Abstracts of 6th National INSPIRE GEM Research Conference

INGEM 2023

Organized by
University of Warwick, UK
2 September, 2023

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Dr Ilyas Khan

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Ilyas Khan
(Editor)

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INGEM 2023

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INGEM 2023

Foreword

I would like to welcome everyone to Warwick Medical School for this Annual National INSPIRE-funded GEM Research Conference. I would like to welcome particularly attendees from Swansea University, Three Counties, and Chester Medical Schools. The INSPIRE program is a wonderful opportunity for medical students to engage in clinical research, to gain key research skills, and to be inspired into opting for a future career in clinical academia. The ethos of this approach should be that research is open to all, with no one excluded from this opportunity, and that remains our long-term goal and aspiration. An essential component of the INSPIRE program is the annual national GEM research conference, which provides an invaluable opportunity for medical students to present their INSPIRE-funded projects, to learn from each other, and to celebrate all the great work that INSPIRE funding has enabled. We would like to thank the Academy of Medical Sciences for their generous support of the INSPIRE program, and hope that this will continue into the future.

I would like to thank personally my counterparts at each of the three affiliated medical schools, and the student INSPIRE leads and committees at each of the medical schools, who work so tirelessly to enable its functioning and smooth running. Undoubtedly, INGEM would not have been as successfully delivered without the exceptional organisation of Erica Sugita, co-ordination of Flora Chamberlain and the support of Dante Holt. We are also grateful to Nabeel Hussain for helping to capture and share the successes on the day through social media. I would like to pay special gratitude and appreciation to Kelly Coles at WMS who coordinates the INSPIRE program, who works so hard and efficiently to coordinate the INSPIRE program, and whose compassion for this role shines through for the benefit of all the students and colleagues involved.

Thank You Kelly

Dr. Thomas Barber

Editor

I like to extend my thanks to the organisers of the event in particular the student committees of all four medical schools, in particular Erica Sugita and Flora Chamberlain of Warwick Medical School who nobly and successfully took on the task of organising a National Student Conference.

I act as one of the four Academic Leads for the INSPIRE programme, in my case Swansea University Medical School. I am primarily a researcher interested in articular cartilage biology whose aim is to help people suffering from joint problems that limit their movement. My group primarily uses tissue engineering and stem cells to try and develop solutions to cartilage loss. I am constantly impressed by the calibre and level of science I see from Graduate Entry Medical students who apply for internships in our INSPIRE programme and those who submit their work to these annual conferences. It is indeed inspiring.

Dr. Ilyas Khan

Oral Presentation Winners

	WINNERS	MEDICAL SCHOOL
Most Engaging Presentation	Lucas Snow & James Whiting Sarwar Shah	Warwick
Best Presentation Content	Sarwar Shah & Zain Mohammad	Warwick
Best Presentation Content	Tads Ciecierski-Holmes	Cambridge
Best Methodological Quality	Yahya Saif	Warwick
Most Innovative Research	Flora Chamberlain	Warwick
Highest Impact Research	Helen Winterburn Melina Peling	Warwick
Overall Best Presentation	Yahya Saif	Warwick

Poster Presentation Winners

	WINNERS	MEDICAL SCHOOL
Best Abstract	Laura Stathan Stanimir Stoliov	Warwick
Best Methodological Quality	Sarwar Shah & Zain Mohammad	Warwick
Most Innovative Research	Flora Chamberlain Lucas Snow & James Whiting	Cambridge
Highest Impact Research	Karar Alif	Warwick
Best Poster Design	*Camille Hunt &* *Harini Sundaramoorthy*	Warwick
Student Choice Award	Sarwar Shah & Zain Mohammad	Warwick
Overall Best Poster	Stanimir Stoliov	Warwick

Oral Presentation Abstracts

The extent of research waste in trials of exercise therapy versus usual care/no treatment for chronic lower back pain

Flora Chamberlain

Warwick Medical School

Background: There is increasing literature on the use of exercise therapies for lower back pain. The 2021 Cochrane review of exercise therapy for chronic lower back pain included 249 studies looking at the impact of exercise therapies on pain and function outcomes. They concluded that exercise therapy is probably more effective than no treatment or usual care for pain outcomes but did not reach their minimal clinically important difference threshold for all outcomes. We hypothesised that many of the trials included in the Cochrane review were not contributing to our knowledge and constitute research waste.

Methods: Using published data from the Cochrane review we did Trial Sequential Meta-Analyses (TSA), including all trials which compared exercise therapies to normal treatment/usual care. We performed TSAs and cumulative meta-analyses (CMAs) for both the pain and function outcomes at all durations of follow-up, mirroring the original Cochrane analyses.

Results: Seven of the eight TSAs showed statistically significant evidence for exercise therapy, consistent with the Cochrane review. In six of the TSAs the monitoring boundaries for superiority were crossed indicating that further research was non-contributory. Dates when this occurred ranged from 2000-2009. Only for the long-term follow-ups was there a possibility that further research would be contributory, as they reached significance but didn't cross the TSB. The CMAs demonstrate that when the smallest trials are excluded there is no clinically important difference between exercise therapies and usual care. There has been little change in the summary estimate mean difference and confidence intervals since 2009.

Conclusions: There has been substantial research waste in the field of exercise interventions for low back pain. Much of our research effort in this area since 2004 could have been directed to more informed research questions. It may be difficult to justify any further research comparing exercise interventions to usual care.

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A cross sectional study of factors impacting mental wellbeing in Tanzanian school-attending adolescents

Rachael Cresswell

Swansea University Medical School

Objectives: To examine the association between (i) certain socio-demographic variables indicating marginalisation ("marginality indicators" or "MIs") and (ii) mental wellbeing in Tanzanian adolescent school students, and differences between female and male students.

Methods: 3052 adolescents aged 15+ years from 5 districts of Tanzania (3 rural and 2 urban locations) participated in a cross sectional survey in August 2020, responding to questions enabling calculation of their Warwick-Edinburgh Mental Wellbeing Scale ("WEMWBS") score as well as questions relating to their socio-demographic characteristics and the MIs. Descriptive statistical analysis, linear regression and logistic regression analyses were performed.

Results: A wide range of MIs are associated with lower mean mental wellbeing in Tanzanian adolescents on a univariate basis, with females more likely to experience most MIs. 17.3% of students (20.9% of females and 13.5% of males) had WEMWBS scores potentially indicative of depressive illness. Linear regression analysis of the 17 MIs with a statistically significant relationship to reduced mental wellbeing on a univariate basis (adjusted for age, sex, form and district) found that 3 MIs (all of which were prevalent) had a statistically significant negative effect on student mental wellbeing: (i) parents being unable to afford the cost of healthcare; (ii) doing outside work which interferes with schoolwork; and (iii) lacking a permanent home. Two MIs related to (ii) and (iii) – needing to earn income for their family, and lacking shelter – were statistically significantly associated with scores consistent with probable clinical depression upon logistic regression analysis. Although there were points of commonality, different marginality indicators were associated with mental wellbeing (and scores indicative of possible/probable depression) in males and females.

Conclusion: This study identified several factors whose presence correlates with statistically significant reductions in the mental wellbeing of Tanzanian adolescents, which can hopefully be used to inform future policy and interventions.

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How do learners perceive near-peer Anatomy educators?

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*Corresponding author

Introduction: Interdisciplinary educational opportunities in healthcare curricula can take a near-peer format. Qualitative studies to discern the impact of being taught anatomy by interdisciplinary near-peer educators (INPE) are often low-powered, limiting inferences which can be drawn. Swansea University Medical School established an INPE initiative wherein graduate-entry medical students facilitate weekly practicals for a first-year human anatomy module within a medical sciences degree.

Aims: Extrapolate core concepts from feedback gathered post INPE teaching of anatomy to discern impacts to the learner. Explore effects of INPE practicals on learner confidence with anatomy.

Methods: Students completed surveys collating feedback for anatomy practicals over 10 weeks. Survey respondents rated their confidence (Likert scale, 1=very poor, 5=very good) with answering learning outcomes at the start and end of the practicals separately. They provided personalised feedback for their INPE, answering two questions: "what worked well?" and "what could be improved?". Data was processed in Microsoft Excel and analysed in SPSS. Conventional content analysis of feedback comments was undertaken.

Results: Total survey respondents n=240. Respondents reported increased confidence after practicals (pre-session $\bar{X}$=2.45/5, post-session $\bar{X}$=4.13/5, paired t-test $p<0.001$). Learners described enhanced understanding (n=81) from high calibre INPE engagement with them (n=39), cadaveric specimens (n-16) and anatomical models (n=52) alongside using bespoke resources INPE's created (n=41). Most respondents identified no scope for improvement (n=126). Critical comments focused on differing levels of engagement by INPE's (n=33) alongside session time constraints (n=28) which impaired learner understanding (n=23).

Conclusions: Feedback was overwhelmingly positive. This programme provided learners opportunities to develop professional relationships with medical students, benefitting those keen to enter graduate medicine. Learners state that medical students possess sufficient knowledge to deliver meaningful teaching which improved confidence in anatomy. A longitudinal paired approach matching INPE's, and learners is preferred. Our findings recommend including INPE initiatives in all human anatomy curricula.

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Is any more research needed comparing spinal manipulation to other interventions for chronic lower back pain needed?

Louise Elliott

Warwick Medical School

Background: Chronic lower back pain is a leading cause of disability and will affect over 800 million people by 2050. Therefore, there is need for good, evidence-based back pain care. Spinal manipulation therapy (SMT) is a recommended treatment for chronic lower back pain in multiple guidelines. However, meta-analysis results have shown SMT to not provide clinically significant improvements in pain and function in chronic lower back pain. We aim to explore if further research is needed or if this conclusion is definitive, and if there is evidence of research waste in this field.

Methods: We re-analysed data from a 2019 meta-analysis by Rubenstein and a 2021 Cochrane review into exercise therapies for lower back pain using trial sequential analysis. The Trial sequential analysis tool developed by Copenhagen Clinical Trials Unit, determines required sample size, and establishes if further trials are needed. Pain and function outcomes at one-, six- and twelve-month follow-up times were investigated. Cumulative meta-analysis was employed (using RevMan5.4 software) to explore the impact of trial size on conclusions.

Results: The results of our Trial Sequential Analysis reflected the results from the review outcomes; there was no clinically significant mean difference between SMT and recommended or exercise therapies. However, we showed that at time-frames, with both pain and function outcomes, that the futility of SMT was concluded after only a few trials. We also demonstrated, with cumulative meta-analyses, small trials may be providing spurious results that misrepresent outcomes.

Conclusion: Conclusions regarding the effectiveness of spinal manipulative therapy for chronic lower back pain have been reached and a substantial number of trials have not added to the field of research; this constitutes as research waste.

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Perceived barriers to Geriatric Medicine in medical students

Grace Fisher

Swansea University Medical School

Geriatric Medicine remains a speciality with low uptake in the UK, despite the UK having a rapidly growing ageing population. The aim of this review is was to investigate what factors medical students perceive as barriers to Geriatric Medicine and then, from identifying these, generate several suggestions as to how to tackle these barriers at a medical school level to increase the interest and ultimately uptake of Geriatric Medicine as a speciality. The review contains literature published between 2003 and 2023 accessed using MedLine. Several themes were identified including; (a) high emotional burden, (b), caring for patients with complex needs, (c) career perceived as uninteresting and more. We suggest that further qualitative work is carried out across medical schools in the UK, in all years of study, to investigate when interest in Geriatric Medicine peaks or troughs, and to investigate holistically the programmes currently in place to improve interest in Geriatric Medicine for medical students and their efficacy.

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Predictors of Behaviours that Challenge in Individuals with Moderate-Severe Intellectual Disability: A Systematic Literature Review

William Flett and Elizabeth Cork

Warwick Medical School

Background: Behaviours that challenge (BtC) represents a poorly-defined, yet common occurrence in individuals with moderate-to-profound intellectual disability (ID). Previous systematic reviews have synthesised information relating to predictors of BtC in individuals with ID, with particular focus on aggression, self-injurious behaviour (SIB) and destruction. Identifying predictors of BtC promotes a greater understanding of why individuals exhibit a given behaviour and informs measures to reduce the risk of the BtC and associated harms occurring.

Aims: The aim of the present study was to extend the systematic reviews carried out by McClintock *et al.* (2003) and Bamford (2020).

Method: The methodology for the present study mirrored that of the currently unpublished Bamford (2020) systematic review. A systematic search of the MEDLINE, Embase and PsycINFO databases was carried out on literature published between January 2019 and October 2022, the results of which formed the basis of this review.

Results: Review findings further corroborate previously defined predictors of BtC; presence of autism spectrum disorder predicted both SIB and aggression, and lower adaptive level and skills and presence of epilepsy predicted SIB. Age, pro-social behaviour and history of suicidal ideation were found to predict either SIB or aggression. Lower levels of emotional development were found to predict all three components of BtC.

Conclusion: The synthesis of current literature has further corroborated predictors of BtC evaluated previously and has identified additional predictors which warrant future investigation. This review, alongside the work of McClintock *et al*. (2003) and Bamford (2020) represent a comprehensive, up-to-date assessment of predictors of aggression, SIB and destruction in individuals with ID.

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Does the use of blood products in a pre-hospital setting increase survival to one month in trauma patients? A systematic review

Camila Gough, William Page*, Christopher M. Smith*

Warwick Medical School

* contributed equally

Background: Major haemorrhage is a leading cause of mortality for the traumatically-injured patient. While it is best practice to replace lost blood with blood products in the hospital setting, it is currently not established practice to transfuse hypovolaemic patients with blood products at the scene of trauma.

The evidence has been lacking to support this practice, but the findings of a major trial published in 2022, in combination with other studies in recent years, add to the evidence base and can now help to answer the question of whether the practice of pre-hospital transfusion improves mortality outcomes.

Aim: To analyse the evidence for the use of blood products in trauma patients in a pre-hospital setting and ascertain its impact, if any, on survival.

Methods: We performed a systematic review of the literature for studies where the effects of transfusing blood or blood products to adult trauma patients in the pre-hospital setting were compared to those of infusing crystalloid fluids alone. Primary outcome was one-month mortality. We obtained measures of effect for each study by calculating risk ratios with 95% confidence intervals. We performed a meta-analysis to assess pooled effect size.

Results: Analysis performed on a total of 1,393 patients across six studies (four randomised controlled trials, one cohort study and one case-control study) showed no statistically significant change in one- month mortality for the blood products group compared to the crystalloid fluid-only group (pooled risk ratio = 0.9, 95% CI = 0.77, 1.04). This result was similar to our separate analysis of the randomised controlled trials alone (pooled risk ratio = 0.91, 95% CI = 0.77, 1.08).

Conclusion: Based on data from the currently available literature, the administration of blood products to patients with haemorrhagic trauma in the pre-hospital setting does not lead to a statistically significant benefit in one-month survival when compared to resuscitation with fluids alone.

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Melanoma and PET-CT: The First Systematic Review and Meta-Analysis of False Positive Findings in PET-CT for Cutaneous Malignant Melanoma

Jessica Martin

Warwick Medical School

Background: Cutaneous malignant melanoma (CMM) is increasing in prevalence and possesses the highest mortality rate of any skin cancer. Positron Emission Tomography and Computed Tomography (PET-CT) may be utilised in either radiological staging or surveillance of CMM, primarily in stage III-IV disease but can be limited by false positive (FP) results; leading to patient distress, increased costs, and unnecessary follow-up. The FP rate in CMM literature varies widely, altering calculations of positive predictive value (PPV) and has not undergone pooled meta-analytic.

Methods: A systematic review and meta-analysis of FP results in prospective studies of PET- CT in CMM was performed.

Results: The systematic review produced 14 trials for inclusion. Patient-based reporting had the lowest pooled proportion of FP results with 5.8% (95% CI = 3.5% to 8.6%), lesion-based was highest with 9.6% (95% CI = 3.1% to 19.1%) and combined was 7.0% (95% CI = 4.4% to 10.2%) Bias was low to unclear other than for FP reporting and heterogeneity (I2) was considerable for all analyses. FP findings were mainly lymphatic, dermatological, respiratory, or skeletal in nature but diagnostic information was not provided.

Conclusions: This study was the first attempt to quantify the pooled proportion of FP results from PET-CT in CMM. A small number of studies (n=14) were available due to the predominance of retrospective methodology in this field. It is unclear whether this represents the true proportion of FP results due to inconsistent reporting. Systemic distribution was expected but limited diagnostic information was provided. Repeat meta-analysis using retrospective work should be carried out and future work should be prospective with clearly documented FP proportion, distribution, diagnosis and need for follow-up.

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EPIC-PPT Cross Study: Enhancing Prescribing Safety in Medical Students: The Impact of Pharmacist Peer-Led Teaching Intervention

Zain Mohammed and Sarwar Shah

Warwick Medical School

Background: Prescribing safety is a critical aspect of medical practice, ensuring optimal patient care and minimizing medication errors. In the United Kingdom, medical students are required to pass the National Prescribing Safety Assessment (NPSA) to demonstrate their competency in safe and effective prescribing practices. However, the NPSA poses challenges for medical students, demanding a comprehensive understanding of pharmacology, drug interactions, and prescribing guidelines. Graduate entry medicine courses, which enrol students with prior qualifications in pharmacy, offer a unique opportunity for peer support, potentially enhancing students' preparation for the NPSA.

Aims: Primary outcome: The score of participants sitting the NPSA mock exams following pharmacist peer-led teaching.

Secondary outcomes

- Confidence of students in prescribing by survey
- Qualitative analysis: Interviews conducted with participants regarding their experiences of prescribing training and teaching

Methods: A cross-study method will be employed, recruiting two streams of 30-40 participants each who will undertake six teaching sessions and three 50 mark NPSA style examinations at set point intervals. Feedback forms and confidence questionnaires will also be administered throughout the program to evaluate the effectiveness of the teaching intervention. Additionally, individual interviews will be conducted with willing volunteers at the end of the program to gain deeper insights into their experiences with prescribing training.

Expected Results: We anticipate that the pharmacist peer-led teaching intervention will lead to significant improvements in NPSA scores among the participants. Furthermore, we expect to observe an increase in participants' self-perceived confidence in prescribing after completing the program.

Conclusions: The findings from this study will contribute valuable insights into the effectiveness of pharmacist peer-led teaching intervention in enhancing prescribing safety among medical students. These findings hold significance for medical educators and institutions seeking to enhance prescribing training and promote patient safety in medical practice.

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Does the functional improvement justify the Krukenberg procedure in patients with unilateral hand amputation and no visual impairment? A systematic review

Tamsin Nicholson

Swansea University Medical School

Established in 1917, the KRUKENBERG procedure separates the forearm into two opposable rays. Originally indicated in blind bilateral hand amputees, we seek to ascertain if the procedure delivers justifiable functional improvement in patients with unilateral amputation and no visual impairment. We have conducted a systematic review and narrative synthesis of 11 papers identified through database searches and screening of references. We find that the Krukenberg procedure does deliver functional improvement which would justify the procedure in patients requiring bilateral tactile sensation, especially if this would facilitate employment. Patients who require bilateral grasping function may also benefit if they lack access to sophisticated prostheses and their maintenance. The procedure may be of limited value to other patient groups.

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Auditing indications for GP referrals to lymphoma clinic – time to tighten our criteria?

Eva Parisi

University of Cambridge

Introduction: Lymphoma is the most common blood cancer in the UK, with over 14,000 people diagnosed per year. Patients suspected of having lymphoma are referred to one of the four lymphoma clinics at Addenbrooke's hospital either via their GP or another specialist. With rising numbers of referrals, these clinics are increasingly oversubscribed. This results in increased workload for staff and unnecessary stress on both the NHS and the patients who are referred without fitting the haematological criteria outlined on referral forms.

Objectives: To assess the appropriateness of GP referrals to the lymphoproliferative disorder (LPD) clinics at Addenbrooke's hospital. To evaluate whether a set of suggested stricter referral criteria could safely reduce the pressure on the clinics.

Methods: A retrospective audit was performed on patients referred to Addenbrooke's hospital from 30/09/2020-14/09/2022. 176 GP referrals were included in the study and patient records were used to gather the following information: reasons for referral, previous history or existing histological diagnosis of LPD, diagnosis made, and whether treatment was required. Data was then analysed using Microsoft Excel.

Key Findings:

1. The most common reason for GP referrals was lymphadenopathy (n=72) but for the majority of these patients, no lymphadenopathy was detected by the consultant on examination in clinic (n=44).
2. Therefore, 66 out of 176 referrals (37.5%) did not meet the suggested stricter referral criteria.
3. Common reasons for inappropriate referrals included "false" lymphadenopathy (not detected in clinic) and isolated "B symptoms".
4. Of the 66 patients not meeting the suggested stricter criteria, none were diagnosed with LPD.

Conclusions: This audit revealed that over a third of referrals to LPD clinics at Addenbrooke's hospital did not meet appropriate haematological criteria. Importantly, none of these patients were diagnosed with LPD, demonstrating that adhering to stricter guidelines for GP referrals is feasible without compromising patient safety.

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Volatile Organic Compound Analysis in the Detection of Hepatobiliary and Pancreatic Cancers: A Systematic Review and Meta-Analysis

Melina Pelling , Subashini Chandrapalan, Emily West, Ramesh P. Arasaradnam

Warwick Medical School

Background: Hepatobiliary cancers are notoriously difficult to detect, frequently leading to diagnosis in later stages of disease when curative treatment is not an option. The currently used biomarkers such as AFP (alpha-fetoprotein) and CA19.9 lack sensitivity and specificity. Hence, there is an unmet need for an alternative biomarker.

Aim: To evaluate the diagnostic accuracy of volatile organic compounds (VOCs) for the detection of hepatobiliary and pancreatic cancers.

Methods: A systematic review of VOCs' use in the detection of hepatobiliary and pancreatic cancers was performed. A meta-analysis was performed using the software R. Heterogeneity was explored through meta-regression analysis.

Results: A total of 18 studies looking at 2296 patients were evaluated. Pooled sensitivity and specificity of VOCs for the detection of hepatobiliary and pancreatic cancer were 0.79 (95% CI, 0.72−0.85) and 0.81 (97.5% CI, 0.76−0.85), respectively. The area under the curve was 0.86. Meta- regression analysis showed that the sample media used contributed to heterogeneity. Bile-based VOCs showed the highest precision values, although urine and breath are preferred for their feasibility.

Conclusions: Volatile organic compounds have the potential to be used as an adjunct tool to aid in the early diagnosis of hepatobiliary cancers.

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Liberal versus restrictive transfusion thresholds after cardiac surgery: systematic review & meta-analysis

Alexander C. Reynolds[1], Samuel Burton[2], Amit Modi[3], Sanjay Asopa[4]

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Context: Restrictive transfusion threshold has been proposed as a method to circumvent the adverse complications of blood transfusion following cardiac surgery. Several randomised controlled trials (RCTs) have been funded to determine the effects of this postoperative strategy. Reviewing the literature and pooling suitably compatible data may add consensus to previous trial findings and better inform guidelines for postoperative management. The author is likely to draw on experience from a recent elective in Western Ukraine during presentation.

Methods: (population & design) Any adult patient who is in the immediate postoperative phase of cardiac surgery. Where haemoglobin or haematocrit values indicate transfusion requirement Randomised to receive transfusion if:

-a) they reach the conventional threshold ('liberal' group)

or

-b) they reach a pre-determined higher threshold ('restrictive' group)

Followed-up to determine whether adverse outcomes of blood transfusion are significantly different in either group. Systematic review and meta-analysis in accordance with the PRISMA guidelines. Search terms "(liberal versus restrictive) AND (blood transfusion) AND (cardiac surgery)" and in PubMed, Medline and Web of Science. Screened to collect RCTs that arranged their patients according to the PICO specified in the 'Patients' section. Trials reviewed and suitable data was pooled and analysed using Review Manager 5.3. Sensitivity analysis and bias-detection tools used to determine internal and external validity of statistical outcomes.

Results: Twelve RCTs were identified through screening. Data for four primary outcomes and eight secondary outcomes were sequestered and pooled for analysis. Primary outcomes: Stroke, AKI, Infection and Mortality. Secondary outcomes: Myocardial Infarction, Cardiac Arrythmias, ICU Stay and Hospital Stay. All outcomes showed insignificant differences between liberal and restrictive transfusion threshold. ICU stay duration significantly less in liberal group, but dataset failed sensitivity analysis- discarded.

Conclusion: Excellent study quality examining the effect of restricted transfusion thresholds on the adverse outcomes of blood transfusion. Data is randomised, controlled, and peaks the hierarchy of evidence. Pooling of high-quality trial data affirms the insignificance of restricted transfusion thresholds on

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the adverse effects of blood transfusion. Restrictive blood transfusion threshold does not reduce the adverse effects of blood transfusion. Conversely, restrictive blood transfusion threshold does not result in greater morbidity or mortality. Implications for both the well-resourced and the humanitarian setting.

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Is chondrocyte enrichment on vitronectin equivalent to fibronectin enrichment? A proof-of-concept study

Julia Shaaban

Swansea University Medical School

Background: Osteoarthritis is a common degenerative bone condition affecting the large weight bearing joints, where the cartilage in the joint has worn away. This causes pain, immobility and loss of economic independence. The most common solutions are pain relief and knee joint replacement. The field of regenerative medicine is aiming to repair worn cartilage by grafting lab grown patch into the joint. These methods require proteins that are found in the extra cellular matrix to be used in experiments.

Aim: Fibronectin is commonly used as it is reliable; this paper aims to see if vitronectin has equivalent function.

Method: Human chondrocytes were subjected to two different adhesion proteins in different media combinations of normal cell media, normal media plus FGF2 and normal media with FGF2 + TGFß1. Six genes' expression were used to characterise the chondrocytes: Sox9, CD105, CD166, CD73, ITGA5, PRG4 and 18S for a housekeeping gene, by means of qPCR.

Results: The trends vary per gene. PRG4 only expressed on fibronectin with FGF2 and TGFß1. The CD genes decreased their expression in the FGF2 and TGFß1 media in vitronectin and fibronectin. ITGA5 was expressed more on vitronectin. Sox 9 was expressed more in FGF2 media compared to the other media in their respective adhesion protein groups. CD166 also showed it can differentiate between Fibronectin and Vitronectin.

Conclusion: As n=1 it is not possible to make any constructive inferences. The CD gene expression reduction indicates differentiation has occurred, but more samples need to be used to achieve statistical analysis.

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A systematic literature review of the use of diuretics in cardiorenal syndrome (CRS)

Sarwar Shah

Warwick Medical School

Background: CRS is an umbrella term for disorders involving both the heart and kidneys in which acute or chronic dysfunction in one organ may induce dysfunction in the other. Diuretics are one of the mainstay treatments of CRS, however at present there are no current guidelines for CRS and there is often hesitancy to prescribe diuretics due to fears of worsening kidney function. This review aims to identify if use of diuretics in CRS reduces all- cause mortality. Secondary objectives include assessing if diuretics reduce hospitalisations, preserve renal function, or increase serious adverse events.

Methods: Only studies on adults with CRS treated with diuretics, published in the English language and with a minimum population of 50 were included. A systematic search with specific terms was conducted via Medline, Embase and Cochrane databases. Over 1622 studies was identified. After screening and full text analysis, 12 studies were included within this review.

Results: Diuretics were found to be safe and effective if dosed appropriately. Loop diuretics at high doses were found to increase renal decline and risk of hospitalisation. However, the mineralocorticoid receptor antagonists and finerenone, when dosed appropriately, were found in some studies to significantly reduce all-cause mortality and hospitalisation. Finerenone was also shown to significantly reduce renal decline in some studies.

Discussion: Diuretics are a safe and effective option in the management of CRS if managed appropriately with close monitoring. Currently diuretics are one of the mainstays of treatments within CRS and will remain so, as alternative therapies such as ultrafiltration have not been shown to be as effective. Further research needs to be done within CRS, such as diuretics in combination with sodium glucose co-transporter 2 inhibitors.

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Dispatcher-assisted AED use: A scoping review

Lucas Snow and James Whiting

University of Warwick

Background: Early defibrillation of out-of-hospital cardiac arrest (OHCA) patients is a key step in the chain of survival. Public-access defibrillation is an important area where emergency medical dispatchers can have an influence on guiding bystanders to automated external defibrillators (AED) and using them safely and effectively to deliver a shock.

Aims: This scoping review aims to look at relevant studies relating to dispatcher-assisted public-access defibrillation and its influence on rates of AED retrieval and use, and patient outcomes.

Methods: MEDLINE, EMBASE and Cochrane libraries were searched with an electronic search strategy, as well as citation and related article searches. The database search returned 8 studies and a further 12 were identified from related articles, citations, and professional contacts. The studies were a mix of real-life observational and simulations, including randomized controlled simulations.

Results: The outcomes assessed were rate of AED retrieval and use, time to shock or first rhythm analysis, AED competence, scripts and specific language, time and distance travelled to shock, and use of video or mobile geolocation assistance. Rates of use and competence were generally higher, and time to shock was lower when bystanders received dispatcher assistance. Voice and video assistance were comparable in terms of outcome. Several studies had a high risk of bias due to the observational nature and some simulations had problems with randomization methods.

Conclusions: The review found that dispatcher assistance has the potential to improve several outcomes associated with the rate and quality of bystander AED use. There is a need for further good quality research in this area as early defibrillation by lay people will result in better OHCA survival rates and outcomes.

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Clearing the fog: A systematic literature review on the ethical issues surrounding artificial intelligence based medical devices

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Introduction: Artificial Intelligence (AI), the capacity for computers to mimic human intelligence, is among the main drivers of the Fourth Industrial Revolution and is set to transform the healthcare sector. Most medical-AI utilizes machine learning for specific tasks, for example in clinical decision support systems and robotics. However, this has sparked debate among philosophers, ethicists, regulators, and policymakers who have raised concerns regarding the ethical implications. Whilst several global initiatives for AI regulation and development exist, these are still in their infancy, and policy differs between nations. There is also a requirement for continuous training and education in technical and ethical aspects of medical AI for healthcare workers, biomedical engineers, technicians, policymakers, and bioethicists.

Objectives: To identify key ethical themes concerning use of AI-based medical technologies and the proposed solutions.

Methods: A systematic search was conducted in April 2022 using Scopus to identify studies discussing ethics of AI-based healthcare technology. Only English language and freely available studies were included; Reviews and grey literature were excluded. Three investigators independently screened studies by title, abstract, and full text, before using an ad-hoc extraction table to facilitate narrative synthesis.

Results: Of 1574 studies identified, 41 met criteria for final review. Studies covered a range of contexts and technologies. The main ethical themes concerning medical technology, in order of frequency, included: transparency, algorithmic bias, confidentiality, fairness, trust, autonomy, accountability, and informed consent. The proposed solutions included multidisciplinary development approaches, standardization of framework, regulation, and policy, and AI education for healthcare professionals and users.

Conclusions: This review highlights the importance of increasing ethical awareness through interdisciplinary research, such that developers and regulators have the necessary tools to ensure consideration of ethical issues in the design of AI technologies. Interdisciplinary research, regulation, and implementation may help ensure AI-based medical technology is ethical, effective, and safe.

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Epidemiology and outcomes of out-of-hospital cardiac arrests at sport and recreational events in England

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Background: Few studies have examined the epidemiology of out-of-hospital cardiac arrests (OHCA) at sports and recreational events. This project aimed to report the characteristics and outcomes of OHCAs at sports and recreational events in England.

Methods: Data on OHCA events that occurred between 2015 and 2020 at sport or recreational events were obtained from the OHCA Outcomes registry. Descriptive statistics were used to compare OHCA characteristics against outcomes (return of spontaneous circulation (ROSC) at hospital handover and survival to discharge (STD)). Logistic regression established which characteristics were affecting outcomes. P-values <0.05 were considered statistically significant.

Results: About 45% of patients achieved a ROSC at hospital handover and 27.4% survived to discharge. Patients were predominantly male and over 65-years. Outcomes were independently associated with: bystander witnessed, medical aetiology, initially in shockable rhythm, ambulance response time less than 7-minutes and emergency medical services used defibrillators. Achieving a ROSC at hospital handover improved STD. Logistic regression indicated initial shockable rhythm, witnessed OHCAs, bystander CPR and public access defibrillator (PAD) improved ROSC chances, whereas increased age and ambulance response time reduced chances. A similar pattern was observed for STD with the addition that ROSC at any time increased STD. Increased age and ambulance response time increased the likelihood that resuscitation efforts were unsuccessful.

Conclusion: OHCA outcomes at sports and recreational events are significantly better compared to those occurring in the general population. Increased survival possibly due to higher proportion of cases being witnessed allowing for more bystander CPR, and potential PAD use. This highlights the importance of recognising what is happening, CPR training and being aware of the location of nearest PAD.

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Antenatal Couples' Counselling in Uganda (ACCU): A cost-effectiveness analysis and methodological evaluation of a randomised controlled feasibility study

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Introduction: Common avoidable factors contributing to maternal and neonatal deaths include lack of birth planning and an unmet need for contraception. The Antenatal Couples' Counselling in Uganda (ACCU) randomised controlled feasibility trial has tested the feasibility of a complex community-based intervention to provide counselling to antenatal couples. The intervention aimed to increase the proportion of women delivering in an appropriate location and increase the uptake of Postpartum Family Planning (PPFP), in order to reduce maternal and neonatal morbidity and mortality.

Objectives: This analysis aims to provide a cost-effectiveness analysis of the feasibility trial using trial outcomes, costs and estimates of patient out-of-pocket expenditures (OOPs). Any challenges in completing a comprehensive cost-effectiveness analysis will be investigated for potential changes that can be made in a full-scale randomised controlled trial of the complex community intervention.

Methods: The ACCU trial is a two-group, non-blinded cluster-randomised controlled feasibility trial. The intervention and control group each include an urban and rural sub-county in the city of Mbarara and surrounding area. The cost-effectiveness analysis compares the intervention costs and patient OOP expenditure between the intervention groups and control groups, and differences in outcomes in terms of: proportion of women delivering in appropriate locations according to their risk of complications, proportion uptaking PPFP, and incidence of neonatal and maternal morbidity and mortality.

Results: Preliminary analysis shows an average cost per participant of £53.21. An increase in the proportion of women delivering in an appropriate location was observed, with 84% in the intervention group compared to 75% in the control group, costing £726.04 per additional delivery in an appropriate location. PPFP uptake at 6 months increased, with 89% uptake in the intervention group compared to 56% in the control group, costing £162.82 per additional woman using PPFP at 6 months.

Conclusions: Further work is still required in order to fully assess the cost-effectiveness of this intervention. Initial results show a promising improvement in the number of women delivering appropriate healthcare centres.

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Poster Presentation Abstracts

Has the COVID-19 Pandemic increased the frequency and severity of DKA cases amongst paediatric patients with T1DM: A systematic review and meta-analysis

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Objectives: The COVID-19 pandemic's impact on healthcare is undisputed. Reports suggest the pandemic may have increased the risk and severity of diabetic ketoacidosis (DKA) among paediatric patients with existing and new-onset type 1 diabetes mellitus (T1DM) (McGlacken, 2021). This systematic review and meta-analysis aims to estimate the incidence and severity of DKA during the COVID-19 pandemic compared to the pre-pandemic period among paediatric patients with T1DM.

Methods: EMBASE, Medline and Web of Science were searched for studies investigating the risk of DKA and severe DKA during the COVID-19 pandemic and pre-pandemic period, among paediatric patients (<21 years) with T1DM.A random-effects meta-analysis was conducted to compare the relative risk of DKA and severe DKA.

Results: Using PRISMA flowchart methodology 24 papers were identified from a pooled sample of 344, with a total of 22,045 paediatric patients with T1DM. The majority of studies investigated DKA risk in new-onset diabetic patients. Random-effects meta-analysis demonstrated a statistically significant increase in the risk of DKA among T1DM patients occurred during the pandemic compared to the pre-pandemic period. Of these 24 papers, 18 investigated risk of severe DKA, with random-effects meta-analysis demonstrating a statistically significant increase in the risk of severe DKA among T1DM patients occurring during the pandemic compared to the pre-pandemic period.

Conclusion: This review demonstrates that globally during the COVID-19 pandemic the risk of DKA and severe DKA amongst children with T1DM has significantly increased. This increase is independent of temporal trends in DKA incidence. Whether that is linked to government restrictions, parental fear, or a diabetogenic effect of the virus, cannot yet be determined. Further research is needed to explore these hypotheses with measures bringing this issue to the public and clinicians' attention; especially given the morbidity and mortality of DKA and the associated healthcare demands.

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The Use of Nitrofurantoin for Uncomplicated Lower Urinary Tract Infections in Primary Care

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Within the Alliance Teaching Practice (Coventry), the prescribing of nitrofuratoin, in accordance to published guidelines, for the management of uncomplicated urinary tract infections (UTIs) were assessed. The study aims to evaluate the adherence to local prescribing guidelines for nitrofurantoin, the recommended antibiotic for UTIs, and assess the impact on patient care. The study population consisted of patients aged 18 and above presenting with symptoms of uncomplicated UTIs. Data were collected retrospectively, revealing that only 68% of eligible patients were prescribed nitrofurantoin, with some receiving alternative antibiotics or none at all. Among female patients, 78% were prescribed nitrofurantoin, but only 57% received the recommended dosage. For males, compliance was lower at 25% but in adherence with dosing recommendations. The study underscores the need for improved adherence to guidelines and suggests interventions such as educational training for healthcare professionals and collaboration with pharmacists. The study concludes that addressing non-compliance could enhance patient care, optimize treatment outcomes, and mitigate the risk of antibiotic resistance. A re-audit is recommended to assess the effectiveness of interventions in improving guideline adherence.

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Methodology for isolation of miRNA from serum of women investigated for Preeclampsia

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Preeclampsia remains a leading cause of maternal and foetal mortality with a poorly understood pathophysiology. It can lead to a range of clinical presentations, but proteinuria and hypertension are key components of the diagnosis. These signs arise due to disordered placental implantation due to poor trophoblastic invasion and resulting in placental oxidative stress due to hypoxia. Oxidative stress triggers the release of syncytiotrophoblast microvesicles (STMBs), of which placenta-derived exosomes may be a key component. The high specificity of exosomes to their cell of origin makes them ideal candidates as diagnostic biomarkers. We are particularly interested in the miRNAs (micro RNAs) contained within these exosomes as they may give us an insight into the genomic regulation within the pre-eclamptic placenta which leads to the disease state. The development of workflows for miRNA quantitation may enable us to identify novel biomarkers.

We have successfully isolated RNA from 23 samples; however, the concentration of the total RNA was too low for downstream molecular analysis. We did gain an insight into how to optimise and develop the workflow, so that with each attempt, the yield was increased. Our greatest concentrations were obtained by combining serum samples from multiple patients, demonstrating that we needed a higher volume to optimise the yield. Future studies should aim to obtain samples specifically for use in this research so that we could process a larger volume of serum.

The next steps will be to optimise the concentration of RNA for use in downstream applications including NGS (Next-Generation Sequencing). We have also noted that there is a positive correlation between the overall concentration of total RNA and a high sFlt-1/PlGF ratio, in the future it will be interesting to identify any miRNA candidates which contribute to this finding.

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A Scoping Review of Service Users' and Caregivers' Perceptions of Collaborative Mental Healthcare in Low and Middle Income Countries

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Background: Collaboration between biomedical practitioners (BHPs) and traditional and faith healers (TFHs) in treating mental disorders has been promoted as improving access to biomedical care and preventing human rights abuses. In many low- and middle-income countries, TFHs outnumber BHPs, and are the first contact for people with lived experience of mental illness (PLEs). While there are many papers exploring collaboration from the view of healers and BMPs, there is a lack of research that explores the views of PLEs and caregivers.

Aims: This scoping review aims to identify the literature investigating perspectives on collaboration for mental health care between BHPs and TFHs from the perspectives of PLEs and caregivers.

Methods: The Joanna Briggs Institute (JBI) protocol was used for this scoping review. Search terms were identified and agreed by team members and an initial search was conducted on four databases – CINAHL, AMED, PsychInfo and Medline. Identified articles were extracted and abstracts were screened independently by both researchers using Rayyan software. Conflicting papers were resolved, duplicates removed, and full texts retrieved for screening. Full texts and reference lists of selected papers were screened independently by two researchers. The selected articles were summarised in a charting table and coded thematically using NVivo.

Results: Eleven articles met the inclusion criteria. Five themes were explored – acceptability and perceived benefits of collaboration, perceived barriers to collaboration, potential harms and recommendations. Perceptions were generally positive towards collaboration and benefits were identified. However, some important barriers and harms were also highlighted, which may hinder effective partnership.

Conclusion: Overall, PLEs/caregivers were receptive to the idea of collaboration but had concerns such as lack of access to biomedicine or efficacy and trustworthiness of TFHs. Research that collected primary data was lacking stressing the need to focus on the perspectives of PLEs and caregivers in respect to collaboration between traditional and biomedical systems, as they have the most to benefit or lose from this partnership.

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Adipose Tissue Engineering: Current Surgical Applications and Future Potential Research

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Adipose Tissue Engineering (ATE) is a novel technology with many potential surgical and trauma-related applications. The current technique used to treat wounds or scarring in a plastic surgery context is using autologous flaps. ATE aims to provide an alternative to autologous flaps. The main principle of ATE is to use sourced donor adipose stem cell tissue, through using a variety of different three- dimensional scaffolds, to implant this tissue onto the site of injury or reconstruction. Although this technology is new and carries a lot of promise, there are a few limitations to its use; firstly, there is a lack of donor tissue available to use compared to the requirements that need to be met for this technology to be in larger use in practice. Secondly, research is needed to understand how we can better deliver oxygen and nutrients to the implanted tissue. Finally, finding ways of reducing likelihood of tissue morbidity during transport and finding new methods of maintaining tissue health. To conclude, ATE is a new technique to help improve the potential patent-outcome of healing skin-damage related injuries. Currently, only a few studies have been conducted to demonstrate its efficacy in everyday clinical practice. However, there is still a long way to go to make this technology more prominent than other techniques such as autologous flaps.

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Clinical audit on the long-term management of women with Polycystic Ovarian Syndrome in an urban GP surgery

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Background: Polycystic ovarian syndrome (PCOS) was historically largely under- recognised, underdiagnosed, and undermanaged. It is now considered one of the most common endocrine conditions affecting women of reproductive age. The long- term implications of PCOS include increased risk of developing diabetes, metabolic syndrome, and cardiovascular disease (CVD) risk factors. As such, national and international guidelines recommend that women with PCOS should be offered routine screening for diabetes and CVD risk factors.

Objectives: To compare a GP surgery's performance against national and international guidelines and recommendations with intent to improve the long-term management of women with PCOS, specifically with relevance to diabetes and CVD screening.

Methods: This retrospective clinical audit assessed whether screening for HbA1c and/or oral glucose tolerance test (OGTT), body mass index (BMI), and blood pressure (BP) measurements were taken in women with PCOS at an urban GP surgery and compared these outcomes against national and international guideline standards.

Results: 67 patients with PCOS were included in analysis. The GP surgery did not meet the 100% standard for all audited criteria. HbA1c/OGTT had been recorded in 67% of women over the age of 40 (n=21) within the past year and in 67% of women aged 40 or younger (n=46) within the past three years. BMI had been recorded in 54% of women within the past year. BP had been recorded in clinic in 37% of women within the past year.

Conclusion: Although monitoring for signs of diabetes in patients with PCOS was present for two-thirds of patients, increased early detection and management of cardiovascular risk factors would greatly benefit this patient population. Raising awareness, improving sources of support, and self-advocacy are among future directions following this audit. Re-audit is planned after 12 months, to determine the extent of implementation of proposed changes in line with audited standards.

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Auditing antimicrobial prescribing in children presenting with sore throat: using FeverPain or Centor scores

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Introduction: Pharyngitis (sore throat) is one of the most common presentations in General Practice (GP), particularly in children and young people. The aetiology of pharyngitis is predominantly viral (50-80%), yet antibiotics are commonly prescribed. Antimicrobial resistance is one of the top 10 global public health threats recognised by the World Health Organisation. In the UK, GP antibiotic prescribing increased by 40% between 1999 and 2011. NICE guidelines recommend the use of FeverPain or Centor criteria for antimicrobial prescribing in pharyngitis.

Aim: To assess antimicrobial prescribing in general practice, as per NICE guidelines. To evaluate the use of FeverPain/Centor scores in general practice

Method: Antimicrobial prescribing data in children (aged 5-17 years) presenting with sore throat in GP (Wychbury Medical Centre, Stourbridge) was audited. Data was collected retrospectively using GP records on EMIS (between 30/09/21-01/10/22). A FeverPain or Centor score was calculated manually for each patient. Data on patient symptoms was collected then FeverPain and Centor scores were calculated and analysed using excel. Patients were excluded if they were systemically unwell or are at a high-risk for complications, as per the NICE guidelines.

Results: 51 patients were prescribed antibiotics, with 41.12% of these cases being inappropriate based on NICE guidelines. There was a larger percentage of inappropriate prescribing with the Centor score, however a paired T test found no statistically significant difference between the scores (t=0, CI = -61.05 to 61.05). Additionally, the Centor and/or FeverPain score was only used in 12.389% of cases.

Discussion and conclusion: The recommended prescribing tools are infrequently used, and guidelines are not consistently adhered to. Consequently, utilisation of and adherence to those prescribing tools was recommended to prevent contribution to the growing issue of antimicrobial resistance. Additionally, recommendations will be given on antimicrobial prescribing diligence and use of the recommended scores.

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Use of a dedicated admission clerking proforma improves documentation and adherence to national standards

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Background: Good quality documentation that is comprehensive and coherent improves patient care, helps minimise clinical errors, and is a key safety matter. In our T&O unit, patient clerking is completed on lined continuation paper which results in a lack of format and standardisation, and is prone to omission of key elements within the history and examination.

Aims & Objectives:

1. Audit adherence of clerking documentation completed on lined continuation paper to standards set by Royal College of Surgeons and Professional Records Standards Body.
2. Determine whether a dedicated clerking proforma improves compliance to these standards.

Methods: Case notes of 30 consecutive patients admitted to our T&O department from 1st February 2020 were reviewed prospectively. A 38 item checklist was devised from the standards to assess clerking documentation. Following introduction of a dedicated clerking proforma, 30 additional consecutive patients' notes were assessed from 1st December 2020 using the original checklist. Results before & following implementation of the proforma were compared. Furthermore, various healthcare professionals (HCPs) were surveyed about current practices and attitudes to clerking practices and use of a proforma.

Results: The proforma outperformed in 32 items (84%). The greatest improvements were seen in social history (93% versus 27%); investigations, plan and diagnosis (77% versus 35%); patient details (80% versus 60%); presenting complaint, past medical and other history (92% versus 62%); musculoskeletal examination (93% versus 69%). 100% of ten HCPs surveyed believed the clerking proforma would ease their duties, improve quality of documentation, and preferred a structured proforma to lined paper.

Conclusions: This audit has identified a low compliance to national documentation standards for patient clerking when lined continuation paper is used. This was improved with the use of a dedicated admissions proforma and we recommend other T&O departments to implement their use if not already in existence.

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Comparing vitamin D deficiency induced dilated cardiomyopathy in Black African and South Asian paediatric patients – A systematic literature review

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Introduction: Dilated Cardiomyopathy (DCM) involves ventricular dilation and dysfunction, with reduced ejection fraction. It is the third leading cause of heart failure in children. An under- researched aetiology is vitamin D deficiency (VDD). If untreated, for instance due to poor screening and low clinical suspicion, which is an existing issue, it may lead to mortality. Studies often band both ethnic groups; this is perhaps inappropriate despite both having higher risk of vitamin D deficiency than Caucasians.

Aims: This review aimed to expand knowledge about VDD induced DCM in children of these ethnicities, to facilitate earlier diagnosis and better outcomes. As well as to investigate whether these ethnic groups should not be banded together in research of this condition.

Methodology: Following systematic database searches conducted on 19/10/2022, left ventricular ejection fractions (LVEF), compared with 25-hydroxyvitamin-D (25OHD) and total serum calcium values, were recorded for under-18-year-old Black African and South Asian VDD induced DCM patients. Any discrepancies between the clinical presentations of ethnic groups were investigated. Study characteristics were conveyed with a table, scatter graphs and narrative synthesis.

Results: Thirteen studies, comprising thirty-one patients, were included. Unexpected negative correlation between total serum calcium and LVEF in Black Africans was identified. Black African patients had a higher LVEF range than South Asian patients, despite similar 25OHD and total serum calcium ranges. Twenty-four patients developed heart failure, five (of seven) did not due to preventative heart failure treatment. Three patients, all South Asian, died. Clinical presentations were similar in both groups.

Conclusion: South Asians may be more susceptible to severe morbidity from a given 25OHD or total serum calcium compared to Black Africans, however this is uncertain as the case studies had low generalisability. Future research should be cautious about grouping these ethnicities. Screening and clinical suspicion should be enhanced to facilitate early management.

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The Efficacy of Robotic Assisted Thoracic Surgery versus Video Assisted Thoracic Surgery in Early-stage NSCLC: A Systematic Review of Recent Randomised Controlled Trial

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Introduction: Use of robotic-assisted thoracic surgery (RATS) for lung lobectomy for non-small cell lung cancer (NSCLC) has recently increased. This relatively new procedure is often compared to its predecessor, video-assisted thoracic surgery, without any clear advantage

Objectives: This study aims to identify randomised controlled trials comparing RATS and VATS usage in NSCLC and to perform a meta-analysis comparing efficacy with regards to perioperative outcomes.

Methods: A systematic search of online databases PubMed, Embase and Cochrane Library was conducted, and meta-analysis of eligible studies was performed. Reported results include operation time, hospital stay duration, chest tube duration, conversion-to-open thoracotomy, re-admission rates <90 days and post-operative complications.

Results: Pooled analysis of the three included studies showed no significant difference between RATS and VATS in any of the measured perioperative outcomes; operation time (MD 6.01 95% CI -16.04 to 28.06, p=0.59), chest tube duration (MD 0.00, 95% CI -0.29 to 0.29, p=1.00), total number of lymph node stations dissected (MD 1.91 95% CI -0.11 to 3.74, p=0.06), hospital stay (MD -0.12, 95% CI -1.54 to 1.31, p=0.87), conversion-to-open thoracotomy (RR 0.84 95% CI 0.37 to 1.90, p=0.68), Re-admissions <90 days (RR 0.90 95% CI 0.11 to 7.24, p=0.92), post-operative complication rate (RR 0.86, 95% CI 0.51 to 1.44, p=0.56), post-operative pneumonia (RR 2.26, 95% CI 0.69 to 7.44, p=0.18), and post-operative air leaks (RR 0.99, 95% CI 0.55 to 1.79, p=0.98).

Conclusion: Comparison of recent trials shows RATS has comparable efficacy to VATS in terms of perioperative outcomes. As more trials are published, further evaluation will be needed.

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Improving Medical Students' Knowledge and Attitudes towards Electroconvulsive Therapy

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Background: Stigma largely remains surrounding the use of electroconvulsive therapy (ECT) despite its proven safety and efficacy in treating a range of psychiatric disease like refractory affective illness and schizophrenia. Negative perceptions of the procedure are still held by many healthcare professionals including psychologists, nurses and medical students. It is therefore vital any misconception is adequately addressed and challenged. Negative attitudes towards ECT could impact patient management plans and result in patients foregoing this life-saving intervention.

Objective: This research aims to identify how medical students learn about ECT, how this shapes their perceptions, and what could be done to improve their knowledge and attitudes on the procedure.

Methods: APA PsychInfo and MEDLINE databases were searched on 18/07/2023. Articles were screened for suitability and reporting was done in accordance with PRISMA. Information has been obtained from six different primary research articles.

Results: Popular media, notably film and television are frequently reported as students in earlier years of studies' principal source of information – or misinformation, despite its known sensationalised inaccuracies. Senior medical students are more knowledgeable on the treatment and are therefore more likely to have positive attitudes compared to their junior counterparts, citing formal teaching, videos, scientific journals, observing and partaking in live ECT sessions as valuable learning sources.

Conclusion: Most depictions of ECT in popular culture are exaggerated, disturbing and very misleading. By incorporating ECT into the medical curriculum, stigmatising attitudes are greatly reduced in this cohort, hopefully leading to better outcomes for patients in the future.

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A review of low sodium diet in heart failure and its effects on cardiovascular events

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Background: Heart failure's (HF) global prevalence is 64 million people around the world. HF's pathophysiology can result in fluid overload, since cardiac output is reduced, and renal perfusion decreases. Which can further worsen disease progression. Thus, to prevent the worsening of congestion, current guidelines recommend no more than two grams of sodium per day. However, a prior review, concluded more evidence was required, to form a conclusion on the effectiveness of low sodium diets on cardiac outcomes. The aim of this review is to explore the evidence since 2016, to see if current data can help to update guidelines of current practice.

Methods: The following databases were systematically screened; MEDLINE, EMBASE, Cochrane, CINAHL and ClinicalTrials.gov and screened in two phases using eligibility criteria. Included studies were critically appraised, and data extracted based on primary outcomes, cardiovascular related hospitalisations and secondary outcomes, namely cardiac death and all-cause mortality.

Results: Following our search, 2811 articles were identified, after full-text screening, seven trials were included. Moderate amount of bias was identified mainly in blinding and value of results domains. Only one study showed lower rate of hospitalisations in the low sodium group compared to control, compared to two studies preferring the control group. Cardiac death data was limited, instead data on rates of all-causes mortality between the two groups were similar for all studies.

Conclusion: This review shows low sodium diets do not improve cardiac outcomes in heart failure. A Dietary Approaches to Stop Hypertension (DASH) diet with sodium restriction, adhered well for longer periods did reduce hospitalisations. This review does not provide evidence for sodium restriction guidelines and heart failure patients need to be individually assessed if sodium restriction is suitable.

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Career intentions of MBChB students at Warwick Medical School: Sub-analysis of a national cross-sectional study (AIMS Study)

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The working intentions of UK junior doctors and prospective medical students have been well documented [1,2,3]. Understanding current medical students' career intentions is key to future workforce planning [4], which is particularly pertinent in light of the recent industrial action taken by junior doctors. This research aims to determine current Warwick medical students' career intentions after graduation and upon completing the Foundation Programme and to ascertain the motivations behind these intentions. The sub-analysis is drawn from the AIMS (Ascertaining the career Intentions of UK Medical Students) study; a national cross-sectional study of medical students from all medical schools in the UK.

As an exclusively graduate-entry medical school, Warwick presents a unique population. 203 Warwick MBChB students responded to the survey (n=203) with 82.3% of students intending to complete the full 2-year foundation programme in the UK. However, only 37.72% of students intended to peruse speciality training in the UK thereafter and 44.33% of students intended to leave the NHS altogether within 2 years of graduating. These trends have significant implications for junior doctor workforce retention in the UK and the future of the UK medical profession.

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Total Intravenous Anaesthesia (TIVA) postgraduate education programme proposal

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Introduction & Aims: As well as having advantages over inhalation agents, total intravenous anaesthesia (TIVA) also offers a reduction in carbon footprint caused by anaesthetic gases which accounts for up to 5% of hospitals' CO_2 emissions in high income countries.[1] With the use of TIVA there are patient safety challenges arising from complexity of administration and lack of formal training. According to the 5th National Audit Project, a link exists between cases of accidental awareness during general anaesthesia (AAGA) and inexperience in TIVA methods which the 2020 Royal College of Anaesthetists Quality Improvement Compendium considers a priority subject.[2] This audit aimed to establish the volume of formal TIVA training received by trainee anaesthetists at a tertiary West Midlands hospital and propose a suitable education programme to address any gaps.

Methods: The number of formal TIVA training sessions attended by anaesthetics trainees at our hospital was collected via an anonymous online questionnaire between October and November 2022.

Results: There were a total of 17 responses (38% of all trainees) and a median of one (range 0–4) session attended. Most respondents (88%) were in higher specialty training and the number of training sessions attended increased with seniority - ST7 trainees (n=5) attended 47% of all sessions. In keeping with national data, our results indicate that formal TIVA education programmes need to be established to improve patient safety and add to sustainability efforts.

Conclusions: Our education programme is based on a framework by the Society for Intravenous Anaesthesia. It comprises four teaching sessions delivered at Novice and Intermediate training – three knowledge based and one practical session. A refresher is intended for those in higher training posts. Pre- and post-session quizzes and teaching feedback will be used to evaluate this quality improvement exercise, in conjunction with further research into number of AAGA cases with TIVA.

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Damage Control Surgery: paving access for trainees

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Background: Damage control surgery (DCS) is a crucial concept in trauma surgery, that has shown to reduce mortality in selected patients. The principles are to stop haemorrhage, restore blood flow and prevent contamination. Currently, there is no DCS training exists within the region and the confidence of Speciality Registrars at performing DCS is unknown.

Aim(s): To assess surgical Specialty Registrars' confidence in preforming DCS before and after the delivery of a dedicated DCS course.

Method: Using Likert scale, confidence of General, Vascular and Paediatric Surgery Specialty Registrars was assessed, using an online survey, pre and post course (1 – not confident, 5 – extremely confident). The DCS course consisted of the following Skills:

- Resuscitative thoracotomy
- Trauma laparotomy
- Abdominal packing for major haemorrhage

The course was run over 1-day and used a combination of porcine tissue and synthetic models. Using paired T-tests, pre-course and post course confidence scores were compared for each skill. A p value of <0.05 was considered significant.

Results:

Pre-course and post-course mean confidences of each skill are listed:

- Abdominal packing for major haemorrhage

o Pre:2.83

o Post:4.25

- Trauma laparotomy:

o Pre:2.75

o Post:4.17

- Resuscitative thoracotomy

o Pre:1.75

o Post:4.25

All results were statistically significant.

Discussion: This one-day course has demonstrated a statically significantly increase in the mean confidence of registrars performing key DC Skills. Its success has led to its inclusion as an annual course within the Major Trauma Centre, at no cost to the trainees.

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Clinical audit of annual health checks for patients with learning disabilities at a GP practice in rural South Warwickshire

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Introduction: Annual health checks (AHCs) improve access to primary healthcare services for people with learning disabilities. People with learning disabilities (LD) have been shown to have poorer health outcomes than the neurotypical population (Mencap, 2016) (Heslop A, 2013). AHCs increase identification of previously undiagnosed health conditions (Robertson J, 2010). Shipston Medical Centre has a LD prevalence of 0.45%- lower than the national average of 0.53%. (NHS Digital, 2021). This audit investigated the uptake of AHCs by people with LD at a rural GP practice and compare with the national average and NHS England target.

Methods: The standard used was: "At least 75% of young people and adults over the age of 14 with a learning disability should have had an Annual Health Check in the last 12 months." (NHS, 2021) The practice learning disabilities register identified all patients >14 years old with registered LD, and EMIS was used to search for their most recent AHC.

Results: Of the 50 patients at Shipston Medical Centre eligible for an AHC, only 34 (68%) of them had attended an AHC in the last 12 months- lower than the national average of 74% and NHS England target of 75%. Of the 16 patients who had not had an AHC in the last 12 months: 8 patients (16%) declined an appointment, 3 (6%) did not arrive at their agreed appointment time, 3 (6%) were awaiting bookings, and 2 (4%) were not invited.

Discussion: Limitations to the AHC system at this practice included fixed appointment times, practitioner inflexibility, 30-minute limits, and lack of reasonable adjustments. These limitations conflict with Public Health England recommendations and may contribute to poor AHC engagement. Subsequent recommendations included increasing staff training, greater appointment flexibility, and longer appointments. A re-audit should occur after implementation of these changes to assess for improvement.

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Menstrual Product Advertising in Social Media: Tensions and Inconsistencies

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Background: Many who experience menstrual pain globally don't seek healthcare, and when they do there is criticism that medical professionals may normalise symptoms. Additionally, many teenagers who experience menstrual pain don't know about endometriosis. Social media is an increasingly used source of menstrual information for young people. Understanding how menstruation and existing menstrual products are represented in the media is critical to appreciating the context in which young people menstruate and make decisions about how to navigate symptoms such as dysmenorrhoea.

Aim: To explore contemporary menstrual product advertising messages in social media.

Methods: Multi-modal discourse analysis on advertisements from 13 prominent menstrual product companies on Instagram and TikTok over a 1-month period.

Findings: Several key tensions were identified in the advertisements: "breaking taboos" vs. "keeping it hidden"; "it's normal" vs. "it might not be normal"; and "periods are hard" vs. "don't let it stop you. There were some evolutions in messaging compared to previous analyses, including environmental and social justice, more accurate representation of menstrual blood, greater diversity of body size and colours, educational posts, and new forms of judgment (e.g. for using disposable products). Significant omissions still remained.

Conclusions: Mixed messaging remains prevalent and potentially undermines health messages and makes it difficult for young people to know when to seek support for dysmenorrhoea. Healthcare professionals are seeing people exposed to this messaging and are, themselves, exposed. These messages likely permeate decisions about both seeking and navigating health encounters.

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