NHS
Health Education England

Evidence Brief: Theatre Workforce

Contents

HEE Knowledge Management Team, March 2021

Produced by the HEE Knowledge Management team Evidence Briefs offer a quick overview of the published reports, research and evidence on a workforce-related topic. A starter for 10 on the evidence if you will.

Please acknowledge this work in any resulting paper or presentation as:
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Key publications – the big picture

The Productive Operating Theatre June 2020, NHS Improvement Hub
The Productive Operating Theatre helps theatre teams to work more effectively together to improve the quality of patient experience, the safety and outcomes of surgical services, the effective use of theatre time and staff experience. This focus on quality and safety helps theatres run more productively and efficiently, which subsequently can lead to significant financial savings.

Long Term Plan January 2019, NHS
The NHS Long Term Plan was developed in partnership with those who know the NHS best –frontline health and care staff, patients and their families and other experts.

Operating theatres: opportunities to reduce waiting list February 2019, NHS Improvement
See p. 2 "This report provides the insight to support clinicians, managers and hospital leaders further challenge themselves to improve how care is delivered and how valuable theatre resources and clinical expertise can be best used. Patients should expect the best healthcare to be delivered safely, efficiently and effectively. But against the backdrop of continuing financial challenges, clinicians and hospital administrators are under ever-increasing pressure from rising demand for elective surgery, the availability of beds and workforce challenges. Trusts more than ever need to use their existing facilities and workforce as effectively and efficiently as possible if they are to continue to meet the needs of their patients."

See p. 19 "However, longer operating sessions are usually scheduled in subspecialties in which a smaller number of longer, more complex operations are carried out (eg colorectal surgery and spinal surgery). For trusts that identify a productivity opportunity in these types of lists, completing additional long and complex cases at the end of a long session may not be feasible or appropriate. Instead, these trusts may findthey can improve overall theatre productivity on these lists more by shortening the sessions and re-planning their workforce to reduce costs (eg through reducing their use of locum, bank and agency staff.)"

Briefing: Operating theatres – maximising a valuable resource
Foundation Trust Network, NHS Providers
Operating theatres are critical in the delivery of acute patient care. However, in a time of shrinking budgets and increasing demands in the health service, acute hospitals face significant operational challenges in maintaining the excellent clinical outcomes and low waiting lists that have been delivered to date.

Our benchmarking project found that their were three key challenges facing providers:

- *Effective planning*: On average, participants in our study scheduled 35 hours of operating activity per theatre per week, of which 10% were cancelled, though the best performing trust managed to cancel only 3% of scheduled lists.
- *Preventing last minute changes*: Cancellation of procedures are not always under the control of the department: patient cancellations accounted for 39% of all last minute procedure cancellations, while hospital cancellations due to clinical reasons accounted for 34% and the remainder were due to nonclinical reasons.
- *Efficient patient flow in the department*: A main focus for trusts is reducing the theatre time wasted due to late starts and early finishes which overall accounts for 18% of theatre hours used.

A question of balance: the extended surgical team 2016, The Royal College of Surgeons England
The surgical workforce has been depleted by reductions in the numbers of doctors in training in surgery, and changes to their working hours and shift patterns. Frequent reference has been made to 'filling gaps' in rotas, particularly at night, and 'plugging holes' in ward and theatre cover. The reality is that the medical element of the surgical workforce has changed and surgical departments need to redesign their teams in response – as one senior NHS manager told us: 'The gaps are not really gaps anymore; this is what we have'. Changes to the surgical workforce have had an impact on the training provided to tomorrow's surgeons. This report – co-funded by Health Education England (HEE) – explores perceptions of surgical training held by those in positions of leadership across surgery, as well as doctors in training. The findings of two surveys and a diary exercise give rise to concern about the time available for training for doctors in core and foundation training, about the demands placed upon them to cover the service, and their exposure to common surgical conditions. These findings are compounded by perceptions from some NHS staff at eight case study sites we visited that doctors in training today are less competent – and less useful to the service – than they used to be, and that newly qualified consultant surgeons are often less confident. These perceptions, while anecdotal, will confirm worries expressed by many within the surgical profession about the state of surgical training.

Case Studies

Bryony – Operating Department Practitioner Newcastle upon Tyne Hospitals NHS Foundation Trust
My job as an ODP involves planning and executing patients' intra-operative care. I will initially discuss care requirements with the multidisciplinary team for patients who are coming to theatre that day. As an ODP I have two main roles within the theatre which involves 'circulating' and 'scrubbing'.
As a circulator I ensure the patient's safety and support the needs of the scrub practitioner pre-empting any requirements which may be needed. I then scrub with the surgical team to anticipate and support the needs of the surgeon; I am also accountable for all equipment used in the surgery.

Operating Department Practitioner (ODP) - Lisa 2021, CASCAID Wales
Day in the life of an ODP.

The Perioperative Practitioner – Insights from a Physician Associate November 2019, The Royal College of Surgeons Edinburgh
We caught up with one of the speakers at the event, Alexandra Brant, who is a Physician Associate in the Liver Unit at Birmingham Children's Hospital and got an insight into her role and her views on how potential changes to the surgical team and its structure would impact the overall quality of patient care in the future.

What it's really like to be an ODP Birmingham City School of Health Sciences
In honour of National Operating Department Practitioners Day, we've spent time talking to BCU alumna Paige Jones, who works as an ODP and was recently filmed for a BBC documentary:

Edge of Life. Below, Paige very kindly gives us an insight into what it's really like to be an ODP.

Physicians' assistants (anaesthesia) at Aintree University Hospital NHS Foundation Trust October 2018, NHS Employers
Aintree University Hospital NHS Foundation Trust has introduced a number of physicians' assistants (anaesthesia) (PA(A)) to its anaesthetics department. This case study explores the journey the trust has taken to integrate these new roles into the team, the challenges it has faced and the successes it has seen. It also highlights a number of top tips that the trust would like to share with other NHS organisations.

Surgical Care Practitioners at Torbay and South Devon NHS Foundation Trust October 2018, NHS Employers

Torbay and South Devon NHS Foundation Trust was one of the first trusts to recruit surgical care practitioners (SCPs) within England.
In this case study, we explore how the trust has successfully integrated SCPs within its orthopaedics department and developed the role, providing SCPs with support and training to extend their scope of practice.

Physician assistants (anaesthesia) at Salford Royal Hospitals NHS Foundation Trust October 2018, NHS Employers
This case study looks at how Salford Royal NHS Foundation Trust, part of the Northern Care Alliance NHS Group, has introduced physicians' assistants (anaesthesia) (PA(A)) to enhance its anaesthetics workforce. The publication explains the steps the trust has taken to develop, support and train PA(A)s. In turn, this new and versatile role has helped to facilitate the delivery of services, improved continuity of care and allowed doctors in training to focus more of their time on clinical learning.

Surgical Care Practitioner Infographic October 2018, NHS Employers
Take a look at our infographic exploring the role of the surgical care practitioner (SCP).
The introduction of this role gives a new opportunity for employers to train nursing staff, operating department practitioners and allied health professionals to become highly trained members of the surgical care team with improved learning and development. The main responsibility of the SCP is to provide senior level support to surgeons and other healthcare professionals before, during and after minor surgical procedures.

Anaesthesia associates Infographic June 2019, NHS Employers
Take a look at our infographic exploring the role of anaesthesia associates.
The introduction of this role gives employers the opportunity to provide career development for the existing workforce to meet future service need and form an additional clinical career pathway.

HEE Star

More resources and tools are available by searching for **"theatre"** on the HEE Star

Statistics

You can find relevant statistics on the Health and Care Statistics Landscape under **"Health and Care"** and searching for **"Theatre"**

Supporting Facilities Data NHS England

Operating Theatres Programme NHS Benchmarking Network
The NHS Benchmarking Network's Operating Theatres project complements the Model Hospital and GIRFT workstreams with a holistic view of Theatre provision covering infrastructure, capacity, activity, theatre utilisation, quality, finance and workforce. The Network project gives Trusts the opportunity to submit data at a hospital level, so that performance can be compared between different sites within the Trust's portfolio.

HEE National Data Programme

HEE staff can look at the National Data Warehouse (NDL) SharePoint site to find out more about datasets and Tableau products.

Published Peer Reviewed Research

COVID-19

The role of the surgical care practitioner during the COVID-19 pandemic: An audit of experiences February 2021, Journal of Perioperative Practice *Abstract only**
Introduction: The Surgical Care Practitioner is a medical associate profession role, working to an advanced level, undertaken by registered nurses, operating department practitioners or physiotherapists, on completion of a Royal College of Surgeons accredited course. The COVID-19 pandemic has led to all heath care professionals needing to adapt to help support the health care system as it tackles its effect. Aim: Audit of roles undertaken by Surgical Care Practitioners during the COVID-19 pandemic in the context of Royal College of Surgeons (2014) Curriculum to review the utilisation of this medical associate profession role. Method: The online questionnaire service, SurveyMonkey®, was used to collect data on the activities being undertaken by the Surgical Care Practitioner during the COVID-19 pandemic. Results: Eighty Surgical Care Practitioners from across seven different surgical specialties within the United Kingdom completed the online survey. Nearly half stated that they remained mostly working in their substantive role, just less than a third helped in critical care units, with the remaining redeployed in equal shares to emergency departments or assisting on wards with nurses and as part of medical teams. A brief description of their activities was also recorded. Conclusion: This audit has demonstrated the versatility of the Surgical Care Practitioner and ability to adapt during the pandemic.

During the COVID-19 Pandemic, Surgery Centers Should Focus on Alleviating Staff Burnout October 2020, Same-day surgery *Athens log in required**

Healthcare professionals across the United States, including perioperative nurses, have seen stress levels rise during the COVID-19 pandemic, leading to potential burnout and post-traumatic stress disorder.

Preventing transmission among operating room staff during COVID-19 pandemic: the role of the Aerosol Box and other personal protective equipment September 2020, Updates in Surgery

The COVID-19 pandemic is highly challenging for the operating room staff and healthcare workers in emergency departments. SARS-CoV-2 is a positive-sense single-stranded RNA beta-coronavirus that primarily targets the human respiratory system, with fever, cough, myalgia, and pneumonia as the most common manifestations. However, since SARS-CoV-2 RNA was detected in stool specimens much more attention has been paid to gastrointestinal symptoms such as loss of appetite, nausea, and diarrhea. Furthermore, the expression of ACE-2 receptors in absorptive enterocytes from ileum and colon suggests that these organs should also be considered as a potential high risk for SARS-CoV-2 infection. During aerosol-generating medical procedures (AGMP; e.g. intubating and extubating patients or any surgical procedures), the production of both airborne particles and droplets may increase the risk of infection. In this situation, the surgical staff is strongly recommended to wear personal protective equipment (PPE). A transparent plastic cube, the so-called "Aerosol Box" (AB), has been recently designed to lend further protection against droplets and aerosol exposure during the AGMP.

New and extended roles

Changing faces within the perioperative workforce: New, advanced and extended roles February 2020, Journal of Perioperative Practice *Abstract only**

The operating department like many other areas within healthcare is diversifying its workforce. Several new, advanced and extended roles have been integrated within the team. This article briefly outlines historical and current developments which have influenced the operating department workforce. It focuses on the following: Surgical Care Practitioner, Physician Associate, Anaesthesia Associates formerly known as Physician Assistant in Anaesthesia, Surgical First Assistant, Assistant Theatre Practitioner and Nursing Associates, highlighting the professional regulators, education and training, qualification and continuing professional development requirements.

Two decades on - cardiothoracic surgical care practitioners in the UK: a narrative review February 2020, Journal of Cardiothoracic Surgery

Background: The role of Surgical Care Practitioner (SCP) was first introduced by the NHS in the field of cardiothoracic surgery more than two decades ago to overcome the chronic shortage of junior doctors, and subsequently evolved into other surgical specialties. This review aims to provide evidence on the current situation of SCPs' clinical outcomes within their surgical extended role, with an emphasis on the cardiothoracic surgical field. Method: A systematic search of PubMed, Scopus, Embase via Ovid, Web of Science and TRIP was conducted with no time restriction to explore the evidence on SCPs. All included articles were reviewed by three researchers using the selection criteria, and a narrative synthesis was undertaken. Findings: Ten out of the 38 studies identified were selected for inclusion. Only one study specifically investigated cardiothoracic SCPs. Three

themes were identified: (1) clinical outcomes (six studies), (2) workforce impact (two studies) and (3) colleagues' opinions (two studies). All studies demonstrated that SCPs provided safe practice, added value and were of benefit to workforce environments and surgical teams. Conclusion: Although the current literature provides assurances that the presence of SCPs within surgical teams is beneficial in terms of their clinical outcomes, their impact on the workforce and colleagues' opinions, a significant gap was identified around the SCPs' role within their surgical extended role, specifically in cardiac surgery. Thus, prospective clinical research is required to evaluate SCPs' clinical impact.

What is the contribution of physician associates in hospital care in England? A mixed methods, multiple case study 2019, BMJ Open
Objectives To investigate the deployment of physician associates (PAs); the factors supporting and inhibiting their employment and their contribution and impact on patients' experience and outcomes and the organisation of services. Design Mixed methods within a case study design, using interviews, observations, work diaries and documentary analysis. Setting Six acute care hospitals in three regions of England in 2016–2017. Participants 43 PAs, 77 other health professionals, 28 managers, 28 patients and relatives. Results A key influencing factor supporting the employment of PAs in all settings was a shortage of doctors. PAs were found to be acceptable, appropriate and safe members of the medical/surgical teams by the majority of doctors, managers and nurses. They were mainly deployed to undertake inpatient ward work in the medical/surgical team during core weekday hours. They were reported to positively contribute to: continuity within their medical/surgical team, patient experience and flow, inducting new junior doctors, supporting the medical/surgical teams' workload, which released doctors for more complex patients and their training. The lack of regulation and attendant lack of authority to prescribe was seen as a problem in many but not all specialties. The contribution of PAs to productivity and patient outcomes was not quantifiable separately from other members of the team and wider service organisation. Patients and relatives described PAs positively but most did not understand who and what a PA was, often mistaking them for doctors. Conclusions This study offers new insights concerning the deployment and contribution of PAs in medical and surgical specialties in English hospitals. PAs provided a flexible addition to the secondary care workforce without drawing from existing professions. Their utility in the hospital setting is unlikely to be completely realised without the appropriate level of regulation and authority to prescribe medicines and order ionising radiation within their scope of practice.

Workforce planning, design and strategy

State of the anaesthesia workforce in the United States: trends and geographic variation in nurse anaesthetist to physician anaesthesiologist ratios October 2020, British Journal of Anaesthesia *Abstract only**
Editor—Growing demand for anaesthesia services has resulted in a push towards more nurse-led (vs physician-led) care. Increases in certified registered nurse anaesthetist (CRNA) employment have been facilitated by various regulations, and 41 US states currently do not require physician-anaesthesiologist supervision of CRNAs. The Centers for Medicare and Medicaid Services allows state governors to opt out of the 'federal supervision' reimbursement requirement of physician supervision of non-physician anaesthesia providers, and 18 states have elected to do so.1

In the absence of detailed data on the anaesthesia workforce in the USA, we sought to identify state-specific patterns in anaesthesiologist and CRNA employment.

Extending the surgical workforce – should we be worried? March 2020, Royal College of Surgeons of England
It is clear to all of us in surgical training that the surgical landscape and surgical workforce have changed over the past few decades. We are constantly trying to meet both the demands of surgical training and those of a stretched NHS. The pressure on services has increased with falling numbers of doctors in training, a greater number of patients being treated1 and higher expectations of care – not to mention the growth of training pressures with ever-increasing paperwork demands. Surely we would embrace any change claiming to relieve the burden on surgeons in training? Heralded as the answer to many of our problems, one idea has been the expansion of medical associate professions (MAPs) into the surgical workforce. These team members should give surgical departments continuity and rota coordinators less of a headache as well as relieving strain on trainees – so do they?

Literature Review: The role of non-medical staff within the theatres workforce August 2018, NHS Scotland
Staffing of the theatres workforce is a challenging area commanding much attention at Scottish Government level as well as within Boards/clinically. A national Theatres Steering Group hasbeen formedto address the issue. A literature search was requestedto identify the international evidence-base on the role(s) of the non-medical workforce within theatre workforce models. The question asked was: What literature is available on the role(s) of non-medical staff within theatres workforce models?

Extended operating times are more efficient, save money and maintain a high staff and patient satisfaction September 2018, Journal of Perioperative Practice *Abstract only**
Current public sector austerity measures necessitate efficiency savings throughout the NHS. Performance targets have resulted in activity being performed in the private sector, waiting list initiative lists and requests for staff to work overtime. This has resulted in staff fatigue and additional agency costs. Adoption of extended operating theatre times (0800-1800 hours) may improve productivity and efficiency, with potentially significant financial savings; however, implementation may adversely affect staff morale and patient compliance. A pilot period of four months of extended operating times (4.5 hour sessions) was completed and included all theatre surgical specialties. Outcome measures included: the number of cases completed, late starts, early finishes, cancelled operations, theatre overruns, preoperative assessment and 18-week targets. The outcomes were then compared to pre-existing normal working day operating lists (0900-1700). Theatre staff, patient and surgical trainee satisfaction with the system were also considered by use of an anonymous questionnaire. The study showed that in-session utilisation time was unchanged by extended operating hours 88.7% (vs 89.2%). The service was rated as 'good' or 'excellent' by 87.5% of patients. Over £345,000 was saved by reducing premium payments. Savings of £225,000 were made by reducing privately outsourced operation and a further £63,000 by reviewing staff hours. Day case procedures increased from 2.8 to 3.2 cases/day with extended operating. There was no significant increase in late starts (5.1% vs 6.8%) or cancellation rates (0.75% vs 1.02%). Theatre over-runs reduced from 5% to 3.4%. The 18 weeks target for surgery was achieved in 93.7% of cases (vs 88.3%). The number of elective procedures increased from 4.1 to 4.89 cases/day. Only 13.33% of trainees (n = 33) surveyed felt that extended operating had a negative impact on training.

The study concludes that extended operating increased productivity from 2.8 patients per session to 3.2 patients per session with potential savings of just over £2.4 million per financial year. Extrapolating this to the other 155 trusts in England could be a potential saving of £372 million per year. Staff, trainee and patient satisfaction was unaffected. An improved 18 weeks target position was achieved with a significant reduction in private sector work. However, some staff had difficulty with arranging childcare and taking public transport and this may prevent full implementation.

Trauma theatre productivity - Does the individual surgeon, anaesthetist or consultant presence matter? May 2018, Injury
*Abstract only**
Introduction: With rising NHS clinical and financial demands, improving theatre efficiency is essential to maintain quality of patient care. Consistent teams and consultant presence have been shown to improve outcomes and productivity in elective orthopaedic surgery. The aim of this study was to investigate the impact on trauma theatre productivity of different surgeons and anaesthetists working together in a Major Trauma Centre. The influence of consultant presence and weekend operating on productivity was also considered. Methods: Data relating to a single orthopaedic trauma theatre was gathered retrospectively for a two-year period. Variables including orthopaedic and anaesthetic consultant presence, number and complexity of operations performed and procedure start times were collected for daily trauma lists. Individual anaesthetic and orthopaedic consultants were compared by productivity outcomes. The impact of surgeons operating more frequently with one anaesthetist was also examined. Results: Data relating to 2384 patients undergoing a total of 2787 procedures was collected. Orthopaedic consultant presence at the first surgical case ($p < 0.05$) and for 50% or greater of cases ($p < 0.05$) lead to higher mean number of cases performed per list and reduced turnaround time. Despite working with a significantly higher number of different consultant anaesthetists ($p < 0.001$) in year two, the productivity of surgeons as judged by list start time, total cases per list and total operating time was not significantly affected. Significantly earlier start times ($p < 0.001$) and shorter turnaround times ($p < 0.001$) at weekends led to maintained productivity despite shorter theatre time. No significant difference in productivity was found when comparing individual anaesthetic and orthopaedic consultants. Productivity was not significantly increased by surgeons operating more frequently with one individual anaesthetist.Conclusion: In the setting of an acute trauma theatre, orthopaedic consultant presence led to increased productivity. Furthermore, individual surgeon and anaesthetist pairings had no effect on overall productivity. Future efforts to improve productivity should focus on achieving earlier start times, consultant supervision of lists and reduced turnaround times between cases.

Re-evaluation of three-session theatre efficiency 2017, The Bulletin (Royal College of Surgeons of England)
The first decade of the new millennium brought in a vast amount of changes in the National Health Service (NHS). There has been a need and constant drive towards efficiency and savings. Theatre utilisation has become the principal managerial measure of theatre performance across trusts in the UK.1 In 2002 the Modernisation Agency published its Step Guide to Improving Theatre Performance2 while the Audit Commission reported on operating theatres in 2002 and 2003.3,4 Theatre utilisation of 84% has been considered an acceptable standard of theatre practice.4 Trusts across the country have taken measures to meet the national targets such as a reduction in waiting list times for elective surgery. Enhancing theatre capacity is a key step in reducing total waiting times to under 18 weeks.1 The regular

two-session (2S) theatre lists have been increasingly replaced by three-session (3S) lists. The aim of this study was to compare the efficiency of 3S theatre days and 2S days at the Greater Manchester Neuroscience Centre in Salford.

The efficiency of a dedicated staff on operating room turnover time in hand surgery January 2014, The Journal of Hand Surgery
*Abstract only**
PURPOSE To evaluate the effect of orthopedic and nonorthopedic operating room (OR) staff on the efficiency of turnover time in a hand surgery practice. METHODS A total of 621 sequential hand surgery cases were retrospectively reviewed. Turnover times for sequential cases were calculated and analyzed with regard to the characteristics of the OR staff being primarily orthopedic or nonorthopedic. RESULTS A total of 227 turnover times were analyzed. The average turnover time with all nonorthopedic staff was 31 minutes, for having only an orthopedic surgical technician was 32 minutes, for having only an orthopedic circulator was 25 minutes, and for having both an orthopedic surgical technician and a circulator was 20 minutes. Statistical significance was seen when comparing only an orthopedic surgical technician versus both an orthopedic circulator and a surgical technician and when comparing both nonorthopedic staff versus both an orthopedic circulator and a surgical technician. CONCLUSIONS OR efficiency is being increasingly evaluated for its effect on hospital revenue and OR staff costs. Reducing turnover time is one aspect of a multifaceted solution in increasing efficiency. Our study showed that, for hand surgery, orthopedic-specific staff can reduce turnover time. TYPE OF STUDY/LEVEL OF EVIDENCE Economic/Decision Analysis III.

Applying science and strategy to operating room workforce management 2012, Nursing economics Athens log in required*

The traditional means of planning nurse staffing for operating rooms are either poorly translated to the setting or do not provide decision makers with a platform to defend their needs, especially in an era of health care reform. The surgical operations department of the Cleveland Clinic initiated a quality improvement project aimed at applying a scientific method to operating room staffing. One goal was to provide a defensible plan for allocating direct caregiver positions. A second goal was to provide a quick and easy way for nurse managers and directors to track positions and graphically depict the effect of vacancies and orientation on their staffing budgets. Using an objective, scientific method allows position requests to be approved quickly and allows managers to feel much more comfortable functioning in a "lean" mode because they know needed positions will be approved quickly. Managers and directors also have found that graphically depicting numbers of vacant positions, as well as staff in orientation, could quickly relate a story visually rather than getting "bogged down" in narrative (often losing finance administrators along the way).

Leadership

Challenging gender stereotypes and advancing inclusive leadership in the operating theatre March 2020, British Journal of Anaesthesia
Modern healthcare is delivered by interprofessional teams, and good leadership of these teams is integral to safe patient care. Good leadership in the operating theatre has traditionally been considered as authoritative, confident and directive, and stereotypically associated with men. We argue that this may not be the best model for team-based patient care and promote the concept of inclusive leadership as a valid alternative. Inclusive leadership encourages all team members to contribute to decision-making, thus engendering more team cohesion,

information sharing and speaking up, and ultimately enhancing team effectiveness. However, the relational behaviours associated with inclusive leadership are stereotypically associated with women and may not in fact be recognised as leadership. In this article we provide evidence on the advantages of inclusive leadership over authoritative leadership and explore gender stereotypes and obstacles that limit the recognition of inclusive leadership. We propose that operating teams rise above gender stereotypes of leadership. Inclusive leadership can elicit maximum performance of every team member, thus realising the full potential of interprofessional healthcare teams to provide the best care for patients.

Surgeon leadership style and risk-adjusted patient outcomes
2019, Surgical Endoscopy *Abstract only**
Background: There are many reasons to believe that surgeon personality traits and related leadership behaviors influence patient outcomes. For example, participation in continuing education, effective self-reflection, and openness to feedback are associated with certain personalities and may also lead to improvement in outcomes. In this context, we sought to determine if an individual surgeon's thinking and behavior traits correlate with patient level outcomes after bariatric surgery. Methods: Practicing surgeons from the Michigan Bariatric Surgery Collaborative (MBSC) were administered the Life Styles Inventory (LSI) assessment. The results of this assessment were then collapsed into three major styles that corresponded with particular patterns of an individual's thinking and behavior: constructive (achievement, self-actualizing, humanistic-encouraging, affiliative), passive/defensive (approval, conventional, dependent, avoidance), and aggressive/defensive (perfectionistic, competitive, power, oppositional). We compared patients level outcomes for surgeons in the lowest, middle, and highest quintiles for each style. We then used patient level risk-adjusted rates of complications after bariatric surgery to quantify the impact surgeon style on post-operative outcomes. Results: We found that patients undergoing bariatric surgery performed by surgeons with high levels of constructive (achievement, self-actualizing, humanistic-encouraging, affiliative) and passive/defensive (approval, conventional, dependent, avoidance) styles had lower rates of adverse events compared with surgeons with low levels of the respective styles [High constructive: 14.7% (13.8–15.6%), low constructive: 17.7% (16.8–18.6%); high passive: 14.8% (13.4–16.1%), low passive: 18.7% (17.3–19.9%)]. Conversely, surgeons identified with high aggressive styles (perfectionistic, competitive, power, oppositional) had similar rates of post-operative adverse events compared with surgeons with low levels [high aggressive: 15.2% (14.3–16.1%), low aggressive: 14.9% (14.2–15.6%)]. Conclusion: Our analysis demonstrates that surgeons' leadership styles are correlated with surgical outcomes for individual patients. This finding underscores the need for professional development for surgeons to cultivate strengths in the constructive domains including intentional self-improvement, development of interpersonal skills, and the receptiveness to feedback.

Lean healthcare from a change management perspective: The role of leadership and workforce flexibility in an operating theatre
May 2016, Journal of Health Organization and Management *Abstract only**
Purpose: Lean healthcare is used in a growing number of hospitals to increase efficiency and quality of care. However, healthcare organizations encounter problems with the implementation of change initiatives due to an implementation gap: the gap between strategy and execution. From a change management perspective, the purpose of this paper is to increase scientific knowledge regarding factors that diminish the

implementation gap and make the transition from the "toolbox lean" toward an actual transformation to lean healthcare. Design/methodology/approach: A cross-sectional study was executed in an operating theatre of a Dutch University Medical Centre. Transformational leadership was expected to ensure the required top-down commitment, whereas team leadership creates the required active, bottom-up behavior of employees. Furthermore, professional and functional silos and a hierarchical structure were expected to impede the workforce flexibility in adapting organizational elements and optimize the entire process flow. Findings: The correlation and regression analyses showed positive relations between the transformational leadership and team leadership styles and lean healthcare implementation. The results also indicated a strong relation between workforce flexibility and the implementation of lean healthcare. Originality/value: With the use of a recently developed change management model, the Change Competence Model, the authors suggest leadership and workforce flexibility to be part of an organization's change capacity as crucial success factor for a sustainable transformation to lean healthcare. See also this accompanying video

New ways of working

Integrating a pharmacist into an anaesthesiology and critical care department: Is this worthwhile? 2019, International Journal of Clinical Pharmacy *Abstract only**
Background Operating rooms and Intensive Care Units are places where an optimal management of drugs and medical devices is required. *Objective* To evaluate the impact of a dedicated pharmacist in an academic Anaesthesiology and Critical Care Department. *Setting* This study was conducted in the Anaesthesiology and Critical Care Department of Grenoble University Hospital. *Method* Between November 2013 and June 2017, the drug-related problems occurring in three Intensive Care Units and their corrections by a full-time clinical pharmacist were analyzed using a structured order review instrument. Pharmaceutical costs in the Anaesthesiology and Critical Care Department were analyzed over a 7 year period (2010–2016), during which automated dispensing systems and recurrent meetings to review indications of medications and medical devices were implemented in the department. *Main outcome measure* Analysis of two issues: correcting drug-related problems and containing pharmaceutical costs. *Results* A total of 324 drug-related problems were identified. The most frequent problem concerned anti-infective agents (45%), and this was mainly due to the over-dosage of drugs (30%). Dosage adjustments were the most frequent interventions performed by the pharmacist (43%). Over the 7 year period, pharmaceutical costs decreased by 9% (€365,469), while the care activity of the department increased by 55% (+ 12,022 surgical procedures and + 1424 admissions in the ICU). *Conclusion* Integrating a pharmacist into the Anaesthesiology and Critical Care Department was associated with interventions to correct drug-related problems and containing pharmaceutical costs. Pharmacists should play a central role in such medical environments, to optimize the use of drugs and medical devices.

Perioperative accountable care teams: Improving surgical team efficiency and work satisfaction through interprofessional collaboration September 2018, Journal of Perioperative Practice *Abstract only**
The purpose of this performance improvement project was to design, implement and evaluate an interprofessional education initiative intended to improve surgical team efficiency, communication and work satisfaction. The development of interprofessional perioperative accountable care teams in three surgical specialties, cardiothoracic, neurosurgery and

orthopedics, demonstrated a reduction in turnover time, increased staff, patient and surgeon satisfaction, and increased operating room (OR) revenue generated by the surgical specialties within one year of implementation.

Opinion: Shifting operating department practice to a graduate workforce July 2010, Journal of Perioperative Practice *Athens log in required**
The decision has already been made to shift nursing to an all graduate profession, possibly by 2013. However, the shift to graduate level entry by 2015 is still being debated for operating department practitioners (ODPs) (CODP 2010). The question is, 'Should future operating department practitioners in the UK be educated to degree level in order to apply for registration with the HPC?' Personally, I believe that the shift to graduate status will give a much needed boost which will enhance the ODP profession and the status of its members.
One clear advantage to ODPs will be the separating of the profession from the non registered assistant perioperative practitioners, who are often now educated to Foundation Degree level. Even more worryingly, the recent validation of a Foundation Degree in Operating Department Practice by the Open University has blurred the boundary between assistants and practitioners because the academic level of both groups is the same. A shift to graduate status for ODPs will offer the opportunity to adopt a clear difference in knowledge and competence beyond that of assistant and into the realms of higher level practice, opening up new and better career opportunities (NHS Workforce Review Team 2008).

Upskilling

Operating theatre nurses' self-reported clinical competence in perioperative nursing: A mixed method study August 2019, Nursing Open
Aims: The aim of this study was to investigate how operating theatre nurses (OTNs) self-rated their clinical competence and describe their experience of important factors for the development of clinical competence in perioperative nursing. Design: A cross-sectional study with a mixed-method approach was chosen. Data were collected through a modified version of the questionnaire Professional Nurse Self-Assessment Scale of Clinical Core Competence I, which was supplemented with an open-ended question. Methods: Data were collected from 303 operating theatre nurses in Sweden. Statistics analysis was used to identify the relationship between the participants' background variables. The open-ended question was analysed by using a qualitative conventional content analysis.Results: Academic degree and professional experience of perioperative nursing were significant for the development of clinical competence. Academic degree appeared to affect operating theatre nurses' leadership and cooperation in the surgical team, as well as how consultations took place with other professionals.

Exploring the professional development of the ODP role
December 2014, Journal of Operating Department Practitioners *Abstract only**
Considering the evolution of the contemporary operating department practitioner (ODP), this paper will explore the barriers and developments that have led to the ODP profession's current occupational position. Consideration and engagement with primary research will highlight perceptions of the role of the ODP from other health professions and the detrimental effect a practitioner's perspective can have on a profession as a whole.

Further, changes to educational standards will be considered in relation to their application and the perceptional challenges from the healthcare community considered. A brief reflective approach to the challenges for developing roles, such as physician's assistant anaesthesia, will also be outlined in consideration of what lies ahead.

The effect of continuing professional education on perioperative nurses' relationships with medical staff: findings from a qualitative study June 2012, Journal of Advanced Nursing *Abstract only**
Aims. To report perceived changes to UK perioperative nurses' relationships with medical staff following periods of formal, university-based study. Background. Continuing professional development is considered important for nursing internationally; however, practice changes may not result following formal study. The literature did not describe perioperative nurses' experiences of formal study, and it was believed differences may exist due to hierarchical interprofessional relationships in the operating theatre. Design. Descriptive, qualitative. Methods. Unstructured interviews (N = 23) were conducted between 2006–2007 with a purposive sample of perioperative nurses who had recent experience of continuing professional education. All participants were employed by one National Health Service Trust in the North of England, UK. Audio-taped interviews were transcribed fully into the ethnograph computer-assisted qualitative data analysis programme and data coded and analysed to identify themes. Findings. The findings indicated that whilst continuing professional education did not have a direct impact on practice, development of increased knowledge and confidence facilitated participants' collaboration with and questioning of medical colleagues. Such increased interprofessional collaboration was attributed to indirectly enhancing patient care. Conclusion. Continuing professional education appeared to lead to intrinsic changes to practitioners rather than direct behavioural change. Nurses' increased knowledge and confidence affected the balance of power in the doctor–nurse relationship in British perioperative environments. This paper is of significance to perioperative nursing and may be transferable to other areas of care.

Supply

Growing our own theatre staff: Practice development and education May 2018, Journal of Perioperative Practice *Abstract only**
Royal Bournemouth & Christchurch Hospitals NHS Foundation Trust engaged in a quality improvement project aimed at improving quality and safety in theatres. The improvements delivered were recruitment to full staffing template, reduction in agency staffing to zero, and creating a theatre coordinator role to ensure safe staffing. The Practice Education Team was increased fivefold with no extra investment as a result of these improvements. Student satisfaction results amongst ODPs and nurses have increased alongside staff morale and productivity.

Significant factors for work attractiveness and how these differ from the current work situation among operating department nurses September 2015, Journal of Clinical Nursing *Abstract only**
Aims and objectives: The aim was to examine significant factors for work attractiveness and how these differ from the current work situation among operating department nurses. A second objective was to examine the associations between age, gender, length of employment, work engagement, work ability, self-rated health indicators and attractiveness of the current work situation. Background: The attractiveness of work is rarely taken into account in research on nurse retention. To expand this

knowledge, it is relevant to examine factors that make work attractive and their associations with related concepts. Design: Correlational, cross-sectional survey using a convenience sample. Methods: Questionnaires were answered by 147 nurses in four operating departments in Sweden. Correlation and regression analyses were conducted. Results: The nurses rated the significance of all factors of work attractiveness higher than they rated those factors in their current work situation; salary, organisation and physical work environment had the largest differences. The most significant attractive factors were relationships, leadership and status. A statistically significant positive correlation between work engagement and attractive work was found. In the multiple regression model, the independent variables work engagement and older age significantly predicted work attractiveness. Conclusions: Several factors should be considered in the effort to increase work attractiveness in operating departments and thereby to encourage nurse retention. Positive aspects of work seem to unite work engagement and attractive work, while work ability and self-rated health indicators are other important dimensions in nurse retention. Relevance to clinical practice: The great discrepancies between the significance of attractive factors and the current work situation in salary, organisation and physical work environment suggest ways in which work attractiveness may be increased. To discover exactly what needs to be improved may require a deeper look into the construct of the examined factors.

Teamwork and culture

Operating department practitioners and midwives: The undervalued obstetric care collaboration November 2018, British Journal of Midwifery *Abstract only**

More than one-quarter of births in the UK are reported to be by caesarean section, requiring the skills and expertise of operating department practitioners (ODPs) and midwives, an often-overlooked care collaboration. This reflective case study looks back at an experience that the author, a registered ODP, had as a third-year student. It provides an example of how a lack of understanding of roles and poor interprofessional communication between the midwife and postoperative practitioner detrimentally affected a woman's care. The aim is to demonstrate areas for improvement and make recommendations highlighting the need for inclusive education and learning in perioperative obstetric care.

Building an effective and efficient theatre team and harnessing its power May 2018, Journal of Perioperative Practice *Abstract only**

Medway Maritime Hospital (MMH) in Kent, England describe how they found ways to improve their internal working systems to enhance the overall effectiveness of their emergency surgical team.

Developing high-reliability multiprofessional teams in the operating theatre: a national initiative 2013, Bulletin of the Royal College of Anaesthetists and Royal College of Surgeons Operating theatres and interventional suites are complex, dynamic environments in which the delivery of safe healthcare is fraught with challenge. There can be significant and harmful consequences to the patient's wellbeing if a procedure does not progress as intended. This potential hazard may arise in response to having to manage a high volume of cases or when performing lengthier, technically challenging procedures. Additional factors include the urgency of the procedures involved, and the potential for staff members' lack of familiarity

with one another, the task itself, and any associated technologies involved in the care provided.

Surgical teams: role perspectives and role dynamics in the operating room May 2011, Health Services Management Research *Abstract only**

Observations of surgical teams in the operating room (OR) and interviews with surgeons, circulating registered nurses (RNs), anaesthesiologists and surgical technicians reveal the importance of leadership, team member competencies and an enacted environment that encourages feelings of competence and cooperation. Surgical teams are more loosely coupled than intact and bounded. Team members tend to rely on expected role behaviours to bridge lack of familiarity. While members of the surgical team identified technical competence and preparation as critical factors affecting team performance, they had differing views over the role behaviours of other members of the surgical team that lead to surgical team performance. Observations revealed that the work climate in the OR can shape interpersonal relations and begins to be established when the room is being set up for the surgical case, and evolves as the surgical procedure progresses. The leadership and supervisory competencies of the circulating RNs establish the initial work environment. Both influenced the degree of cooperation and support that was observed, which had an effect on the interactions and relationships between other members of the surgical team. As the surgery unfolds, the surgeon's behaviours and interpersonal relations modify this environment and ultimately influence the degree of team work, team satisfaction and team performance.

Does Teamwork Improve Performance in the Operating Room? A Multilevel Evaluation March 2010, The Joint Commission Journal on Quality and Patient Safety *Abstract only**

Background: Medical care is a team effort, especially as patient cases are more complex. Communication, cooperation, and coordination are vital to effective care, especially in complex service lines such as the operating room (OR). Team training, specifically the TeamSTEPPS™ training program, has been touted as one methodology for optimizing teamwork among providers and increasing patient safety. Although such team-training programs have transformed the culture and outcomes of other dynamic, high-risk industries such as aviation and nuclear power, evidence of team training effectiveness in health care is still evolving. Although providers tend to react positively to many training programs, evidence that training contributes to important behavioral and patient safety outcomes is lacking. Method: A multilevel evaluation of the TeamSTEPPS training program was conducted within the OR service line with a control location. The evaluation was a mixed-model design with one between-groups factor (TeamSTEPPS training versus no training) and two within-groups factors (time period, team). The groups were located at separate campuses to minimize treatment diffusion. Trainee reactions, learning, behaviors in the OR, and proxy outcome measures such as the Hospital Survey on Patient Safety Culture (HSOPS) and Operating Room Management Attitudes Questionnaire (ORMAQ) were collected. Results: All levels of evaluation demonstrated positive results. The trained group demonstrated significant increases in the quantity and quality of presurgical procedure briefings and the use of quality teamwork behaviors during cases. Increases were also found in perceptions of patient safety culture and teamwork attitudes. Discussion:
The hospital system has integrated elements of TeamSTEPPS into orientation training provided to all incoming hospital employees, including nonclinical staff.

Health, wellbeing and burnout

Risks and health effects in operating room personnel. Risks and health effects in operating room personnel 2011, Work *Abstract only**

OBJECTIVE The objective was to find the factors that pose a possible health risk to OR personnel. Work-related health problems of operating room (OR) personnel were signalled by an occupational physician and preparations for the development of new Worker's Health Surveillance (WHS) were started with a systematic review of the literature. METHODS A systematic review was performed of articles in Pubmed, published from January 1991 to December 2007, concerning risks or health effects in the working conditions of OR personnel. RESULTS Twenty-three articles reported that workers in the OR are exposed to infectious agents, noise, anaesthetic gases and radiation. Eleven studies reported elevated risk for (allergic) skin diseases, musculoskeletal complaints and infectious diseases. CONCLUSIONS Factors that form a health risk for workers in the operating room are infectious agents, noise, anaesthetic gases and radiation. Health effects on workers in the OR are (allergic) skin disorders, musculoskeletal complaints and infectious diseases.

Effects of music therapy on occupational stress and burn-out risk of operating room staff December 2020, The Libyan Journal of Medicine

The operating theatre staff is exposed to various constraints such as excessive working hours, severe medical conditions and dreadful consequences in case of malpractice. These working conditions may lead to high and chronic levels of stress, which can interfere with medical staff well-being and patients quality of care. The aim of this study is to assess the impact of music therapy on stress levels and burnout risk on the operating room staff. This is a pre-experimental study including the operating rooms staff of urology and maxillofacial surgery in the academic hospital of Sahloul Sousse (Tunisia) over a period of six weeks. The study consisted of three phases. The first was an initial assessment of stress level with a predefined survey. The second included three music therapy sessions per day over one month. The third was an immediate stress level reassessment following the intervention. Stress levels were evaluated using the Perceived Stress Scale version PSS-10 and the Maslach Burnout Inventory. The overall response rate was 73.9%.The average age of the study population was 37.8 ± 7.7 years with a female predominance (64.7%). After the music therapy program, Perceived Stress Scale average score decreased from 22 ± 8.9 to 16 ± 7.9 (p = 0.006). Concerning the burnout, only the average score of emotional exhaustion decreased significantly from 27 ± 10.8 to 19.2 ± 9.5 (p = 0.004). Music therapy is an innovative approach that seems to reduce operating theatre staff stress. It must be considered as a non pharmacological, simple, economic and non invasive preventive tool.

Staff views and experiences

Operating Room Personnel Viewpoints About Certified Registered Nurse Anesthetists February 2018, Western Journal of Nursing Research *Abstract only**

The purpose of this project was to explore what attitudes physicians, nurses, and operating room technicians had about working with Certified Registered Nurse Anesthetists (CRNAs) to better understand practice barriers and facilitators. This Q methodology study used a purposive sample of operating room personnel from four institutions in the Midwestern United States. Participants completed a -4 to +4 rank-ordering of their level of agreement with 34 attitude statements representing a wide range of beliefs about nurse anesthetists. Centroid factor analysis with

varimax rotation was used to analyze 24 returned Q sorts. Three distinct viewpoints emerged that explained 66% of the variance: favoring unrestricted practice, favoring anesthesiologist supervision, and favoring anesthesiologist practice. Research is needed on how to develop workplace attitudes that support autonomous nurse anesthetist practice and to understand preferences for restricted practice in team members other than physicians.

Staff expertise

Relationship between operating room nursing staff expertise and patient outcomes 2015, Journal of Nursing Care Quality *Abstract only**

This secondary analysis evaluated the association of operating room scrub staff expertise, based on frequency of working on a specific surgical procedure, with the development of surgical site infections. The odds of developing surgical site infections decreased by 5.7% (odds ratio = 0.943; 95% confidence interval, 0.834-1.067) with increased expertise, although a statistically significant association was not established (P = .354). The relationship between operating room scrub staff expertise and patient outcomes is important to understand.

Training and education

How can the presence of a surgical care practitioner improve training for staff who are learning how to scrub for robotics cases in a urology theatre? June 2019, Journal of Perioperative Practice *Abstract only**

AIM This study examines how a surgical care practitioner can contribute to the learning needs of junior scrub staff learning to scrub for urological robotics cases. Key themes include education, technical training, non-technical skills, patient safety and the specialist practitioner as educator. METHODS Data collection was via an online survey, distributed by a gatekeeper to 13 participants. These were junior scrub practitioners who had completed their robotic rotation. RESULTS A 62% response rate was achieved. The majority of respondents indicated that there was a difference in interactions when a surgical care practitioner was assisting compared to a surgical trainee. Half of the respondents felt more confident when the surgical care practitioner was assisting. CONCLUSIONS A range of approaches were proposed for how the surgical care practitioner could enhance learning. Structured input is likely to be more appropriate to avoid the surgical care practitioner being distracted from their own duties whilst assisting. There is scope for further research.

Factors that influence medical student learning in the operating room May 2019, Medical Teacher *Abstract only**
Introduction: The operating room (OR) is a dynamic, high-pressure clinical setting that offers a unique workplace-based learning environment for students. We undertook a narrative synthesis of the literature to identify factors that influence medical student learning in the OR, and we recommend educational strategies that maximize "theater-based learning". Methods: Key words were searched across three databases PubMed, EMBASE and ERIC (Education Resource Information Center). Eligible studies included original articles published after 1997 presenting empirical research on factors that influence medical students learning in the OR. Methodological quality was measured using the Newcastle-Ottawa Score for education. Results: We identified 764 studies on the topic of student learning in the OR, of which 16 studies fulfilled inclusion criteria. The quality assessments demonstrated a mean value of 2.1 out of a maximum of 6. Conclusions: We

identified five key domains that influence student learning in the OR: emotional factors, socio-environmental factors, organizational factors, factors related to educational relevance and factors related to the educator. Educational strategies to enhance theater-based learning include: an induction and physical orientation, clear learning objectives, educator feedback, and simulation.

Non-technical skills in minimally invasive surgery teams: a systematic review 2016, Surgical Endoscopy *Abstract only**
Background: Root cause analyses show that up to 70 % of adverse events are caused by human error. Strong non-technical skills (NTS) can prevent or reduce these errors, considerable numbers of which occur in the operating theatre. Minimally invasive surgery (MIS) requires manipulation of more complex equipment than open procedures, likely requiring a different set of NTS for each kind of team. The aims of this study were to identify the MIS teams' key NTS and investigate the effect of training and assessment of NTS on MIS teams. Methods: The databases of PubMed, Cochrane Library, Embase, PsycINFO, and Scopus were systematically searched according to Preferred Reporting Item for Systematic Reviews and Meta-Analyses (PRISMA) guidelines. Articles containing outcome measures related to MIS teams' key NTS, training, or assessment of NTS were included.
Results: The search yielded 1984 articles, 11 of which were included. All were observational studies without blinding, and they differed in aims, types of evaluation, and outcomes. Only two studies evaluated patient outcomes other than operative time, and overall, the studies' quality of evidence was low. Different communication types were encountered in MIS compared to open surgery, mainly due to equipment- and patient-related challenges. Fixed teams improved teamwork and safety levels, while deficient planning and poor teamwork were found to obstruct workflow and increase errors. Training NTS mitigates these issues and improves staff attitudes towards NTS. Conclusions: MIS teams' NTS are important for workflow and prevention of errors and can be enhanced by working in fixed teams. In the technological complex sphere of MIS, communication revolves around equipment- and patient-related topics, much more so than in open surgery. In all, only a few heterogeneous-design studies have examined this. In the future, the focus should shift to systematically identifying key NTS and developing effective, evidence-based team training programmes in MIS.

A combined teamwork training and work standardisation intervention in operating theatres: controlled interrupted time series study February 2015, BMJ Quality & Safety *Abstract only**
Background: Teamwork training and system standardisation have both been proposed to reduce error and harm in surgery. Since the approaches differ markedly, there is potential for synergy between them. Design: Controlled interrupted time series with a 3 month intervention and observation phases before and after. Setting: Operating theatres conducting elective orthopaedic surgery in a single hospital system (UK Hospital Trust). Intervention: Teamwork training based on crew resource management plus training and follow-up support in developing standardised operating procedures. Focus of subsequent standardisation efforts decided by theatre staff. Measures: Paired observers watched whole procedures together. We assessed non-technical skills using NOTECHS II, technical performance using glitch rate and compliance with WHO checklist using a simple quality tool. We measured complication and readmission rates and hospital stay using hospital administrative records. Before/after change was compared in the active and control groups using two-way ANOVA and regression models. Results: 1121 patients were operated on before and

1100 after intervention. 44 operations were observed before and 50 afterwards. Non-technical skills (p=0.002) and WHO compliance (p<0.001) improved significantly after the intervention in the active versus the control group. Glitch count improved in both groups and there was no significant effect on clinical outcomes. Discussion: Combined training in teamwork and system improvement causes marked improvements in team behaviour and WHO performance, but not technical performance or outcome. These findings are consistent with the synergistic hypothesis, but larger controlled studies with a strong implementation strategy are required to test potential outcome effects.

Multidisciplinary team simulation for the operating theatre: a review of the literature July-August 2014, ANZ Journal of Surgery *Abstract only**
Introduction: Analyses of adverse events inside the operating theatre has demonstrated that many errors are caused by failure in non-technical skills and teamwork. While simulation has been used successfully for teaching and improving technical skills, more recently, multidisciplinary simulation has been used for training team skills. We hypothesized that this type of training is feasible and improves team skills in the operating theatre. Methods: A systematic search of the literature for studies describing true multidisciplinary operating theatre team simulation was conducted in November and December 2012. We looked at the characteristics and outcomes of the team simulation programmes. Results: 1636 articles were initially retrieved. Utilizing a stepwise evaluation process, 26 articles were included in the review. The studies reveal that multidisciplinary operating theatre simulation has been used to provide training in technical and non-technical skills, to help implement new techniques and technologies, and to identify latent weaknesses within a health system. Most of the studies included are descriptions of training programmes with a low level of evidence. No randomized control trial was identified. Participants' reactions to the training programme were positive in all studies; however, none of them could objectively demonstrate that skills acquired from simulation are transferred to the operating theatre or show a demonstrable benefit in patient outcomes. Conclusion: Multidisciplinary operating room team simulation is feasible and widely accepted by participants. More studies are required to assess the impact of this type of training on operative performance and patient safety.

Evaluating the influence of perceived organizational learning capability on user acceptance of information technology among operating room nurse staff March 2013, Acta anaesthesiologica Taiwanica : official journal of the Taiwan Society of Anesthesiologists *Abstract only**

OBJECTIVES Medical institutions are eager to introduce new information technology to improve patient safety and clinical efficiency. However, the acceptance of new information technology by medical personnel plays a key role in its adoption and application. This study aims to investigate whether perceived organizational learning capability (OLC) is associated with user acceptance of information technology among operating room nurse staff. MATERIALS AND METHODS Nurse anesthetists and operating room nurses were recruited in this questionnaire survey. A pilot study was performed to ensure the reliability and validity of the translated questionnaire, which consisted of 14 items from the four dimensions of OLC, and 16 items from the four constructs of user acceptance of information technology, including performance expectancy, effort expectancy, social influence, and behavioral intention. Confirmatory factor analysis was applied in the main survey to evaluate the construct validity of the questionnaire. Structural equation modeling was used to test the hypothetical relationships between the four dimensions

of user acceptance of information technology and the second-ordered OLC. Goodness of fit of the hypothetic model was also assessed. RESULTS Performance expectancy, effort expectancy, and social influence positively influenced behavioral intention of users of the clinical information system (all $p < 0.001$) and accounted for 75% of its variation. The second-ordered OLC was positively associated with performance expectancy, effort expectancy, and social influence (all $p < 0.001$). However, the hypothetic relationship between perceived OLC and behavioral intention was not significant ($p = 0.87$). The fit statistical analysis indicated reasonable model fit to data (root mean square error of approximation = 0.07 and comparative fit index = 0.91).CONCLUSION Perceived OLC indirectly affects user behavioral intention through the mediation of performance expectancy, effort expectancy, and social influence in the operating room setting.

Training Rotations at Hospitals as a recruitment tool for Certified Registered Nurse Anaesthetists (CRNAs) August 2012, AANA Journal *Athens log in required**

Recruiting newly graduating Certified Registered Nurse Anesthetists (CRNAs) is expensive. Recruitment into rural areas is especially challenging. We analyzed the first jobs of all 95 graduates of the University of Iowa's CRN A training program, from the initial graduating class of 1997 through the class of 2009. We compared the location of the student's first job to where the student lived at the time of application to the program. Hospitals enhanced recruitment of CRNAs by having student rotations ($P = .001$). Most students who joined a practice offering an outside rotation were not from the county or contiguous counties of the hospital they joined ($P < .001$). In years that hospitals with rotations hired more than the median number of students, significantly more students had rotated through the hospital ($P = .02$). Offering a CRN A training program did not facilitate the university's retention of nurses already living in its county or contiguous counties ($P = 0.58$). Consequently, rural hospitals can view sponsoring rotations as a recruitment tool for graduating CRNAs. The university sponsoring the training program did not retain an advantage, however, in hiring its own graduates. Because this case study provided valuable insights, other programs should consider performing similar analyses.

Evaluation of a multidisciplinary faculty to support learning in surgical practice 2010, Journal of Interprofessional Care *Athens log in required**

The Theatre Faculty Project was a programme of education seminars, personal study and workplace educational activities for surgeons, operating theatre staff and surgical trainees at a hospital in north-west England. Its aim was to create a multidisciplinary faculty with an understanding of implicit aspects of surgical practice, of how these enter clinical thinking and professional judgement and are used to enhance the learning, teaching and assessment of surgeons. A qualitative evaluation of the faculty project showed improved educational understanding and multidisciplinary awareness among its participants. Refinements of the programme were identified to help those (surgeons in particular) having difficulty conceptually or practically with clinical reflective writing and with portfolio building. However, the support of Trust management at the host hospital will be vital in extending the programme beyond its initial group of volunteers and in integrating the multidisciplinary faculty into its organizational structures.

Technology

Surgery in the 2020s: Implications of advancing technology for patients and the workforce February 2020, Future Healthcare Journal

As the surgical workforce, surgical techniques and patient expectations change, the Royal College of Surgeons of England is actively engaged in taking forward the recommendations of its Future of Surgery Commission. Here the commission's chair articulates the implications for smaller hospitals and the need for achieving interoperability and safe sharing of patient data across different systems, so enabling immediate access to patients' records across healthcare organisations; extension of regulation to surgical care practitioners, reflecting the recent decision to regulate physician associates and physician assistants; introducing a UK-wide registry of surgical devices, with tracking for implantable devices; implementing a robotics strategy to help the NHS plan and purchase new surgical robotics, as well as monitor their use and the effect on outcomes; and investing in genomic medicine and artificial intelligence for diagnostics, and in stem-cell research for treatment.

Competency Frameworks

Core Competence Framework for Anaesthetic Assistants 2020, NHS Education for Scotland
The 2018 revised edition of the Core Competence Framework for Anaesthetic Assistants, developed by the Scottish Multidisciplinary Anaesthetic Assistants Development (SMAAD) group and NHS Education for Scotland.

Standards of proficiency: Operating Department Practitioners (ODP) 2014, Health and Care Professions Council (HCPC)
This document sets out the standards of proficiency. These standards set out safe and effective practice in the professions we regulate. They are the threshold standards we consider necessary to protect members of the public. They set out what a student must know, understand and be able to do by the time they have completed their training, so that they are able to apply to register with us. Once on our Register you must meet those standards of proficiency which relate to the areas in which you work.

National Core Curriculum for Perioperative Nursing 2017, PCC
It is the aim of this curriculum to provide a nationally recognised route for career progression for all perioperative nurses. It will also enable registered nurses, new to theatres to gain a nationally recognised Higher Education Institute (HEI) perioperative qualification as part of this Master's route. For those nurses who wish to work in theatres, but who do not have a level 6 (degree level)qualifications, it is suggested that a BSc (Hons) route should also be offered, which includes the core competencies of this curriculum.

The Curriculum Framework for the Surgical Care Practitioners
February 2015, Royal College of Surgery in England
The role and status of this document: Over the past three decades, healthcare practitioners other than doctors have increasingly been expanding their roles and scope of practice involving the treatment and care of surgical patients. This has been encouraged and supported by surgeons. The development of the surgical care practitioner (SCP) role was, and continues to be, driven by the need of institutions to maintain surgical services due to the depletion of the surgical workforce.This development has been driven by the workforce needs of institutions, which, in collaboration with key surgeons has resulted in the development of bespoke programmes of education and training for some

practitioners who now not only manage the clinical care of patients but who also assist with technical and operative interventions; a role overlapping with care normally offered by doctors. There has been close affiliation with The Royal College of Surgeons of England and patient representative groups during these developments. However, many new roles are now emerging and there is the potential for confusion and variable standards.

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