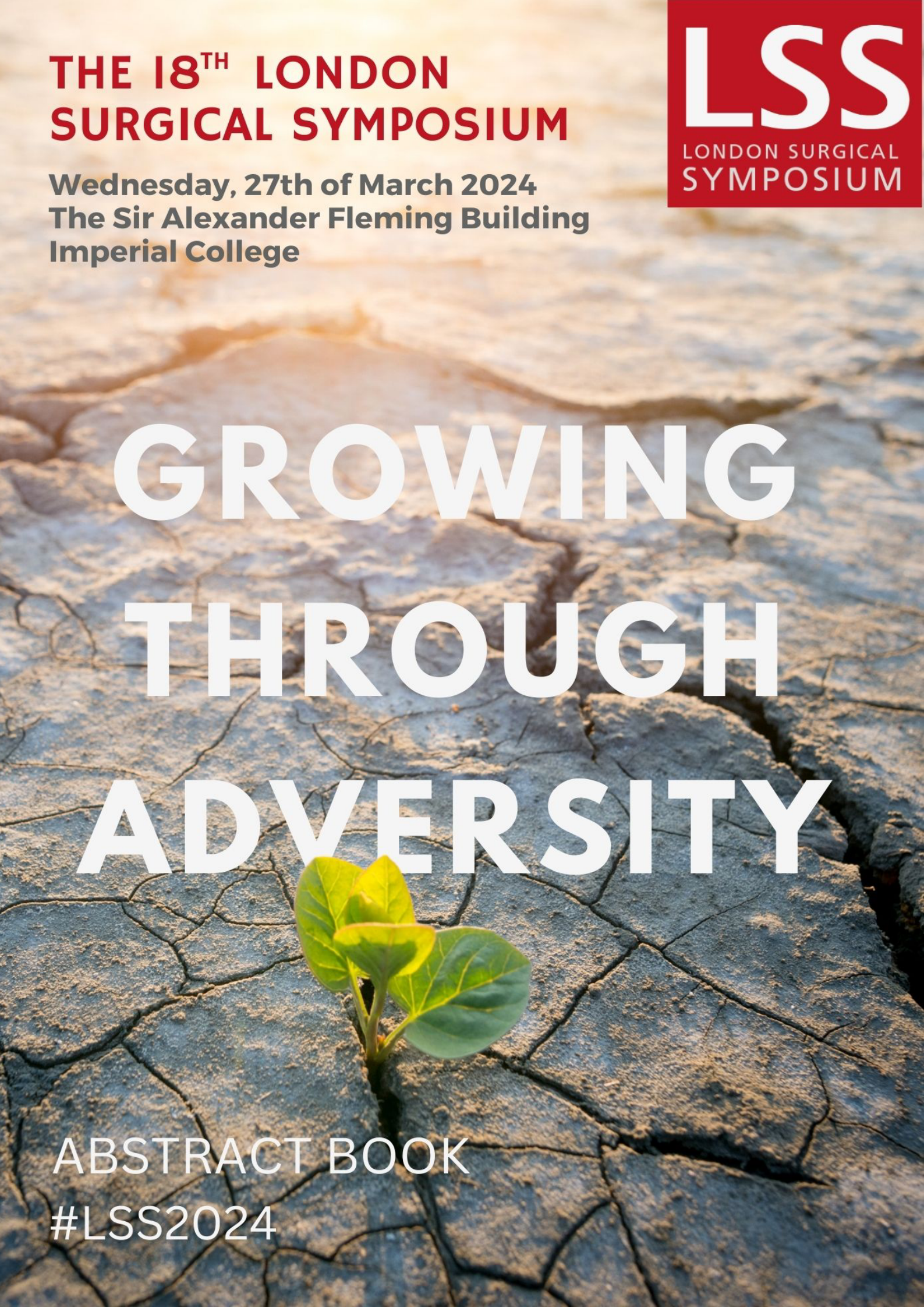
THE 18TH LONDON SURGICAL SYMPOSIUM

LSS
LONDON SURGICAL SYMPOSIUM

Wednesday, 27th of March 2024
The Sir Alexander Fleming Building
Imperial College



GROWING THROUGH ADVERSITY

ABSTRACT BOOK
#LSS2024

AVERIL MANSFIELD ORAL PRIZE ABSTRACTS

Living with Faecal Incontinence: A Systematic Review and Meta-Ethnography

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Introduction: Faecal incontinence (FI) affects up to 8.3% of the population with physical, psychological and social consequences. Sadly, patient experiences remain under-explored, and most symptom measures are based on clinical outcomes rather than patient narratives. This study aimed to describe the lived experience of FI through review of published qualitative studies.

Method: A systematic literature search of qualitative studies of patients with FI published between 2003-2023 was conducted. An inductive approach by 2 reviewers enabled identification of key concepts. Collaboration with a third
reviewer then generated higher-order interpretations. Finally, a meta- ethnographic method was utilised to construct a comprehensive thematic framework of lived experiences of FI.

Results: Of 3394 studies identified, 13 were included. Six major themes emerged: quality of life, adaptation, protection, wider environment, perception and healthcare experiences. The most prevalent theme was quality of life,
incorporating mental health, social well-being, functional ability, and physical impact of FI. Adaptation encompassed behavioural changes, dietary modification, and adjustments to routine. Protection comprised risk management strategies and symptom concealment. Wider environment described navigation of professional and public environments. Perception described self-perception, societal attitudes, and condition awareness. Healthcare experiences included access to care, clinician-patient interactions, and fulfilment of health needs.

Conclusions: This study provides a new, patient-centric framework of lived experiences of FI and gives insight into the breadth of factors contributing to the burden of this condition. Many themes found are not represented in current outcome measures highlighting the need for new ways of describing the impact of FI.

Remimazolam Besylate inhibits human prostate cancer cell (PC-3) viability, migration and promotes apoptosis in vitro

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Introduction: Currently, 15% of UK patients with prostate cancer receive surgery, where the choice of anaesthetic has the potential to affect disease recurrence. While no consensus exists as to which anaesthetic has potential linking to cancer recurrence after surgery, pre-clinical data suggest that intravenous agents may be superior to volatile agents which are cancer promoting. Remimazolam besylate is a new intravenous anaesthetic that acts on the GABA-
alpha subunit of the benzodiazepine receptors and is broken down by tissue- nonspecific esterases; its effects on prostate cancer cells has not be characterized 3. This study aims to characterize the effect of Remimazolam on PC-3 prostate cancer cell viability and migration, and further assess mitochondrial activity.

Method: Cultured PC-3 cells were treated with Remimazolam concentrations varying from 0.1 to 500 μM for 24 hours. Their viability was assessed with MTT assay. Further migration assays, immunofluorescence staining, and mitotracker assays were conducted on the cells treated with 300 μM of Remimazolam. The expression levels of multiple cell cycle and apoptotic markers were measured.

Results: Remimazolam reduced PC-3 cell viability in a dose-dependent manner from 100 (21.6% decrease [P = 0.034]) to 500 μM (70% decrease [P < 0.0001]). At 300 μM, it decreased cell migration by 66 % (P<0.0001). Furthermore, Ki-67, cyclin A and cyclin D expression were reduced after treatment (77.7% reduction, P<0.0001; 46.5% reduction, P = 0.0128; 47% reduction, P = 0.0128; respectively); while caspase-3, caspase-9 and cytochrome C expression were all increased
(44% increase, P = 0.0483; 47% increase, P = 0.0013; 26% increase, P = 0.0012; respectively). In addition, 300 μM of remimazolam decreased mitochondrial mass compared to that in the vehicle group by (53.3% decrease [P = 0.0479])
(Figure.1).

Conclusions: Remimazolam decreased PC-3 cell proliferation and stimulated the intrinsic apoptotic pathway to cause cell death. The drug has "anti-cancer" properties, but its effect needs to be further explored in in vivo setting.

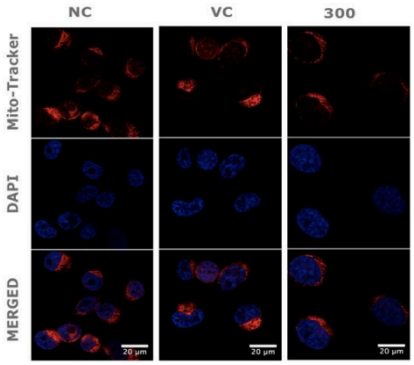

Figure 1. Remimazolam besylate at 300 μM decreased the mitochondrial mass. NC: Naïve control; VC: Vehicle control.

A 6-year retrospective study of vulvar cancer in a tertiary hospital in Indonesia: Portraying incidence trends and predicting adverse clinical features

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Background: This study investigated the rare occurrence of vulvar cancer (VC) in Asia, focusing on Southeast Asia, where data is scarce. We aimed to analyse the annual incidence trends, comprehensive profiling characteristics, and associative models of advanced-stage and distant metastasis in Indonesian VC patients.

Methods: Studying 86 eligible vulvar cancer cases in an Indonesian tertiary hospital, we compared clinicopathological and treatment-related characteristics based on staging and distant metastasis (DM). Joinpoint was used for trend analysis, expressed as an annual percentage change (APC). Univariate and multivariate logistic regression analyses established a logistic-regression model for advanced stage and DM occurrences, with the model's discrimination performance assessed using the ROC curve.

Results: Over 6 years, the incidence of VC significantly increased annually (+21.43%, p=0.034). This increase was more pronounced in older patients, rural communities, and VC cases without DM compared to their counterparts
(+25.53% vs. +19.61%, +22.25% vs. +19.08%, and +30.50% vs. +9.95%, respectively). The logistic-regression model for advanced-stage VC identified associated traits such as urban living (OR 5.12), right-sided lesion (OR 7.93), bilateral lesion (OR 10.25), and tumour volume ≥70 cm3 (OR 10.88); achieving an AUC of 0.81, p<0.001. Associated traits to VC with DM included normal-underweight nutritional status (OR 5.50), presence of pain (OR 4.88), right-sided lesion (OR 13.80), and non- keratinised tumour (OR 5.72) with an AUC of 0.80, p<0.001.

Conclusions: VC incidence in Indonesian patients has notably risen annually, particularly in older patients, rural areas, and cases without DM. Specific clinicopathological characteristics are linked to adverse clinical outcomes in VC.

Table 1. Univariate and multivariate regression analyses of factors associated with advanced-stage and distant metastasis in vulvar cancer patients

Variables	Unadjusted OR		Adjusted OR	
	OR (95%CI)	p-value	OR (95%CI)	p-value
ADVANCED-STAGE				
Living in urban areas (*Ref*: rural)	2.54 (0.87–7.37)	0.081[a]	**5.12 (1.43–18.37)**	**0.012[c]**
Age ≥60 years	3.09 (0.82–11.73)	0.085[a]	2.66 (0.58–12.06)	0.206[c]
Onset ≥3 months	2.69 (0.87–8.28)	0.114[b]	2.79 (0.70–11.01)	0.144[c]
Urethral invasion (+)	5.23 (0.64–42.42)	0.107[b]	3.95 (0.43–35.79)	0.222[c]
Perineum NOS invasion (+)	3.33 (0.70–15.86)	0.139[b]	1.75 (0.29–10.77)	0.544[c]
Right-sided cancer lesion (*Ref*: left-sided)	3.80 (0.78–18.51)	0.116[b]	**7.93 (1.09–57.77)**	**0.041[c]**
Bilateral cancer lesion (*Ref*: left-sided)	5.50 (1.29–23.46)	**0.027[b]**	**10.25 (1.73–60.80)**	**0.010[c]**
Tumour volume ≥70 cm^3	5.30 (1.41–20.00)	**0.008[a]**	**10.88 (2.26–52.36)**	**0.003[c]**
Greatest tumour diameter ≥4 cm	3.69 (1.16–11.79)	**0.041[a]**	2.21 (0.43–11.44)	0.345[c]
DISTANT METASTASIS				
Underweight-normal (*Ref*: overweight-obesity)	2.96 (1.16–7.57)	**0.021[a]**	**5.50 (1.69–17.85)**	**0.005[c]**
No palpable mass and swollen vulva	2.24 (0.68–7.38)	0.219[b]	1.87 (0.39–8.94)	0.431[c]
Vulvar/vaginal bleeding (+)	3.45 (1.32–9.00)	**0.010[a]**	2.47 (0.80–7.63)	0.115[c]
No ulceration	3.41 (0.70–16.68)	0.196[b]	1.94 (0.30–12.59)	0.489[c]
Labial pain and discomfort (+)	1.92 (0.64–5.74)	0.241[a]	**4.88 (1.23–19.38)**	**0.024[c]**
Defecation or urination abnormalities (+)	3.71 (0.64–21.56)	0.189[b]	1.97 (0.18–21.70)	0.578[c]
Right-sided cancer lesion (*Ref*: left-sided)	7.61 (0.83–69.87)	0.061[b]	**13.80 (1.28–148.22)**	**0.030[c]**
Bilateral cancer lesion (*Ref*: left-sided)	5.62 (0.66–47.82)	0.143[b]	9.21 (0.96–88.16)	0.054[c]
Tumour volume ≥70 cm^3	1.78 (0.74–4.31)	0.199[a]	2.06 (0.68–6.26)	0.201[c]
Moderate differentiation (*Ref*: well differentiation)	2.53 (0.85–7.51)	0.090[a]	2.10 (0.50–8.89)	0.312[c]
Poor differentiation (*Ref*: well differentiation)	4.22 (1.25–14.28)	**0.017[a]**	2.57 (0.36–18.22)	0.345[c]
Non-keratinised cancer	2.96 (1.18–7.45)	**0.019[a]**	**5.72 (1.88–17.44)**	**0.002[c]**

Notes: [a]χ2 test; [b]Fisher's exact test; [c]Multivariate logistic regression analysis. **Notes:** Although their p-value was <0.25, the variables of 'inguinal involvement', 'histopathology,' and 'Papaniculou smear' were not included in multivariate logistic regression for the staging model because there was zero to an excessively small sample size in these variables within the 2 x 2 table. Although its p-value was <0.25, the variable of 'recurrence time' was excluded from multivariate logistic regression for the distant metastasis model because its sample size (n=17) was not equal to that of most of the eligible variables in models (n=86). Moreover, recurrence time did not precede the outcomes (the distant metastasis that was investigated is on initial presentation). ***Abbreviation:*** *95%CI, 95% confidence interval; NOS, non specific; OR, odds ratio; (+), present/exist*

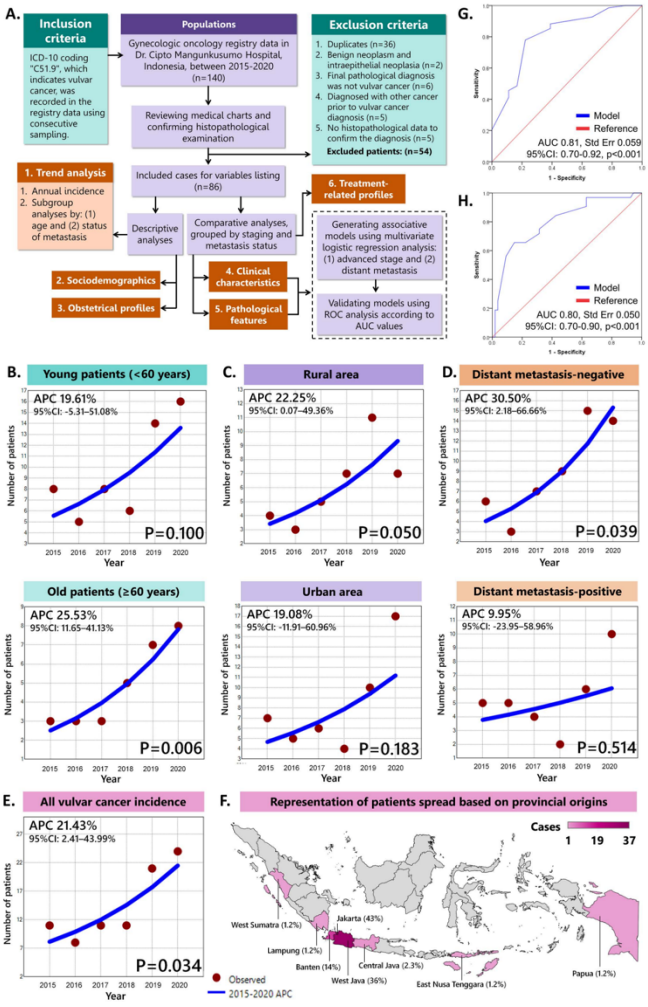

Figure 1. (A) Study flow: Cases were analysed using joinpoint regression for annual trends, categorised by age and distant metastasis. Patient characteristics were compared across stages and metastasis statuses, and factors associated with advanced stage and vulvar cancer metastases. Annual incidence trend and subgroup analysis of vulvar cancer among Indonesian patients at Dr. Cipto Mangunkusumo Hospital (2015-2020), Jakarta, Indonesia were categorised based on **(B)** age, **(C)** residential areas, **(D)** distant metastasis presence status, and **(E)** overall vulvar cancer status. The P-value derived from Monte Carlo permutation tests indicates the significance of the annual percentage change (APC) at alpha = 0.05. **(F)** Representation of provinces of origin of patients referred to our hospital across Indonesia. **(G)** Receiver operating characteristic curve (ROC) analyses for prediction models of advanced-stage diseases, and **(H)** distant metastasis in vulvar cancer. ***Abbreviations**: 95%CI, 95% confidence interval; AUC, the area under the receiver operating characteristic curve; BMI, body mass index; ICD-10, International Classification of Diseases, 10th edition; Std Err, standard error.*

Tenascin-C as a target for Intra-operative margin assessment in patients after neo-adjuvant chemotherapy

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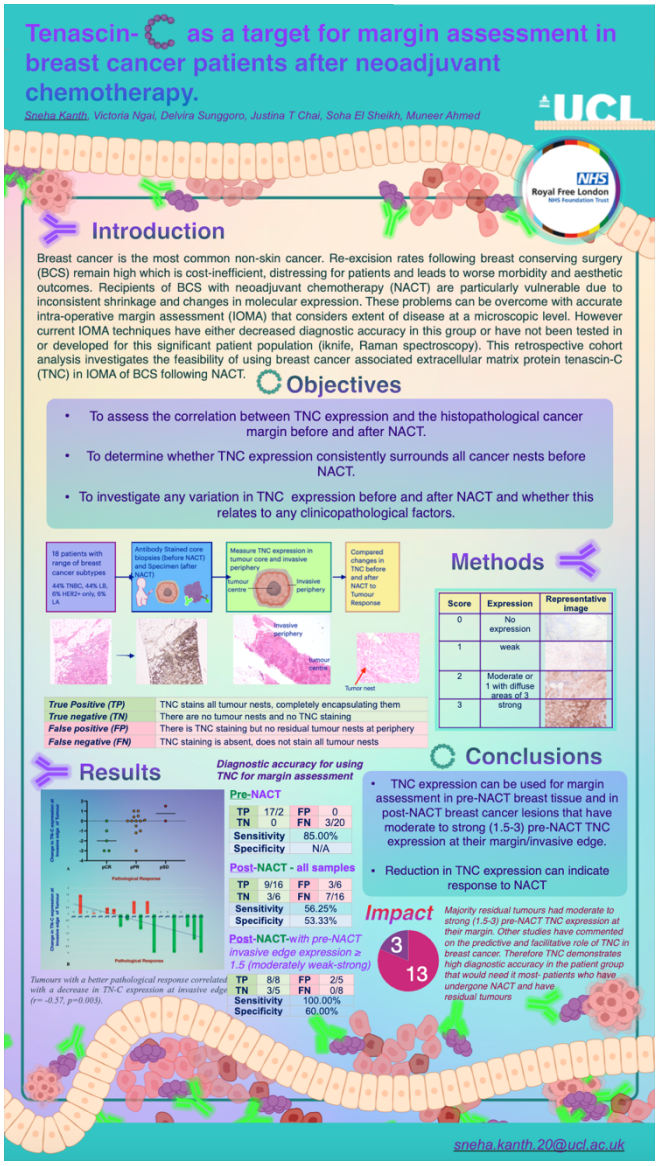
Introduction: Re-excision rates following breast-conserving surgery (BCS) are high, especially after neoadjuvant chemotherapy (NACT). Intraoperative margin assessment is limited in this patient group. This retrospective analysis
investigates using tenascin-C (TN-C), an extracellular matrix protein, for intraoperative margin assessment in BCS post- chemotherapy.

Method: A cohort of 24 breast cancer patients who had NACT participated in the study. Core biopsies were taken before treatment (Pre-NACT) and breast specimens after (Post-NACT). Samples were stained with anti-TNC antibody and the TN-C staining at the margin was correlated with histology. TN-C expression was also scored between 0 (none)- 3 (strong) to assess change in TN-C expression following NACT. Statistical analysis included Spearman's correlation and Wilcoxon sign tests, with a significance level set at $p \leq 0.05$.

Results: In Pre-NACT samples, TN-C expression consistently encapsulated tumour invasive edge in 17/20 cases, giving a sensitivity for margin assessment of 85%. In post NACT samples, TN-C's had a sensitivity of 56.25% and specificity was 53.33% In margin assessment when correlated to histology. When we only considered samples in which the initial pre-NACT invasive edge TN-C staining
was at least week-moderate (≥ 1.5), the sensitivity and specificity increased to 100% and 60% respectively. Additionally, complete pathological response (pCR) was correlated to a decrease in TN-C expression (r= -0.57, p=0.003).

Conclusion: Our proof-of concept study shows that using TN-C expression is feasible for use in margin assessment of residual breast cancer lesions after NACT in a subset of patients. These patients can be identified before NACT as
having a TN-C expression at their invasive edge that scores ≥ 1.5. This provides more reliability than existing tools. Furthermore, reduction in TN-C with pCR and TN-C role in breast cancer progression, points toward a potential prognostic role.



Proof-of-Concept: Can Wearable Devices Differentiate Upper-Limb Exercises used in Breast Cancer Surgery Rehabilitation?

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Background: Breast cancer (BC) is the commonest cancer worldwide. Most BC patients suffer mild to moderate shoulder disability post-axillary surgery, yet physiotherapy is not routinely offered. Patients are given exercise leaflets
without monitoring of compliance. This proof-of-concept study uses an experimental app that detects tri-axial movement, utilising a smartwatch gyroscope and accelerometer. The study aims to assess whether wearables can differentiate post-BC surgery exercises, and different levels of exercise restriction.

Methods: Ten healthy adults were asked to perform six cycles of nine exercises routinely prescribed to post-operative BC patients for shoulder rehabilitation. Their upper-limb movement outcomes, including gravity, acceleration, attitude and rotation-rate were recorded for each exercise over three sets of movement. Set one was performed without restriction, set two was performed with a
restriction band to simulate muscle injury and weakness, and set three was performed with 50% range of movement (ROM) restriction to simulate movement limitation due to pain or chording.

Results: Nine unique tri-axial waveform signatures were identified for each of the nine post-operative exercises. Simulated band restriction and 50% ROM
restriction produced widening of the tri-axial waveforms, with peaks and troughs of the sinusoidal waveforms narrowing with increasing restriction.

Discussion: This proof-of-concept study demonstrates that wearables can differentiate exercises used in post-BC surgery rehabilitation. Moreover, it shows that wearables can detect exercise restriction, and have potential to monitor patient progress through their rehabilitation. Further studies utilising a movement classifier or a neural network should explore the utility of wearables in providing remote monitoring of self-directed rehabilitation.

THE LSS POSTER PRIZE ABSTRACTS

LS001: Understanding influences on waste in operating theatres: an interview study about unnecessary glove use

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Background: Approximately 5.5 billion disposable gloves are used across NHS England annually. Many of those are used in operating theatres (OTs), often unnecessarily: alcohol hand gel and hand washing have a lower environmental impact and are in many cases safer alternatives. However, the influences on unnecessary glove use are not well understood. Therefore, we investigated the
key behavioural determinants for overuse of non-sterile, single-use gloves in OTs.

Methods: Nineteen surgeons, nurses and anaesthetists (of different specialties and seniority) were interviewed using a semi-structured technique based on the Theoretical Domains Framework (TDF). Transcripts were analysed using
framework analysis and mapped to the TDF.

Findings: Six themes were identified, covering ten of the 14 TDF domains. Participants described the influence of the wider context of the NHS, including having finances taking precedence over sustainability, and a lack of incentivisation to reduce waste. Patient outcomes were described as the highest priority, resulting in a reluctance to change current practices. There are strong social influences: a less communicative or familiar team results in more waste,
and junior staff model the glove wearing of more experienced staff. Alternatives to gloves were reported to be much less readily available, resulting in higher
glove use. There are no clear guidelines for glove use, and limited training, leading to the influence of individual differences, such as 'common sense', habits, values and years of experience.

Discussion: This study provides insight into an important behaviour affecting sustainability in healthcare, and will inform the design of appropriate and
effective interventions.

LS002 - Remote Patient Monitoring for Patients Awaiting Elective Cardiac Surgery: What Symptoms Should We Monitor?

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Background: Patients waiting for major cardiac surgery have significant comorbidities and are at risk of morbidity and mortality whilst awaiting intervention. With prolonged waiting times, remote patient monitoring (RPM) allows for regular monitoring of patients who may demonstrate evolving symptoms and herald the risk of an adverse event. RPM and the utilization of current technology allows clinicians and healthcare systems to monitor the
waiting list and amend surgical priority thereby minimizing the risk of adverse events. This study sought to guide RPM by evaluating the key symptoms and preoperative risk factors to monitor that lead to increased mortality &
perioperative complications.
Methods: A literature review was conducted. Data was collected through Pubmed, Ovid MEDLINE, Embase, and Google Scholar. Articles were screened and relevant articles were extracted; results were summarized in the related
section.

Results: Eighteen manuscripts were reviewed with a total of 121,555 patients. Key outcomes of common symptoms and risk factors used to assess preoperative patients for worsening were: impaired left ventricular function (66%); unstable angina (44%); myocardial infarction, prior history of MI, or AMI (33%); atrial fibrillation, non-AF arrythmia, and ECG abnormalities (27.7%); congestive heart failure and associated symptoms (22%); and others.

Discussion: Based on a review of existing literature we have identified the key risk factors associated with adverse outcomes whilst waiting cardiac surgical intervention. For RPM systems we suggest that the utilization of technology and a questionnaire specifically monitoring for the above risk factors will result in a lower rate of adverse events on the waiting list.

LS003 - How Does Exercise Aid Recovery After Surgery in Patients with Breast Cancer: a Quantitative Analysis of Quality of Life and Patient Satisfaction

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Background: Trials to assess differences in FACT-B (Functional Assessment of Cancer Therapy - Breast) over time, as a proxy for quality of life and patient satisfaction, in patients that have surgical interventions for breast cancer,
between arms that have prescribed exercise in their recovery compared to a control are rare. Conflicting data and results make it difficult to determine the extent to which exercise can help to improve postoperative recovery.

Methods: PubMed and Cochrane were searched for randomised controlled trials up to 15.12.23, reporting FACT-B at baseline and at least one other data point within 24 months. Data was extracted by 2 researchers. Mean monthly change in FACT-B after surgical intervention for breast cancer in patients that have had a prescribed exercise routine, compared to those that have not, were assessed using unpaired T testing. 1221 records were screened. 6 studies enrolling 642 participants met the eligibility criteria and were analysed.

Results: The mean monthly rate of ΔFACT-B score differed significantly between intervention and control groups (1.31 ± 3.40 vs 0.46 ± 3.55, respectively; $p < 0.001$). However, upon considering the effect size, the overall pooled Mean Difference estimate showed no significant differences (D = 0.20, 95% CI = -0.12 to 0.51, p = 0.22), with moderate heterogeneity ($I^2 = 69\%$, p = 0.006).

Conclusions: Change in FACT-B over time may be a useful measure of treatment efficacy in patients that have had surgery to treat breast cancer. This could be assessed in practice, and exercise could be used as a formal method of
treatment, potentially provoking a change in the post operative guidelines for patients with breast cancer. This could inform future trial design, and could encourage physical activity among patients. Higher powered trials are required to validate our results.

LS004 - Evaluating prescribing practice of best medical therapy in patients with peripheral arterial disease requiring lower limb interventional angioplasty

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Introduction: Peripheral arterial disease (PAD) affects 1 in 5 people over the age of 60 years old and increases the risk of chronic limb-threatening ischaemia with subsequent tissue loss. Stringent risk factor modification with best medical
therapy (BMT) is the first-line treatment for patients with PAD. The aim of this audit was to evaluate prescribing practices of BMT based on recommendations by the European Society of Cardiology (ESC) PAD guidelines for our cohort of patients pre- and post-lower limb interventional angioplasty at a specialist tertiary centre.

Methods: Patients who received lower limb interventional angioplasty between July-September 2021 were included. BMT was defined as dual antiplatelet therapy or single antiplatelet therapy with an anticoagulant, and lipid-lowering therapy. Development of local trust guidelines with key stakeholders and departmental teaching were implemented based on the results from the first cycle. The evaluation was performed on patients receiving angioplasty between June-August 2023.

Results: First cycle analysis of 30 patients observed that only 44% of patients were prescribed BMT on discharge. Barriers to gold-standard prescribing included inconsistent documentation of medications and discharging junior
doctors finding the ESC PAD guidelines vague or difficult to interpret. After implementation of local trust guidelines and teaching, the second cycle analysis of 45 patients showed an improvement of 82% of patients discharged on BMT.

Conclusion: Overall, this audit highlighted inconsistent prescribing of BMT secondary to lack of confidence in current guidelines. Design and implementation of local trust guidelines and teaching led to marked improvement in doctors prescribing BMT post-angioplasty.

LS005 - Surgical trainee experiences from 2013 to 2023 within the United Kingdom as reported by the General Medical Council National Training Survey

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Introduction: The General Medical Council (GMC) issues annual surveys to all doctors within the United Kingdom (UK) in a formal postgraduate training scheme. This facilitates the monitoring of experiences for quality assurance purposes. Low job satisfaction is associated with heightened burnout and staff turnover, as well as deteriorating clinical care and productivity levels.

Methods: We gathered and extracted data from the publicly available online GMC reporting tool. Data ranged from 2013 to 2023 and spanned 12 postgraduate surgical training programmes across all 18 indicators available. In
total, 198 individual metrics were recorded, in addition to burnout. We conducted trend analysis and yearly average mean scores for individual metrics, burnout, and geographical differences for 141 individual training programmes within the 16 training regions.

Results: Of the 198 metrics analysed, 83 (42 %) were found to have statistically significant negative trends ($P < 0.05$), in comparison to 24 (12 %) with positive trends. 5 specialities had over 50 % of metrics showing a significant negative
trend. Overall satisfaction was negative in all 12 programmes, with eight reaching significance ($P < 0.05$). Of 141 individual training programmes, 29 % showed a significantly negative trend in overall satisfaction, with 1 % demonstrating a significant positive trend ($P < 0.05$).

Conclusion: Our study is the first to explore long-term trends in trainee-reported surgical training experiences within the UK. Our data have revealed widespread worsening trainee-reported experiences and dissatisfaction across multiple
specialities and geographical regions, especially in key areas of overall satisfaction, self-development, and clinical supervision.

Table 1
Summary of trend results for Spearman's rank correlation coefficient from 2013 to 2023. Results are stratified by speciality with each category and percentage of trends calculated from the total number of indicators for each speciality.

Programme	Negative significant	Negative	Positive	Positive significant	No trend
Core Surgical Training	12 (71 %)	2 (12 %)	2 (12 %)	1 (6 %)	
Cardiothoracic Surgery	6 (35 %)	7 (41 %)	2 (12 %)	1 (6 %)	1 (6 %)
Surgery Foundation Year 1	11 (85 %)			1 (8 %)	1 (8 %)
Surgery Foundation Year 2	12 (80 %)	3 (20 %)			
General Surgery	9 (53 %)	1 (6 %)	4 (24 %)	3 (18 %)	
Neurosurgery	4 (24 %)	8 (47 %)	2 (12 %)	3 (18 %)	
Paediatric Surgery	5 (29 %)	9 (53 %)	1 (6 %)	2 (12 %)	
Plastic Surgery	5 (29 %)	5 (29 %)	3 (18 %)	3 (18 %)	1 (6 %)
Trauma and Orthopaedic Surgery	12 (71 %)	1 (6 %)	1 (6 %)	3 (18 %)	
Urology	4 (24 %)	8 (47 %)	3 (18 %)	2 (12 %)	
Vascular	1 (6 %)	8 (47 %)	7 (41 %)	1 (6 %)	
ENT	2 (12 %)	7 (41 %)	4 (24 %)	4 (24 %)	
Total	83 (42 %)	59 (30 %)	29 (15 %)	24 (12 %)	3 (2 %)

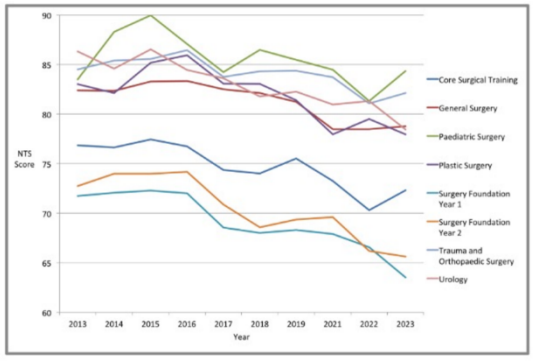

Fig. 1. Mean overall satisfaction scores for training programmes with statistically significant trends.

LS006 - Incidence and trends in workplace violence within emergency departments in the United Kingdom 2017–2022: an observational time series analysis

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Background: Workplace violence (WPV) is a notable issue facing healthcare services and workers globally. WPV impacts the well-being of staff and can put healthcare provision at risk with detrimental effects on patient care. This study aims to investigate and quantify the incidence and trends of WPV within emergency departments (EDs) at national and regional levels.

Methods: We requested data relating to WPV from all 152 trusts with an ED I the UK from January 2017–March 2022. We applied interrupted time series and trend analysis to check for significant differences in WPV across the COVID-19 pandemic.

Results: We conducted time series analysis on 58 million attendances and detected statistically significant increases in WPV in March 2020–5.06/100,000 attendances (95% CI 1.59/100,000–8.53/100,000 p < 0.01) and May 2020–
20.63/100,000 attendances (95% CI 9.39–31.87 p < 0.01). We analyzed 96 million attendances for yearly trends, which revealed statistically significant increasing trends of WPV in London and North-West England (p < 0.05) and physical WPV in North-West England (p < 0.05).

Conclusion: There have been dramatic increases in WPV incidents in United Kingdom EDs over the last five years, with concerning rises during the COVID-19 period. Our findings highlight the potential to further demoralize a workforce already under significant strain, resulting in increased physical or mental health absences and an exodus of staff. Therefore, trusts should ensure there are robust systems in place to protect and safeguard staff.

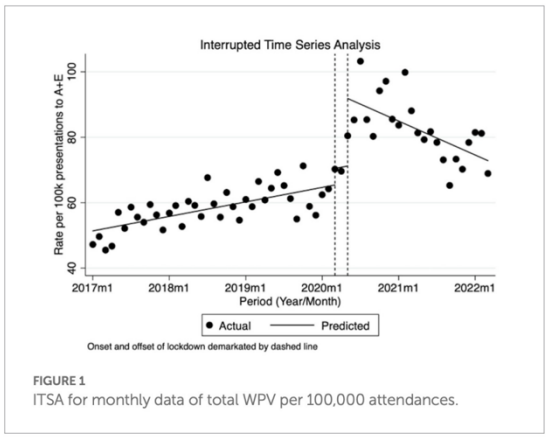

FIGURE 1
ITSA for monthly data of total WPV per 100,000 attendances.

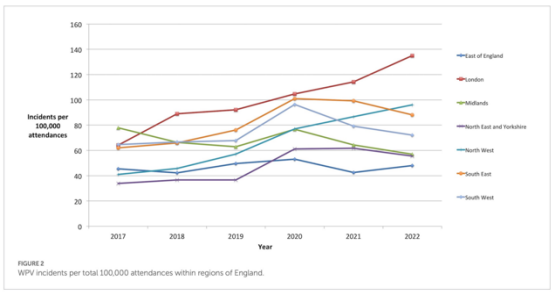

FIGURE 2
WPV incidents per total 100,000 attendances within regions of England.

LS007 - Understanding (Un)Sustainable Behaviours in Operating Theatres: An Ethnographic Study

Aws Almukhtar[1,2], Carys Batcup[2], Daniel Leff[1,2], Talya Porat[2], Pelin Demirel[2], Gaby Judah[2]

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2 Imperial College, London

Introduction: Upper limb (UL) morbidity is inadequately quantified/characterised which is usually assessed using patient-reported outcome measures (PROMs). These measurements are limited by recall/response bias. Our data indicates that wearable activity monitors (WAMs) are reliable and objective for measuring UL impairment after breast surgery. We present short-term (peri-operative) and long-term (6 months+) objective data to characterise UL recovery and identify predictors of long-term functional outcomes.

Methods: A prospective, non-randomised, observational study was conducted including patients undergoing breast surgery. Patients with movement disorders/mobility assistance, patients with additional operations or new
diagnoses that might impair mobility during long-term follow-up were excluded. Participants were asked to wear WAMs on both wrists for 3 days pre- operatively, 2 weeks post-operatively, and for 72 hours at 6 months or > post-
operatively.

Results: Physical activity (PA)(n=38) significantly decreased (% of pre-operative level) during the first and second weeks post-operatively (median PA:week 1=60.9% and week 2=71.7%, p<0.001). On average, PA returned to baseline in the long-term (median PA:105.6%, p>0.05), with 60% of patients reaching baseline (median PA:116.4%, p>0.05). Patients with a 2-week PA greater than 75% had a
greater likelihood of returning to baseline (OR:7.5,p<0.01). Multivariable regression analysis demonstrated the only independent predictor of long-term functional outcomes was the 2-week post-operative recovery (β= 0.752, p<0.001).
Conclusion: Early two-week recovery is an independent predictor of long-term UL function. This emphasises the importance of measuring early recovery and implementing measures to mitigate long-term impairment. WAMs can complement PROMs as predictive instruments, identifying patients who may need further rehabilitation and promoting self-directed recovery.

Themes	Influencers	TDF Domains	Example observation
Sustainable practices are fragile and fragmented	Lack of adequate education and training	Knowledge	Incorrect waste segregation noted. When asked, the nurse did not know the difference between the bins and is not sure what type of waste goes in which bin
	Inadequate signage, and labelling of items and packaging	Environmental Context and Resources	A nurse opened surgical ties for the scrub nurse. The packaging (can be recycled) did not have disposal and recycling information, so they discarded it in the orange bin
	low environmental concerns in healthcare setting compared to outside	Memory, Attention and Decision Processes	A surgical registrar lead the brief, the consultant later explained that they *"don't care about the environment"* and that they believe that people who care about the environment *"don't do their jobs well"*
Precaution is a significant driver of (un)sustainable practices	Avoidance of direct and indirect patient contact	Emotions	The surgical team put on gloves to examine and shave an anesthetised patient's clean abdomen
	Fear of contracting infection	Emotions	An anaesthesia nurse put on NSGs to help the patient into the operating table before being anesthetised. They explained, *"You never know if the patient has HIV, you need to always be protected"*
	Fear of transmitting infection	Beliefs about consequences	Twenty clean pairs of NSGs were incorrectly discarded in the orange bin. The theatre manager explained that they always discard gloves in the orange bin *"in case they are contaminated"*
(Un)sustainable clinical practices are habitual and vary between groups and individuals	Unsustainable behaviours done automatically in particular contexts	[lack of] Memory, Attention and Decision Processes	In between operations, 3 nurses were chatting to each other. Two had disposed of their NSGs after wheeling the previous patient to recovery. They started preparing the theatre for the next operation while chatting. One nurse took out a pair of gloves from their pocket, and the one put on a new pair to move clean equipment in preparation for the next operation. All 3 discarded their gloves in the orange bin while chatting
	Strong habits: Behaviour of other OT staff, or knowledge does not influence habitual unsustainable practices		A theatre manager explained that packaging should be separated into paper and non-paper and discarded in the green (paper) and transparent (non-paper). Later on, they opened an instrument pack and discarded the packaging in the green bin without separating.
Efficiency is a significant driver of (un)sustainable practices	Trying to anticipate and prepare for the next task increases waste	Goals	Ten swabs were opened and only 2 were used for an operation. The scrub nurse explained that the consultant did not state how many they needed so they opened they opened the *"minimum number"* to ensure efficiency. They said, "We were not sure how many swabs she would need for the first operation, so we opened 10"
Past experiences and training prompt (un)sustainable practices	Nurses adopt more stringent infection-averse attitudes than other groups	Social/Professional Role and Identity	On average, each nurse unnecessarily put on NSGs 3.8 times compared to 0.8 times for surgeons per operation.
	(Un)sustainable practices are learned from seniors and peers at the early stages of training	Social influences	The scrub nurse unnecessarily double gloved for an operation. They said, *"I always double glove. It is something I picked up when I was shadowing, and it is for my own safety"*
	Previous clinical and non-clinical experiences prompt unsustainable, infection-conscious, zero-risk attitudes	Emotions	Unnecessary NSG use was observed by a nurse. They explained that they wear NSGs for protection and that they do not feel *"comfortable"* not wearing them in OTs. They told a story about how they became afraid of germs, infection-conscious and risk-averse after catching illness from eating in the canteen when they were a student.
	Habitual practices are formed during previous clinical training	Behavioural Regulation	An SpR observed to double glove unnecessarily. They explained that training in surgery demands rotating between jobs and the experience from previous surgical jobs standardises their practices. They said: *"I always double glove. It's good practice; I'm was trained in colorectal surgery"*
Leadership, Management and Communication influence (un)sustainable Practices	Awareness of the items needed for the operation reduces waste	Knowledge	When the brief did not include every instrument, but nurses resorted to the Cardex which was enough to open the necessary equipment. There were no opened, unused equipment at the end of that list
	Senior surgeons leading the briefing can improve sustainability	Social influences	When the brief was led by consultant and they stated which instruments to be open and which to be on stand- by, there were no opened, unused packs at the end of operation on that list.
	Changing organisational policies and guidelines can improve sustainability	Environmental Context and Resources	A nurse manager explained that the best way to change practices is by changing the trust's policy as the nursing staff "will do what they're told by the trust".
The physical environment in OTs influences (un)sustainable practices	OTs setup leads to energy waste, encourages use of NSGs and disposal in orange bins	Environmental Context and Resources	There were only 2 bins in the operating room: one orange and one transparent. In the prep room, there was one green and one transparent, but no orange. Most packages (clean, can be recycled) are disposed of in the orange bin closer to the patients and to the foot end.

Table 1 Themes and influencers of unsustainable practices in OTs. The influencers are mapped to the TDF Domains.

LS009 – Differentiating Tumour and Normal Tissue using Diffuse Reflectance Spectroscopy In Vivo in Upper Gastrointestinal Cancer Surgery

Maxime Giot[1], Scarlet Nazarian[1], Ioannis Gkouzionis[1,2], Daniel Elson[1,2], Christopher Peters[1]

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2. Hamlyn Centre, Imperial College London

Introduction: Negative resection margins are an independent predictor of survival and recurrence. However, the intraoperative assessment of margins presents many limitations and there is currently no technique that allows real-time tissue differentiation. Diffuse reflectance spectroscopy (DRS) is a point-based optical sensing technique which can differentiate tissue type by analysing the absorbance and diffuse reflection of light in the tissue sampled. The aim of this study was to assess the diagnostic accuracy of a DRS probe and tracking system to differentiate tissue type in vivo.

Methods: Spectra were acquired intraoperatively from normal and tumour, stomach and oesophagus tissue using a sterilisable DRS probe. Spectra were correlated with standard histopathology analysis for labelling of ground truths. Four supervised machine learning classifiers were trained and tested. All classifiers were evaluated for: sensitivity, specificity, overall accuracy and area under the curve (AUC).

Results: A total of 2,235 spectra were collected from 10 patients. In stomach tissue, LGBM was the best performing classifier achieving sensitivity and specificity of 88% and 97%, respectively, and a diagnostic accuracy of 94%. For oesophagus tissue, SpecNet yielded a sensitivity and specificity of 90% and 94%, respectively, and accuracy of 93%. AUC were >97% for all classifiers across datasets.

Conclusion: DRS can differentiate normal and tumour oesophageal and gastric tissue with high diagnostic accuracy. The use of DRS in combination with real-time tracking allows for differentiation of tissue intraoperatively with the aim of aiding surgeons in resection margin assessment and has potential for translation within the surgical workflow.

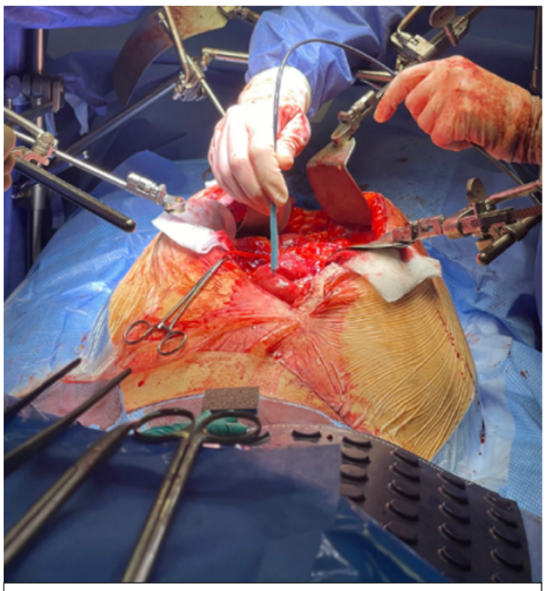

Figure 1: *In vivo* data collection using sterilisable DRS probe to sample over tissue.

Classifier	Stomach				Oesophagus			
	Accuracy	Sensitivity	Specificity	AUC	Accuracy	Sensitivity	Specificity	AUC
RF	92.86 (1.61)	85.03 (3.23)	96.41 (1.52)	97.52 (0.86)	91.60 (2.27)	87.85 (4.14)	93.78 (2.62)	97.54 (1.08)
XGB	93.70 (1.13)	87.18 (3.22)	96.66 (1.34)	97.74 (0.66)	91.92 (1.74)	87.42 (3.92)	94.54 (2.86)	97.47 (1.13)
LGBM	94.02 (1.16)	87.88 (2.95)	96.81 (1.04)	98.05 (0.65)	91.85 (2.17)	88.05 (5.42)	94.09 (2.17)	97.84 (0.81)
SpecNet	93.65 (2.10)	87.65 (2.83)	96.37 (1.61)	97.59 (1.32)	92.51 (3.77)	89.86 (4.33)	94.07(3.39)	98.37 (1.81)

Table 1: Performance metrics for all classifiers tested for both stomach and oesophagus datasets.

LS012 - An untrained open-source natural language processing tool (ChatGPT) can make complex surgical decisions with confidence similar to experienced surgeons: a comparative analysis

Omar Musbahi[1], Martine Nurek[2], Kyriacos Pouris[1], Martinique Vella-Baldachino[1], Olga Kostopoulou[2], Caroline Hing[3], Alex Bottle[4], Justin Cobb[1], Gareth Jones[1]

1 MSk Lab, Imperial College London, Sir Michael Uren Hub, White City Campus, 80 Wood Lane, London, W12 0BZ
2 Department of Surgery and Cancer
3 St George's University Hospitals NHS Foundation Trust
4. Institute of Global Health Innovation, Imperial College London

Background: Unicompartmental knee replacements (UKR) have become an increasingly attractive option for end-stage single-compartment knee osteoarthritis(OA). However, there remains controversy in patient selection. Natural language processing (NLP) is a form of artificial intelligence.

Objectives: We aimed to determine whether a General-Purpose open-source natural language program (ChatGPT) can make complex decisions regarding a patient's suitability for a total knee replacement (TKR) or a UKR.

Study Design & Methods: We conducted a case-based cohort study using data from a separate study, where participants (73 surgeons and ChatGPT) were presented with 32 fictitious clinical case scenarios that simulated patients with knee OA who would require surgery. Using the overall UKR/TKR judgments of the 73 experienced knee surgeons as the gold standard reference, we calculated the sensitivity, specificity, and positive predictive value of ChatGPT to identify if a patient should undergo UKR.

Results: There was disagreement between the surgeons and ChatGPT in five scenarios (15.6%). With the 73 surgeons' decision as the gold standard, the sensitivity of ChatGPT in determining if a patient should undergo UKR was 0.91 (95% CI: 0.71 to 0.98) and the specificity was 0.70 (95% CI: 0.39 to 0.93). The positive predictive value for ChatGPT was 0.87 (95% CI: 0.72 to 0.94). ChatGPT was more confident in its UKR decision making (Surgeon mean confidence =1.7, ChatGPT mean confidence=2.4).

Conclusions: This General-Purpose open-source NLP program approximated the decision making, and exceeded the confidence, of experienced knee surgeons with substantial inter-rater agreement when deciding if a patient was most appropriate for a UKR.

LS013 - Short-term physical recovery of patients who undergo breast cancer surgery predicts their long-term functional outcomes

Nur Amalina Che Bakri[1,2], Richard Kwasnicki[1,2], Tanusree Dutta[1], Chiara Rizk[1], Emmanuel Giannas[1], Hutan Ashrafian[1,2], Judith E. Hunter[4], Francis P. Henry[4], Simon H. Wood[1,4], Ara Darzi[1,2], Daniel R. Leff[1,2,3]

1 Department of Surgery & Cancer, Imperial College London, United Kingdom
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3 Breast Unit, Imperial College Healthcare NHS Trust, Charing Cross Hospital, London, United Kingdom
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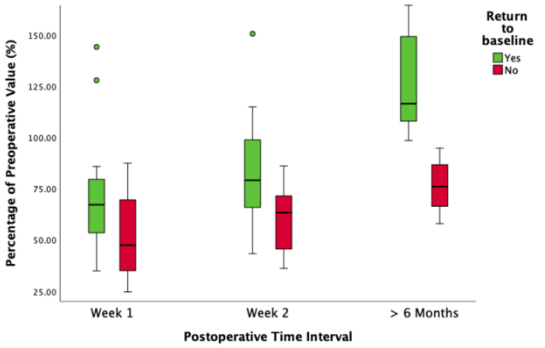
Introduction:
Upper limb (UL) morbidity is inadequately quantified/characterised which is usually assessed using patient-reported outcome measures (PROMs). These measurements are limited by recall/response bias. Our data indicates that wearable activity monitors (WAMs) are reliable and objective for measuring UL impairment after breast surgery. We present short-term (peri-operative) and long-term (6 months+) objective data to characterise UL recovery and identify predictors of long-term functional outcomes.

Methods:
A prospective, non-randomised, observational study was conducted including patients undergoing breast surgery. Patients with movement disorders/mobility assistance, patients with additional operations or new diagnoses that might impair mobility during long-term follow-up were excluded. Participants were asked to wear WAMs on both wrists for 3 days pre-operatively, 2 weeks post-operatively, and for 72 hours at 6 months or > post-operatively.

Results:
Physical activity (PA)(n=38) significantly decreased (% of pre-operative level) during the first and second weeks post-operatively (median PA:week 1=60.9% and week 2=71.7%, p<0.001). On average, PA returned to baseline in the long-term (median PA:105.6%, p>0.05), with 60% of patients reaching baseline (median PA:116.4%, p>0.05). Patients with a 2-week PA greater than 75% had a greater likelihood of returning to baseline (OR:7.5,p<0.01). Multivariable regression analysis demonstrated the only independent predictor of long-term functional outcomes was the 2-week post-operative recovery (β= 0.752, p<0.001).

Conclusion:
Early two-week recovery is an independent predictor of long-term UL function. This emphasises the importance of measuring early recovery and implementing measures to mitigate long-term impairment. WAMs can complement PROMs as predictive instruments, identifying patients who may need further rehabilitation and promoting self-directed recovery.



LS014 - Lymph node counts in the preoperative staging of colon cancer

Georgette Camilleri[1,2], Nicola Hodges[1,2], Danilo Miskovic[1], Gina Brown[2]

1 St Mark's Academic Institute
2 Imperial College London

Introduction: The number of lymph nodes sampled at histology is an independent prognostic marker for improved survival in colon cancer. Halstedian views and stage migration provide incomplete explanations for this phenomenon, drawing light on the alternative hypothesis of immunogenicity. This retrospective cohort study aims to investigate the relationship between lymph node counts (LNC) on pre-operative CT and survival in colon cancer.

Methodology: 100 patients with non-metastatic, right-sided colonic adenocarcinoma were included. Their preoperative CT scan was reviewed and lymph nodes along the ileocolic, right colic, middle colic and superior mesenteric vessels counted. Para-aortic nodes were counted separately. The 5-
year overall survival (OS) and disease-free survival (DFS) was recorded, and ROC curves were applied in the analysis.

Results: The median mesocolic LNC on CT was 24 (range 5-55). Higher mesocolic LNCs were associated with improved 5-year OS and DFS (p<0.001 for both end- points). Paraaortic LNCs showed no prognostic value (p=0.45 5-yr OS, p=0.49 5-yr DFS). Mesocolic LNCs yielded an area under the ROC curve of 0.88 (5-year OS) and 0.82 (5-year DFS). 94% (n=15/16) of mortalities had a CT LNC <19, making this a potential threshold for predicting overall survival.

Conclusions: Higher CT mesocolic LNCs are associated with improved survival in colon cancer, supporting the hypothesis of immunogenicity. Para-aortic nodes are extramesenteric, and may not contribute to the immune response. Larger- scale studies are needed to validate these results; machine learning could help in the automation of lymph node counting on CT.

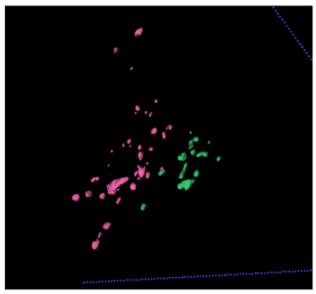


Figure 1: An example of CT lymph node mapping in right sided colon cancer, showing 46 mesocolic and 17 para-aortic lymph nodes.

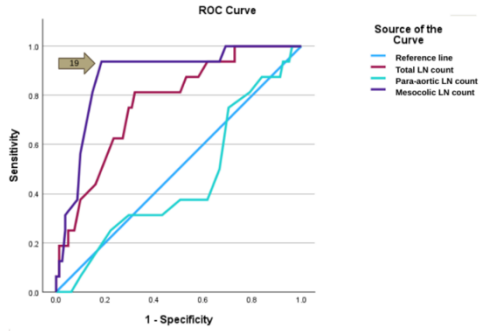


Figure 2: ROC curves for total LNC, para-aortic LNC, and mesocolic LNC (outcome: 5-year overall survival)

LS015 - Acceptability of Digital Health Interventions in Perioperative Care: A Systematic Review and Narrative Synthesis of Clinician Perspectives

Amal Ahmed[1], Chik Wai Ho[1], Yasmin Grant[1], Stephanie Archer[1,2,3], Emma V Carrington[1]

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3 Department of Psychology, University of Cambridge, UK

Introduction: Digital health interventions (DHIs) are increasingly used in the peri-operative setting. Clinicians play a key role in their implementation, so an understanding of factors which influence clinician acceptability is key to facilitate long-term adoption and success.

Objectives: To identify themes relating to clinician acceptability of DHIs in the perioperative setting.

Methods: A systematic review and narrative synthesis was performed with a literature search across Medline, Embase and CINAHL. Studies published between inception and 2023 in English were included if they provided qualitative data on clinician perceptions of DHIs in the context of adult perioperative care. An inductive-deductive framework synthesis approach was employed. Included studies were coded inductively by a single reviewer. Codes were organised into themes based on conceptual similarities. Collaborative discussions with a second and third reviewer enabled higher-order interpretations and the emergence of subthemes. Themes and subthemes were systematically mapped onto the seven constructs of the Theoretical Framework of Acceptability (TFA).

Results: A total of 3234 publications were identified, of which 18 were selected for inclusion. DHIs studied included telemedicine platforms, mobile health applications, website-based programmes, and EHR-integrated software. The most commonly reported TFA construct was perceived effectiveness, followed by affective attitudes, opportunity costs, ethicality, burden, intervention coherence and self-efficacy.

Conclusions: Clinicians' acceptance of DHIs is primarily driven by perceived effectiveness. Optimism about the potential for DHIs to enhance care is often overshadowed by concerns about patient safety, privacy, and opportunity costs. As clinicians are key gatekeepers in DHI adoption, these perspectives have a significant impact on the long-term integration of these technologies into perioperative care. Co-creation of DHIs with clinicians is required to ensure future interventions are better aligned with clinical workflows and patient needs, enhancing their utilisation and uptake in the long-term.

Figure 4: Thematic map illustrating themes extracted from publications and corresponding TFA constructs; The seven constructs of the TFA are represented in blue, while themes identified in our study are depicted in grey. The lines between construct and theme represent the frequency of each theme across included publications, with solid lines used for themes found in n > 12 publications, dotted lines for themes in n=5-12 publications, and no lines for themes in n<5 publications.

LS016 - Barriers to the adoption of routine surgical video recording: a mixed-methods analysis of real-world implementation of a recording platform

Catherine Simister[1], Andrew Yiu[1], Kyle Lam[1], James Kinross[1]

1 Imperial College London, Department of Surgery and Cancer

Introduction: Routine surgical video recording is not mainstream despite widespread use of minimally invasive surgical techniques. Current literature is largely US-focused and questionnaire-based. Therefore, this mixed methods study aimed to identify the barriers to implementation in the UK.

Methods: Phase one of this study involved questionnaires of participants in a pilot of a C-SATSÓ, a surgical analytics platform, at a UK university hospital. Descriptive analysis of responses and the Nonadoption, Abandonment, Scale-up, spread and Sustainability framework were used to create topic guides for semi- tructured interviews, forming phase two of this study. Interviews were conducted and evaluated in a thematic analysis. Usage metrics for the C-SATS platform were also analysed.

Results: Usage data from the C-SATSÓ platform showed inconsistent use of the recording function. Three consultants, four trainees, three patients, one scrub nurse, one lawyer, and one industry representative were interviewed. Barriers of 'change, ' resource' and 'governance' were identified. All surgeon participants favoured the adoption of routine recording but hypothesised their colleagues may resist. Most saw videos as a more robust medicolegal document than the operative note. All participants believed availability of infrastructure would facilitate adoption but integration into the preoperative routine would be required, with 'forgot to use' cited as a primary factor in those with recording experience. Governance concerns were centred around the lack of anonymity and ownership guidelines.

Conclusions: The adoption of routine surgical video recording goes beyond provision of the infrastructure. Integration into the surgical workflow, digitising medical records, and resolving legal uncertainty will facilitate adoption.

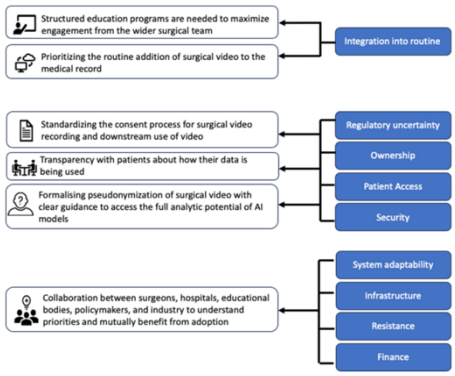

Figure 1: Recommendations for future work and research to facilitate the adoption of routine surgical video recording.

LS017 - Interventions to Achieve Environmentally Sustainable Operating Theatres: An Umbrella Review Using the Behaviour Change Wheel

Aws Almukhtar[1], Carys Batcup[1], Miranda Bowman[1], Jasmine Winter Beatty[1], Daniel Leff[1,2], Pelin Demirel[1], Gaby Judah[1], Talya Porat[1]

1 Imperial College, London
2 Imperial College Healthcare NHS Trust

Introduction: Healthcare is a major contributor to the climate crisis, and Operating Theatres (OTs) are one of the highest sources of emissions. To inform emissions reduction, we aimed to (i) compare the outcomes of sustainability interventions in OTs using the Triple Bottom Line framework, (ii) categorise the sustainable behaviours' intervention strategies using the 5Rs (reduce, recycle, reuse, refuse, and renew) of circular economy, and (iii) examine the Intervention Functions (IFs) using the Behaviour Change Wheel (BCW).

Methods: Medline, Embase, and PsychInfo databases were searched until June 2023, in line with the Cochrane and the Joanna Briggs Institutions' recommendations. The review was registered on PROSPERO (CRD42024501755)
and reported in line with PRISMA guidelines.

Results: 16 reviews encompassing 43 life-cycle analyses, 30 interventions, 5 IFs, and 9 BCW policy categories were included. 28/30 (93%) interventions were successful; however, the environmental outcomes were not suitable for meaningful comparisons due to their using different metrics and relying on local factors. The 'reduce' strategy was the most prolific and achieved through 'education' and/or 'environmental restructuring'; However, single-session educational interventions were ineffective. Improving recycling relied on 'environmental restructuring'. Arduous strategies such as 'reuse' can be achieved by integrating multiple functions either through a sustainability committee or through an intervention package.

Conclusion: Policymakers must examine interventions within the local context.
Comparing the outcomes of different interventions could be misleading, highlighting the need for a tool integrating diverse outcomes and contextual factors. 'Reduce' strategy guarantees environmental and financial savings and can be achieved through 'Education' and/or 'environmental restructuring'.

Table 1 interventions divided by circular economy concept and categorised according to the Behaviour Change Wheel (BCW).

Main Concept(s)	Study	BCW		Intervention category	Outcomes			
		Intervention Functions	Policy category		Waste	Emissions or CO2e	Financial	Other
Refuse	Barwise et al	Environmental restructuring	Guidelines	Upgrading technology infrastructure				The new system produces energy savings and may increase vacuum pump lifespan.
	DeBois et al	Environmental restructuring	Guidelines	Changing local protocols	almost 15,000 pounds (7.5 tons) of trash will be diverted from RMW	This process not only releases a significantly less amount of carbon dioxide into the environment, but also helps generate renewable energy.		
	Van Demark et al	Environmental restructuring	Guidelines	Changing local protocols	surgical waste was decreased by 5.06 pounds per case		cost savings for the new "green packs" was $10.64 per case. The overall cost savings was $13,250.42	
Reduce	Park et al	Education	Communication/ marketing	Education on financial and environmental cost	reduced the use of disposable trocars by 56% and the use of disposable		Reduced median supply cost per case by 43%, with total cost savings of	
					harmonics and staplers by 33%.		$71,035 for the first four quarters	
	Southorn et al	Education	Communication/ marketing	Education on waste segregation	Clinical waste reduced by up to 5.8kg an operation	75% lower carbon footprint.		
	Mosquera et al	Training	Communication/ marketing	Training on waste segregation	significant reduction in the monthly average health care waste volume of 6.2%		savings cost of €125,205.	
	McCarthy et al	Education	Communication/ marketing	Education on financial and environmental cost				No improvement was found 18 months later
	Perrego et al	Education	Communication/ marketing	Education on waste segregation	41% reduction in the total mass of regulated waste sampled and a 77% reduction in nonregulated item mass.			
	Mankes et al	Restriction	Guidelines	Restriction of supplies	Eliminating the 50/100 mL bottles reduced propofol waste from 29.2 mL/day/bin to 2.8 mL/day/bin			
	Hubbard et al	Environmental restructuring	Guidelines	Changing policy and physical infrastructure	Annual reduction in medical waste of approximately 8470 kg		cost savings of $2200 per year	
	Zuegge et al	"Education Environmental restructuring"	Communication/ marketing	Intervention package		CO2 equivalent emissions per case dropped from163 kg to 58		55% reduction in desflurane usage

						kg (64%reduction).		
	Martin et al	"Education Environmental restructuring"	Communication/ marketing	Intervention package	"Daily landfill waste reduced by 12%. Weight of medical waste reduced by 59% Recyclable waste increased by 19%"			
	Denny et al	"Education Environmental restructuring"	"Guidelines Communication/ marketing"	Intervention package	63% decrease of weekly waste for endotracheal tubes, a 54.7% reduction in laryngoscope handles waste, and 54.0% reduction laryngoscope blades			
	Fraifeld et al	"Education Environmental restructuring"	Communication/ marketing	Intervention package	Decrease in overall weight of regulated medical waste items from 0.33 kg/case to 0.09 kg/case (p < 0.001); segregation audit showed overall increase in correctly segregated regulated waste of 65%.		Cost savings of $15.60 per OR per week, or $28,392 annually	
	Thiel et al	Environmental restructuring	Guidelines	Changing policy and	13% less waste produced.		55% cost reduction	

				physical infrastructure				
	Lin et al	Environmental restructuring	Environmental/ social planning	Upgrading technology infrastructure				50% of energy saving in the OR with this system
	French et al	"Education Environmental restructuring Enablement"	"Guidelines Communication/ marketing"	Intervention package	In 2 years - 30,000 lbs of waste reused/recycled			
Re-use	French et al	"Education Environmental restructuring Enablement"	"Guidelines Communication/ marketing"	Intervention package	In 2 years - 30,000 lbs of waste reused/recycled			
	Proctor and Raym	Education	Service provision	Education through sustainability committee	Decided to keep single-use gowns, but did institute a disposable wrap recycling program			
	Boone et al	"Education Environmental restructuring Enablement"	"Service provision Guidelines"	Intervention package	5 years later, saved more than 9000 lbs of waste		5 years later, more than $251 000 in cost savings resulted from the reprocessing program	Now part of the culture of the surgical team and a 'nonissue'
Recycle	Wyssusek et al	Environmental restructuring	Guidelines	Intervention package	reduced the amount of clinical waste produced by the OR by 82%, and the amount of total OR waste was reduced by more than 50%		60% reduction in costs	

	French et al	"Education Environmental restructuring Enablement"	"Guidelines Communication/ marketing"	Intervention package	In 2 years - 30,000 lbs of waste reused/recycled			
	Babu et al	Environmental restructuring	Guidelines	Changing local protocols	1247 lbs waste collected. 31.2 cubic feet landfill saved.		Cost avoidance yielded $31 680.00 in savings	376.75 gallons of oil saved. 3175.7 kWH electricity saved
	Francis et al	Environmental restructuring	Guidelines	Changing policy and physical infrastructure	30% recovery of non- infectious waste			
	McKendrick et al	Environmental restructuring	Guidelines	Changing policy and physical infrastructure	"Across 20 operations 54 kg of recyclable waste (50% of AR and 67% of OR waste)"	The 54kg of recycled bags produced during the study saved 25kg CO2 emissions.	Recycling saved a mean of £0.51 per case.	
	Bliss et al	Environmental restructuring	Guidelines	Changing policy and physical infrastructure	infectious waste reduced by 3.4 kg per procedure		contaminated or infectious waste costs $5.60 per red bag and non-infectious waste costs $0.02 per pound, decreasing both forms of waste is economically attractive to hospitals.	
Renew	Tay et al	Environmental restructuring	Environmental/ social planning	Upgrading technology infrastructure		Greenhouse gas emissions decreased by 44%	volatile agent cost was $18.87/hour using manual	The 100-year global warming potential

							control and $13.82/hour using automated control: mean decrease $5.05/hour	decreased from 23.2 kg/hour of carbon dioxide equivalents to 13.0 kg/hour: mean decrease 10.2 kg/hour
Multifaceted	Wormer et al	"Education Environmental restructuring Enablement"	"Service provision Guidelines Environmental/ social planning"	Intervention package	Recycling reduced waste by 12,860 lbs per year. New bins + 5,443kg per year recycled, 75% reduction in red-bag waste	Turning off equipment reduced Co2 emissions by 234.3 metric tons per year	Switching foam padding saved $50,000 per year. Turning off equipment saved $33,000 per year	Scrubbing with gel instead of washing hands saved 2.7 million litres of water per year
	Burrell et al	"Education Enablement Restriction"	"Service provision Communication / marketing Guidelines"	Intervention package		a third less greenhouse gas emissions		Decrease in the volumes of desflurane used
	Albert et al	Environmental restructuring	Guidelines	Intervention package	Recycling increased from 0% to 20-50%. Repurposing of 1.2 tonnes of blue wrap			

LS018 - Development of hypothesised conceptual framework for major abdominal surgery

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Background Major abdominal surgery (MAS) can have a diverse impact on patient's life, including physical, emotional and socio-economic effects. At present, there is no patient reported outcome (PRO) instrument that was specifically developed for MAS population. The aim of this study was to develop a hypothesised conceptual framework of the key domains that underpin the process of recovery following major abdominal surgery in the adult population. This framework will serve as a foundation for developing a valid PRO instrument for the target population of interest.

Methods The development of the hypothesised conceptual framework included the following stages: 1) defining major abdominal surgery and verification of its discriminative properties, 2) systematic review of currently available PRO instruments, 3) mapping of the domains within identified PRO instruments to WHO International Classification of Functioning, Disability and Health (ICF) conceptual framework, 4) derivation of the hypothesised conceptual framework by linking of the ICF domains and the health-related quality of life theoretical framework.

Results Fourteen PRO instruments were identified by the systematic review. The individual PRO items within each instrument collectively covered 25 ICF domains and 53 sub-domains. A hypothesised
conceptual framework was derived based on the "conceptual model of health-related quality of life" and the ICF framework, applied within three principles of exposure, moderating factors and outcomes.

Conclusions This study proposed a hypothesised conceptual framework for the development of PRO instruments to evaluate recovery following major abdominal surgery. However, its relevance, content validity and comprehensiveness remains to be examined in future studies.

LS019 -Objective Assessment of Cognitive Workload in Surgery: A Systematic Review

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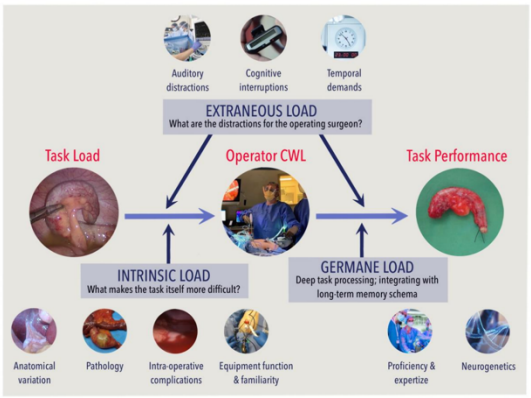
Background: Surgical tasks entail concurrent clinical decision-making and the safe application of technical and non-technical skills, which requires a substantial cognitive workload (CWL). Assessing CWL could enable interventions o alleviate burden and improve patient safety. This study aimed to systematically review the technologies that objectively measure CWL in surgery, assessing their psychometric and methodological characteristics using Eggemeier's criteria.

Methods: Ovid MEDLINE, OVID Embase, the Cochrane Library and IEEE Xplore databases were searched from Inception to August 2023 in line with the Cochrane collaboration's recommendations. The study was registered on PROSPERO (CRD42023358935) and reported in line with the PRISMA guidelines.

Results: 10790 studies were identified, of which 67 met inclusion criteria. The most widely used assessment modalities were autonomic (32 ocular and 24 cardiac), and the most prevalent load sources were intrinsic workload (e.g. task complexity) and germane workload (effect of training). Sensitivity was greatest for neurophysiological instruments (100% EEG, 80% fNIRS); and across modalities accuracy increased with multi-sensor recordings. Specificity assessment was possible for cardiac and ocular metrics (50% and 66.67%). Cardiac sensors were the least intrusive, with 54.2% of studies conducted in naturalistic clinical environments (higher ecological validity).

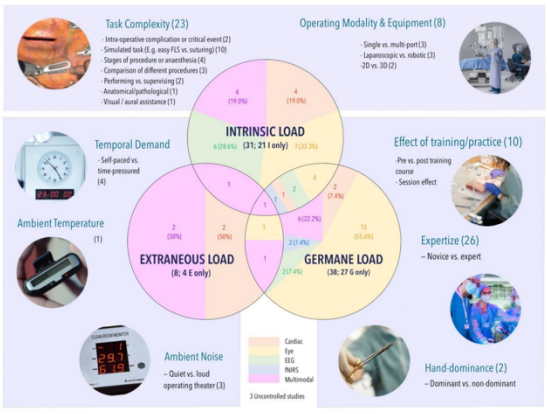
Conclusion: Physiological metrics provide an accessible, objective assessment of CWL in surgery, but their dependence on autonomic function negates selectivity and diagnosticity. Neurophysiological measures demonstrate favorable sensitivity, directly measuring brain activation as a correlate of cognitive state. A theoretical and technical framework for objective assessment of CWL is required to overcome the heterogeneity of methodological reporting, data processing, and analysis.

Figure 1 Sources of CWL during surgical task performance



Establishing CLT domain of a clinical procedure and study task paradigms: a) INTRINSIC LOAD: the complexity of the task itself; b) EXTRANEOUS LOAD: distractions for the operator; c) GERMANE LOAD: the schema developed from previous processing to assist in task completion. CWL characterises the relationship between task demands and the operator's finite information-processing resources; with increasing task difficulty, cognitive resources are depleted, and CWL increases. Abbreviations: CWL, Cognitive Workload.

Figure *2* Venn diagram illustrating the distribution of studies by CLT domain, task paradigm and modality



For each CLT domain, the pie chart demonstrates the proportion of sensor modality use (orange for cardiac, yellow for eye, green for EEG, blue for fNIRS, and pink for multimodal). Such breadth of study designs prevented meaningful quantitative repeatability analysis due to the paucity of studies investigating the same CLT domain, task paradigm and sensor, and employing comparable data analysis techniques.

LS020 - Long-term outcomes relating to upper tract drainage in patients who have undergone robotic-assisted intra-corporeal neobladder construction

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Introduction: Robotic-assisted intra-corporeal neobladder construction has increased in popularity as a urinary diversion option. The long-term impact on upper tract drainage is not well described. This case series reports on our centre's experience, focussing on hydronephrosis, anastomotic stricture and renal function.

Methods: A retrospective review of all intra-corporeal neobladders performed between January 2015 and December 2022. Neobladders were constructed using a pyramid pouch by three high volume surgeons. Electronic health care records were examined to extract patient characteristics, imaging and renal function follow up.

Results (Table): 72 patients were identified with a median imaging and renal function follow-up of 39 and 44 months respectively. 6 patients (8%) had unilateral and 9 (13%) had bilateral hydronephrosis. The cause was cancer recurrence (5), reflux (1), poor emptying (1), unclear (8). Of those that it was unclear, 6 underwent dynamic imaging, all of which failed to demonstrate obstruction. Three strictures (4%) were identified, occurring between 5-17 months post-operatively, all at the ureteric-neobladder anastomosis. Two patients underwent re-implantation and one nephrectomy. Renal function declined in 44 (61%) patients, with 9 (13%) falling into CKD stage 3 or more. There was no correlation with the presence of hydronephrosis and fall in CKD stage (Chi Square, p=0.79.)

Conclusions: Hydronephrosis is a frequent finding (21%) and dynamic imaging is important in confirming no obstruction. The stricture rate is low. A fall in renal function is common and prevention is likely to be multifactorial as it does does- not appear to be correlated with hydronephrosis.

Table 1. Patient Characteristics and Outcomes

	(n=72)
Median Age (IQR)	58 years (52-64 years)
Male	61 (85%)
Previous radiotherapy	6 (8%)
Imaging follow-up Available Median, (IQR)	72 (100%) 39 months, (14.75-65.75 months)
Hydronephrosis at last imaging None Unilateral Bilateral	57 (79%) 6 (8%) 9 (13%)
Stricture	3 (4%)
Renal function follow up Available Median duration, (IQR)	67 (93%) 28 months, (49.75-58.75 months)
Fall in renal function (any) Median fall in eGFR, (IQR) Fall in CKD Stage Drop into CKD stage 3 or more	44 (66%) 22.5, (8-28) 26, (39%) 9, (13%)

LS021- The Use of Commercial Grade Wearable Devices for Physical Rehabilitation in Healthcare: A Systematic Review

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Background: Physiotherapy remains vital for patient rehabilitation, though limited resources pose significant challenges. Technology driven self-care has gained significant traction and the use of wearables presents potential solutions. This review evaluates whether commercial-grade wearables (CGW) improve patient ehabilitation outcomes, and categorises wearables currently being used, ncluding the disciplines and conditions under investigation.

Methods: Embase, MEDLINE, Web of Science, and the Cochrane Library (up to and including July 2023) were searched using PRISMA guidelines for peer- reviewed studies utilising CGW for patient rehabilitation. The disciplines, conditions treated, types and brands of device, main study findings and limitations were analysed.

Results: Eighteen studies encompassing 1754 patients met eligibility, including six randomised controlled trials, six quasi-experimental studies and six observational studies. Eight investigated CGW in Orthopaedics, seven in Stroke Medicine, two in Oncology and one in General Surgery. All studies reported improved patient outcomes using CGW, including an increase in functional capacity, step-count, physical activity, joint range of movement and quality-of- life. Eleven studies utilised wrist-worn activity trackers, including eight FitBit, one armin, one Patron and one using Polar wristbands. Seven studies utilised apps on martwatches and smartphones of which four used Android and three used Apple perating systems.

Discussion: All included studies demonstrated that CGW can be utilised at the least as an adjunct to traditional physiotherapy, and at best as alternatives for self-directed rehabilitation. This was despite a heterogenous pool of devices and interventions employed. Future trials should focus on economic evaluations of CGW before widespread adoption in healthcare settings can be considered.

LS022 - Documentation of Pelvic Floor Symptoms in IBD Patients

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Introduction: The prevalence of pelvic floor (PF) symptoms is high in patients with Inflammatory Bowel Disease (IBD) and over 50% report symptoms of incontinence or constipation using standardised questionnaires. Despite having
significant negative impacts on quality of life, few patients proactively seek help for PF symptoms. This quality improvement project aims to describe how well clinicians are identifying PF symptoms in routine IBD care.

Methods: Clinic letters from patients attending IBD clinics at Imperial College Healthcare Trust (ICHT), from 1 January 2024, were analysed retrospectively for documentation of PF symptoms.

Results: 120 consecutive patients (60/120 (50%) male, median age 45 [18-88]) were included - 76/120 (63.3%) with ulcerative colitis, 44/120 (36.7%) with Crohn's disease. Abdominal pain was the most frequently documented symptom (44/120 (36.7%)), followed by faecal urgency (26/120 (21.7%)). Faecal incontinence and evacuatory dysfunction were each documented in 5/120 (4.2%) patients. Impact on quality of life was only documented in 1 patient. Symptoms of urinary frequency, voiding and sexual dysfunction were not documented in any patients. Significantly fewer consultant clinicians documented symptoms of abdominal pain compared to ST1-8 clinicians (p = 0.004).

Conclusion: PF symptoms are not frequently documented in IBD patients at ICHT - barriers may include patient fear of stigmatisation, or physician lack of awareness of PF symptoms. The prevalence of PF symptoms in IBD patients at ICHT should be identified, and implementation of a standardised reporting tool may increase identification.

LS023 - The Burden of Anal Cancer in Women with Genital Cancers

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Background: Women account for the majority of anal squamous cell carcinoma (ASCC) cases in the UK compared to men and incidence continues to rise more rapidly. ASCC is typically preceded by high-grade lesions (HSIL) caused by HPV. Risk of ASCC increases with a history of HPV-related genital HSIL or cancers. Most women present with stage 3 disease, a missed opportunity given that HSIL can be detected and treated.

Methods: There are no national guidelines to manage these patients. Recommendations published by the ACPGBI were used as audit standards. Cycle 1 assessed the number of women in the trust between 2002-2022 with anal HSIL/SCC and concurrent genital HSIL/SCC. This led to implementation of a pilot multidisciplinary anogenital neoplasia pathway within the trust over a year. Cycle 2 compared outcomes of women diagnosed between 2022-2023.

Results: In cycle 1, 91 women were diagnosed with anal SCC/HSIL compared to 19 in cycle 2. Across both cycles, women mostly presented with stage 3 disease and approximately 25% had concurrent genital diagnosis. More were diagnosed with anal HSIL at the time of SCC diagnosis (61%) in cycle 2, compared to cycle 1. In both cycles, women mostly presented with stage 3 disease. Screening for synchronous genital lesions increased from 50% to 79% across cycles.

LS024 - Advancing Surgical Training Through 3D Printing: A Multispecialty Approach

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Surgical skill acquisition and competence, while upholding patient safety, is affected by restricted working hours and limited exposure to uncommon cases. 3D printing technology is transforming healthcare by enhancing patient care through improved medical and surgical education, pre-operative planning, and patient communication. This study details our collaboration with consultant surgeons at Chelsea and Westminster Hospital (CWH) to develop surgical models across four specialties: paediatric, colorectal, maxillofacial, and orthopaedic surgery, using a combination of 3D printing and silicon casting. These models, crafted from medical imaging data and refined iteratively, include patient- specific models for carpal tunnel release, parasymphyseal mandibular fracture repair, rectal anastomosis, and paediatric congenital pulmonary airway malformation repair. By addressing the unique challenges of each specialty, our study aims to assess the role of 3D printed models in surgical training, with the primary aim of evaluating their efficiency.

A comprehensive literature review revealed the utility of 3D printed models for surgical skills training and anatomy learning, highlighting their superiority over traditional methods. Proposed models offer advantages including reduced surgical time, risk mitigation, and avoidance of ethical concerns associated with cadaveric models. However, limitations including material realism and adoption barriers must be addressed through further research and innovation.

This study underscores the transformative potential of 3D printing in surgical training, offering tailored solutions to address the specific needs of diverse surgical specialties. By enhancing trainee confidence and competence, 3D printed models represent a significant advancement in modern surgical education that can lead to improve surgical outcomes.

Figure 1.

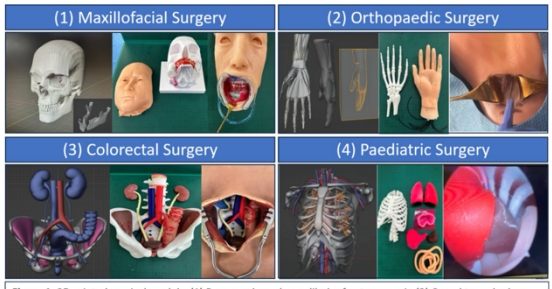

Figure 1. 3D printed surgical models: (1) Parasymphyseal mandibular fracture repair, (2) Carpal tunnel release, (3) Abdomen and pelvis model for dissection, tumour resection and rectal to rectal anastomosis, and (4) Congenital pulmonary airway malformation repair.

LS025 - Quality Improvement Project: Improving access to psychological wellbeing support for patients with bowel dysfunction

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Aim: It is well appreciated that bowel dysfunction may affect a patient's psychological wellbeing. Nevertheless, access to psychological wellbeing support is limited. This quality improvement project aimed to investigate barriers to offering psychological support and explore interventions to address these barriers.

Method: Over a one-week period in November 2023, an opportunistic sampling approach was taken to distribute two surveys: one for patients with bowel symptoms at Imperial College Healthcare Trust and one for clinicians via email. The surveys, which included Likert scales, dichotomous and open-ended questions, explored patient experiences of the impact of bowel symptoms on psychological wellbeing and the usefulness of possible interventions.

Results: 19 patient and 25 clinician responses were received. No patient reported being offered psychological wellbeing support, despite an average rating of 7.2/10 when asked if their psychological wellbeing impacted their quality of life (1 being no effect at all, 10 being a very big effect). 20/25 (80%) of clinicians felt psychological wellbeing was often an important feature in patients with bowel disorders. However, only 9/25 (36%) reported asking about their patients' psychological wellbeing in at least half of their consultations. Time limitations, lack of mental health expertise and accessible signposting resources were cited as barriers. Both patients and clinicians rated a leaflet and in-person consultations useful as a form of psychological wellbeing support.

Conclusions: This small study highlights the gap in accessible psychological support for patients with bowel dysfunction. To address this, interventions including signposting leaflets and in-person consultations with clinical psychologists will be explored.

LS026 - Fluorescence confocal microscopy for detection of positive surgical margins in prostate cancer: development of a standard operating procedure in the IP8- FLUORESCE study

Nikhil Mayor[1,2], Anna Silvanto[2], Alexander JW Light[1,2], Emma Cullen[1,2], Peng Ng[2], Almostafa Badreldin[2], Bijan Khoubehi[1,2], Giles Hellawell[2], Martin J Connor[1,2], Taimur T Shah[1,2], Hashim U Ahmed[1,2], Mathias Winkler[1,2]

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Introduction: The IP8-FLUORESCE study evaluates the accuracy of fluorescence confocal microscopy (FCM) for detection of positive surgical margins (PSMs) in radical prostatectomy (RP) specimens. We describe our reproducible standard operating procedure (SOP) for evaluating RP specimens with FCM.

Methods: FCM uses a digital laser microscope and pinhole aperture to reject out- of-focus light combined with fluorochromes to increase cell-to-stroma contrast, producing high-resolution imaging. The Histolog® Scanner is a CE-marked portable FCM device which can produce near-instant images. The SOP was developed by the IP8-FLUORESCE study team including urologists, an expert uro-pathologist, and device experts based on two pilot cases.

Results: Ethical approval was granted via Imperial College Healthcare Tissue Bank (ICHTB). Patients receive a generic digital patient information sheet as part of the standard consent process. 95% of patients approached consented. The Scanner is kept in a clinical area adjacent to the operating theatre. Immediately fter extraction, the specimen is immersed in the Acridine Orange dye for 10s followed by a saline rinse, then placed directly onto the Scanner. Six margins making up the whole surface are scanned. Each margin takes 45s to scan. The whole procedure takes 15min. As the soluble dye preserves specimen integrity, it can then undergo standard histological processing. A blinded histopathologist then reports the margin status on FCM and histological images.

Conclusions: Our streamlined SOP and ultrafast scanner provide microscopic images rapidly without need for expert laboratory staff. The compact, portable Scanner is stored in/near the operating theatre. Digital consent via ICTHB has led to high patient acceptance and rapid recruitment.

LS027- Imperial Prostate 8 - Fluorescence confocal microscopy for rapid evaluation of surgical cancer excision (FLUORESCE): update on trial progress

Nikhil Mayor[1,2], Anna Silvanto[2], Alexander JW Light[1,2], Emma Cullen[1,2], Peng Ng[2], Almostafa Badreldin[2], Bijan Khoubehi[1,2], Giles Hellawell[2], Martin J Connor[1,2], Taimur T Shah[1,2], Hashim U Ahmed[1,2], Mathias Winkler[1,2]

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Introduction: Positive surgical margins (PSMs) post-radical prostatectomy (RP) heighten mortality risk, especially in high-risk patients. Current intraoperative margin assessment methods, notably frozen section, face constraints in time, cost, and expert availability. Fluorescence confocal microscopy (FCM) offers a promising alternative. IP8-FLUORESCE aims to validate FCM accuracy against gold standard histopathology for margin detection.

Methods: IP8-FLUORESCE is a multicentre, ex vivo, prospective, blinded, cohort study. Men undergoing RP for prostate cancer are included. After extraction, the specimen is immediately placed into an Acridine Orange dye for 10s then rinsed in saline. It is placed directly on the Histolog® Scanner which produces a digital microscopic image using FCM in under a minute. The whole surface is scanned (6 margins). After formalin fixation and paraffin embedding (FFPE), an independent, linded uropathologist analyses FCM images and histological slides. Primary outcome: accuracy of FCM for margin detection compared to histopathology. The study was powered for a sensitivity analysis (estimated PSM rate 41%). Sample size was calculated a priori using +/-14 points precision margin, accounting for 10% dropout (n=100). An interim event rate analysis was planned to maximise power.

Results: Recruitment commenced 17th August 2023. At interim analysis after 50 cases, PSM rate exceeded expectations (50%); precision margin was therefore narrowed to +/-10 points. Adjusted target: 123 patients. Recruitment target was met by 14th March 2024 (n=129).

Conclusions: IP8-FLUORESCE marks the first blinded assessment of FCM accuracy. FCM generates real-time digital images similar to H&E-stained slides, bypassing the need for expert specimen preparation. Results are expected in mid-2024.

LS028 - Exploring Unreported Pain in Major Trauma Centres

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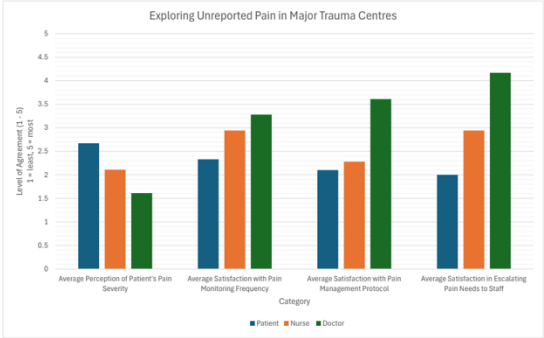
Aims: Existing reviews acknowledge the benefits of effective pain management in trauma patients, yet there are few studies soliciting stakeholder opinion. This project investigates the disconnect in perceptions of pain management among major trauma patients, nurses, and doctors, evaluating the efficacy of pain management delivery in an acute setting.

Method: A preliminary questionnaire was conducted using the Likert Scale (1-5), with 1 indicating the least agreement and 5, the greatest. The survey explored atient, nurse and doctor perceptions/satisfaction of (i) relative pain levels (ii) pain management guidelines (iii) patient comfort in escalating pain needs (iv) frequency of pain monitoring. This yielded 18 datasets, each containing a patient matched to a unique nurse and doctor. Exclusion criteria included traumatic brain injuries and ward admission < 3 days.

Results: The average relative pain scores were 2.67 for patients, 2.11 for nurses, and 1.61 for doctors. Doctors exhibited higher average satisfaction with current pain management protocols (3.61), compared to nurses (2.28) and patients (2.10). However, doctors overestimate patients' comfort in escalating pain to staff, averaging 4.17, compared to nurses (2.94) and patients themselves (2.0). The average patient satisfaction with pain monitoring frequency was 2.33, while
nurses (2.94) and doctors (3.28) were more satisfied.

Conclusion: This project highlights a consistent under-appreciation of patient pain and its management by major trauma healthcare professionals, with doctors doing so the most. This warrants intervention; a 30-second '5-step pain checklist' will be piloted, and its efficacy will be evaluated.



LS029 - Understanding the Effects of Cognitive Load Domains Upon a Surgical Procedure: Laparoscopic Appendicectomy

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Introduction: High cognitive workload (CWL) states, particularly extraneous, account for 87.1% of medical errors. Post Covid-19 pandemic, with burden higher than ever, recognising the factors contributing to cognitive overload could reduce surgical errors and enhance patient safety. This study explores how independent CWL domains affect perceived CWL and technical performance.

Methods: 10 surgical trainees (CT1-CT3) perfomed laparoscopic appendicectomies using an augmented-reality simulator (INOVUS LapAR, UK). A
baseline benchmarking procedure was followed by a 2x2 block design, independently assessing the effects of: (i) intrinsic load (low (LI) vs high (HI)); and
(ii) extraneous load (low (LE) vs high (HE) conditions). Outcome measures included perceived workload (SURG-TLX), and objective performance metrics (task completion times (TCTs), and specimen/stump quantitative measurements).

Results: The mean (+/-StD) age was 29.6 (+/-2.41) and 40% female. Two way ANOVA analysis revealed main effect of extraneous load for total SURG-TLX scores ($F(1,45)=27.291$, $p<0.001$), situational stress ($F(1,45)=17.058$, $p<0.001$) and distraction ($F(1,45)=12.413$, $p<0.001$). Conversely, perceived physical demand ($F(1,45)=4.079$, $p=0.049$) and task complexity ($F(1,45)=10.712$, $p=0.002$) decreased. Mean stump length ($F(1,45)=5.679$, $p=0.022$) and stump:specimen ratio ($F(1,45)=4.316$, $p=0.044$) increased with extraneous load and appendix specimen length decreased ($F(1,45)=4.658$, $p=0.036$). TCTs increased with high intrinsic load ($F(1,45)=10.325$, $p<0.001$).

Conclusions: High load conditions increase perceived total workload, stress, distraction and are associated with performance decline both in terms of extent of surgical resection and TCTs. High intrinsic workload increases operative time. Contributors to extraneous workload such as bleeps, loud anaesthetic monitors,
and team interruptions increase workload to a greater extent, and may lead to surgical errors.

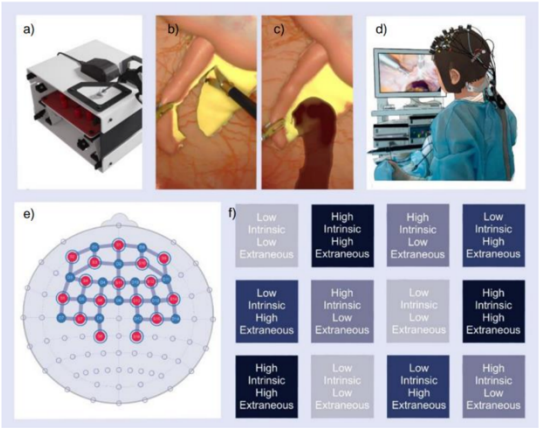
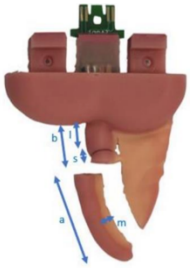


Figure 1: a) Inovus LapAR simulator; b and c) standardised task instructions including dissection of the mesoappendix (b) and haemostasis if bleeding encountered (c); d) participant/ fNIRS cap set up; e) optode array; f) 2x2 block design (3 trial repeat) of low and high intrinsic and extraneous conditions.



Consumable	Key	Measurement
Appendix	a	Length of appendix specimen (mm)
Base	b	Base -> end of stump distance (mm)
Loop	l	Base -> loop distance (mm)
Stump	s	Loop -> Stump distance (mm)
Mesoappendix	m	Width of mesoappendix (mm)

Figure 2: Appendix consumable model measurements including: a) specimen length, b) stump length, l) loop position, s) proximity of loop to stump end and m) mesoappendix.

LS030 - Coding in Corneal Ophthalmology Procedures

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Background: Due to the corneal graft shortages the Western Eye Hospital has looked to source tissue from North America, which comes at a much higher premium. In light of this we aimed to evaluate the tariffs for all corneal procedures to ensure that they accurately reflect the care provided and that the trust is being paid correctly for procedures performed.

Methods: Data from all corneal procedures carried out from a consecutive 3 month period (Feb-April 2023) was extracted and analysed with pre-audit tariff calculated. All procedures were cross-checked manually with operation notes and appropriate codes were added for each procedure. The tariffs for each month were then recalculated for all procedures.

Results: As a stand-alone hospital there are no coders on site and we found there were significant gaps in procedure knowledge and discrepancy in how each case was being coded. 141 procedures were included. 47% of these were incorrectly coded amounting to a total of £30,876 being reclaimed for the department.

Conclusion: This simple project has had large ramifications and helped support the finances in the cornea department. Extrapolated across the year and to other subspecialties the amount claimed back facilitates more procedures, equipment and staff for better patient care. We continue to meet regularly with the coding team who now have better support and have developed a network to include other subspecialties with individual leads, nurses and surgeons documenting. A subsequent reaudit from Oct-Dec showed sustained improvement with only 6% incorrectly coded.

LS031- Cytoskeletal Dynamics and F-actin Redistribution Changes Induced by Lidocaine in Colon Cancer Cells: A Fluorescence Microscopy Analysis

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Introduction: The reorganisation of F-actin within cancer cells profoundly influences their migration abilities, affecting cellular stiffness and motility. In this invitro study, we explored the impact of lidocaine, a local anaesthetic commonly used clinically, on the cytoskeletal dynamics of F-actin in three colon cancer cell lines.

Method: Colon cancer cell lines (SW480, SW620, and HCT116) were cultured and treated with or without 100μM lidocaine for 24 hours. An immunofluorescent staining was performed with phalloidin for F-actin and Dapi for nuclei. F-actin distribution was analysed using ImageJ, focusing on fluorescence intensity changes from the cell centre to the periphery. Ten total cells were randomly chosen for each cell line from 4 biological repeats. The cell centroid crossline is segmented into ten equal parts, with bins 0–2 and 7–9 marking the periphery and bins 3–6 denoting the centre. A two-way ANOVA with Tukey test for multiple comparisons for each bin was carried out.

Results: A notable shift was observed in F-actin distribution following lidocaine treatment, whilst in untreated cells, F-actin was predominantly centralised within the cells. Lidocaine caused marked decentralisation, with increased fluorescence intensity at the cell periphery. This redistribution suggests a significant disruption in the actin cytoskeleton, characterised by the accumulation of high-intensity F-actin spots and rings at the cell edges (Figure 1).

Conclusion: Lidocaine treatment induced a redistribution of F-actin, moving from a centralised to a more peripheral distribution in all colon cancer cells. This reorganisation could potentially reduce cell migration capabilities, a crucial aspect of cancer metastasis.

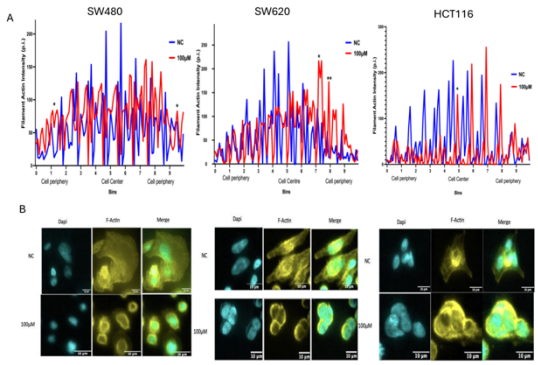

Figure 1: F-Actin distribution in SW480, SW620 and HCT116 colon cancer cells.
A. F-actin fluorescent intensity distribution in untreated cells compared with cells treated with Lidocaine 100 μM for 24 h. A two-way ANOVA with Tukey multiple comparisons for each bin was performed. *p<0.05, **p<0.01, ***p<0.001
B. Cells were stained for F-actin (phalloidin, green) and nuclei (DAPI, blue), scale bar 10μm. All three colon cancer cell lines displayed reorganisations of actin cytoskeletons with lidocaine treatment, accumulating high-intensity spots and rings in the cell periphery.

LS032 - Improving patient information post haemorrhoidectomy

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Introduction: In the UK, approximately 20,000 haemorrhoidectomies are performed annually. Research shows that perioperative patient education impacts upon surgical outcomes. During our placements we observed inconsistencies in the postoperative information provided to haemorrhoidectomy patients, so we aimed to address this and clarify the content of discharge summaries at our trust.

Method: We conducted a two-part study, first analysing the discharge summaries of patients (n=40) from 2 hospitals within Imperial College Foundation Trust who underwent haemorrhoidectomies between June 2023 - February 2024. We identified discrepancies in advice including return to work, analgesia and antibiotics. To understand the reasons behind these, we then developed a clinician questionnaire distributed to the colleagues of our clinical lead (n=19), comprised of 5 Likert scales and 1 free text question.

Results: Variations in postoperative care advice were evident across discharge summaries. Among the patients 33/40 (83%) were not given the reason for their operation, 38/40 (95%) were not prescribed topical GTN and 30/40 (75%) were not given wound care guidance. Analysis of the clinician questionnaire revealed 8/19 clinicians (42%) cited 'not appropriate' as the reason behind the omissions whilst 4/19 (21%) chose both 'time limitations' and 'inexperience'
.
Conclusions: Our findings indicate a significant number of discharge summaries lacked essential reporting elements due to time constraints and parameters within current understanding. Consequently, we developed a patient information leaflet to standardise postoperative advice. With this approach, we aim to reduce the variation in discharge summary content and provide adequate care instructions to facilitate recovery post haemorrhoidectomy.

LS033 - Can appendiceal adhesions cause small bowel obstruction ? A rare case presentation managed laparoscopically

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Aims: Adhesions are the commonest cause of small bowel obstruction world- wide. However, a band adhesion from the appendicular tip to the small bowel causing small bowel obstruction is rarely reported in literature. We report such a presentation and successful management by laparoscopic approach with good outcome.

Methods: 61-year-old female, presented with abdominal pain, mild distension & vomiting for 3-days. She had undergone ultrasound-guided-drainage of appendicular abscess 3-months ago. CTAP showed small-bowel obstruction with ransition point in pelvis - possible cause being adhesions. After initial conservative management, since she was not improving for 2-days, she was consented for diagnostic laparoscopy.

Results: Intraoperatively, an adhesive band was found between the appendicular tip and distal ileum around 100cm proximal to Ileo-colic junction, resulting in mechanical bowel obstruction. Laparoscopic division of band was performed followed by appendicectomy, and patient had an uneventful recovery and discharged on post-operative day-2.

Conclusion: Though an uncommon cause of adhesive small bowel obstruction, a band from appendicular tip causing mechanical bowel obstruction can be managed effectively by laparoscopic approach.

Key Statement: This is an unusual case of small bowel obstruction secondary to band from appendicular tip causing mechanical bowel obstruction with a transition point. In future when dealing with complications of appendicitis, like appendicular abscess - it needs to be addressed with clinical suspicion in such presentations.

LS034 - A review of emergency general surgery (EGS) admissions via the direct access pathway (DAP) in a district general hospital in United Kingdom

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Aims: Emergency surgical presentations require urgent attention by surgeons to

ensure appropriate treatment, However, increased waiting time in A&E often leads to delayed diagnosis and subsequently delayed management. A direct access pathway (DAP) to Surgical Emergency Assessment Unit (SEAU) helps minimize these delays and subsequently improve patient outcome.
Methods: A retrospective observational study of Emergency General Surgery (EGS) admissions from May 2023 to December 2023 was performed. Structured DAP referral proforma was implemented for patients to be directly referred to SEAU from A&E triage. Factors taken into consideration were – initial resentation, source of referral, time of initial assessment and patient outcome.

Results: A total of 265 patients were channeled through DAP referrals during the study period, of which 96.6% were appropriate referrals. The main source of the referral the A&E (52.4%), while the UTC-GP and GP constituted the remaining (47.6%). The most common clinical presentations were abdominal pain (32.4%), followed by subcutaneous abscess (17.3%). The median watiting time for initial assessment by the surgical team was 60 minutes. In terms of outcomes - 15 % patients were admitted, 14.7% were discharged after intervention, 35.8 % were discharged without intervention and 28.6% were planned to return for investigations or interventions.

Conclusion: The DAP for EGS admissions has enabled surgical emergencies to be ddressed more promptly, and thus seen to have improved patient outcome as a esult of avoiding unnecessary steps and delays before being reviewed by the surgical team through A&E pathway.

LS035 - Pilot Project: Developing a Paediatric Pain Management Resource for Healthcare Professionals

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Background: Pain is underestimated and undertreated in children. A survey carried out at Chelsea & Westminster Hospital (CWH) highlighted the need to improve pain management resources for healthcare professionals looking after paediatric inpatients. Accurate pain assessment and confident use of existing pain management guidelines at CWH should achieve the goal of reducing post- operative pain in children.

Method: A needs analysis was conducted by surveying paediatric nurses and anaesthetists at CWH in February 2024. Likert scales established confidence in assessing pain in children; accessibility of existing pain resources; and perceived enefit of having a unified resource. Following implementation of a pain anagement infographic, an immediate post-intervention survey assessed the perceived usefulness of a comprehensive Paediatric Pain Management (PPM) resource.

Results: 16 healthcare professionals responded to the initial survey, with 75% agreeing that a PPM resource would prove beneficial to their daily practice. The post-intervention survey was completed by 4 nursing staff. 100% of respondents felt a PPM resource would be 'extremely useful'; would be 'extremely likely' to recommend the resource to colleagues; and 'strongly agree' that the guide addressed their needs. Additionally, all respondents asserted the potential to use the resource 2-4 times a week, with 50% proposing to use it 4-6 times a week.

Conclusion: This study identified the need for a concise and accessible PPM resource and implemented a successful infographic, with potential to develop it into a comprehensive universal pain guide to be utilised within the operative delivery network and improve the inpatient experience for children.

LS036 - The importance of weekly Radiology-General Surgery Multi-Disciplinary Meetings (MDMs) in the management of Emergency General Surgery (EGS) patients

Shreya Pal[1], Zoengzhen Yi[1], Iesleen Abigaelle Bartolome[2], Leonardo Bareli[1], Anuj Shrestha[1], Jann Yee Colledge[1], Ashish Shrestha[1]

1 East Kent Hospitals University NHS Foundation Trust

Aim: Most patients in Emergency-General-Surgery (EGS) require radiological investigations as part of their management. However, unlike cancer services where structured multi-disciplinary-meetings (MDMs) form an integral part of patient management, MDMs are not commonly practised in EGS. Having a weekly Radiology-General Surgery-MDM leads to better outcome in management of EGS-patients, & also improves learning of surgeons & junior- doctors.

Methods: A prospective study of weekly 1-hour Radiology-GeneralSurgery-MDMs over 24-weeks during May 2023-December 2023 was performed. These MDMs were led by consultant radiologist who discussed the scans with consultant surgeons & other junior-doctors. A new referral-form was introduced after discussion with consultant surgeons & radiologists, & the surgical team was informed about this. Factors considered were clinical presentation, original scan report, missed findings not mentioned in original scan report, changes recommended in management plan for better patient outcome. These scans were also discussed with junior-doctors to improve their knowledge of interpretation of scans.

Results: A total of 92 cases were discussed during the study period, 25(35.71%) initially reported by out-of-hours reporting system. Few had missed findings that were noted as result of Radiology-General Surgery-MDM, & 32(34.7%) had change in management plan. The informal feedback collected after these MDMs noted over 85%junior-doctors agreed that these MDMs had improved their understanding of interpretation of radiological-scans in EGS.

Conclusion: Weekly Radiology-General Surgery-MDMs for EGS-admissions has been seen to improve patient outcome due to expert 2nd-opinion and discussion between surgeons and radiologists, & also recommending change in management plan in significant proportion of patients. It also improved the clinical correlation of radiological-scans by junior-doctors regularly attending these meetings.

LS037 - Talking Trash: A Quality Improvement Project focussed on encouraging the correct disposal of waste

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Background: The NHS is responsible for up to 5% of the UK's carbon footprint. Among many other issues beleaguering the NHS, a focus on planetary health also now seems timely. We have a moral imperative to care not just for the patients of today, but of tomorrow. We discovered infectious clinical waste bags were being unnecessarily filled with recyclable packaging. These not only required industrial burning, increasing emissions, but also cost tenfold to dispose of than recycling bags.

Aims: A QIP investigating recycling habits of theatre staff and encouraging proper disposal of waste.

Methods: We randomly sampled clinical waste bins in St Mary's theatres to determine if bins were being appropriately used. Next, we surveyed theatre staff's knowledge and interest in waste disposal. After creating a poster, we resampled the bins to see if our poster affected behaviour change, and resurveyed theatre staff about their opinions on our intervention.

Results: Our poster was unsuccessful in changing behaviour however we did receive positive feedback from stakeholders. Whilst our sample size was small, we received many congruent opinions from staff who thought a training programme would be more beneficial in future.

Conclusions: More work is required to target different aspects of the COM-B model to facilitate greater behaviour change regarding waste disposal. Overall our laminated posters were sustainable and low cost, and equally a training programme would pay for itself if improving waste costs long term, as well as making surgery more environmentally viable in future.

LS038 - Emergency Laparoscopic Parastomal Hernia Repair Around Ileal Conduit in a Morbidly Obese Patient - a Surgical Challenge Managed Successfully

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1 East Kent Hospitals University NHS Foundation Trust

Aim: Management of a strangulated parastomal hernia (PH) around the ileal conduit can be a surgical challenge. We demonstrate here a safe and effective laparoscopic repair of a strangulated PH in the emergency setting for a 53year- old morbidly obese woman (BMI: 40).

Method: Entry to abdominal-cavity was by Veress-needle technique. PH defect was identified – containing strangulated part of ascending-colon that reduced spontaneously during creation of pneumoperitoneum. Adhesiolysis around stomal defect u pto lateral attachment of ileal conduit was completed. 3cm defect was apposed using transfascial nonabsorbable sutures. 15cm circular- composite-mesh was fashioned U-shaped and introduced in medial to lateral direction with the U lips overlapped and fixed snug laterally around the ideal conduit. Mesh was further fixed through double-crown fixation.

Results: Patient had an uneventful recovery and discharged on the second post-operative day. A 10-month CT as a part of bladder cancer follow up showed no PH recurrence.

Conclusions: This case shows that strangulated PH around an ileal conduit, an uncommon presentation, can be successfully managed laparoscopically even in the emergency setting especially for patients of high BMI with proper assessment and appropriate expertise. Successful management of this challenging presentation of strangulated PH around ileal conduit demonstrates the safe and effective use of laparoscopic surgery especially in the emergency setting for patients of high BMI.

LS039 - Correlation between self-reported and objective cognitive workload estimation in surgeons using functional neuroimaging

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Background: Understanding the impact of cognitive load on surgeons during operative tasks is vital for preventing errors and patient safety. Neural activation follows an inverted 'U-shape' , increasing with cognitive load up to a peak, after which 'overload' leads to neural deactivation and performance decline. While the validated SURG-TLX score can measure global cognitive workload, the relationship between SURG-TLX and neural activation for cognitive load is poorly characterized.

Aim: The study aimed to assess the relationship of the SURG-TLX score and neural activation for cognitive load.

Method: Final-year medical students and foundation doctors (n=20) completed a suturing task under self-paced, time-pressured, and time-pressured with extraneous cognitive demand conditions. Functional near-infrared spectroscopy (fNIRS) measured neural activation in the prefrontal and motor cortex using a NIRSports 2 device (NIRx, wavelengths 760nm and 850nm). SURG-TLX questionnaires were completed after each trial block. Scores for each domain (distractions, mental demands, physical demands, situational stress, task complexity, temporal demands) and total score were fitted to a quadratic function to model an inverted U-shape. Quality of fit was assessed using R- squared. Statistical significance was set to $p<0.05$.

Results: An inverted U-shape response was identified in the prefrontal cortex for distractions, physical demands, situational stress, and total scores, and in the premotor cortex and supplementary motor area for distractions, mental demands, physical demands, situational stress, temporal demands, and total scores (Table 1) (Fig. 1).

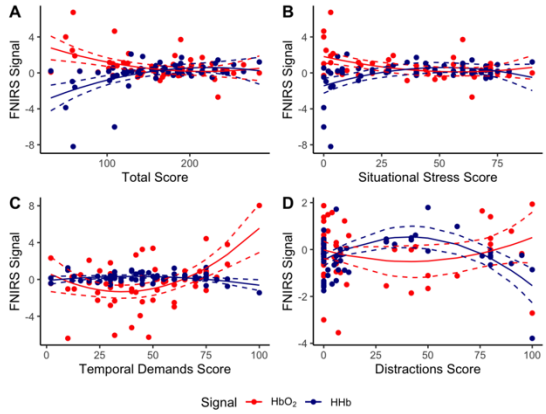
Conclusion: SURG-TLX scores can model neural activation related to cognitive load in surgical tasks. Modelling cognitive overload and performance decline has implications in improving surgical training and patient outcomes.

Table 1

SURG-TLX domain	Channels with U-shaped Response			
	Pre-frontal Cortex		Motor Cortex & Supplemental Motor Area	
	HbO_2	HHb	HbO_2	HHb
Distractions	16 (R2 = 0.12, p = 0.03), 20 (R2 = 0.18, p = 0.004), 28 (R2 = 0.12, p = 0.02)	10 (R2 = 0.11, p = 0.03), 16 (R2 = 0.22, p <0.001), 20 (R2 = 0.23, p <0.001), 21 (R2 = 0.25, p < 0.001), 28 (R2 = 0.11, p = 0.03)	35 (R2 = 0.11, p = 0.03), 47 (R2 = 0.14, p = 0.01)	35 (R2 = 0.14, p = 0.01)
Mental Demands	-	-	33 (R2 = 0.10, p = 0.05), 48 (R2 = 0.16, p = 0.008)	52 (R2 = 0.23, p < 0.001)
Physical Demands	24 (R2 = 0.17, p = 0.005), 57 (R1 = 0.10, p = 0.04)	7 (R2 = 0.10; p = 0.049), 14 (R2 = 0.16, p = 0.007)	-	48 (R2 = 0.15, p = 0.008)
Situational Stress	10 (R2 = 0.10, p = 0.048)	-	4 (R2 = 0.12; p = 0.024), 51 (R2 = 0.19, p = 0.002)	4 (R2 = 0.15; p = 0.009), 51 (R2 = 0.20, p = 0.002)
Task Complexity	-	-	-	-
Temporal Demands	-	-	42 (R2 = 0.17, p = 0.004), 44 (R2 = 0.28, p < 0.001), 50 (R2 = 0.11, p = 0.03)	44 (R2 = 0.12, p = 0.02) , 50 (R2 = 0.12, p = 0.03)
Total Score	17 (R2 = 0.11, p = 0.03)	-	4 (p = 0.019), 51 (R2 = 0.19, p = 0.003)	4 (p = 0.031), 51 (R2 = 0.25, p < 0.001)

Table1 Legend: Channels which demonstrated statistically significant U-shaped responses for different SURG-TLX domains for oxygenated (HbO_2) and deoxygenated (HHb) signals. R-squared and p-values shown. P < 0.05 was deemed as statistically significant.

Figure 1: Example U-shaped curves for oxygenated (HbO_2) and deoxygenated (HHb) signals for (A) Channel 51: Total Score (B) Channel 51: Situational Stress (C) Channel 44: Temporal Demands, (D) Channel 21: Distractions; Dotted lines show 95% confidence intervals for quadratic model



LS040 - A case of Painless Palpable Gall bladder - a rare Exception of the Courvoisier's Law

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Introduction: The Courvoisier's law states that a painless palpable enlarged gallbladder with jaundice is unlikely to be caused by gallstones. There are however various exceptions to the law. We report a rare case of such an exception to make us aware of the clinical condition.

Case Description: 72-year-old male, otherwise fit and healthy, presented to the Emergency department with epigastric discomfort, along with dark urine and pale-colored stool. He was clinically examined to have jaundice, and a painless globular palpable gall bladder, with blood results confirming obstructive picture i.e. raised bilirubin (70 µmol/L), ALT (103 U/L) and Alkaline Phosphatase (590 IU/L). Ultrasound abdomen showed acute cholecystitis. CT chest-abdomen-pelvis showed cholelithiasis and choledocolithiasis with dilated common bile duct (CBD), as well as asymmetric gallbladder wall thickening. The MRCP showed concentric and uniform thickening of the entire gallbladder wall, with minimal pericholecystic fluid reflecting acute inflammation. Multiple calculi were noted to be present within the CBD and gall bladder, resulting in dilation of CBD (15.8mm). The patient had ERCP with sphincterotomy and retrieval of multiple stones by balloon trawl. He was discharged the following day and is planned to undergo laparoscopic cholecystectomy as an elective procedure. His liver function test markedly improved at discharge bilirubin of 18 µmol/L and ALP of 364 IU/L.

Conclusion: This is an unusual case of painless jaundice with palpable gall bladder due to stones impacted in the CBD and not due to periampullary carcinoma, which is an exception to the Courvoisier's Law.

LS041 - Trachelectomy as a fertility-sparing treatment for early cervical cancer – oncological and reproductive outcomes: a systematic review and meta- analysis

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2 Imperial College Healthcare NHS Trust
3 Alexandra Hospital
4 University of Toronto
5 University of Helsinki

Objective: To assess the oncological and reproductive outcomes following different fertility-sparing radical trachelectomy (RT) procedures in presumed early cervical cancer.

Methods: Design - Systematic review and meta-analysis

Data Source: PubMed, Embase and the Cochrane Central Register of Controlled Trials (1999-2024). Eligibility Criteria - Studies exploring oncological or pregnancy outcomes after vaginal simple trachelectomy (VST) and vaginal (VRT), abdominal (ART), laparoscopic (LRT) or robotic (RRT) radical trachelectomy, as well as neo-adjuvant chemotherapy (NACT) followed by surgical excision. Data synthesis: Data extraction and risk of bias assessments were performed in duplicate. Pooled proportions for each outcome were calculated using the generalized linear mixed model and the random-effects model. Main Outcomes: Oncological: rate of margin involvement, disease recurrence and deaths; reproductive: pregnancy rates, 1st trimester and 2nd trimester miscarriages, preterm and term birth.

Results: We identified 93 studies that included 5624 women treated for stage IA1-IIA cervical cancer. The recurrence rates overall were found to be higher in cases >2cm [17% (39/227)] compared to <2cm [2% (66/3159)]. ART was the most common surgical approach [39% (2210/5624)], followed by VRT [31% (1767/5624)] LRT [6% (339/5624)], RRT [5% (278/5624)], and VST [4%(215/5624)]. Pregnancy rates were good amongst those attempting to conceive [63.8% (1100/1723)]. ART had a higher rate of pre-term birth [39%(137/351)] in comparison to VST [28% (23/83)].

Conclusion: Recurrence rates were low for patients undergoing trachelectomy with tumours <2cm. ART surgery appears to be associated with better oncological outcomes but has worse reproductive outcomes when compared to VST. Careful selection of cases is crucial.

LS042 -Quality Improvement Project: Enhancing medical education for medical students on surgical placements through pre-placement resources

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Aim: Hospital placements are an essential part of a medical student's education and professional development. This quality improvement project aims to investigate barriers to education for medical students on placement and address this through the creation of pre-placement resources.

Method: An online survey was distributed opportunistically to medical students on placement over a three-week period in February 2024. Students on breast surgery placement then received a pre-placement resource signposting key conditions and concepts. Likert scales, open-ended questions and dichotomous questions were used in the survey to assess student placement experiences, barriers to education and interest in pre-placement resources.

Results: 23 students responded to the first survey. Students gave an average score of 2.78/5 when asked about how much they learned on placement (0 meaning nothing, 5 meaning a lot) and 15/23 (65%) students had their learning experience negatively affected by a lack of prior knowledge. Students mentioned that one barrier to education was that students and consultants had different perceptions of an appropriate baseline of knowledge. 21/23 (91%) students believed they would likely learn more with a pre-placement resource and an average score of 4.17/5 was given for how likely they would use a pre-placement resource (0 meaning not likely at all, 5 meaning extremely likely).

Conclusions: This study identified that the different perceptions between consultants and students for an appropriate baseline knowledge is a potential barrier to student education. To address this, a pre-placement resource was created, and its impacts are currently being assessed through a second ongoing survey.

LS043 - Increasing awareness of Mask Fit-testing amongst NHS Staff

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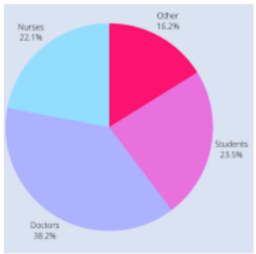
Background: Despite the critical role of mask fit-testing in preventing infectious disease transmission, a significant portion of NHS staff and students have not undergone fit-testing in the past two years, often due to lack of awareness and accessibility.

Objectives: Our study aimed to: 1) Increase awareness and accessibility to mask-fit testing. 2) Raise awareness about aerosol-generating procedures (AGPs) and the availability of fit-tested masks. 3) Identify and address barriers to accessing and wearing fit-tested masks.

Methods: We conducted a pre-intervention survey to assess awareness, knowledge of mask locations, and understanding of mask usage. Strategic placement of posters in various hospital locations provided information on fit-testing appointments and AGP awareness. Post-intervention surveys were conducted to evaluate the effectiveness of our intervention.

Results: Pre-intervention findings revealed that one-third of NHS staff members had not undergone mask fit-testing, while 43% observed others not wearing fit-tested masks for AGPs, and 41% were unaware of mask locations. Post-intervention, approximately 80% of respondents (out of 68 participants) across all intervention locations had seen our posters, with 97% reporting knowledge of how to book fit-testing appointments and feeling confident in doing so.

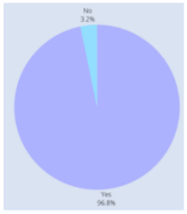
Conclusions: Our study demonstrated an improvement in awareness of mask fit-testing procedures among NHS staff. Future research should focus on enhancing compliance and accessibility to fit-tested masks to further mitigate the spread of infectious diseases in healthcare settings.



Surveyed Population

Figure 1:

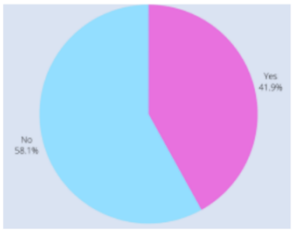
- In total, responses were collected from 68 members of NHS staff, including medical professionals such as FY1s, SHOs, Consultants, as well as Nurses, Pharmacists, Clinical Teaching Fellows, HCAs, and Medical Students.
- A notable discrepancy was observed in the knowledge of where to access fit-tested masks between Nurses and Doctors.



Are you confident in booking a future mask fit-test?

Figure 2:

- Following the implementation of our intervention, 97% of respondents now know how to book a mask fit-testing appointment and feel confident about booking one if they ever need to in the future.



Have you noticed more staff wearing their fit-tested mask?

Figure 3:
42% of respondents reported observing an increase in fit-tested mask wearing during AGPs. However, the majority of those interviewed noted no change in fit-tested mask usage.

LS044 -Can 3-D Planning Optimise Femoral Head Coverage in Periacetabular Osteotomy?

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Background: Bernese periacetabular osteotomy (PAO) is performed in patients with hip dysplasia. Currently, intra-operative fluoroscopy aids cut placement and translation/rotation of the acetabular fragment. However, minimal pre-operative techniques exist to determine ideal fragment adjustment. The MSK Lab Hip Planner(MSKL-HP) can simulate PAOs pre-operatively, providing more precise parameters and optimising lateral centre-edge (LCEA) and Tønnis angles.

Aims: To investigate utility of the MSKL-HP in PAO planning and quantify the influence of varying surgical technique on LCEA and Tønnis angles.

Methods: The MSKL-HP was used to simulate 30 PAOs on two patients with hip dysplasia (four hips). Acetabular and femoral anatomy were landmarked to simulate PAO cuts. The posterior and ischial cuts were standardised. The slope of the iliac cut was neutral (aligned to pelvis), exit point 5mm above the anterior entry point or 5mm below. The slope of the pubic cut was neutral (perpendicular to the pubis), 50◦ or 70◦ (medial-to-lateral). Iliac and pubic cut combinations were varied.

Results: Median pre-operative LCEA and Tønnis angles were 27 ◦ and 15.3 ◦ respectively, with median improvements of 7.6 ◦ and -8.4 ◦ across all PAOs. A Kruskal-Wallis test showed no statistically significant difference in change in LCEA or Tønnis between variations of both iliac and pubic cuts ($p>0.05$). Optimal angles were associated with forward flexion, valgus rotation and increasing anteversion of the acetabular fragment.

Conclusion: The MSKL-HP simulates feasible PAOs with improved post-operative parameters – showing benefit as a pre-operative planning tool for surgeons. Specific PAO technique should be validated through further studies.

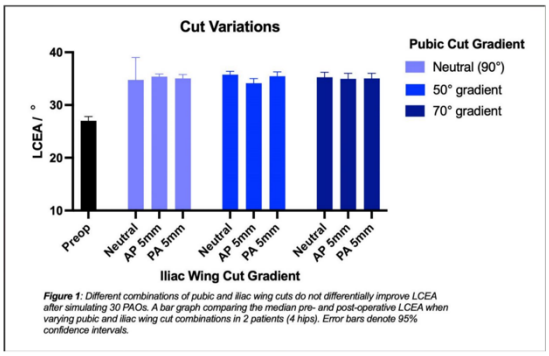

***Figure 1**: Different combinations of pubic and iliac wing cuts do not differentially improve LCEA after simulating 30 PAOs. A bar graph comparing the median pre- and post-operative LCEA when varying pubic and iliac wing cut combinations in 2 patients (4 hips). Error bars denote 95% confidence intervals.*

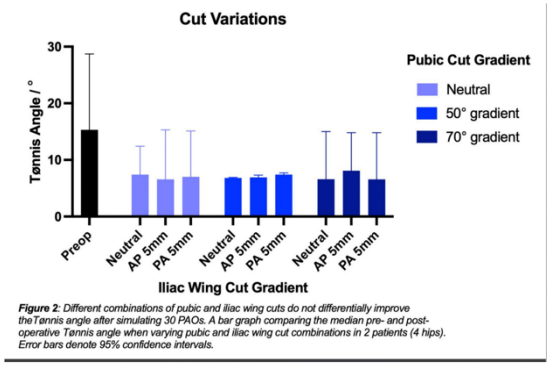

***Figure 2**: Different combinations of pubic and iliac wing cuts do not differentially improve theTønnis angle after simulating 30 PAOs. A bar graph comparing the median pre- and post-operative Tønnis angle when varying pubic and iliac wing cut combinations in 2 patients (4 hips). Error bars denote 95% confidence intervals.*