark compounds. Among these, 10 (41.7%) relied on docking scores, 8 (33.3%) on in-vitro potency, and 8 (33.3%) on binding-free-energy estimates, with overlap between categories. Only four studies (7%) included in vivo validation, while 28 (49%) made no comparative statement and five reported no superiority. Over the decade, computational claims increased steadily, whereas experimental validation showed little growth.

Conclusion

This study provides the first comparative evidence map of AI-generated versus benchmark compounds in oncology. Bridging the gap between algorithmic prediction and biological confirmation will determine whether AI-driven discovery can truly deliver therapeutic gains in cancer and related diseases.

Article title: Influence of menopausal status and age on the outcomes of a structured lifestyle modification programme in females with severe and complicated obesity

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Aim

In the context of the obesity pandemic, understanding how aging and the menopausal hormonal changes influence responses to lifestyle interventions is essential. This study aimed to assess the effect of menopausal status and age on changes in weight, BMI, waist circumference and excess bodyweight, in women with obesity, undergoing an 8-week structured lifestyle modification programme.

Methods

A post hoc analysis of a prospective cohort study was conducted using the CLANN dataset, including 673 female participants who self-reported their menopausal status. Body measurements (weight, BMI, waist circumference and excess body weight) were recorded before and after participation in an 8-week structured lifestyle modification programme. Statistical analysis was conducted using SPSS v28.0.

Results

There was no effect of menopausal status on weight change, BMI change, waist circumference change or excess bodyweight change, or their percentage changes. Age had a significant inverse relationship with excess bodyweight change ($r_s = -0.092$, $p = 0.043$) and percentage excess bodyweight change ($r_s = -0.079$, $p = 0.040$).

Discussion/conclusion

This analysis suggests that age may have a greater influence than menopausal status on lifestyle intervention outcomes, possibly reflecting physiological or behavioral factors related

to aging. The lack of significant differences by menopausal status may be due to the relatively short duration of the intervention.

Funding received by the School of Medicine, University of Galway scholarship.

Article title: Exploring Concordance in Depression and Anxiety Ratings Between Youth with Eating Disorders and Their Parents

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Aim

This study investigates concordance between parent-child reports of quality-of-life (QoL), anxiety, and depression in children with eating disorders (EDs), and the clinical relevance of reporting discrepancies in family-based psychiatric care.

Methods

Clinical data were collected from 113 children (95.6% female, mean age 14.17 years) with EDs admitted to an Irish paediatric hospital (2021 to 2025). Standardized assessments included Revised Child Anxiety and Depression Scale (RCADS), Eating Disorder Examination Questionnaire (EDE-Q), and Paediatric Quality-of-Life (Peds-QL). Parent-child agreement on anxiety/depression and QoL was assessed alongside correlations with clinical factors. Descriptives, paired samples t-tests, and Spearman's correlations were conducted on IBM SPSS Statistics v29.0.2.

Results

Mean admission weight-for-height (WFH) was 86.74% rising to 87.61% at discharge (mean length of stay = 22 days). Children reported higher emotional (MD = 11.91, $p = 0.005$) and social QoL (MD = 9.35, $p = 0.003$) than parents. Anxiety/depression scores were comparable (MD = 3.98, $p = 0.16$), though children reported higher panic (MD = 1.55, $p = 0.048$). Higher WFH correlated with greater ED symptoms, lower QoL, and higher anxiety/depression ($p \geq 0.355$, $p < 0.01$).

Discussion/conclusion

Strong concordance was observed for anxiety/depression; however, children perceived QoL more positively than parents. Findings support multi-informant, family-centred approaches in ED care.

Article title: Transcriptomic Characterisation of the Immune Microenvironment in Acral Lentiginous Melanoma

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Aim

Acral Lentiginous Melanoma (ALM) is a rare and poorly understood form of melanoma occurring on the glabrous skin of the palms, soles, and nail apparatus, likely triggered by mechanical stress. While ALM accounts for only 1-2% of melanoma diagnoses in populations of European descent, it represents between 40-60% in Latin American, Asian and African populations. Current treatment mirrors that of UV-induced cutaneous melanoma (CM), typically involving immune checkpoint blockade (ICB) but with poorer response and higher recurrence rates.

Methods

This study explores the immune landscape of primary ALM tumours through transcriptomic profiling, using CM as a reference. Tumour samples were collected via the MGH Biobank Initiative and sent for Bulk RNA sequencing (CM = 15, ALM = 11). Bulk RNA-seq data was processed using Terra and analysed on RStudio via principal component (PCA), differential gene expression (DGE), and gene set enrichment analysis (GSEA). Immune cell composition was estimated with CIBERSORTx deconvolution using the LM22 signature matrix.

Results

DGE suggested that ALM exhibits lower expression of PD-L1 as well as increased expression of immune evasion marker CD47. Gene set enrichment analysis showed multiple pathways that were significantly down-regulated in ALM including TNF- α signalling, IFN- α response and IFN- γ response pathways. Deconvolutional analysis suggested higher proportions of immunosuppressive M2 macrophages in ALM compared to CM.

Conclusion

These findings add to the foundation for hypothesis generation surrounding ALM's

immunosuppressive tumour microenvironment, which may underpin its resistance to ICB. This work highlights the need for subtype-specific immunotherapy strategies and contributes to a growing understanding of ALM biology.

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Article title: Contemporary Alternative Access Strategies for Transcatheter Aortic Valve Replacement

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Aim

As transcatheter aortic valve replacement (TAVR) expands to younger and lower-risk populations, vascular access selection has become a key determinant of procedural safety and recovery. Although transfemoral access remains preferred, some patients require alternative strategies. This review synthesizes contemporary evidence on alternative access TAVR to inform selection and decision-making.

Methods

A focused narrative review of randomized trials, large registries, meta-analyses, and consensus statements was conducted. Alternative routes were categorized as extra-thoracic (trans-carotid, trans-caval, trans-axillary/subclavian) or intra-thoracic (trans-apical, direct aortic). Procedural planning, technical considerations, and comparative outcomes were assessed.

Results

Registry data show intra-thoracic access has declined to <1% of contemporary TAVR cases, with extra-thoracic strategies predominating. Trans-carotid and trans-caval access achieve technical success >95%, with 30-day mortality of 3–6% and stroke rates of 1–3%. Compared with trans-axillary access, these approaches show shorter procedures, lower contrast use, fewer vascular complications, reduced hospital stay, and higher discharge-home rates (83–93%).

Discussion/Conclusion

When transfemoral access is not feasible, extra-thoracic routes, particularly trans-carotid and trans-caval, are preferred, reflecting the declining role of intra-thoracic approaches. Rigorous CT-based planning, multidisciplinary Heart Team evaluation, and institutional expertise remain essential as access decisions intersect with lifetime management considerations.

Article title: Expanding access to menopause treatment- a scoping review supporting the OTC supply of vaginal oestrogen

Authors:

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Aim

To investigate whether OTC supply of vaginal oestrogen through pharmacies is safe and feasible to improve patient access. It addresses a key question: Does clinical evidence confirm the safety profile of vaginal estrogen?

Methods

Following PRISMA guidelines a review was conducted on Databases including: PubMed and google scholar. 39 articles were identified including one national survey. 31 articles were included in this study. Studies focused solely on systemic hormone therapy or natural oestrogen without topical application were excluded.

Results

31 articles were included and 8 excluded. Studies show: No association between vaginal oestrogen and higher risk of cancer or CVD, Ultra-dose 0.005% of estriol vaginal gel is safe and effective in menopause and 95% (n=2427) of women support free access to HRT.

Discussion

To successfully implement OTC reclassification, a structured pharmacist consultation framework, training programs, and public education campaigns are essential to address stigma and ensure safety and appropriate use. However, barriers such as limited long-term safety data and drug shortages must be addressed.

Article title: The Use of Extended-Release Buprenorphine (XR-BUP) in Custodial Settings and 8-week post release period: A Scoping Review

Authors:

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Aim

Opioid dependence is highly prevalent in carceral populations and is associated with substantial levels of mortality. This includes an elevated risk of fatal overdoses and reincarceration in the 8 weeks post-release. In 2017, the long-acting formulation of buprenorphine (XR-Bup) was approved for use as an opioid substitution therapy (OST). The aim of this review was to identify the benefits of XR-Bup in custodial settings and the post-release period, especially in comparison to the current treatments.

Methods

This scoping review was informed by the Arksey and O' Malley methodological framework. A comprehensive search across PubMed, Embase, Web of Science and PsycINFO databases was carried out, adhering to the Preferred Reporting Items for Systematic reviews and Meta-analysis extension for Scoping reviews (PRISMA-ScR) guidelines.

Results

Of the 616 articles identified initially, 14 were included in the final analysis. Numerous benefits of XR-Bup were identified, with improvements reported in five recurring themes: patient satisfaction, drug efficacy, reducing diversion, transition from current medication and cost-effectiveness.

Discussion/Conclusion

The findings demonstrate various benefits associated with XR-Bup, including improved treatment adherence during incarceration and continued therapeutic engagement post-release. However, further research is warranted to explore implementation strategies, long-term outcomes, and perspectives of both service providers and recipients within justice-involved populations.

Article title: Charting the Future: Career Intentions of Clinical Medical Students at the University of Galway

Authors:

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Aim

Medical graduate emigration remains a significant challenge for Ireland's healthcare system. While previous research has focused on qualified doctors, little is known about medical students' career intentions. This study explores these intentions across clinical-year students.

Methods

An adapted UK survey was distributed following OSCE examination. Descriptive and inferential statistics were performed.

Results

68.3% (n=200) of students were certain of their career plans. While 79.2% (n=232) intended to commence intern training in Ireland, 20.8% (n=61) planned to train abroad, take a break or leave medicine. After internship, 42.7% (n=125) intended to enter speciality training in Ireland. Overall, 58.4% (n=171) planned to emigrate; however, 68.3% (n=117) intended to return. 41.8% (n=122) were satisfied with a career in the HSE. 94% (n=275) felt adequately prepared for safe clinical practice.

Discussion/Conclusion

Emigration appears to represent a stage of career development rather than permanent workforce loss, though addressing working conditions remains important for long-term retention.

Article title: Quality of Life Assessment Following Bariatric/Metabolic Surgery: Evaluating Mental and Physical Health Outcomes

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Aim

Obesity is a global epidemic with major physical and psychological consequences. Metabolic bariatric surgery (MBS) is the most effective treatment for severe obesity, with nearly 800,000 procedures performed annually. Beyond metabolic improvements, MBS has been shown to reduce depression, anxiety, and disordered eating. However, no standardized tool exists to evaluate mental health outcomes post-MBS. This study examines the translational potential of a quality of life (QoL) instrument tailored to capture these effects.

Methods

We conducted a prospective cohort study of patients undergoing MBS between January 2017 and June 2025 at our hospital. Participants completed a QoL assessment of mental and physical health preoperatively and at 12 months postoperatively. Clinical data were extracted from institutional records.

Results

Of 100 patients enrolled, 92 were eligible for telephone follow-ups and 51 completed both pre- and postoperative QoL questionnaires. Total QoL scores improved significantly after MBS (Before: $M = 28.1$, $SD = 1.2$; After: $M = 66.6$, $SD = 1.9$; $t(50) = 45.8$, $p < 0.001$, two-tailed). Improvements were observed across all domains, including physical functioning (27.9 to 69.2), role-physical (23.7 to 70.6), vitality (26.6 to 61.2), and mental health (29.8 to 62.4), all $p < 0.001$, confirming broad postoperative QoL gains.

Conclusion

This pilot study indicates that the modified QoL questionnaire, supplemented with novel mental health-specific items, effectively captures improvements in depression, anxiety, body dysmorphism, and stigma among bariatric surgery patients. Notably, it also detects less common but clinically significant issues, such as new-onset alcohol misuse and compulsive behaviours, that are often overlooked in routine follow-up. Although limited by its small, single-centre cohort and exploratory design, these findings underscore the importance of

incorporating comprehensive mental health monitoring into post-MBS care. Larger multicentre studies are warranted to validate and expand upon these results.

Funding: This study was supported by the Health Research Board, Summer Student Scholarship (SS) 2025.

Article title: From Referral to Disposition: Quantifying the Service Burden of Spinal Metastasis in a Single Institution

Authors:

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Aim

To quantify the service burden of spinal metastasis referrals to a single orthopaedic institution over a nine-month period.

Methods

A retrospective review was conducted of all spinal metastasis referrals between 1 January and 15 September 2025. Data collected included demographics, tumour type, referral source, fracture or neurological deficit at referral, MDT discussion, and need for surgery.

Results

Over the study period, a total of 26 referrals specifically related to spinal metastasis were made. 17 cases were initially discussed with the in-house spinal consultant, representing 6% of all spinal cases discussed during this timeframe.

The mean patient age was 72 years. The majority of referrals originated from Oncology (61.5%, n=16), followed by Haematology (15.4%, n=4). The most common primary tumours were breast (n=5), colorectal (n=4), lung (n=4), and multiple myeloma (n=4). In 6 cases, the primary diagnosis was unknown at referral, and a further 6 patients required additional imaging prior to definitive management planning.

Nearly half of referred patients (46.2%, n=12) had a pathological fracture at presentation, and 8 patients had a documented neurological deficit. Prognosis was not documented in any referral.

Regarding service throughput, 9 patients required formal discussion at the Spinal Metastasis MDT held at the National Spinal Injuries Unit. 3 patients required transfer for surgical intervention and radiotherapy was recommended in 11 cases.

Discussion

Spinal metastasis referrals place a substantial burden on orthopaedic services, with significant demands on imaging and resources. We found both referring and subsequent

reporting of spinal metastasis to be highly heterogenous. Our findings highlight the need for streamlined referral pathways to ensure timely and accurate, guideline-concordant care.

Article title: Obesity and Cancer in the UAE: A Systematic Review of Lifestyle Factors and Cancer Risk

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Aim

The prevalence of obesity continues to rise across all age groups in the United Arab Emirates (UAE), making it an emerging public health issue [1]. Evidence also shows that obesity is increasingly associated with a higher risk of cancer. However, little is known about the relationship between obesity and cancer in the UAE. Therefore, this systematic review investigates the existing research on this association within the UAE population.

Method

This review follows Preferred Reporting Items for Systematic reviews and Meta-Analyses (PRISMA) guidelines, with searches carried out in PubMed and Google Scholar. Out of 33 identified articles, 22 were included according to predefined inclusion and exclusion criteria. Overall, the findings consistently indicate that obesity increases the risk of several cancers, especially colorectal, and gut related cancers.

Results

According to these studies, obesity increases cancer risk by 1.5-2.5 times, with a 60% higher risk of breast cancer among obese women. There is a relation between hormonal imbalances, especially excess estrogen in postmenopausal women, insulin resistance, and chronic systemic inflammation that contributes to carcinogenesis and tumor progression. These findings emphasize the importance of public education and early cancer screening.

Discussion

Overall, this research strongly encourages immediate action focused on obesity prevention, early cancer screening, and targeted prevention initiatives in the UAE. It calls on health authorities, policymakers, and communities to implement wide-reaching awareness campaigns, promote lifestyle modification programs, and improve healthcare accessibility to actively reduce obesity and the associated cancer burden.

References:

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Article title: A scoping review: How does the brain form internal models of the body, and why does this model exclude detailed anatomical knowledge of the brain?

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Aim

To map empirical and theoretical literature on the formation and modification of internal body models and synthesise explanations for the absence of explicit brain anatomy within these models.

Methods

The Arksey and O'Malley scoping review framework was applied. Systematic searches of PubMed/MEDLINE, Embase and APA PsycInfo identified literature on body schema, agency and predictive processing. Screening and extraction were conducted using Covidence. A PRISMA flow diagram documented selection.

Results

Five domains were identified: motor forward models; multisensory body ownership; interoceptive/homeostatic prediction; spatial self-location; and minimal selfhood theories. Across domains, explanations for absent brain anatomy emphasised limited sensory access to neural tissue, prioritisation of control-relevant variables, representational economy and functional constraints of minimal self-models.

Discussion

Internal body models are predictive, multisensory and task-oriented. Their exclusion of detailed brain anatomy reflects sensory, computational and functional constraints shaping minimal embodied self-representation.

Article title: Investigating Mitochondrial Function & Gene Expression of Endothelial Colony-Forming Cells (ECFCs) in Diabetic Chronic Limb-Threatening Ischemia (CLTI)

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Aim

To investigate mitochondrial networking, gene expression, and oxidative phosphorylation in endothelial colony-forming cells (ECFCs) from diabetic chronic limb-threatening ischemia (DM-CLTI) patients compared with age-matched controls (AMC).

Methods

Mitochondrial morphology was assessed using MitoTracker staining. Expression of NDUFA6, CYCS, and TOMM40 was quantified using validated qRT-PCR primers. Oxidative phosphorylation was measured using the Seahorse XF Mito Stress Test under optimised conditions (30,000 cells/well; 2µM oligomycin; 2.5µM FCCP; 1µM rotenone; 30-minute incubation at 37°C).

Results

DM ECFCs demonstrated reduced mitochondrial number per cell, while CLTI ECFCs showed increased branch length, indicating altered network dynamics. Primer validation confirmed efficient, specific amplification of NDUFA6, CYCS, and TOMM40. Under optimised Seahorse conditions, DM-CLTI ECFCs exhibited increased FCCP-driven maximal respiration compared with AMCs, suggesting enhanced spare respiratory capacity and electron transport chain activity.

Discussion/Conclusion

Preliminary findings (N=2 donors per group) indicate increased maximal respiratory capacity in DM-CLTI ECFCs, consistent with compensatory mitochondrial adaptation to metabolic and ischemic stress. Expansion to N≥3 per group is required to enable statistical analysis and confirm differential bioenergetic and gene expression patterns.

Article title: Improving Pericardial Effusion Sizing on Echocardiography

Authors:

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Aims

Transthoracic echocardiography is the primary tool for assessing the pericardial space. The 2025 ESC guidelines recommend semi-qualitative effusion sizing (mild to large) based on linear dimensions, but the correlation with actual effusion volume remains unclear. This study evaluated the accuracy of linear and 2D-based echocardiographic measures in estimating pericardial fluid volume.

Methods

We retrospectively analyzed 199 patients who underwent echocardiography immediately before pericardiocentesis. Exclusions included cases of perforation, active bleeding, or incomplete fluid drainage. Blinded measurements included: 1) linear effusion diameter at end-diastole; 2) area tracings from parasternal long and short axes; and 3) 2D volumetric estimates from apical 4-chamber using Simpson's method. Effusion area/volume was calculated by subtracting epicardial from pericardial tracings.

Results

Median drained pericardial fluid volume was 550 mL (IQR 375–825; range 95–4300). Linear dimensions ranged 7–84 mm (median 22), classifying 5 small, 65 moderate, 52 large, and 77 very large effusions. Both linear dimensions ($R^2=0.53$; RMSE=339.7) and area tracings ($R^2=0.52$; ; RMSE=348.6) correlated with true volumes, but Simpson's method yielded strongest correlation ($R^2=0.84$; RMSE=195.0). Volumetric categorization of pericardial effusion size using the Simpson's method improved the agreement (Kappa=0.74) compared to physician estimates (Kappa=0.35) or linear-based estimates (Kappa=0.25).

Discussion

2D echocardiographic volumetric estimation using Simpson's method provides a simple and accurate approach to quantify pericardial effusion, potentially enhancing the serial assessment of pericardial effusions.

Article title: Examining Expression of C-type Lectin Receptors in Remyelinating Murine Spinal Cord Lesions

Authors:

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Aim

Multiple sclerosis is a demyelinating disease, however there are no therapies that promote remyelination. Microglia are thought to contribute to repair, yet the mechanism of this remains unclear. C-type lectin receptors (CLRs), including Dectin-1, Dectin-2 and Mincle, may influence microglial signalling. It is hypothesised that CLRs are expressed in the remyelinating spinal cord.

Methods

CLR expression was assessed in wild-type and CLR-triple-knockout mice after lysolecithin-induced demyelination. Spinal cords collected at 5 and 14 days post-lesion (dpl) underwent immunohistochemistry for DAPI, Iba1 (microglia) and CLR markers to compare inflammatory (5dpl) and regenerative (14dpl) phases. Fluorescence microscopy with blinded ImageJ quantification was performed.

Results

At 5 dpl, Dectin-1 was expressed by Iba1⁺ microglia in wild-type and absent in triple-knockout ($p < 0.001$), confirming antibody specificity and gene deletion. 90% of Dectin-1⁺ cells co-expressed Iba1, indicating microglial specificity ($p < 0.001$). At 14 dpl, Dectin-1 expression persisted in wild-type, with 75% of Iba1⁺ cells remaining Dectin-1⁺ ($p < 0.001$), while triple-knockout showed complete loss of expression ($p < 0.001$). This suggests a role for Dectin-1 in inflammation and early repair. Dectin-2 could not be detected, and Mincle produced weak signal, requiring further validation.

Discussion

Dectin-1 is microglia-specific and present at both time points, suggesting remyelination potential.

Article title: Examining the potential for the combinatorial endothelial colony forming cells and mesenchymal stromal cells therapy for chronic limb-threatening ischemia

Authors:

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Aim

To assess the angiogenic capacity of Endothelial Colony Forming Cells (ECFCs), which contribute to blood vessel formation, using conditioned media derived from Mesenchymal Stromal Cells (MSCs), which are pro-angiogenic and immunomodulatory cells with therapeutic potential, and to evaluate their therapeutic potential for patients with chronic limb-threatening ischaemia (CLTI) using scratch wound and 2D Matrigel tubulogenesis assays.

Methods

Conditioned media were harvested from MSCs grown in serum-containing and serum-free α -MEM under normoxia and hypoxia. The scratch wound assay was performed by seeding ECFCs in 96-well plates, creating a wound, and culturing them in EGM2, α -MEM, and conditioned media. Wound closure was assessed across various timepoints. The Matrigel assay involved seeding ECFCs with above media onto Matrigel and assessing tubulogenesis after 18 hours.

Results

ECFCs showed no significant difference in wound closure in MSC conditioned media. In the Matrigel assay, MSC conditioned media displayed a suggested increase in ECFC tubulogenesis.

Discussion/Conclusion

MSC conditioned media supplemented with FBS may promote ECFC tubulogenic activity without affecting wound closure, suggesting it can stimulate ECFC tube formation. This supports combining ECFCs and MSCs as a therapeutic option for patients with CLTI. Future work will increase the sample size to allow statistical validation of the scratch wound and Matrigel assays.

**Article title: Pioneering ICD-10 Implementation in Irish Emergency Departments:
Enhancing Visibility, Resourcing and Strategic Planning**

Authors:

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Author affiliations:

1. University College Cork, Ireland
2. Cork University Hospital, Ireland

Aim

Emergency Departments (EDs) in Ireland often lack consistent, coded diagnostic data, limiting their ability to understand case mix, secure appropriate funding, and plan services strategically. ICD-10-AM coding at the point of diagnosis offers a solution but is rarely embedded in ED workflows. This project aimed to implement real-time ICD-10-AM coding using a custom-built diagnosis lookup system supported by education and staffing.

Methods

A bespoke IT tool was developed incorporating over 1,400 common ED diagnoses mapped to ICD-10-AM codes. Two dedicated medical students were assigned to deliver on-the-floor training, support clinicians with system use, and troubleshoot issues in real time. A series of four audits was conducted over a 6-week period to monitor compliance and identify barriers. Findings were fed back into iterative education and workflow adjustments.

Results

Initial compliance with diagnostic coding was 38%. Within three weeks of implementation, this rose to 98%. Audits highlighted common issues: low engagement from locum staff, failure to capture diagnoses in patients referred to inpatient teams, and inclusion of self-discharged patients. These were addressed through targeted interventions. A final audit following full implementation demonstrated sustained high compliance (X%, pending final data). Diagnostic coding data is now being used locally to inform service planning and resource requests.

Conclusion

A multifaceted implementation strategy — combining a custom IT tool, dedicated support staff, and targeted education — resulted in a rapid and sustained improvement in ICD-10-AM coding compliance in an Irish ED. This enhanced diagnostic visibility strengthens local service planning and provides a reproducible model for national scale-up.

Article title: FLAG-Ida-Venetoclax in induction and consolidation chemotherapy in newly diagnosed and relapsed or refractory acute myeloid leukaemia

Authors:

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Aim

Relapse risk and refractory disease remains a challenge in acute myeloid leukaemia (AML). Clinical trials have demonstrated efficacy and safety with the addition of venetoclax to current intensive chemotherapy regimens. This study aims to evaluate both the efficacy and tolerability of FLAG-Ida+venetoclax in routine clinical practice at Cork University Hospital.

Methods

A retrospective chart review was conducted at CUH for adult patients with newly diagnosed (ND) and relapsed/refractory (R/R) AML treated between May 2021 and August 2025. Patients treated with at least one cycle of FLAG-Ida with the addition of 7-14 days venetoclax were included. Efficacy and safety outcomes were collected, and overall (OS) and progression-free-survival (PFS) were estimated using the Kaplan-Meier method, comparison via the log-rank test.

Results

31 patients were included in the study, 21 in the ND cohort and 10 in the R/R cohort. 86% of the ND and 80% of the R/R cohort achieved complete remission post cycle-1. Kaplan-Meier 12 month estimated OS was 85% and 50% in the ND and R/R cohort respectively. Additionally, PFS was 78% in the ND and 50% in the R/R cohort.

Discussion

FLAG-IDA combined with venetoclax represents an effective strategy in intensive chemotherapy in both newly diagnosed and relapsed/refractory patients with AML.

Article title: Retina as a Window to Alzheimer's Disease

Authors:

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3. Affiliation of Third author: The University of Edinburgh, Edinburgh, United Kingdom
4. Affiliation of Fourth Author: The University of Alabama at Birmingham, US

Aim

Investigate associations between retinal changes and genetic risk in preclinical Alzheimer's Disease. Examine the influence of age, sex, smoking and vascular risk on retinal changes. This research addresses the unmet need for non-invasive, early detection of Alzheimer's disease by evaluating the retina for preclinical pathology. It examines whether genetic risk factors are associated with retinal changes, supporting earlier diagnosis.

Methods

Participants aged ≥ 60 from the Deep and Frequent Phenotyping study were assigned to prodromal AD or control groups (4:1). Optical Coherence Tomography images were assessed for retinal nerve-fibre layer (RNFL) changes using Heidelberg Eye Explorer. Ultra-Widefield images were analysed for vascular changes using VAMPIRE software. Poor-quality images were excluded. Statistical analysis of retinal changes and genetic risk performed using SPSS. By comparing the created exposure variable against retinal parameters. A P-Value < 0.05 was considered statistically significant.

Results

RNFL thickness declined with age ($P < 0.001$). Sex and smoking significantly affected vascular changes ($P < 0.05$). Higher genetic risk linked to increased RNFL thickness ($P = 0.026$) and reduced vascular complexity ($P < 0.001$). FH influenced RNFL thickness ($P = 0.027$), APOE4 and FH affected vascular changes ($P < 0.05$).

Discussion

Retinal structure and vasculature in preclinical AD were influenced by genetic factors, age, sex and smoking status. Findings support the potential use of retinal imaging and individual risk profiles as a non-invasive method for early AD biomarker development.

Article title: Perioperative considerations for adult populations undergoing general anesthesia while undergoing ketamine treatment

Authors:

K. Boyle¹, S. Dakilic¹

Author affiliations:

Trinity College Dublin, School of Medicine

Aim

Ketamine is increasingly used to treat treatment-resistant depression, PTSD, and chronic pain (Schak et al., 2019; McIntyer et al., 2020). Perioperative teams frequently encounter patients with ongoing NMDA receptor modulation. This review evaluates the anesthetic implications and management considerations for this population. This study aims to evaluate the perioperative implications of ongoing ketamine therapy in adults and identify key considerations for safe anesthetic management, thereby addressing the clinical uncertainty surrounding anesthetic dosing, hemodynamic stability, and postoperative neuropsychiatric outcomes.

Methods

A systematic scoping review (2015–2025) was conducted per PRISMA guidelines using PubMed, Embase, and Cochrane databases. The study focused on adults receiving therapeutic ketamine undergoing unrelated surgeries, excluding recreational use and pediatric cases.

Results

The literature consistently reports adults receiving ketamine therapy may demonstrate altered anesthetic requirements, including induction agent tolerance and unpredictable dissociative synergy. Cardiovascular responses vary from sympathomimetic-linked hypertension and tachycardia to reduced sensitivity, suggesting receptor desensitization. Intraoperative variability is exacerbated by psychotropic polypharmacy. (Andrade, 2017; Dadiomoc et al., 2019; Zanos & Gould, 2018).

Discussion

Current evidence necessitates personalized perioperative planning for ketamine therapy via customized dosing, vigilant monitoring, and interdisciplinary communication. The lack of standardized guidelines emphasizes the need for future research.

Article title: A systematic review on Deep Brain Stimulation (DBS) for transdiagnostic restrictive and repetitive behaviours (RRBs)

Authors:

K. Boyle¹, S. Dakilic¹

Author affiliations:

Trinity College Dublin, School of Medicine

Aim

Restrictive and repetitive behaviors (RRBs) are core, disabling symptoms across multiple neuropsychiatric disorders, including autism spectrum disorder(ASD), obsessive-compulsive disorder(OCD), and Tourette's syndrome(TS). Aligned with the Research Domain Criteria(RDoC), this review evaluates the clinical utility of deep brain stimulation(DBS) as a transdiagnostic, circuit-based intervention for RRBs. (Denys et al., 2020).

Methods

Following PRISMA guidelines, we systematically reviewed literature from 2015 to 2025 regarding DBS in adults presenting with RRBs, including OCD, restrictive eating disorders(ED), ASD, trichotillomania, and TS. Of 1,246 records screened, 32 studies (n=36 patients) provided quantifiable behavioral metrics (Robbins et al., 2017).

Results

Results demonstrated moderate-to-large symptom reductions across RRB pathologies. Standardized mean differences(SMD) were significant for OCD (1.1), ASD-related self-injury (1.3), TS (0.9), trichotillomania (0.8), and ED (0.7).

Discussion

Across RRB disorders, DBS produced consistent clinically meaningful behavioral improvements, supporting RDoC's conceptualization of compulsivity and RRB-centric neuromodulation as a transdiagnostic treatment model and target. Although there is heterogeneity in the outcome measures and targets for DBS, the converging effect sizes suggest that DBS modulates shared circuits that underlie RRBs. Future studies should incorporate a unified RRB-specific measure to enable formal meta-analyses across diagnosis categories.

Article title: Speed Versus Sensitivity: Evaluating Direct quantitative Polymerase Chain Reaction for the Detection of Key Respiratory Pathogens in Paediatric Cystic Fibrosis Patients

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Aim

Culture-based methods remain the gold-standard for pathogen detection in cystic fibrosis (CF) individuals. Quantitative real-time PCR (qPCR) offers earlier detection for scant colony counts, but it requires prior DNA extraction. This study aimed to compare direct qPCR (without DNA extraction) to real-time qPCR (with DNA extraction) and culture in detecting key respiratory pathogens (*Pseudomonas aeruginosa* [PA], *Haemophilus influenza* [HIF] and *Staphylococcus aureus* [SA]) in sputum samples from paediatric CF individuals.

Methods

Sputum samples (n=79) were collected from paediatric CF patients at Galway University Hospital, each sample was aliquoted into 3 aliquots (culture, real-time qPCR and direct qPCR). McNemar's test assessed differences in detection rates, and Spearman's correlation evaluated associations between qPCR copy numbers.

Results

PA, HIF and SA were detected in 0, 2 and 15 samples; respectively. Overall, 16 (20%) samples tested positive for PA, 35 (44%) for HIF, and 16 (20%) for SA using real-time qPCR. Using direct qPCR, 29 (83%) samples were positive for HIF and 9 (56%) for SA, and none for PA. Detection rates showed significant statistical difference, while qPCR methods found no significant statistical correlation.

Conclusion

Extraction-free qPCR lacks sufficient sensitivity for this study. Accurate detection necessitates DNA-extracted real-time qPCR. Future optimization may enable rapid, reliable testing.

Article title: Presynaptic Spinal Reflex Modulation in Children and Adolescents

Authors:

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Aim

Children with neurodevelopmental disorders like Cerebral Palsy (CP) show improperly developed motor responses including hyperreflexia and spasticity, impacting their quality of life. Findings in adults with spinal cord injuries (SCI) implicate changes in primary afferent depolarization (PAD), a GABA-A dependent modality of presynaptic modulation of motor activity as partly responsible for these effects. Presynaptic reflex modulation in childhood and adolescence, as compared to adulthood, is understudied, with little to no research on younger populations reflecting updated findings on the role played by GABAergic interneurons in facilitating reflexes via PAD and in post-activation depression.

Methods

A cross-section study compared measures of PAD-mediated reflex excitability in neurologically healthy children and adolescents (n=13, aged 8-17) with that in adults (n=9, aged 24-31) using surface EMG investigations. Soleus muscle H-reflex facilitation following tonic PAD induction via cutaneous and sub-motor threshold flexor-afferent stimulation, and post-activation depression from rate-dependent depression and supra-motor threshold flexor-afferent conditioning, were tested.

Results

Reflex facilitation and suppression in children and adolescents, reflecting excitability, resembled previous findings from neurologically healthy adults, with post-activation depression following rate-dependent depression, and trends indicating tonic PAD build-up following cutaneous conditioning. More reflex facilitation following cutaneous conditioning was observed in children than adults. Differences between children and adults following these specific post-activation depression protocols were not statistically significant.

Discussion

Investigations on intervention efficacy in young populations need to be appropriately adjusted to assess reflex development in paediatric stages. Our findings have implications

for future research on how interventions for adults with CNS injuries can be more appropriately adapted for children and adolescents with neurodevelopmental disorders affecting motor function.

Article title: Paediatric Spine Surgery in Ireland: A Five-Year Review of System Change and Emerging Requirements

Authors:

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Aim

Paediatric spine and neurosurgical services in Ireland have undergone targeted investment and service reorganisation over the past five years. Nonetheless, waiting lists for spinal procedures remain significantly above clinical targets, affecting functional outcomes and family wellbeing. We synthesise recent national reports, audits, and service updates to evaluate progress, persistent barriers, and future needs in paediatric spine surgery in Ireland.

Methods

A retrospective narrative review of grey literature was conducted, including Health Service Executive (HSE) updates, Children's Health Ireland (CHI) activity reports, National Treatment Purchase Fund (NTPF) data, Department of Health communications, Oireachtas committee proceedings, and media reporting from 2020–2025. Sources were screened for information on surgical capacity, waiting list trends, multidisciplinary care, perioperative resources, and service performance indicators.

Results

Capacity-building initiatives have contributed to increased surgical volumes and reductions in active waitlist sizes, reflecting targeted efforts to increase throughput. However, paediatric spine waiting lists remain above recommended timelines, with several hundred children awaiting assessment or surgery. Limited protected theatre time and specialist recruitment gaps continue to constrain capacity.

Discussion

While national coordination and capacity expansion has achieved meaningful progress, unmet need remains substantial. Future priorities include protected paediatric theatre time, sustainable consultant recruitment, enhanced rehabilitation pathways, and a fully resourced national paediatric spine strategy to improve equity and timeliness of care.

Article title: Public Attitudes Towards Male Postnatal Depression on X: A Mixed-Methods Sentiment Analysis

Author:

A. Parvez

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University of Galway

Aim

This paper aimed to examine public perception of male postnatal depression (MPND) on X and assess whether fathers' fears of stigma and judgment are reflected in public discourse.

Methods

A mixed-methods approach was used, combining computational sentiment analysis with thematic analysis. Tweets published between 2020 and 2024 containing keywords related to MPND were collected through X's advanced search, yielding 451 tweets. Sentiment was analysed using VADER and the Twitter-Roberta-Base-Sentiment-Latest model. Thematic coding, using inductive and deductive methods, organized tweets into six themes: stigma, expectation of rejection, cultural norms and masculinity, support and advocacy, media influence, and intimacy and relationships.

Results

Support and Advocacy was the largest theme (144 tweets) and showed the highest positive sentiment (+0.190). Expectation of Rejection was the most negative (−0.295), reflecting frequent dismissal of MPND. Cultural Norms and Masculinity (−0.033), Media Influence (+0.060), and Intimacy and Relationships (−0.050) showed ambivalent perceptions. Although negative tweets were most common (265 tweets), overall sentiment was neutral (+0.150) because positive tweets, though the fewest (82), had the strongest score (+0.611). Sentiment models showed 75% confidence.

Discussion/Conclusion

Public perception of male postnatal depression (MPND) on social media is ambivalent, driven by polarized attitudes rather than indifference. While stigma and expectations of rejection remain prominent, strong supportive responses indicate that fathers may encounter more understanding than anticipated. However, persistent gender norms continue to limit recognition of male vulnerability, and many acknowledge paternal distress while rejecting the legitimacy of the term “postnatal depression” for men. These findings

highlight the need for improved public education, inclusive screening practices, and greater clinical recognition of paternal postnatal mental health.

Article title: Early Intervention Matters: A National Retrospective Analysis of Pre-EMS Defibrillation and Community Response in Irish Out-of-Hospital Cardiac Arrest from 2021–2024

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Aim

Examine trends in bystander CPR and defibrillation for out-of-hospital cardiac arrest (OHCA) incidents in Ireland from 2021–2024 and assess associations with patient survival to hospital discharge.

Methods

Analysis was conducted on 10,075 non-EMS-witnessed OHCA incidents from 2021–2024, stratified by bystander CPR, bystander defibrillation and survival outcomes. Trends in bystander intervention and patient survival were evaluated using the Cochran–Armitage Trend Test, and yearly crude survival rates between pre-EMS and EMS defibrillation groups were assessed using chi-square tests.

Results

Survivor exposure to bystander CPR showed a non-significant upward trend ($Z = 1.95$, $p = 0.052$). Whereas, attempted pre-EMS defibrillation rates increased significantly ($Z = 5.40$, $p < 0.00001$), and the proportion of survivors receiving bystander defibrillation demonstrated a significant increase ($Z = 2.05$, $p = 0.041$). Patients receiving pre-EMS defibrillation consistently had higher crude survival rates than those receiving EMS defibrillation, including in 2024 ($\chi^2 = 33.89$, $p < 10^{-8}$).

Discussion / conclusion

Findings indicate meaningful improvements in Ireland's community OHCA response from 2021–2024, with increasing early defibrillation rates and significant associations with survival. However, most patients still do not receive pre-EMS defibrillation, highlighting the need for national expansion of AED accessibility and public training to further improve cardiac arrest outcomes in Ireland.

Article title: Pilot study assessing the utilisation of the MyTeleDiary app for idiopathic pulmonary fibrosis

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Aim

IPF patients experience a high symptom burden and treatment side effects, increasing the importance of self-management. Aims were to evaluate user satisfaction with MyTeleDiary, designed for health education, symptom tracking and data sharing to enhance consultations and facilitate timely interventions.

Methods

Patients were invited by specialist nurses. Patient and ILD nurse satisfaction via questionnaire and app activity levels were analysed.

Results

The age of users was 60-80. Initial app engagement was high, with 80% feeling positive when introduced. Symptom tracking activity in the first month: 62% were active 1 day per week. 67% reported improved understanding and management of their condition. 63% improved communication and consultations with their clinical team. 70% valued the educational videos. 77% would recommend the app. 69% experienced few technical issues. Reported barriers included illness and limited digital confidence.

Discussion

Users reported strong acceptance and the potential to enhance health education, self-management, and communication with their healthcare team.

Article title: Culinary nutrition interventions for those living with and beyond cancer and their support networks: A Systematic Review

Authors:

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Aim

Cancer patients and survivors can experience changes in dietary habits and well-being, and many seek evidence-based and practical nutritional advice. Culinary nutrition interventions are more effective than education alone because they merge nutrition knowledge with practical cooking skills. Participants show improved diet, meal planning, and social connectedness. This study reviews the impact of culinary nutrition interventions on dietary intake, psychosocial and health-related outcomes, anthropometric measures, laboratory markers, and feasibility, among those living with or beyond cancer.

Methods

Following PRISMA guidelines, 18 studies were identified across PubMed, Scopus, EMBASE, CINAHL, and Web of Science. Eligibility criteria included randomised and non-randomised trials published from 2015 onwards, in English, with a culinary component, for cancer patients/survivors and their supports.

Results

Improvements were noted in dietary intake, quality of life, mental health, self-efficacy, symptom management, selected anthropometric measures, and some metabolic biomarkers. Qualitative results demonstrated that interventions were highly acceptable, with a desire for interactivity and individualisation. Many studies had a high bias risk due to potential confounding and reliance on self-reported outcome measures.

Discussion

The evidence suggests that culinary interventions are effective in supporting those living with and beyond cancer; however, heterogeneity across interventions and outcomes limited effect quantification. Future interventions should include larger sample sizes, standardised

outcome measures, lowered bias risk, and be interactive and individualised to enhance efficacy.

This systematic review was funded by the RCSI Research Summer School Fund.

Article title: Assessing patient-reported experiences in the cardiac catheterization lab (PATCATH): A comparison between patients with and without coronary revascularization

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3. Dr. Himanshu Rai, PhD, FESC, Director, Imaging Core Laboratory, Cardiovascular Research Institute Dublin (CVRI), Royal College of Surgeons in Ireland, Dublin, Ireland

Aim

This study aimed to evaluate whether prior coronary revascularization (PCI or CABG) influences patient-reported experiences in the cardiac catheterization laboratory using the PATCATH questionnaire.

Methods

A cross-sectional survey was conducted at the Mater Private Hospital between January 6 and February 6, 2025. The validated PATCATH questionnaire was randomly distributed to 149 patients undergoing coronary angiography or PCI.

Of these, 53 (35.6%) had a history of prior revascularization, while 96 (64.4%) were first-time patients. The questionnaire assessed pre-, intra-, and post-procedural experiences.

Participation was voluntary and anonymous. Statistical comparisons between groups were performed using one-way ANOVA.

Results

Among 149 respondents, 120 (80.5%) were male. Coronary angiography was performed in 126 patients (84.6%), PCI in 20 (13.4%), and both procedures in 3 (2.0%). Patients with prior revascularization consistently demonstrated higher proportions of “strongly agree” responses in the pre- and intra-procedural domains. In the post-procedural domain, gaps were noted across both groups, with lower agreement rates related to understanding lifestyle modifications and medication duration.

Discussion/Conclusion

These findings mirror earlier PATCATH results, where disparity in post-procedural comprehension across both groups highlights a consistent communication gap. These

findings support the need for structured and targeted discharge education strategies to enhance patient understanding and long-term cardiovascular outcomes.

Article title: Optimization of Smooth Muscle Cell Proliferation, Cell Migration and Modulation of NOTCH Signalling in the Context of CADASIL

Authors:

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Aim

Cerebral autosomal-dominant arteriopathy with subcortical infarcts and leukoencephalopathy (CADASIL) is caused by a pathogenic variant in the NOTCH3 gene, causing an unpaired cysteine residue and ultimately loss of vascular smooth muscle cells (SMCs) and weakening cerebral arteries. NOTCH signalling is essential for SMC function and depends on γ -secretase-mediated cleavage of NOTCH receptors. Angiotensin-II and PDGF-BB influence SMC proliferation and migration. The aim of this research was a) investigate the effect of NOTCH inhibition using DAPT a γ -secretase inhibitor on cell proliferation and migration of human aortic smooth muscle cells (HAoSMCs) and b) investigate the effects of Angiotensin-II and DAPT on NOTCH3 protein levels.

Methods

Mitomycin-C inhibited HAoSMC proliferation and allowed observation of cell migration. Proliferation and migration assays were conducted investigating DAPT +/-PDGF. HAoSMCs were treated with DAPT, Angiotensin II, or combination and NOTCH3 protein expression was analyzed by Western blotting.

Results

Mitomycin-C was found to be an effective inhibitor of proliferation and migration of HAoSMCs. Treatment with DAPT demonstrated a trend toward reduced HAoSMC proliferation and migration, with no dose-dependent effect. Co-treatment with PDGF partially reversed the DAPT-induced reduction in confluency. NOTCH3 was detected by Western blot but results were inconclusive.

Discussion

Established migration and proliferation assays with HAoSMCs, will enable future studies on cells from patients with CADASIL.

We would like to acknowledge the UCD School of Medicine for providing funding for this project.

Article title: TrkB Activation Enhances Contextual but Not Spatial Memory in an Alzheimer's Mouse Model

Authors:

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Aim

Alzheimer's disease (AD) is associated with early dysfunction in the retrosplenial cortex (RSC), which supports spatial and contextual memory, and impaired TrkB signalling linked to synaptic loss. This pilot study examined whether activating TrkB with the agonist ENT-A061 improves memory performance and modulates RSC activity in an AD mouse model.

Methods

Sixteen 12-month-old male APP^{NL-G-F} and wild-type mice received ENT-A061 or vehicle (n = 3–5/group). Mice completed object-place learning (OPL) and contextual fear conditioning (cFC). Memory was assessed using object discrimination and freezing behaviour, and RSC activity was recorded with in vivo calcium imaging. Data were analysed using mixed-effects models and Spearman's correlations.

Results

Treated mice showed increased freezing behaviour ($\beta = 1.10$, $p < 0.001$), higher RSC activity ($\beta = 25.83$, $p = 0.0003$), and stable ensemble patterns ($p = 0.48$, $p < 0.001$) in cFC. No group showed improved spatial memory. APP⁺ mice displayed reduced object discrimination ($\beta = -2.85$, $p = 0.01$) and increased RSC activity at the familiar object ($\beta = 2.33$, $p = 0.01$).

Discussion/Conclusion

ENT-A061 enhanced contextual but not spatial memory in APP^{NL-G-F} mice, suggesting task-specific modulation of RSC circuits via TrkB signalling, while the absence of spatial improvement may reflect limited sensitivity of the OPL task.

Article title: Lung Transplantation for Interstitial Lung Diseases in Northern Ireland: A retrospective cohort study

Authors:

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Aim

Timely and optimal referral for lung transplant (LTx) is critical. This study aimed to analyse ILD LTx referral outcomes in Northern Ireland (NI) and identify patient-related factors associated with successful LTx outcomes.

Methods

A retrospective review of ILD LTx referrals from five NI healthcare trusts between January 2014 and March 2024 was conducted. Data was extracted from electronic patient records (ECR) and statistically analysed.

Results

Among 138 referrals (64.5% male; mean age 58), idiopathic pulmonary fibrosis was most common, 61 (44.2%). Mean comorbidity count was 2.9. Mean forced vital capacity 62% and transfer factor 43.6%. 75 (54.4%) required antifibrotics and 109 (79%) required oxygen. All patients were seen in a satellite transplant clinic. 68 (49.3%) assessment unsuitable, mainly due to age and comorbidities. 64 (46.4%) accepted for in-patient transplant assessment. Of those accepted (64), 28 (43.8%) declined and died prior to detailed assessment and 28 (43.8%) were LTx listed. Of these 28, 11 (39.3%) were transplanted, 14 (50%) died on waiting list and 3 (10.7%) remain alive on waitlist.

Discussion

High mortality before in-patient assessment suggests referral occurs at advanced disease stages. Half were unsuitable for assessment, highlighting the need for earlier, optimised referral. These findings aim to help clinicians identify factors optimising LTx eligibility.

Article title: Nanosponge Loaded Niclosamide Demonstrates Anticancer Potential in Adrenocortical Carcinoma Cell

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Aims

Adrenocortical carcinoma (ACC) is a rare aggressive malignancy with a mean survival of 15 months. Surgical resection remains the primary curative approach, however most patients present with metastases, where therapeutic options are limited. Our aim was to effectively load a repurposed anthelmintic drug niclosamide onto cholesterol based nanosponges and demonstrate a significant anti-cancer effect against the ACC cell lines.

Methods

Proliferation of three 2D ACC cell lines (H295R, HAC15, MUC-1) following treatment with nothing (Control), niclosamide, empty nanosponges. Or niclosamide loaded nanosponges was assessed using the xCELLigence real-time impedance platform. Cell index values were monitored for up to 96 hours, and proliferation slopes were compared between groups.

Results

Within a 24-hour period, niclosamide-loaded nanosponges reduced proliferation significantly across all cell lines in comparison to a control. (H295R $p < 0.05$. HAC-15 $p < 0.01$. MUC-1 $p < 0.05$). Notably, curves for niclosamide-loaded nanosponges exhibited a 'lagging growth phase' compared with niclosamide or nanosponges alone, consistent with successful drug loading. However overall cytotoxicity was comparable between niclosamide and nanosponge-loaded niclosamide, indicating no significant enhancement in potency within the timeframe tested ($P > 0.05$).

Discussion

This study demonstrates that niclosamide can be effectively encapsulated Within nanosponge formulations. With XCELLigence analysis indicating a consistent reduction in proliferation across three ACC cell lines. Further testing in 3D cell models and mice is needed.

Article title: Addressing the Developmental Origins of Health and Disease (DOHaD) theory: Examination of associations between a healthy lifestyle in pregnancy and offspring cord blood metabolic markers.

Authors:

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Aim

This study examined whether adherence to a composite maternal healthy lifestyle score (HLS) and its individual components during pregnancy influences neonatal metabolic health among mothers with overweight or obesity.

Methods

A total of 167 mother–child pairs from the Pregnancy Exercise and Nutrition Research Study randomised controlled trial were included. Composite healthy lifestyle scores for early and late pregnancy were generated based on diet quality, sleep duration, alcohol intake, physical activity, and smoking status. Adjusted correlation and linear regression analyses examined associations between lifestyle scores and cord blood biomarkers, including insulin, C-peptide, complement C3, C-reactive protein, IL-6, TNF- α , and lipid profiles.

Results

Not smoking in early ($B = -6.681$ mg/dl, $p < 0.001$) and late pregnancy ($B = -5.142$ mg/dl, $p = 0.003$) was linked to lower cord insulin levels. Higher diet quality and longer sleep duration were associated with lower TNF- α levels ($B = -0.163$ pg/ml, $p = 0.045$; $B = -0.034$ pg/ml, $p = 0.008$), respectively. In late pregnancy, the composite lifestyle score was inversely associated with insulin ($B = -0.83$ mg/dl, $p = 0.024$), though this association was attenuated after adjustment.

Discussion

Maternal lifestyle in pregnancy may influence neonatal biomarkers, highlighting early-life influences on the child's metabolic health and supporting the DOHaD theory.

Article title: A Retrospective Analysis of Anatomical Lung Resection Outcomes in Incidental versus Symptomatic Lung Cancer in Ireland: Evaluating the Potential Role for Screening

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Aim

Lung cancer is the leading cause of cancer related mortality in Ireland and is usually diagnosed symptomatically at an advanced stage. This study compared postoperative and survival outcomes after lobectomy for incidentally versus symptomatically detected lung cancers and assessed whether incidental detection confers survival advantage.

Methods

This retrospective single centre study included all patients undergoing lobectomy for primary lung cancer between January 2020 and December 2024. Clinical, operative and outcome data were extracted from electronic records and analysed.

Results

Among 235 patients, 43.4% presented symptomatically and 56.6% were diagnosed incidentally. Incidental cancers were predominantly stage I, while advanced stages (IIA–IIIA) were mainly symptomatic ($p<0.001$). Symptomatic patients had longer hospital stays (8.8 vs 6.8 days, $p=0.018$) and chest drain durations (mean 5.8 vs 3.5 days, $p=0.001$). Median overall survival was longer for incidental cancers (1,980 vs 1,803 days, $p=0.009$), with a 46% unadjusted reduction in mortality (hazard ratio 0.57, $p=0.015$).

Discussion

Incidental presentation identifies earlier stage disease, enabling less invasive surgery and superior unadjusted survival. After adjustment, TNM stage, rather than mode of presentation, independently predicted survival, indicating that the apparent benefit of incidental detection is mediated through stage shift. These findings support implementation of structured lung cancer screening in Ireland.

Article title: Addressing the Sexual Health Education Needs of Autistic Individuals

Authors:

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Aims

Autistic people are at increased risk of being sexually abused compared to their neurotypical peers. This risk is heightened due to characteristic difficulties/differences in interpreting and responding to social cues and a lack of sex/consent education. Autistic people have historically been excluded from sex education based on misconceptions regarding their interest or ability to understand sexual relationships, despite engaging at the same rate as the general population. The aim of this systematic review is to look at the available data on the state of current sexual consent education offered to autistic students from the students, their parents and their teachers' perspectives.

Methods

This systematic review was conducted in accordance with the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines.

Results

6414 papers were originally selected. 5012 studies were retrieved after 1309 duplicates had been removed. After screening by title and abstract, 4682 papers were excluded and 330 papers were included for full-text screening. 316 papers were excluded, and 14 were included in the review. 11 were interviews with parents of, teachers of and Autistic students, and 3 were reports on novel programs.

Discussion

Without providing adequate education, the right of disabled people to consent to sexual relationships is violated. Assuming that this information is inherently inappropriate for them is an ableist assumption that further promotes denying bodily autonomy to a historically vulnerable demographic. By better educating and resourcing parents and teachers to teach their autistic students give and receive consent, steps can be made to help reduce the numbers of autistic people subject to sexual abuse, and to empower them to have healthy romantic and/or sexual relationships.

Article title: From Bands to Bioluminescence: Demonstrating NanoLuc HiBiT as a Superior Assay for PROTAC-Mediated BRD4 Degradation

Authors:

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2. Hoshi University, Tokyo

Aim

To establish NanoLuc HiBiT as a superior platform for evaluating PROTAC-mediated protein degradation, demonstrated using trivalent PROTACs targeting BRD4.

Methods

The trivalent PROTAC 1,2,3T-EG2-MZ1 and positional isomers were synthesised following published protocols. BRD4 degradation was quantified in live cells using NanoLuc HiBiT, with MZ1 as a benchmark. Luminescence was measured across concentrations and time points, and results were compared with published Western blot data to assess sensitivity, reproducibility, and assay fidelity.

Results

HiBiT demonstrated clear, dose-dependent BRD4 degradation across all PROTACs tested. MZ1 showed the highest potency (DC_{50} 23.8 ± 0.63 nM), closely followed by 1,2,6T-EG2-MZ1 (25.57 ± 0.65 nM), confirming the importance of linker positioning. Compared to published Western blot data, HiBiT demonstrated faster, higher-resolution, and more reproducible data. Minor differences were attributed to cell line variability.

Discussion

This study confirms the successful synthesis of 1,2,5T-EG2-MeVHL and demonstrates that the NanoLuc HiBiT system reliably quantifies BRD4 degradation in live cells. The assay reproduced published potency trends, highlighting the importance of linker positioning in trivalent PROTAC design. Overall, HiBiT provides a sensitive, reproducible and efficient platform for evaluating PROTAC-mediated protein degradation representing a practical alternative to traditional Western blot analysis.

Article title: The Role of HIF-1 in the Induction of Glycolysis in Colon Cancer Cells

Author:

M. Sicic

Author affiliations:

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Aim

To investigate the mechanism of action of hypoxia inducible factor-1 (HIF-1) in the induction of glycolysis within human colon cancer cells.

Methods

Tissue culture of CaCo-2 cells using DMEM, incubator and hypoxia chamber handling, cell lysis + centrifugation, Bio-Rad DC Protein Assay, SDS-PAGE, western blotting, co-immunoprecipitation, DC protein assay. Statistical analyses were performed using a one-way ANOVA, followed by a Holm-Sidak post-hoc test.

Results

There is evidence to suggest that the expression of HIF-1 α within CaCo-2 cells is cyclical under hypoxic conditions. A t-test cut-off point of $p < 0.05$ was used to investigate this. Although the difference measured between HIF-1 α expression levels in the different cell samples is not statistically significant ($p = 0.0653$), the p-value obtained is very close to the significance threshold (0.05). Although the expression of HIF-1 α within CaCo-2 cells under hypoxia is cyclical, the data show a different pattern for the expression of key lower GEs in hypoxia, including PKM2, LDHA, ENO1, and PGAM1. The western blots and the densitometries generated suggest that their levels within cells remain constant irrespective of the amount of time spent in hypoxia (PKM2 p-value: 0.6140, LDHA p-value: 0.5295, ENO1: 0.3287, PGAM1 p-value: 0.2567). The co-immunoprecipitation studies indicate that PKM2 does not exhibit a strong interaction with LDHA; however, an apparent interaction with PGAM1 is observed during hypoxia.

Discussion

Overall, HIF1- α expression in CaCo-2 cells showed cyclic variation, suggesting a negative feedback loop mechanism in response to hypoxia, while the expression of all four GEs analysed remained constant throughout the experiment. The data also indicated that pyruvate kinase may potentially interact with PGAM1 during hypoxia and does not appear to strongly interact with LDHA under the experimental conditions.

Acknowledgements:

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Article title: Exploring gender differences in administrative burden and the use of digital health technologies in primary care: A rapid review and secondary data analysis

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Aim

To examine gender differences in administrative burden in primary care and assess whether digital health technologies reduce or reproduce gender-based inequities through a rapid review and secondary analysis of real-world evaluation data.

Methods

A rapid review of peer-reviewed literature (2010–2025) was conducted following Cochrane rapid review guidance, focusing on primary care providers and gender differences in administrative workload and digital tool use. Secondary analysis used data from the 2024 Women's College Hospital Institute for Health System Solutions and Virtual Care AI Scribe Evaluation, with gender as the primary exposure. Descriptive statistics, independent t-tests with unequal variance, and F-tests assessed mean differences and variability.

Results

Preliminary findings showed that mean time saved did not differ significantly by gender (e.g. "Time saved to do other duties": men 2.7 hours; women 3.0 hours). However, variability differed significantly, with women demonstrating greater dispersion, including both larger gains and losses.

Discussion

Based on the preliminary findings, similar mean efficiency gains can mask meaningful gender-based differences in experience. Equity-focused evaluation of digital health tools should assess distributional effects, not solely average outcomes, to avoid reinforcing existing disparities. Additional analysis and triangulation of findings from the rapid review will be conducted to further contextualize the initial results.

Article title: Reflecting on the Blue: A Retrospective Evaluation of Methylene Blue's Therapeutic Indications and Outcomes

Authors:

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Aim

This study aims to provide insights into the common indications and adverse effects associated with methylene blue (MB) administration.

Methods

This retrospective observational cohort study was conducted at Sultan Qaboos University Hospital, a tertiary care hospital in Oman, covering the period from 1/1/2014, to 1/1/2025. The study population included patients who received methylene blue during this timeframe.

Results

A total of 37 patient charts were reviewed, 25 patients met the inclusion criteria. The mean age of the cohort was 52.1 ± 19.5 years; 48% were male, and 88.5% were Omani. Most patients (76%) presented via the Emergency Department, with 42.9% triaged as category one. Methylene blue was primarily administered for shock: septic shock in 44% , cardiogenic shock in 28% , and other forms of shock in 12% . It was used for methemoglobinemia in 12% . Recorded side effects were observed in 8% . In-hospital mortality occurred in 84% of patients.

Discussion/Conclusion

Methylene blue was often administered late to critically ill patients suffering from severe multi-organ dysfunction, correlating with a high associated mortality rate. However, for toxicology-related indications, particularly methemoglobinemia, MB was associated with a very good survival rate and a low incidence of side effects. Early administration may improve outcomes, particularly in refractory vasoplegic shock.

Article title: Natural Products for Reducing Post-operative Ileus: Mechanisms, Evidence, and Emerging Roles in Surgical Recovery

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Aims

Post-operative ileus (POI) is a frequent complication following abdominal surgery, affecting up to 25% of patients undergoing elective abdominal procedures, with some studies reporting transient ileus in nearly all patients after bowel resection. POI is associated with delayed oral intake, prolonged hospitalization, increased morbidity, and substantial healthcare costs. This review evaluates current evidence on selected non-pharmacological and herbal interventions for POI prevention and management, focusing on mechanisms, efficacy, and safety.

Methods

A literature review was conducted using PubMed, Scopus, and Google Scholar. Cohort studies, randomized controlled trials, meta-analyses, and systematic reviews published in English within the last 10 years were included if they evaluated non-pharmacological or herbal interventions for postoperative ileus following abdominal surgery. Keywords included “postoperative ileus,” “gastrointestinal motility,” “coffee,” “caffeine,” “Daikenchuto,” “probiotics,” “ginger,” and “herbal medicine.”

Results

Coffee intake reduced time to first bowel movement by a mean of 10.3 hours and shortened hospital stay by 0.9 days in meta-analyses. Daikenchuto reduced paralytic ileus incidence in up to 52% of patients (214/410). Probiotics significantly shortened time to first flatus and defecation across 21 studies and reduced POI incidence. Ginger, peppermint, fennel, and chamomile demonstrated modest but consistent improvements in gastrointestinal recovery.

Discussion

Overall, non-pharmacological and herbal interventions consistently accelerated postoperative gastrointestinal recovery. These findings support their integration as adjuncts within enhanced recovery protocols. Their use may improve patient comfort, expedite discharge, and optimize postoperative care pathways.

Article title: Insights from Cancer of the Pancreas Screening-5 (CAPS-5) Study: Advancing Early Detection in High-Risk Individuals in Ireland

Author: V.C. Kaplan

Author affiliations: Michael G. Goggins¹ and Takahiro Shinozuka²

Aim

Pancreatic cancer remains a globally lethal malignancy with a five-year survival rate of under 15%.¹ In Ireland, over 600 new cases are diagnosed annually, with five-year survival rates of 9–10%.¹ Developing structured early detection in Ireland is crucial to improve survival outcomes.

Method

The Cancer of the Pancreas Screening-5 (CAPS-5) Study, coordinated by Johns Hopkins University, surveillance of high-risk individuals with strong family history or pathogenic germline mutations, using imaging and biospecimen collection for biomarker research. This report integrates peer-reviewed and institutional literature with direct research experience at Johns Hopkins Hospital, to evaluate Ireland's current early detection strategy for pancreatic cancer. PubMed and Scopus (2012–2025) literature was reviewed using MeSH terms and findings structured via PICO framework.

Results

Structured surveillance programs for high-risk individuals have been implemented in countries such as the UK (EUROPAC) and the Netherlands, offering replicable models in Ireland. Key steps include piloting a CAPS5-like program, improving risk documentation, and raising public awareness. CAPS5 reported a 73.3% survival rate, highlighting the benefit of structured surveillance.²

Discussion

Limitations in Irish literature, population risk profiles, and healthcare capacity hinder direct implementation. The CAPS5 study provides a valuable template for enhancing early detection of pancreatic cancer. Bridging grey and peer reviewed literature, expanding national data collection, and piloting targeted surveillance initiatives represent next steps for adapting this model in Ireland.

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Article Title: Functional disorders in paediatric inpatients: A 3-year retrospective cohort study of presentation, management, and outcomes in a paediatric hospital.

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Aims

This study aimed to describe the demographics, characteristics and resource utilisation of hospitalised paediatric patients diagnosed with FD.

Methods

Retrospective chart reviews were performed for patients aged 4–18 admitted under General Paediatrics at CHI Crumlin between January 2022 and December 2024 with a discharge diagnosis of FD. Data from electronic health records was used to calculate incidence. Neurological versus non-neurological presentations were analysed. Institutional ethics approval was obtained.

Results

Forty-eight patients were included with a median age of 12; 64.6% were female. 47.9% had multisystem involvement. Headache complaints were only documented in females; abdominal pain was evenly distributed. Admissions increased from 13 in 2022 to 24 in 2024. Mean length of stay decreased from 13.1 days in 2022 to 8.5 days in 2024. Admissions <7 days accounted for 41.7% of cases, while 16.7% stayed >14 days.

90% underwent baseline blood tests, normal in 43 cases. Common investigations included abdominal ultrasound (29%), brain MRI (25%), chest X-ray (22%), and CT brain (18%). 10% had no investigations.

All patients had inpatient psychology involvement. Parental acceptance of diagnosis was 58%. At discharge, 69% of patients were referred to psychology/psychiatry/CAMHS.

Discussion

Functional disorders are a significant cause of morbidity and healthcare utilisation. While

rising admissions with reduced hospital stay suggest improved recognition, high investigation rates indicate diagnostic uncertainty. School term peaks may reflect psychosocial triggers.

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Article title: Romosozumab in severe osteoporosis: the Guy's and St Thomas' experience

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Aims

To evaluate the clinical characteristics and treatment pathways of patients with osteoporosis receiving romosozumab at GSTT, including demographics, prior therapy, fracture-to-care timelines, subsequent treatments, adverse events, and adherence to NICE/NOGG guidance.

Methods

We conducted a retrospective review of patients between 2023–2026, identified through pharmacy dispatch records. Clinical data from EpiC systems, FRAX and QRISK3 scores were collated and analysed in Microsoft Excel for trends, in accordance with GDPR.

Results

The mean age of the 51 patients was 74, 100% female, 76 % resided in South London, and 72% white ethnicity. The most common fracture type was multivertebral (31%). Concordance with NICE and NOGG guidelines was 100% and 69% respectively. 31% of patients commenced IV follow-on zoledronate within one month. Before romosozumab, 72% were bisphosphonate naive. No cardiovascular or severe systemic adverse events were documented. The mean length of time between fractures and appointments was 150 days. The QRISK3 score was reported in 59% of records. 43% of patients completed treatment, 51% ongoing. There was a significant increase (11.98%) in lumbar spine T-score following romosozumab ($p=0.02$).

Discussion

Romosozumab was effective in improving the lumbar spine bone mineral density. However, the mean length of time between fractures and appointments highlights an opportunity for pathway improvement. Limited recording of ethnicity, Vitamin D and calcium may have impacted the precision and validity of the results.

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Article title: Atrial Fibrillation Management in Inpatient Care: Evaluating Procedural Gaps and the Impact of Medical Therapy

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Aim

Atrial fibrillation (AF) affects a large proportion of the population, with a significant increase expected. In Ireland, management is predominantly medical, despite potential adverse effects and growing evidence supporting early rhythm control with procedural interventions. Limited national data exists on AF diagnosis and management. This study aimed to evaluate current management approaches and their impact on our cohort.

Methods

100 inpatients with AF were identified over a 6-week period. Patients under Cardiology or Cardiothoracic Surgery were excluded. Descriptive and inferential statistical analysis was performed with a significance of $p < 0.05$. Informed consent was obtained from all participants.

Results

Medical management was used in 95% of patients, with 87% receiving factor Xa inhibitors and 4% receiving antiarrhythmic therapy. Adverse effects were reported by 37% of patients, with 15% reporting symptomatic improvement. Procedural interventions were performed in 24%, more commonly in permanent AF (71.4% vs. 15.7–29.4%, $p < 0.001$). Interventions occurred later in the disease course (mean 8.34 years post-diagnosis, $p = 0.023$). Additionally, 22% had a history of stroke, and 87.7% reported perioperative challenges related to anticoagulation.

Conclusion

Medical management alone may be suboptimal. Early rhythm control strategies, including procedural interventions, were underutilised. This highlights the potential gaps in resource allocation and guideline adherence.

Funding source: School of Medicine Undergraduate Research Grant 2025

Article title: The impact of anticoagulation management in atrial fibrillation on perioperative care

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Aim

This study evaluated the impact of anticoagulation use on perioperative care in patients with atrial fibrillation (AF).

Methods

We conducted a cross-sectional study of 100 inpatients over a 6-week period with a diagnosis of AF. Primary outcomes included reason for admission, adverse side effects from anticoagulants, and surgical delays. Patients under cardiology or cardiothoracic surgery were excluded. Data were analysed using SPSS, with significance set at $p < 0.05$.

Results

87% of patients were taking factor Xa inhibitors. Among these patients, 37% reported adverse side effects, mainly excessive bruising and inappropriate bleeding. Overall, 89% had needed surgery at some point since their AF diagnosis, with 50% anticoagulated at the time of the surgery. Of these, 87.7% reported perioperative issues, mainly surgical delays. The main categories of surgical intervention required were general surgery (36%), orthopaedic surgery (18%) and cardiac (including cardiology procedures) (10%). Patients who had had a procedural intervention for their AF were significantly more likely to have had issues with their surgery compared to those who had only ever been managed medically (79.2% vs. 40.8%, $p < 0.004$).

Conclusion

Anticoagulant use in AF negatively impacts perioperative care. Development of a structured preoperative pathway for patients on long-term anticoagulation should be considered.

Article title: Clonidine as a Sedative in Children under Two: Systematic Review

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Aim

Clonidine, an alpha-2 adrenergic agonist, is a proposed alternative to standard sedatives with reduced addiction and respiratory depression potential. Despite widespread use in children, research remains limited. This review analysed evidence for clonidine as a sedative in children under two years.

Methods

Following PRISMA guidelines, PubMed, Embase, and Cochrane were searched through April 2025. We included nine studies examining children under two receiving clonidine for PICU/NICU sedation or post-operative analgesia. Studies involving NAS management were excluded.

Results

In mechanically ventilated infants, continuous IV clonidine improved sedation depth, demonstrated by lower COMFORT ($p = 0.006$) and Hartwig scores ($p = 0.002$). HS was generally preserved, though one study noted a transient 12% decrease in heart rate from a mean of 149 (SD 17) to 131 bpm (SD 17) ($p < 0.0001$). Clonidine showed significantly reduced rescue morphine requirements during therapeutic hypothermia ($p < 0.001$). Reductions in fentanyl and midazolam use were also noted post-cardiac surgery.

Discussion

Evidence for clonidine as a sedative-analgesic in children under two is heterogeneous. While it appears to be a safe alternative to traditional sedation with significant opioid-sparing

effects, lack of standardised scoring and small sample sizes limit data generalisability. Larger prospective studies are required to confirm long-term neurodevelopmental safety.

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for sedation in infants during therapeutic hypothermia with neonatal encephalopathy: pilot study.

Journal of Perinatology. 2021 Sep 16;

Article title: Focused Ultrasound Therapy for Alzheimer's Disease

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Aim

The limited efficacy and significant side effects of anti-amyloid monoclonal antibody therapies have prompted exploration into innovative treatments. Focused ultrasound shows promise as a non-invasive technique for disrupting the blood–brain barrier, potentially enhancing drug delivery to the brain and improving penetration of existing therapeutic agents.

Methods

This systematic review was conducted using PubMed and Embase, focusing on studies in people with Alzheimer's disease published in the last ten years that examined the use of focused ultrasound for blood–brain barrier opening. The search strategy encompassed terms related to Alzheimer's disease, focused ultrasound, and the blood–brain barrier. Studies were selected based on predefined criteria. The quality of included studies was assessed using the Oxford Centre for Evidence-Based Medicine Levels of Evidence framework.

Results

Twelve studies were analyzed, the results of which suggested focused ultrasound combined with microbubbles may safely and transiently disrupt the blood–brain barrier. These studies, primarily early-phase and observational, highlight the potential feasibility of focused ultrasound in facilitating drug delivery to the brain for the treatment of Alzheimer's disease.

Discussion

The results indicate the use of focused ultrasound in Alzheimer's disease treatment might be safe and effective in transiently opening the blood–brain barrier. Although current evidence is promising, further research is needed.

Article title: The effect of FETO on the development of Pulmonary Hypertension in CDH: A literature review on neonatal prognosis and survival outcomes

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Aim

Foetal endoscopic tracheal occlusion (FETO) aims to promote lung growth and reduce PH in foetuses with Congenital Diaphragmatic Hernia (CDH), thereby improving survival. This review aims to evaluate the current evidence on FETO and its effectiveness in reducing the development and severity of PH. Additional considerations include the influence of disease severity, laterality, dependence on extracorporeal membrane oxygenation (ECMO) and procedural risk.

Method

A literature search of PUBMED and EMBASE (2010 to July 2025) identified 169 articles. Twelve studies met inclusion criteria, comprising of retrospective cohort studies, randomised controlled trials and observational studies investigating FETO in CDH.

Results

Of the 12 studies included, only two examined PH as a primary outcome. FETO demonstrated the greatest benefit in severe CDH, with reduced PH burden and improved survival, though results were less consistent in moderate cases, with limited survival benefit. Several studies also reported decreased ECMO dependence. However, the procedural risks, notably, preterm prelabour rupture of membranes, remained significant.

Discussion

Current evidence suggests that FETO is most beneficial in severe CDH, however the substantial heterogeneity in definitions of CDH severity and ECMO criteria limits comparability. Future research should prioritise larger multicentre studies with standardised criteria to evaluate PH incidence, severity and resolution.

Article title: Use of High-Flow Nasal Cannula in Very Low Birth Weight Infants: A Five-Year Retrospective Review of Respiratory Support Practices in Craigavon Area Hospital Neonatal Unit

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Aim

To evaluate patterns of respiratory support use and describe the characteristics of infants receiving high-flow nasal cannula (HHFNC) in a neonatal unit, with particular focus on very low birth weight (VLBW) infants.

Methods

A five-year retrospective review was conducted on all inborn infants admitted between 2019 and 2024 who received invasive or non-invasive respiratory support. Data collected included gestational age, birth weight, type of respiratory support, and duration of support. Subgroup analysis was performed for birth weight <1500g.

Results

Of 231 infants included, 82 (35.5%) were VLBW, of which 27 (32.9%) received HHFNC. Compared to those managed with CPAP and/or low-flow oxygen alone, infants receiving HHFNC had lower mean birth weight (992g vs. 1300g) and longer non-invasive respiratory support (23.9 vs. 6.7 days). Similar trends were observed in ventilated infants.

Discussion

HHFNC was preferentially used in smaller, more immature infants and was associated with prolonged respiratory support, warranting further prospective evaluation in VLBW populations.

Article title: Predictive Value of Longitudinal ctDNA Dynamics in Breast Cancer: A Systematic Review of Therapeutic Response and Clinical Outcomes

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Aim

Breast cancer remains a global challenge; while ctDNA shows promise as a non-invasive biomarker for tumor burden, its prognostic value regarding treatment dynamics remains debated. This review evaluates whether longitudinal ctDNA changes can reliably predict clinical outcomes.

To identify associations between ctDNA dynamics and recurrence, overall survival (OS), and disease progression.

Methods

A systematic search of PubMed, Medline, and Embase (2015–2025) identified studies evaluating ctDNA levels during treatment. Eligibility was determined via independent dual-author screening. Primary endpoints included breast cancer subtype, ctDNA fluctuations, and survival rates (PFS/OS).

Results

ctDNA dynamics were highly prognostic across cohorts. In metastatic settings, early molecular persistence (Day 15) predicted significantly shorter PFS (HR 3.94; $p=0.001$). For HER2+ mBC, clearance within six weeks extended median PFS from 3.2 to 21.9 months ($p<0.001$). In neoadjuvant settings, failure to clear mutations after two cycles increased recurrence risk 12.5-fold ($p=0.0063$). Rapid suppression also preceded pathological complete response in TNBC. However, utility was attenuated in heavily pretreated patients (≥ 3 rd line) and failed to reflect intracranial progression in isolated CNS metastases (median VAF 0.18%).

Discussion

ctDNA dynamics are high-sensitivity biomarkers for therapeutic response. Molecular clearance strongly predicts favorable outcomes, identifying non-responders earlier than radiographic imaging. However, clinical integration must account for disease site and treatment history, as CNS involvement and late-line clonal heterogeneity limit its surveillance accuracy.

Article title: Predictors of Recurrent Medical Admission in Adolescents with Anorexia Nervosa: A Retrospective Cohort Study.

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Aim

To identify sociodemographic, clinical and psychological predictors of hospital readmission among adolescents requiring medical stabilisation for anorexia nervosa (AN) in an Irish tertiary paediatric centre.

Methods

A retrospective review of patients ≤ 17 years admitted for medical stabilisation of AN between 2020 and 2024. Extracted data included demographics, %mBMI, Junior MARSIPAN scores, psychiatric comorbidities, psychosocial adversity, and medical management. Patients were categorised into single-and multiple-admission groups. Group differences were analysed, and univariate logistic regression identified factors associated with readmission.

Results

Of the 106 adolescents, 23 (21.7%) experienced at least one readmission, and 6 required a third admission. Readmitted patients were younger at first presentation and demonstrated greater medical instability, reflected by higher JUNIOR MARSIPAN scores and more frequent nasogastric feeding. Comorbid autism spectrum disorder was more common (34.8% vs 10.8%). Psychosocial adversity was also more prevalent, particularly familial conflict (43.5% v 13.6%) and prior TULSA involvement (21.7% v 7.4%). Younger age, increased medical acuity, comorbid ASD, and family conflict were independently associated with elevated odds of readmission.

Discussion

Younger age, medical instability, co-occurring ASD, and family-level psychosocial stressors identify adolescents at heightened risk of recurrent hospitalisation. Recognising these factors at first presentation may enable more proactive, coordinated follow-up. Enhancing post-discharge supports for adolescents with complex clinical or psychosocial needs may help reduce repeated admissions and improve recovery trajectories.

Article title: Understanding the Burden of Superficial Acute Abscesses in Surgical Practice: A Descriptive Cross-Sectional Study at a Tertiary Hospital in Oman

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Aim

Acute superficial abscesses are a common indication for surgical admission, yet their burden and outcomes are underreported in regional settings. This study aimed to assess their prevalence, clinical patterns, management strategies, and short-term outcomes among general surgery admissions.

Methods

A descriptive cross-sectional study was conducted at the Medical City for Military and Security Services, Muscat, Oman, including all general surgical admissions (n = 1,672) over a one-year period (2024–2025). Data on patient demographics, comorbidities, abscess subtype, management approach, and 2-week wound healing outcomes were collected and analyzed using the chi-square test, with statistical significance set at $p < 0.05$.

Results

Acute superficial abscesses accounted for 6% of all surgical admissions. The mean patient age was 38.2 years (range 15–73), with a marked male predominance (78%). Most patients were Omani nationals (99%) and civilians (62%). Diabetes (21%) and hypertension (18%) were the most common comorbidities. Perianal (45%) and pilonidal (27%) abscesses were the predominant subtypes, with a significant association between subtype and sex ($p = 0.019$). Drain placement was performed in 93% of cases, and 29% were loculated. Fever ($>38^{\circ}\text{C}$) was present in 21%, and 9% developed surgical site infections. At 2-week follow-up, 45% of wounds had healed, 25% were healing, and 6% remained unhealed. Wound healing

showed no significant association with surgical site infection ($p = 0.072$) or drain placement ($p = 0.634$). Imaging was performed in 32% of patients, commonly preceding surgery by more than 12 hours.

Conclusion

Acute superficial abscesses constitute a significant surgical burden, representing 6% of admissions and predominantly affecting males with perianal and pilonidal subtypes. Variable short-term healing outcomes highlight the importance of standardized postoperative care.

Ethical Approval: Approved by the Medical Research Ethics Committee of the Medical City for Military and Security Services, Muscat, Oman (Ref. No: MCMSS-MREC 013/2025).

Article title: Emerging Applications of Artificial Intelligence in the Diagnosis of Cauda Equina Syndrome: A Narrative Review

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Aim

This review evaluates current evidence comparing traditional and AI/ML diagnostic approaches, examining clinical performance, limitations, and validation needs.

Methods

A systematic literature search of PubMed and ScienceDirect identified 520 articles (2019-2025) using "cauda equina" as title search. After removing 200 duplicates and excluding 284 non-diagnostic studies, 36 diagnostic studies were identified. Of these, 9 specifically employed different diagnostic techniques and comprised the final analysis.

Results

Red flag symptoms fail to identify CES, as highlighted by a systematic review by Dionne et al. (2019), which revealed low pooled sensitivity (<0.50) for commonly assessed red flags. In contrast, AI-based approaches show promising efficacy. Large Language Models like ChatGPT-3.5 and Google Bard can analyze patient inquiries to identify red flags, suggesting a role in triaging (Muluk and Olcucu, 2024). Machine learning models also demonstrate high diagnostic accuracy on imaging. Biswas et al. (2025) developed a model achieving 95.0% accuracy, 96.9% sensitivity, and 85.9% specificity for detecting cauda equina compression on 715 MRI scans. Additionally, Sun et al. (2024) developed a predictive model that [clarify specific outcome and surgical conversion rate]. These results suggest AI could enhance diagnostic efficiency and accuracy, though further validation is necessary.

Discussion

AI/ML applications demonstrate promising diagnostic capabilities that may complement traditional CES assessment, potentially improving triage accuracy and optimizing imaging utilization. However, translation to clinical practice requires prospective multicenter validation addressing current limitations in sample size, generalisability, and interpretability.

With appropriate validation, AI could enhance CES diagnostic pathways and patient outcomes.

Article Title: Real-Time AI Guidance for Handheld Cardiac Ultrasound: A Prospective Head-to-Head Study of Two Systems in Novice Imagers

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Aims

Reduced left ventricular ejection fraction (LVEF) affects ~5% of adults. Real-time artificial intelligence (AI) guidance may allow imaging-naïve users to acquire images suitable for LVEF classification using handheld focused cardiac ultrasound (FoCUS). Image quality, and diagnostic accuracy of novice-acquired scans using two AI-guidance FoCUS systems were compared.

Methods

In this prospective study, 128 consenting adults underwent back-to-back AI-guided FoCUS performed by one of three novices (no imaging or clinical experience): 1) GE Vscan-Air with Caption-Health AI-guidance (GE/CH-FoCUS) and 2) Philips Lumify with UltraSight AI-guidance (PH/US-FoCUS). Scan order was randomized. Studies were independently interpreted by blinded expert for image quality and LVEF and by an AI-LVEF algorithm. Diagnostic performance was assessed using an intention-to-diagnose approach, counting non-feasible examinations as incorrect and EF threshold <50%.

Results

Participants were 59% male, aged 20–90 years, BMI 18–66 kg/m². PH/US-FoCUS had shorter scan times (3.1±1.6 vs 3.6±1.6 mins, $p<.01$) and higher quality scores (3.5±0.7 vs 3.2±0.7, $p=.0001$) than GE/CH-FoCUS. Diagnostic accuracy for LVEF<50% was higher for PH/US-FoCUS than GE/CH-FoCUS by both the AI algorithm (sensitivity: 90.9% vs 50.0%; specificity: 91.5% vs 84.0%) and expert interpretation (sensitivity: 95.5% vs 72.7%; specificity: 100% vs 96.2%).

Discussion

Real-time AI-guidance enabled imaging-naïve novices to acquire FoCUS studies adequate for LVEF assessment using both systems. However, the Lumify/UltraSight platform produced higher-quality and more frequently feasible scans, translating into higher diagnostic accuracy.

Article title: The service users experience of interactions with staff in in-patient psychiatric wards in Northern Ireland: a qualitative study

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Aim

There is no research to date which assesses the service user's experience of interactions with staff in Northern Ireland psychiatric units, thus, the objective of this paper is to investigate the service user's experience of these interactions and explore the extent to which this aligns with the principles set out in national guidelines and regional policies.

Methods

A comprehensive qualitative study was conducted using Care Opinion. The relevant data was downloaded and saved to a storage database to be analysed. Search parameters: The search parameters for this qualitative study included; <Health and Social Care Northern Ireland>; Tagged with; <communication>, and <staff>, about services which provide; <psychiatric inpatient care>.

Results

A total of forty-nine returns has been used in this study. Three important themes were revealed- communication, safety and compassion, all of which evoked in a positive light. In total, 95% of service users experience of interactions with staff in inpatient psychiatric units were positive.

Discussion

A qualitative study of service users experience of interactions with staffs in inpatient psychiatric units in Northern Ireland was overwhelmingly positive with 95% of patients communicated a positive interaction. This suggests there is satisfactory compliance with communication guidelines by staff with patients in this.