



Annual Meeting
Friday 31 March 2023

Held at



Keble
College

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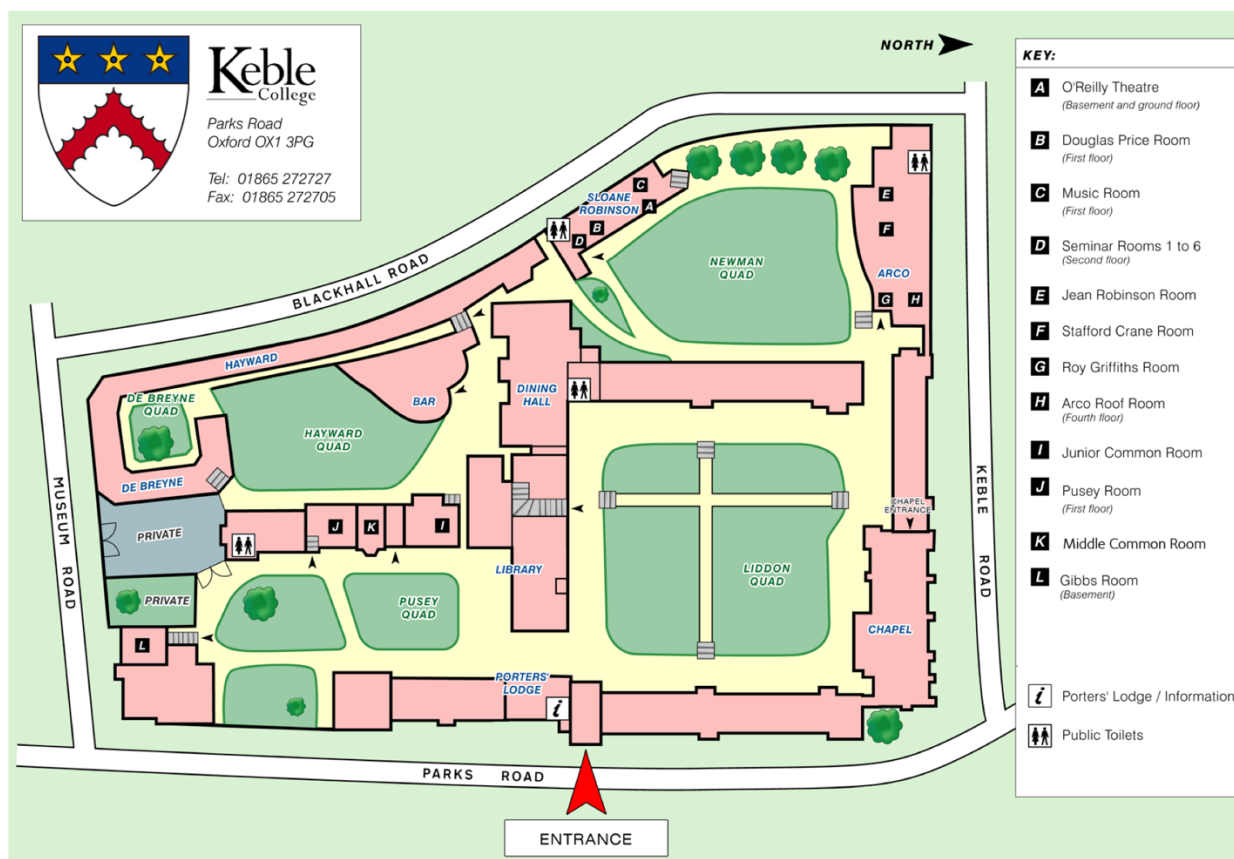
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CSOS Programme - 31 March 2023
Keble College, University of Oxford

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| 0700-0900 | Breakfast (For meeting delegates who spent the night of Thu 30 March in halls only) | Hall |
| 0815-0850 | Registration & coffee | Roy Griffiths Room Arco Building |
| 0855-0915 | Welcome Address – Surg Lt Cdr Pippa Bennett LOC co-Chair Introductory Address – Col Al Mountain, CSOS Chairman | O'Reilly Theatre Sloane Robinson Building |
| 0915-1045 | Academic session one Moderators: Lt Col K Brown MPhil, Lt Col Z Beech | O'Reilly Theatre Sloane Robinson Building |
| 1045-1115 | Coffee & discussion with industry representatives | Roy Griffiths Room Arco Building |
| 1115-1145 | Keynote address <i>Orthopaedic Trauma - Why do we do what we do?</i> Mr Bob Handley, Oxford Trauma Service; BOA & OTS Past President | O'Reilly Theatre Sloane Robinson Building |
| 1145-1230 | CSOS Photograph (Please leave bags, papers and headdress behind) | Good weather-Chapel Steps Inclement weather-O'Reilly Theatre |
| 1230-1330 | Lunch & discussion with industry representatives | Hall |
| 1330-1400 | Keynote address <i>Orthopaedic Trauma - How to do it better?</i> Prof Matt Costa, Oxford Trauma Service and University of Oxford | O'Reilly Theatre Sloane Robinson Building |
| 1400-1515 | Academic session two Moderators: Wg Cdr E Spurrier MD, Surg Cdr J Matthews | O'Reilly Theatre Sloane Robinson Building |
| 1515-1545 | Keynote address – Maj Gen Tim Hodgetts CBE KHS OStJ | O'Reilly Theatre Sloane Robinson Building |
| 1545-1615 | CSOS AGM | O'Reilly Theatre Sloane Robinson Building |
| 1615-1645 | Tea & discussion with industry representatives | Roy Griffiths Room Arco Building |
| 1645-1700 | Prize giving by Professor Deborah Eastwood, BOA President | O'Reilly Theatre Sloane Robinson Building |
| 1700-1730 | State of the nation – Col Al Mountain, CSOS Chairman | |

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|-----------|---------------------------|-------------|
| From 1730 | Refreshments | College Bar |
| 1850 | Call to dinner | Hall |
| 2330 | College bar closes | College Bar |

Seating plan for Mess Dinner. As per College tradition a formal seating plan will only be specified for the High Table. Society members and guests are encouraged to sit where and with whom they wish on the long tables. **Those with dietary requirements will need to collect an allergy card to facilitate smooth running of the dinner service.**



Wireless internet is available in all bedrooms and meeting spaces. Please connect to the WiFi Network:

Keble

Then use password:

RedBrickOxford

You will then need to open your web browser to be redirected to the Keble registration website, click the "Begin Registration" button, select the name of the conference you are attending and follow the prompts on screen. The conference password is:

CSOS23

Note: If you are not redirected to the Keble registration website then just try to browse to any non-https webpage (such as www.it.ox.ac.uk) to force the redirection.

If you are attending the meeting as a day delegate (not staying overnight at Keble) please follow the above instructions, when room number is requested enter:

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**Welcome to Keble College, Oxford University, and the 2023 annual meeting of the
Combined Services Orthopaedic Society**



On behalf of the Local Organising Committee (LOC), I would like to extend a warm welcome to the city and University of Oxford. I am sorry that operational commitments prevent me from joining you, but the LOC co-Chair, Surg Lt Cdr Pippa Bennett, will be leading on the day.

The LOC was very keen to bring CSOS to the University of Oxford. As surgeons who serve in uniform, we are proud of our long history but remain keenly focused on future development and advancement of our techniques and treatments. That is why Oxford University is such an excellent venue for our meeting – the perfect blend of a glorious heritage and a continued quest for new knowledge and the exhaustive expansion of science and technology. In the nine centuries since it was founded, Oxford has remained one of the finest universities in the world, having educated 30 Prime Ministers, 73 Nobel laureates, 4 Fields Medallists, and 6 Turing Award winners.

This year the CSOS LOC has crafted a program that combines the presentation of current research from across the Society with keynote addresses from leaders in our speciality and the DMS. Bob Handley will be sharing his reflections on 40 years at the forefront of UK clinical Trauma care, and his leadership of the BOA and OTS. From his position at the vanguard of international orthopaedic trauma research, Prof Matt Costa will be sharing his views of the future direction of our speciality. Finally, the Surgeon General, Maj Gen Tim Hodgetts, will be presenting his vision of how the DMS will continue to lead the world in military medicine.

The stunning surroundings of Keble College offer not only world-class lecture and seminar facilities but allow us to be accommodated and dine together. I urge you to use this time to meet our colleagues and representatives from the orthopaedic industry whose support makes this day possible. Establish new connections, reaffirm old friendships, dispense advice, receive wisdom, spin dits and imbibe refreshment; all of which will service to forward the aims of our Society.

Yours Aye,

Surg Cdr Jowan Penn-Barwell PhD
Fellow Wolfson College, University of Oxford
Co-Chair CSOS 23 Local Organising Committee

CSOS Committee

| | |
|-----------------------|---------------------------|
| President | Mr Simon Hodkinson |
| Chair | Col Al Mountain |
| Treasurer | Lt Col Tom Wood |
| Secretary | Surg Lt Cdr Pippa Bennett |
| Webmaster & Trade Rep | Surg Lt Cdr Liam Kilbane |

Local Organising Committee 2023

| | |
|-----------------|--|
| Co-chairs | Surg Cdr Jowan Penn-Barwell Surg Lt Cdr Pippa Bennett |
| iCSOS PoC | Surg Lt Cdr Tom Stevenson |
| Mess Dinner PoC | Surg Lt Cdr Rich Myatt |

Keynote speakers

| | |
|--------------------------|----------------------|
| Surgeon General | Maj Gen Tim Hodgetts |
| BOA Past-President | Mr Bob Handley |
| Oxford Prof Ortho Trauma | Prof Matt Costa |

Honoured Guests

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| Warden of Keble College | Dr Sir Michael Jacobs |
| PRCS(Eng) | Prof Neil Mortensen |
| PRCS(Edin) | Professor Rowan Parks |
| BOA President | Professor Deborah Eastwood* |
| Past Chair T&O SAC | Mr Rob Gregory* |
| Medical Director to the SG | Brig Duncan Wilson* |
| Head AMS Reserve | Brig Bibek Banerjee* |
| Defence Dean | Gp Capt Dudley Graham* |

* Podium presentations judging panel



Bob Handley FRCS

Consultant Trauma Surgeon at the John Radcliffe Hospital, Oxford and Past-President of the British Orthopaedic Association and Orthopaedic Trauma Society



I was an undergraduate in Sheffield and then wandered with a first job in the Shetlands and then three years with the British Antarctic Survey which included travelling back to the recently liberated Falklands with Governor Sir Rex Hunt.

My T&O training was in the North East of England with a fellowship in Seattle. Now fully domesticated with four grown-up children I have been a Consultant on the Trauma Service at the John Radcliffe Hospital Oxford since 1994. I am also the GIRFT National Clinical Lead for Adult Orthopaedic Trauma.

I have been President of the British Orthopaedic Association, the Orthopaedic Trauma Society and AOUKI. I have been involved in the development of NICE guidelines and BOASTs related to orthopaedic trauma.



Matthew Costa PhD, FRCS, FMedSci.

Professor of Orthopaedic Trauma Surgery at the University of Oxford and Honorary Consultant Trauma Surgeon at the John Radcliffe Hospital, Oxford.



Matt's research interest is in clinical and cost effectiveness of musculoskeletal trauma interventions. He is Lead Investigator for a series of randomised trials and associated studies supported by grants from the UK National Institute for Health Research (NIHR). His work has been cited widely and informs many guidelines from the National Institute for Health and Care Excellence.

Matt is the NIHR National Specialty Lead for Trauma and Emergency Care and an NIHR Senior Investigator. He is also Associate Editor for Trauma and Research Methods at the Bone and Joint Journal.

Matt is past President of the UK Orthopaedic Trauma Society and past President of the Global Fragility Fracture Network.



Strategic Command
Headquarters Defence Medical Services

Surgeon General
Major General Tim Hodgetts
CBE KHS OStJ PhD MMed MBA MBBS CMgr FRCP FRCSEd FRCEM FIMCRCSEd
FRGS



Tim was commissioned in 1983 and trained at Westminster Medical School, qualifying with distinction in 1986. He holds fellowships with the Royal College of Physicians of London, Royal College of Surgeons of Edinburgh, Royal College of Emergency Medicine, Faculty of Pre-hospital Care, Institute of Healthcare Managers, and the Royal Geographical Society. He has a PhD in Public Health ('A revolutionary approach to improving combat casualty care'); Master's degrees in Medical Education and Business Administration; and is a Chartered Manager. He graduated from Joint Command & Staff College in 2011 and the Royal College of Defence Studies in 2018.

Tim's professional career began as a general physician in the British Military Hospital in Hannover, progressing to higher training in emergency medicine in Manchester and Sydney. He became Consultant in Emergency Medicine at Frimley Park Hospital from 1995, transferring to the Royal Centre for Defence Medicine in 2001 on its inception, where he served until 2010. He was first appointed a Professor in 1998 at the European Institute of Health and Medical Sciences, then at the University of Birmingham (2001), and at City University of London (2013). He was the inaugural Defence Professor with the Royal College of Emergency Medicine, and Penman Foundation Professor of Surgery in South Africa for 2011.

Within Defence Tim has been responsible for nurturing the specialty of emergency medicine from infancy to maturity. He has implemented concept, doctrine, equipment and practice changes to transform the early management of combat injury and led major trauma governance from 1997-2010. Clinical leadership appointments have included Defence Consultant Adviser in EM (1997-2008); and Assistant Director Clinical Services at RCDM (2001-2007). He has served on operations in hospitals in Northern Ireland, Kosovo, Oman, Afghanistan (3 tours), Kuwait and Iraq (4 tours). On 6 of these tours he was the hospital's Medical Director, including the multinational Danish-UK-US hospital in Afghanistan, 2009. From 2011-13 he was Medical Director within NATO's Allied Rapid Reaction Corps; and

from 2014-17 he was Medical Director for the Defence Medical Services. From 2018 until assuming his role as Surgeon General he has was the Army's Senior Health Advisor, the Head of the Army Medical Services and a Commissioner at the Royal Hospital Chelsea. Tim has published extensively (books & journal articles) and regularly lectures internationally as a keynote speaker on leadership, innovation at pace, disaster medicine and combat casualty care. He is co-author of Major Incident Medical Management and Support; Battlefield Casualty Drills; Army Team Medic; Battlefield Advanced Trauma Life Support; and Clinical Guidelines for Operations. He co-founded the citizenAID® charity from 2017, designing a free multi award-winning app to support the public during a terrorist attack and inventing a new device (the Tourni-Key™) for the public to treat life-threatening limb bleeding.

Tim was made Officer of the Order of St John of Jerusalem in 1999 and Commander of the British Empire in 2009; he received the Danish Defence Medal for Meritorious Service in 2010. He was Queen's Honorary Physician from 2004 to 2010 and became Queen's Honorary Surgeon in 2018. In 2010 he received the Defence Scientific Adviser's Commendation for contribution to research and has been awarded 18 academic medals, including the prestigious Mitchiner Medal of the Royal College of Surgeons of England. His academic department was twice recognised nationally as the "Training Team of the Year" and in 2006 he was honoured with the personal accolade of Hospital Doctor of the Year throughout the NHS. He was named in a British Medical Association dossier as one of the most innovative doctors in the country.

Academic Session One:

Moderators: Lt Col K Brown MPhil, Lt Col Z Beech

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| 0915-0925 | Smoking and nicotine replacement therapy on an orthopaedic ward <i>S. Lakani, R. Pyne, H. Khan</i> |
| 0925-0935 | Immersive virtual reality is superior to conventional training for novice scrub nurses learning intramedullary tibial nailing: a randomised controlled trial <i>J. Edwards, I. Poole, T. Edwards, F. Kablean-Howard, K. King, J. Bliss, A. Liddle, J.P. Cobb, K. Logishetty</i> |
| 0935-0945 | The RCS(Eng) Damage Control Orthopaedic Trauma Skills Course (DCOTS): resuscitative knowledge and life-saving surgical skills are reliably maintained at six months post-course <i>P. Parker, O. Bodger, I. Pallister</i> |
| 0945-0955 | National staffing levels in trauma and orthopaedics <i>L. Kilbane, R. Haasbroek, N. Evans</i> |
| 0955-1005 | Muscle size, strength and gait biomechanics in rehabilitated UK veteran unilateral and bilateral transfemoral amputees <i>J. Frias Bocanegra, N. Egginton, D. Fong, P. Wheeler, M. Lewis, A. Bennett, T. Blankenstein, D. Williams, S. Stapley</i> |
| 1005-1015 | Audit looking at management of open fractures in a JHG <i>D. Mills</i> |
| 1015-1025 | An audit of antibiotic use for prophylaxis and treatment of bone and joint infections at Frimley Park Hospital <i>H. Claireaux, R. Pyne, A. Tough, S. Capella, M. Meda, Z. Nawaz, S. Sturridge</i> |
| 1025-1035 | Management of casualties with unexploded ordnance in the operating room <i>A. Bainbridge, G. Kerans, A. Ramasamy, D. Bowley, N. Perkins</i> |

Smoking and Nicotine Replacement Therapy on an Orthopaedic Ward

Shiven S Lakhani¹, Robert Pyne¹, Hayat Khan¹

¹Frimley Park Hospital, Frimley Foundation Healthcare Trust

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Background

With the pressure on NHS beds mounting, and on doctors to discharge patients from hospital, it is critical to look at all interventions that will reduce pressures on the NHS. Smoking is known to increase the risk of complications in Orthopaedic patients, including wound dehiscence, delayed union and infection, not to mention the other cardio-vascular and respiratory effects.⁽¹⁾ Smoking is a modifiable risk factor and cessation advice and treatment is a quick, easy and effective intervention that NICE guidelines state all patients must be offered.⁽²⁾

Aims

To assess our compliance to NICE guidelines on smoking cessation.

Methods

A 2 cycle, cross-sectional review of Orthopaedic inpatients at Frimley Park Hospital. Notes of all in-patients were reviewed for 4 key NICE guideline documented markers: Smoking status, cessation advice provided, nicotine replacement therapy (NRT) offered and NRT accepted. An intervention was implemented between the two cycles, involving local education and posters.

Results

72 patients were identified during cycle 1 and 70 for cycle 2. During cycle 1, 10 smokers were identified, with 60%(n=6) offered cessation advice and 30%(n=3) offered NRT, all of whom accepted. 29%(n=21) of all patients did not have any smoking status documented. Cycle 2 demonstrated 6 smokers, of whom 33%(n=2) were offered cessation advice and none offered NRT. 40%(n=28) of patients did not have smoking status documented.

Conclusion

Smoking status documentation is a basic part of the Orthopaedic clerking. The worsening results between cycle 1 and 2 could be attributable to a changeover of a large number of SHO's within the department, many new to the sub-specialty and some new to the UK. Smoking status documentation can also be a useful surrogate marker for the quality of clerkings. We aim to follow this up with a third cycle and the introduction of a standardised clerking proforma.

Immersive virtual reality is superior to conventional training for novice scrub nurses learning intramedullary tibial nailing: A randomised controlled trial

Jonathan Edwards¹, Isabelle Poole¹, Thomas C Edwards¹, Francesca Kablean-Howard¹, Kathryn King², Julie Bliss², Alexander D Liddle¹, J.P. Cobb¹, K. Logishetty¹

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²: Kings College London, London, United Kingdom

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Introduction

Superior team performance in surgery leads to fewer technical errors, shorter operation time, reduced mortality and improved patient outcomes. Scrub nurses are pivotal team members, yet have little structured training. Immersive virtual reality (iVR) simulation is an accessible technology allowing practitioners to practise skills without patient risk. It has demonstrated excellent efficacy in training surgeons, however, there is minimal literature investigating its role training other team members such as scrub nurses or ODPs. This randomised study investigates the impact of an iVR curriculum on training prospective scrub nurses to assist in intramedullary tibial nailing.

Methods

60 nursing students were included and randomised (1:1 ratio) to conventional or iVR training. Participants with nailing operation or iVR surgical simulation experience were excluded. Conventional training was a 1-hour seminar and 2 hours of e-learning which taught the equipment and operation sequence. iVR training comprised 3 separate hour-long sessions where participants performed the operation virtually. Primary outcome was performance in a physical world practical assessment with real equipment, which tested the knowledge and skills needed for scrub nurses in the operation. The assessment was developed and validated using a modified Delphi method, with experts consisting scrub nurses, surgeons and industry representatives.

Results

53 participants completed the study (26 iVR, 27 conventional), mean age 31 ± 9 y. There were no significant differences in baseline characteristics or knowledge test scores between the groups ($p > 0.05$). The iVR group significantly outperformed the conventionally trained group in real-world assessment, scoring $65.4 \pm 17.7\%$ vs $37.3 \pm 15.9\%$, $p < 0.0001$.

Conclusion

iVR was superior to conventional training in teaching novice scrub nurses to perform their role for intramedullary tibial nailing. This easily accessible, low cost training modality could be integrated into the training of surgical team members assisting in surgery to address training shortfall or develop and maintain skills currency.

The RCSEng Damage Control Orthopaedic Trauma Skills Course (DCOTS) - Resuscitative Knowledge and Life-Saving Surgical Skills are Reliably Maintained at Six Months Post-Course

Paul Parker¹, Owen Bodger², Ian Pallister³

¹Consultant T&O surgeon, University Hospitals Birmingham NHS Foundation Trust

²Senior Lecturer Statistician, Swansea University Medical School

³Consultant major trauma orthopaedic surgeon, Honorary Professor Cardiff & Swansea Medical Schools

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Aim

Since 2012, the Damage Control Orthopaedic Trauma Skills course (DCOTS) has trained over 250 surgeons in the principles and practice of Damage Control Orthopaedics (DCO) and Early Appropriate Care (EAC). This Royal College of Surgeons of England (RCSEng) course takes place at the RCSEng Partner cadaver lab at Brighton and Sussex Medical School. With trauma being a leading cause of morbidity and mortality in the UK, the course has tried to pass on lessons of war and conflict from its military faculty and hard-won lessons of 'developed-world' trauma from its experienced civilian faculty.

Methods

Participating surgeons were invited to score their self-reported confidence prior to attending the DCOTS course, immediately at its conclusion and then again 6 months later. A modified Likert scale was used, with responses made on a 4-point scale from 1=No Confidence to 4=Very Confident. Damage Control Resuscitation (DCR) principles with Damage Control Surgery (DCS) showed the greatest retained increase at six months - 100% which is extremely satisfying. Pelvic External Fixation; initially 93%, dropped to 85% - also considered good to excellent. Pelvic Packing was 90% at the end of the course but had dropped to a level that although up from its low 19% pre-course, was considered good at 62%, but low for the high standards of the course. This may relate to the low familiarity of UK trainees with the concept. Highly responsive to feedback, in 2020 we added rib-plating, resuscitative thoracotomy and more extensive junctional haemorrhage control to the program.

Conclusions

We have demonstrably shown that three of the main skills taught on DCOTS are effectively retained at 6 months post course. We believe that an experienced and approachable faculty; teaching in an immersive adult learning environment, with 4 short didactic lectures and 9 intense practical sessions delivers a reproducible, entertaining and highly valuable course.

National Staffing Levels in Trauma & Orthopaedics

Liam Kilbane¹, Roxanne Haasbroek², Nicholas Evans³

¹Specialist Registrar, Defence Deanery / Salisbury NHS Foundation Trust

²Trust grade locum in orthopaedic and plastic surgery, Salisbury NHS Foundation Trust

³Consultant spinal orthopaedic surgeon, Salisbury NHS Foundation Trust

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Aims: Since April 2014 all hospitals are required to publish information about the number of nursing staff working on each ward to help better meet established safe staffing guidelines. The medical profession is not been required to publish the same information. Hospital departments consistently face staff shortages across different grades and roles and this is no different within Trauma & Orthopaedics. Our aims were to attempt to compare staffing numbers across the country and to provide poorer staffed trusts evidence from which to drive better staffing.

Methods: Questions were sent to 112 NHS hospital trusts through a Freedom of Information request. Staffing numbers at different grades including Consultant, Registrar, Junior, Specialist Nurses and Trauma coordinators were surveyed together with metrics of bed numbers and admissions from which to generate a scaled comparison. Admissions and theatre sessions per consultant could infer the output of the department with the admissions per SHO inferring the workload on juniors.

Results: 61 / 95 (64%) trusts with Level 1 to 3 T&O departments responded. 11 Level 1 (MTC Centres), 44 Level 2 (Trauma Units), 5 Level 3 (Local Emergency Hospitals). Average number of admissions per consultant 264 and theatre sessions per consultant 2.7. Average number of admissions per SHO 442. There was an average Consultant to SpR Ratio of 1.51. Trauma coordinators were employed by 79% of trusts.

Conclusion: There are significant differences across the healthcare trusts in staffing levels. Most notably in the SHO level who are likely responsible for much of the daily ward work and clinical contact for admitted patients and their turnover. Trusts could use our data to leverage additional funding to increase staffing levels, lessen workload on juniors and improve patient safety.

Muscle size, strength and gait biomechanics in rehabilitated UK veteran unilateral and bilateral transfemoral amputees

Jose Manuel Frias Bocanegra¹, Natalie Egginton², Daniel Fong¹, Patrick Wheeler¹, Mark Lewis¹, Alex Bennett^{2,3}, Tom Blankenstein³, David Williams¹ and Sarah Stapley⁴.

¹Loughbrough University

²Defence Medical Rehabilitation Centre, Stanford Hall

³Royal Centre for Defence Medicine (Research and Clinical Innovation)

⁴Portsmouth Hospitals University Trust

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Aims

Early century armed conflicts left a significant number of injured military personnel with lower limb amputation requiring extensive rehabilitation following increased survival rates. A better understanding of the assessment of muscle size and quality, strength production and variability during gait over time may direct the development of new recovery pathways to improve functional outcomes. Rapid clinically applicable methodologies and modern equipment which may guide strength and biomechanical interventions offer the promise of individualised rehabilitation programmes for this cohort of prosthetic users.

Methods

Lower limb resting muscle and fat thickness, isometric joint flexor/extensor group Hamstring: Quadriceps (H:Q) ratio, peak strength with rate of torque development, gait kinematics and kinetics in the 6 minute walk test have been measured for 7 unilateral and 4 bilateral transfemoral amputees using B-mode ultrasound scanning, an isokinetic dynamometer and a 10-camera motion capture system.

Results

Unilateral transfemoral amputees displayed a H:Q torque ratio below the 60% desirable, used in sport rehabilitation to predict recovery. Hip extensors rate of torque development, key for push off during the gait cycle, on the dominant side was over twice that of the non-dominant side reflecting the compound issues associated with this type of injury pattern. Ultrasound showed differences in intramuscular adipose deposition between the dominant and non-dominant limbs. A series of kinematic, kinetic, and temporal spatial discrepancies were found in both cohorts between intact vs residual as well as dominant vs non-dominant limbs, hindering progression towards regular gait mechanics.

Discussion

The anterior posterior imbalance and discrepancies in hip extensor torque development will influence ambulation. The differences observed in muscle quality, as demonstrated by adipose tissue intramuscularly rather than in the surrounding tissues only, potentially indicate a relationship to strength. Earlier understanding may lead to further focused rehabilitation to prevent this or reverse deposition and thus improve overall muscle quality.

Audit looking at management of open fractures in a JHG

Daniel Mills¹

¹Core Surgical Trainee, Derriford Hospital, Plymouth

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Objectives

To see whether open fracture management at a MoD JHG aligned with BOA Standards by having consultant orthopaedic and plastic opinions at first look debridement and whether open fracture wounds were definitively closed within 72 hours of incident.

Design

Measures that have been agreed by clinical experts to facilitate benchmarking between MTCs were collected and submitted to the Trauma Audit and Research Network (TARN) database. If standards had been missed, the patients' paper and electronic notes were reviewed and analysed to look for reasons for this. Data was compared to similar data collected during the preceding nine months.

Setting

A UK major trauma centre.

Participants

Open fractures of the femur, tibia and fibula that stayed in hospital for more than 72 hours were included. Patients transferred for repatriation or from abroad were excluded, along with patients that died within 72 hours of admission or had surgical amputation within 72 hours. There were 72 open fractures meeting the inclusion criteria which were analysed.

Results

There was significant administrative error documenting on TARN. Most unavoidable occasions in which care did not meeting the standards were the result of the clinical condition of the patient (61%). Most avoidable occasions which did not meet the standards were due to unavailability of plastic consultant surgeons (75%) and the day of admission which was found to affect the care delivered within the limitations of the study.

Conclusions

This audit and analysis found that administrative errors and non-standardised documentation led to inaccurate data being submitted onto the TARN database. It has identified opportunities for quality improvement in this area. There is a subgroup of patients who may have an avoidable delayed soft tissue closure. Day of admission may affect time to definitive soft tissue closure.

An audit of antibiotic use for prophylaxis and treatment of bone and joint infections at Frimley Park Hospital

H A Claireaux¹, R Pyne², A Tough², S Capella³, M Meda⁴, Z Nawaz⁵, S Sturridge⁵

¹CT2, T&O, Army Medical Services Support Unit & Frimley Park Hospital

²F1, T&O, Army Medical Services Support Unit & Frimley Park Hospital

³SpR, T&O, Institute of Naval Medicine

⁴Consultant, Microbiology and Infection Control, Frimley Park Hospital

⁵Consultant, T&O, Frimley Park Hospital

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Aims

A review of bone and joint infection cases highlighted sub-optimal antibiotic prescribing and monitoring. The need for this audit was identified at our clinical governance meeting. Bone and joint infection after arthroplasty can represent a devastating complication resulting in significant morbidity and mortality.

The aim of this audit was to compare practice to local antimicrobial guidelines and improve adherence.

Method

Cycle 1 – Cases of bone and joint infection were identified retrospectively from a local microbiology registry. Teicoplanin used for both prophylaxis and treatment.

Changes - Between cycles we provided training to the orthopedic department, prescribing moved from paper to electronic within the Epic system, and there were changes to antimicrobial guidelines.

Cycle 2 – As cycle one for infected cases. Additionally, consecutive cases were identified from theatre lists to assess the updated prophylaxis regime. Flucloxacillin and Gentamicin used for prophylaxis and Teicoplanin for treatment.

Results

Cycle 1 – Treatment n=30, 10% correct dose for prophylaxis, 17% correct day 3 monitoring, 15% correct two weekly monitoring.

Cycle 2 – Prophylaxis n=54, 91% correct dose, 22% acute kidney injury perioperatively. Infection n=15, 47% correct dose, 17% correct day 3 monitoring, 50% correct two weekly monitoring.

Conclusion

Both cycles identified room to improve prescribing and monitoring of antibiotics. Challenges exist around rotational staff, a merger of trusts with standardisation of guidelines, Teicoplanin levels taking days to come back, and a new electronic patient record.

This two-cycle audit has been presented at our clinical governance meeting and training is planned on a recurring basis for rotational staff. We aim to add automatic dose calculation and a monitoring prompt to the electronic patient record. We will re-audit in six months and this will be an enduring audit to assess and improve the use of antibiotics in bone and joint infection.

Management of casualties with unexploded ordnance in the operating room

A. Bainbridge, G. Kerans, A. Ramasamy, D. Bowley, N. Perkins
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Introduction

Encountering a patient with unexploded ordnance (UXO) is a rare but potentially catastrophic scenario during the treatment of combat casualties in armed conflict. The presence of UXO in the vicinity of the casualty presents a risk to all involved, including the treating personnel and the Medical Treatment Facility (MTF). In order to mitigate this risk a DMS Clinical Guideline is being developed to help guide management of this extreme but recognized scenario.

Method

A literature review was conducted for evidence of UXO in casualties, including case reports, case series, current international guidance and known corporate knowledge. 43 reported cases were identified, ranging from WW2 to the current modern era. This information enabled a DMS guideline to be formulated and peer-reviewed after consultation with subject matter experts in relevant fields.

Results and conclusions

The literature review highlighted a deficit in standard guidance for military personnel dealing with these UXO in casualties. Key concepts were identified and explored. Primarily these can be subdivided into understanding the UXO, immediate measures, chain of command actions, specific clinical management and special considerations. Equipment, imaging, PPE, personnel and surgical strategies are explored for the operating room scenario. Research has shown limited evidence on the treatment of patients with embedded UXO and a lack of clear guidance. The development of a clinical guideline for casualties with embedded UXO helps ensure military personnel are trained, equipped and have at least considered the management options available. This helps to mitigate risk whilst maintaining the best clinical outcomes for the casualty.

Academic Session Two

Moderators: Wg Cdr E Spurrier MD, Surg Cdr J Matthews

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| 1400-1410 | Impact on one year mortality after concomitant neck of femur and proximal humerus fractures <i>S. Shah, J. Birk, J. Parkes, N. Holmes, S. Gill, S. Stapley</i> |
| 1410-1420 | Implementing change in management of paediatric forearm fractures at a major trauma centre <i>A. Bainbridge, H. Chandler, D. Cummins, T. Wray, D. Ferguson</i> |
| 1420-1430 | Synchronous cerclage fixation and intramedullary nailing for unstable femoral fractures: revisiting the dead bone sandwich <i>J. McIntyre, J. Bashyam, S. Molyneux, J. Nicholson</i> |
| 1430-1440 | ACL reconstruction and UK military service: time for a rethink? <i>D. Cain, P. Parker</i> |
| 1440-1450 | Operative management of neck of femur and distal radius fractures in the same sitting: does it affect clinical outcome? <i>S. Shah, J. Birk, J. Parkes, N. Holmes, S. Gill, S. Stapley</i> |
| 1450-1500 | Ankle fractures in a major trauma centre: can we hope to meet the standards, and does it help? <i>Y. Jamal, Z. Beech</i> |

Impact On One Year Mortality After Concomitant Neck Of Femur And Proximal Humerus Fractures

Saumil Shah, Jasryan Birk, Jasmine Parkes, Natal Holmes, Sukhdeep Gill, Sarah Stapley
Portsmouth Hospitals University NHS trust, Portsmouth, United Kingdom

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Aim

To compare average length of stay and 1-year mortality in combined hip and proximal humerus fracture with isolated hip fractures.

Methods

A single-centre retrospective study over 11 years (January 2009- December 2019) identifying patients with concomitant neck of femur fractures with proximal humerus fractures in patients over 60 years of age. Data collection included demographics, ASA grade, co-morbidities, pre-fracture mobility, fracture pattern, operative intervention, post operative mobility, length of stay, discharge destination and 30-day and 1-year mortality was collected. Pathological fractures, peri-prosthetic fractures, high energy mechanism injuries were excluded.

Results

A total of 116 patients were identified with concomitant fractures, out of which 114 proximal humeri were managed conservatively and 2 patients were surgically fixed. All neck of femur fractures were operatively fixed.

Postoperatively, delayed weight-bearing was planned due to proximal humerus fractures. An ASA grade of an average 3 was documented in all patients with this injury. Average length of stay in the hospital was ~24 days compared to 15 days for isolated neck of femur fractures. The 30-day mortality of these fractures 11.40% and 1-year mortality of 42.11% compared to isolated neck of femur fractures have 6.5% at 30-day mortality and 30% at 1 year.

Conclusions

Neck of femur fractures and proximal humerus fractures are both frailty fractures. However, a combination of these two injuries is seen in very frail patients with a higher number of co-morbidities and poor cognitive function. 1-year mortality in this cohort is higher compared to isolated neck of femur fractures.

Implementing change in management of paediatric forearm fractures at a major trauma centre

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Aim

To re-audit compliance with the BOAST guideline on the early management of paediatric forearm fractures following the introduction of a new SOP in James Cook University Hospital.

In May 2021 the British Orthopaedic Association published the latest standards for trauma for the early management of paediatric forearm fractures. Our previous audit demonstrated poor compliance with these standards, leading to unnecessary admissions, exposure to risks such as general anaesthetics, increased hospital costs and disruption to the child's parents.

Methods

Electronic patient records were searched and refined against the inclusion criteria between 9 May and 30 August. Those with undisplaced fractures, fractures outside the middle third of the radius and ulna and those fractures that would require surgery for any other reason, were excluded. 18 patients were identified.

Results and conclusions

With the introduction of this protocol, compliance with BOAST guidelines has significantly improved, resulting in fewer patients undergoing delayed manipulation under GA. Searching theatre records show just 3 MUA forearm between May and August 2022, compared to 27 in the same period the year before. An improvement in the appropriate use of the protocol was also noted between the start and the end of this cycle with a reduction in inappropriate orthopaedic referrals. This suggests that the use of this protocol is having a positive impact to reduce hospital admissions and unnecessary operations, saving the NHS around £1600 per operative case.

Whilst our results demonstrate we are achieving the primary goal of reducing delayed GA procedures and hospital admissions, issues such as objective pain scoring, documentation of consent and appropriate use of protocol still need to be addressed as they are not yet standard.

Synchronous cerclage fixation and intramedullary nailing for unstable femoral fractures: revisiting the dead bone sandwich

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Aims

Unstable femoral fractures occasionally mandate open reduction to facilitate cortical alignment prior to intramedullary nailing. Although cerclage devices can support fracture reduction, their use when combined with reamed nailing has been traditionally associated with increased concern of impaired fracture healing. Our unit has employed this technique in select cases and anecdotally has not observed complications. The aim of this study was to describe our technique and assess the safety of intramedullary femoral nailing with synchronous open cerclage devices.

Methods

A consecutive series of patients who underwent cerclage and femoral nailing was identified over a seven-year period from a prospectively gathered database. Patient demographics and complications were identified via a retrospective review of patient notes. All patients were a minimum of one-year post-operation at time of analysis.

Results

50 synchronous cases were identified from 765 patients. The mean age was 79 years (SD 13.1). There were 39 subtrochanteric, 3 diaphyseal and 8 distal fractures. 27 cases used cables and 23 wires; of these 19 used more than 1 cerclage device. 7 patients died within 1 year of surgery. 1 case underwent revision surgery following further trauma 8 months after the index procedure. There were no cases of post-operative infection or further surgery for loss of fracture reduction. 23 patients had serial radiological follow-up; the remainder did not represent.

Conclusions

Synchronous intramedullary nailing with cerclage wiring of unstable fracture patterns appears to be a useful technique to maintain fracture reduction without an increased risk of post-operative complications.

ACL Reconstruction and UK Military Service: Time for a Rethink?

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Aim

Current UK Armed Forces policy precludes prospective applicants from joining with an ACL tear or ACL reconstruction. This is due to a perceived risk of; premature osteoarthritis, graft rupture or clinical failure. Perversely; service personnel (who may only have just completed 24 weeks of basic training and are now in 'adult service') who tear and then undergo ACL reconstruction, are subsequently graded P2 MFD.

Methods

To assess the long-term morbidity of modern ACL reconstruction, a formal literature search was undertaken; rather than a PRISMA review, due to the nature of the articles retrieved. All relevant articles found were then reviewed by both authors.

Results

In current practice, there is clear published evidence that a successfully reconstructed ACL rupture without associated significant meniscal or osteochondral defect, has the same likelihood of developing osteoarthritis as that of an uninjured knee after reconstruction, 20 years later. We also outline the USA and Australian entry criteria (acceptance) and discuss why the current UK policy is likely more disadvantageous to female applicants. Prospective applicants should now be considered for service following an ACL rupture with concurrent meniscal tear grade 1 or below or osteochondral defects less than 1 cm who have undergone ACL reconstruction: This following completion of a structured physiotherapy regime for a minimum of 18 months and after a satisfactory review of their stability and functional status by a Serving Service Orthopaedic surgeon. We can confidently state that those with ACL reconstruction without significant concurrent meniscal or articular cartilage damage at time of injury have a low risk of developing OA during their service career.

Conclusion

We therefore recommend that UK policy is rapidly altered to allow these recruits be graded P2 MFD as per the JSP guidance for serving personnel who undergo ACL reconstruction and thus enter adult military service.

Operative Management Of Neck Of Femur And Distal Radius Fractures In The Same Sitting. Does It Affect Clinical Outcome?

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Aims

The aim of the study was: 1) To compare the average length of stay in patients undergoing both distal radius and neck of femur fractures surgeries in one sitting vs only surgical management of neck of femur fractures. 2) To review mortality in this patient cohort.

Methods

A retrospective analysis was carried out in a single-centre University hospital that had concomitant neck of femur fractures with distal radius fractures over 11 year period (January 2009- December 2019). Data collected included patient demographics, ASA grade, fracture configuration, type of surgery whether combined fixation or only neck of femur fixation, post-operative mobility status, length of stay, 30-day and 1-year mortality. Peri-prosthetic fractures, high energy mechanism injury and pathological fractures were excluded from the study. Length of stay for both fracture surgery vs only neck of femur surgery was analysed with student t test.

Results

A total of 168 concomitant neck of femur fractures and distal radius fractures were admitted over 11 years. Out of them, 40 (23.8%) underwent operative management for distal radius fractures along with neck of femur fractures.

128 (76.2%) patients had distal radius fractures managed conservatively. Average length of stay for operatively managed group was 14.5 days compared to 20.5 days for conservatively managed group (p value <0.001). One-year mortality for conservatively treated group was 28.13% compared to operative group which was 5%.

Conclusions

Operative management of neck of femur fractures with distal radius fractures in single sitting not only allows early weight bearing but also reduces the length of stay in hospital and does not increase 1-year mortality.

Ankle fractures in a Major Trauma Centre: can we hope to meet the standards and does it help?

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Aims

We retrospectively audited the management of fractures in a major trauma centre to assess whether we met national guidance (NICE / BOAST).

Methods

We assessed all patients who had surgical treatment of their fractured ankle at our centre between 1st April 2022 and 1st August 2022. The patients were identified via the Pathpoint trauma database. CHARTS (clinical handover and record of treatment system) was used to collect further details about their treatment. The data were analysed via SPSS and Excel.

Results

There were 40 females and 39 males. Open reduction internal fixation (ORIF) was the first operation in 72%; external fixation in 14%. 89% of the patients with closed fractures were treated within 48 hours of admission. All open fractures received their first surgery within 12 hours of admission.

The average length of stay for closed ankle fractures was 13 days; for open fractures, it was 30 days.

According to the BOAST, all fractures should get reduced in the emergency department (ED). In this study, 92% of the fractures were reduced in the ED. This was generally due to lack of appropriate space.

Conclusion

Despite prompt operative intervention patients with open fractures spent longer in hospital. This was due to a number of factors. Open fractures were admitted directly at the time of injury; many closed fractures were discharged home and readmitted for daycase / semi-elective surgery. Open fractures required more operative procedures. Unsurprisingly the frail elderly subsequently struggle with rehabilitation.

The majority of both battle and non-battle injuries are Orthopaedic Trauma, as is the principal physical cause for AEROMED and the commonest reason for medical discharge from the Service.