

5A TRAINING AND EDUCATION

O114 LEARNING AND IDENTITY FORMATION IN THE LAPAROSCOPIC COMMUNITY OF PRACTICE – THE CONCEPTIONS OF JUNIOR SURGICAL TRAINEES

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Introduction: Junior surgical trainees (JST) must develop their professional identity as well as surgical skills within the laparoscopic community of practice (LCoP). This research aims to illuminate psychomotor and affective learning in the LCoP through the conceptions of junior surgical trainees using the lens of Communities of Practice (CoP) theory.

Method: Face-to-face audio-recorded interviews were conducted with JSTs and anonymised transcripts generated. A Grounded Theory approach utilising an open-coding analysis was employed to generate themes for discussion.

Result: Eight JSTs were interviewed generating eight transcripts (range 42-74 minutes, mean 54 minutes). Four themes were saturated: Continuity in Training; concepts relating to the continuity of training, primarily focused towards trainers and operative experience. The Laparoscopic Community of Practice & Beyond; concepts relating to the conceived influences of human and system factors on learning in the LCoP. Agency of Laparoscopic Techniques and Simulation; concepts relating to the power and influence of laparoscopic equipment and technique on training, and the mitigating role of simulation. Dissonance & Emotions in Identity Formation; concepts relating to the influence of emotions and reconciling identity dissonance in the LCoP.

Conclusion : JST describe the powerful and specific influences of psychomotor and affective learning in the LCoP, contributing significantly to professional identity development. The special role of simulation is highlighted in the conceptions of the JSTs in mitigating some of the agency of the technique, and is a considered as a threshold concept in learning.

Take-home message:

The laparoscopic community of practice has a powerful effect on junior surgical trainee psychomotor and affective learning, including professional identity development. Simulation can act to mitigate some of the negative influences of the community.

O115 THE COMPARISON BETWEEN THE EFFECTS OF A PERFORMANCE BASED INTRA-PROCEDURAL CHECKLIST ON A VIRTUAL REALITY EMERGENCY SIMULATED LAPAROSCOPIC TASK IN NOVICE SURGEONS AND SENIOR TRAINEES

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Introduction: Surgical checklists are in use as means to reduce errors. A previous study proved the significant effect of a performance based intra-procedural checklist on the laparoscopic performance of novice surgeons during emergency simulated tasks. We aimed to compare between the effect of the checklist on the laparoscopic performance of novice surgeons and senior surgical trainees when applied during an emergency simulated scenario.

Method: Thirty two consented participants were included in this study. Sixteen medical students and 16 senior surgical trainees were exposed unexpectedly to a bleeding vessel in a laparoscopic virtual reality simulator after an introductory session. The task consisted of using laparoscopic clips to achieve haemostasis. Each group was randomly divided into those who performed the task with a seven-component checklist (checklist group) and those without the checklist (control group). A soft beeping sound was used in order to remind subjects to apply the checklist at 20 seconds intervals. The performance was computed on 8 predetermined technical factors. Non-parametric statistics were used for data analysis.

Result: There was no statistically significant difference in the senior surgical trainees between the control and the checklist group ($p > 0.05$). However, in novices the checklist group performed statistically better in all the 8 technical factors when compared to the control group ($p < 0.05$).

Conclusion: The performance based self-administered intra-procedural checklist improved the performance of novice surgeons during virtual reality simulated emergency laparoscopic task, while it had no significant effect on senior surgical trainees.

Take-home message:

The performance based self-administered intra-procedural checklist improved the performance of novice surgeons during virtual reality simulated emergency laparoscopic task, while it had no significant effect on senior surgical trainees.

O116 VALIDATION OF A NEW ENT-EMERGENCIES COURSE FOR FIRST-ON-CALL DOCTORS

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Introduction: First-on-call ear, nose and throat (ENT) cover is often provided by junior doctors with limited ENT experience; yet, they may have to manage life-threatening emergencies. We sought to develop an intensive one-day simulation course to teach the skills required to junior doctors. We aimed to validate it using both clinically relevant objective measures and sustained participant feedback.

Method: A prospective, single-blinded design was used. Junior doctors were recruited nationally to attend an ENT course consisting of short lectures, skills stations and 4 mannequin simulation scenarios. Upon application, participants completed a needs assessment to influence course content and teaching methodology. Participants rated their confidence before the course, immediately following, and after a two-month interval. Two blinded assessors scored participant performance in video-recorded simulated scenarios before and after the course. Results were compared using a Mann-Whitney test.

Result: 37 doctors were recruited. Participant self-rated confidence was increased at the end of course survey (27.5 vs 53.0; $p < 0.0001$), and this was maintained 2-4 months after the course (50.5; $p < 0.0001$). Patient assessment and management of video-recorded emergency scenarios was significantly improved following course completion (9.75 vs 18.75; $p = 0.0093$). Participants showed improvement in all four key areas: diagnosis ($p = 0.0054$), systematic approach ($p = 0.0203$), airway, breathing, circulation assessment ($p = 0.0178$) and ongoing management ($p = 0.0294$).

Conclusion: This course represents an effective and desirable method of teaching ENT emergency management to junior doctors. The structured educational experience is tailored to participant requirements and our results suggest that it improves confidence and induces sustained changes in professional practice and performance.

Take-home message:

Junior doctors who cover ENT out-of-hours often lack experience and confidence when dealing with ENT emergencies. A simulation course is an effective method of providing a sustained improvement in confidence and performance.

O117 PILOT TO ASSESS THE EFFECT OF A NOVEL SURGICAL SKILLS TRAINER IN THE ACQUISITION AND RETENTION OF BASIC SURGICAL SKILLS PROFICIENCY

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Introduction: Basic skills are traditionally taught to undergraduates through isolated sessions with little outlet for subsequent practice. This randomised control trial aims to assess the effect of home practice on basic skill acquisition and retention using a low-cost basic skills trainer designed and built by the research team.

Method: Medical students were taught interrupted suturing and hand tying during a 2-hour workshop. Participants were randomised into TRAINER (received novel skills trainer) and NON-TRAINER groups. Participants were recorded performing each skill immediately after the session and again at three weeks. Two independent raters blinded to both group and timing assessed performance using validated mark schemes.

Result Total participants $n = 32$ (TRAINER/NONTRAINER $n = 16$). Groups were comparable for year and experience. The TRAINER group demonstrated an improved performance score between assessments (Mean score 23.1 vs 28.1; Max Score 54; $p = 0.02$ Wilcoxon Signed Rank Test) with no difference observed in NON TRAINERS (mean Score 21.31 vs. 19.37; $p = 0.34$ Wilcoxon Signed Rank Test). Initially no difference in performance was evident between groups (Mean score 23.1 vs 21.31; $p = 0.24$ Mann Whitney U test), however TRAINERS were superior at follow up (Mean score 28.1 vs. 19.4; $p = 0.01$ Mann Whitney U Test). TRAINERS engaged in a mean of 60 minutes practice spaced over three sessions versus no additional practice in the NON TRAINER group.

Conclusion: Engaging in self directed home practice can result in improvements in early surgical skill acquisition and developments. Low cost trainers could be useful adjunct to enable deliberate practice.

Take-home message:

Acquisition of basic surgical motor skills requires sustained distributed practice. Our novel low cost trainers allowed attendees of a basic surgical skills course to practice at home and demonstrate an improved performance on repeat assessment.

O118 THE PROXIMIE TELEMEDICINE PLATFORM AND ITS POTENTIAL EFFECTIVENESS IN GLOBAL HEALTHCARE SOLUTIONS

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Introduction: Telemedicine is becoming an integral part of patient management globally. This is largely due to the increasing need to provide equal accessible care to all regardless of geographic location as well as telemedicine cost effectiveness. This is also due to the increasing drive for surgical outreach missions to enhance long-term surgical skills at local sites and to provide support that is critically necessary in war-zones.

Method: PROXIMIE is a single, focused and complete telecommunications platform providing access to experts via a cloud based augmented reality platform enabling visual collaboration, video, 3D animated surgery and detailed record systems that integrate patient medical records all on one platform. The system is designed by doctors and is revolutionising the way medical professionals provide teaching, consultation, and virtual guidance globally using a dedicated infrastructure for the health care provider.

Result: PROXIMIE has already been tested and utilised by recognized NGOs and teaching institutions globally, such as Global Smile Foundation, Facing the World, University of California Riverside, EsSalud Hospital Trujillo, Peru and The American University of Beirut Medical Centre (for regional refugee and

critical injuries support). All have reported it being extremely useful and necessary to their endeavours of providing medical and surgical support, teaching and training, and triaging war victims. Feedback has been very encouraging and currently Medecins Sans Frontiers, and the International Committee of the Red Cross are also considering adopting PROXIMIE as their telemedicine solution.

Conclusion: PROXIMIE offers a complete telehealth solution that may be invaluable to any organization.

Take-home message:

PROXIMIE offers a complete telehealth solution that may be invaluable to any organization.

O119 THE FIFE ROUND – DESIGN AND IMPLEMENTATION OF AN ADHESIVE SURGICAL WARD ROUND PROFORMA ON A COLORECTAL WARD

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Introduction: Clear documentation during ward rounds is crucial to ensure effective handover and patient safety. An audit revealed that the quality of ward round documentation varied widely on our colorectal ward and so we designed a quality improvement project to standardise this. Our aim was to develop an adhesive ward round proforma which improved compliance with essential documentation items to greater than 95% across 2 PDSA cycles (at 1 week and 1 month).

Method: We surveyed 4 consultants, 4 speciality trainees, 1 core trainee, 1 nurse practitioner and 7 foundation doctors to identify current practice. From this survey, and on review of good surgical practice, 8 items were identified as essential documentation. During the initial audit there was 95% compliance with only 3 of the 8 items and so we designed a proforma to highlight these. Case notes were re-audited at 1 week and then 1 month after implementing the proforma.

Result: The 8 essential items were date, time, consultant name, antibiotic use, early warning score, diagnosis, plan and phone extension/signature. One week after implementing the proforma there was greater than 95% compliance on all 8 items, however at 1 month there was 95% compliance with 3 out of 8 items.

Conclusion : Our proforma improved compliance at 1 week but not at 1 month. A changeover of doctors after 1 week may account for this. Nonetheless it has proved popular with the team and we aim to develop the idea further in order to standardise our ward rounding.

Take-home message:

A standardised ward round proforma can improve compliance with essential ward round documentation.

O120 DELIVERING 'SAFE APPROACH' COURSE FOR MEDICAL STUDENTS IN EMERGENCY GENERAL SURGERY

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Introduction: Recent evidence suggests that medical students feel unprepared for general surgery on-calls. This may be associated with a reduction in dedicated surgical teaching. To address specific concerns about emergency surgery admissions, we undertook an educational intervention.

Method: A one-day course was delivered, covering a 'safe approach' in emergency general surgery. This included recognising the sick patient, use of an ABC approach and construction of a practical differential diagnosis. Professional skills including prioritisation were also addressed. Pre and post course confidence and preparation scores were compared using t tests.

Result: A total of 40 final year medical students enrolled on the one-day course with 36 completing both pre and post course questionnaires. Before and after the course the students rated themselves on scales of preparedness and confidence. Reported mean confidence scores increased following the course for initial management of surgical conditions (1.61+/- 0.068 to 1.97+/- 0.066, $p < 0.001$), performing surgical skills (0.94+/- 0.081 to 1.89+/- 0.085, $p < 0.001$) and finally reported preparedness to start as a surgical F1 doctor (0.97+/- 0.084 to 1.81+/- 0.067, $p < 0.001$).

Conclusion: This course shows potential as an intervention to address concerns around preparedness for surgical-on call, although is not a substitute for wider surgical education. There are plans to refine the course using feedback and institute it for a wider group of students. Longer term follow-up of participants is planned to assess for residual effect of the course.

Take-home message:

Student preparedness to take part in the acute surgical take improved following this course ($p < 0.001$). Their confidence in managing acute surgical conditions and performing surgical skills also improved (both < 0.001).

O121 HTC FOUNDATION (HTCF): DEVELOPING FUTURE SURGICAL INNOVATORS

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Introduction: Collaboration between clinicians and scientists promotes effective and timely translation of surgical biotechnology. In the United Kingdom, Healthcare Technology Cooperatives (HTC) address unmet clinical needs through interdisciplinary development of novel biotechnology. Student involvement in this process is important for building sustainable networks and developing surgical innovators of the future.

Method: In 2015-16, a student-led innovation group was developed (HTC Foundation; HTCF). An

educational "Innovation Programme" was delivered via five interactive workshops. Principles taught included clinical need identification, device regulation, business basics and concept development. Students collaborated to develop conceptual solutions for a current clinical need in surgery. Evaluation of the programme was undertaken via anonymous, numerical rating scale questionnaires. Averages and Standard Deviations (SD) are reported.

Result: On average 28 students attended each workshop with representation from broad discipline areas (Medicine, Physics, Chemistry, Medical Engineering, Mechanical Engineering and Product Design). Attendees found the experience useful for their needs (7.2 out of 10; $SD \pm 0.21$). The format of workshops was fit for purpose (9.5 out of 10; $SD \pm 0.15$) and workshop content was valuable for professional development (9.1 out of 10; $SD \pm 0.38$). Following completion of the programme, students were likely to recommend the programme to others (9.1 out of 10; $SD \pm 0.2$) and likely to engage in future biotechnology innovation workshops (9.5 out of 10; $SD \pm 0.31$).

Conclusion: We have developed a unique educational programme bringing together students from broad scientific backgrounds. This demonstrates the feasibility of a student-led interdisciplinary group. Its popularity amongst students proposes this as a valuable adjunct to medical curricula.

Take-home message:

Interdisciplinary collaboration is essential for surgical innovation. Instilling this attitude in students and trainees will secure lasting interdisciplinary networks and surgical innovators of the future.