

SWAN 2018

TRAUMA, CRITICAL CARE & EMERGENCY
SURGERY CONFERENCE

27th & 28th
July 2018



Sheraton on the Park
Sydney, Australia

SWAN 26 CONFERENCE

27th-28th JULY 2018

It is with great pleasure that we welcome you to SWAN 2018 which once again is being held in the Sydney CBD at the magnificent Sheraton on the Park. We have with us this year a superb line up of outstanding international speakers from the United States of America, Canada, South Africa, New Zealand and Norway, as well as an impressive National Faculty.

Last year's 25th Anniversary Conference proved an enormous success with excellent feedback from speakers, delegates and sponsors. The expanded program was very well received and great professional relationships were forged between the many specialties and disciplines. This year's conference promises again to be outstanding with another great mix of lectures, debates, interactive case scenarios, key note speeches and Q and A sessions.

We will traverse the globe with exciting stories from the Vikings and Middle Earth, from the Maple Leaves to a touch of Hollywood glamour and finally passing through the Rockies and the hardships of Iraq. The Hard Talk sessions will challenge dogma and the Horrendoplasties session will give you invaluable tips and tricks to get you out of a nightmare clinical scenario. The first day plenary session keynote address will ask the difficult question "Terror Mass Casualties in Australia – How Prepared Are We?"

On the second day we will examine the Quality of Care you are providing. Another session will be directed at the Nursing challenges of caring for complex and critically ill patients. We will also focus on difficult operative scenarios and critical decision making and at the end of this great meeting; we will entertain you with our signature debates.

We especially look forward to seeing you at SWAN 2018, Australia's leading Trauma, Critical Care and Emergency Surgery Conference, for another fantastic two days of education, entertainment, inspiration and innovation. Don't miss out on this great opportunity to be with International and National leaders in Trauma and Emergency Surgical Care.



Dr Scott D'Amours

Conference Co- Convenor



Dr Valerie Malka

Conference Co-Convenor



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Organising Committee



Scott D'Amours



Valerie Malka



Sonia Gagliardi



Julie Thring



Christie Raju



Exhibitors

GOLD LEVEL



BRONZE LEVEL





OTHER LEVEL



General Information

WIFI Access: WIFI is all complimentary through the function and accommodation rooms. No password is required just click on Sheraton and then connect now.

SWAN 2018 Feedback - go to link emailed to you preconference

Questions and Comments - We want to make sure we address your most important questions and concerns at today's event. There will be microphones setup and we encourage you to stand up and engage with the speakers and other attendees by asking questions.



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CPD/CME Points

This educational activity has been approved for the RACS CPD Program qualifying for 15 points in the Maintenance of Knowledge and Skills Section. For other Colleges please submit your attendance certificate to the relevant CPD/CME department in order to redeem credits/points.



Venue – Sheraton On The Park Hotel 161 Elizabeth Street, Sydney Grand Ballroom, Level 2.

Car Parking – Parking available at Sheraton on the Park Hotel. 161 Elizabeth Street, Sydney. Valet Parking @ \$65.00 per day and self parking @ \$55.00 per day. Please see conference organisers at the registration desk to obtain a discounted parking voucher.

In addition the Domain Car Park is available with entry via St Mary's Road Sydney. Information regarding rates can be found at domaincarpark.com.au/rates-a-times.

Transport- Sheraton On The Park is only a two minute walk from St James station.

Conference Catering - Morning/ afternoon teas as well as lunches will be served in the Hyde Park room located on level 2 and in the foyer space next to the Hyde Park room.

Industry Exhibition - Sponsor exhibits are located in the Hyde Park room and the foyer area just outside the Hyde Park room. Please make sure you complete your exhibition passport in order to be eligible for a prize.

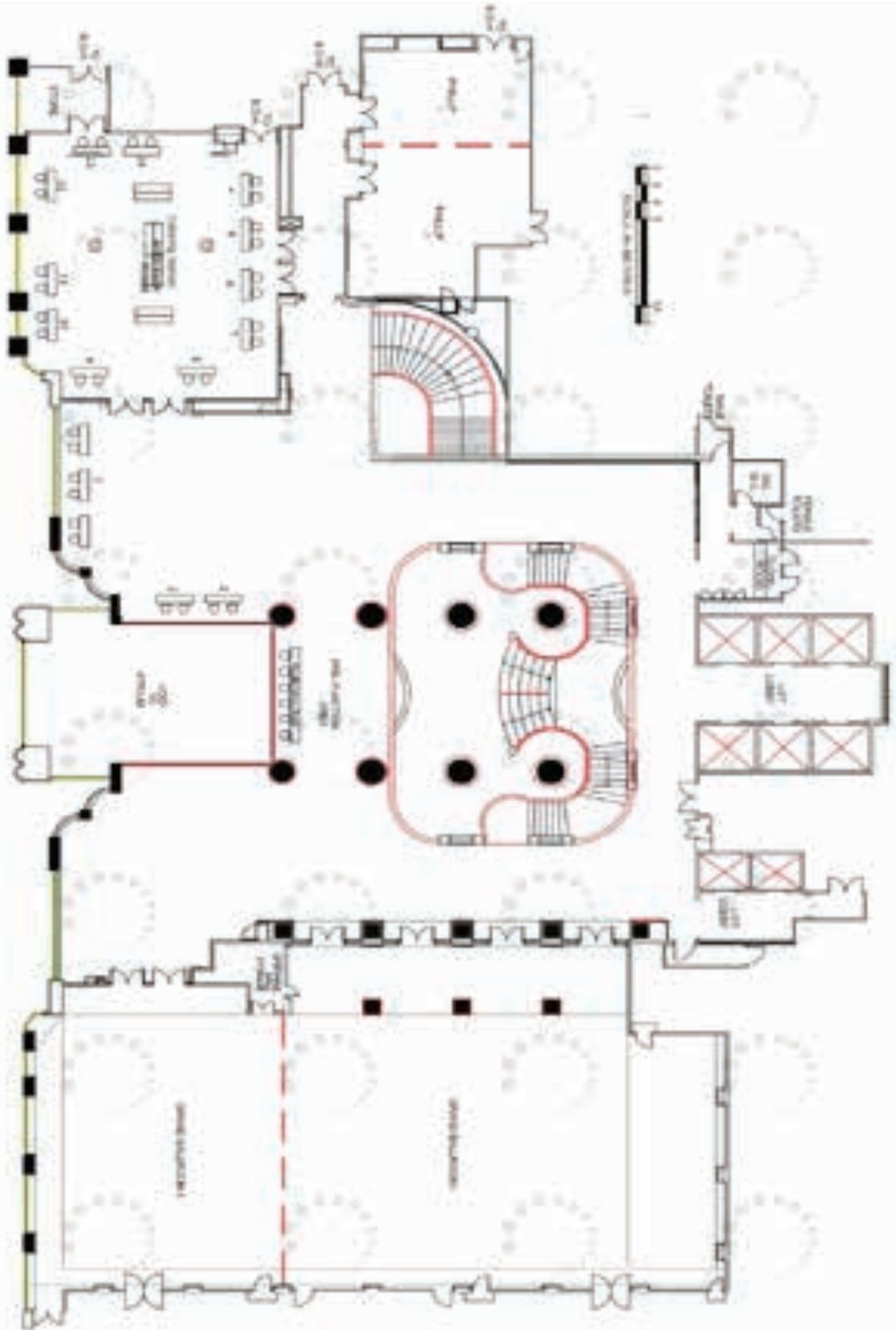
Registration Desk - Desk will be located in the pre function area outside the grand ballroom. Name badges and satchels must be collected prior to entry to the conference. Staff will be available at the registration desk on Friday from 06.30am. On Saturday from 07.30am.

Scientific Program – Plenary sessions will be run in the Grand Ballroom. The Grand Ballroom will be split into Ballroom 1 and 2 for the concurrent sessions.



Grand Ballroom and Industry Exhibition Floor Plan

- | | |
|-----------------------------|-------------------------|
| 1. KCI an Acellby Company | 8. Harmonix Diagnostics |
| 2. DePuy Synthes | 9. Zimmer Biomet |
| 3. Defense Force Recruiting | 10. Medical & Optical |
| 4. GE Healthcare | 11. Sanofi |
| 5. Harmonics | 12. OAC Health |
| 6. PolyNova | 13. Abacus de |
| 7. WL Gore & Associates | 14. Medtronic |



Invited Speakers International Faculty

WALTER BIFFL



Dr Biffl earned his Bachelor of Science degree from Duke University, and Medical Degree from the George Washington University. He performed his surgical training at the University of Colorado Health Sciences Center, including a two-year NIH-sponsored Trauma Research Fellowship. He has served as Chief of the Division of Trauma and Surgical Critical Care at Brown Medical School; Director of Acute Care Surgery at The Queen's Medical Center in Honolulu, Hawaii; and Professor and Associate Director of Surgery at Denver Health Medical Center/University of Colorado. He is currently Medical Director of Trauma and Acute Care Surgery at Scripps Memorial Hospital La Jolla in La Jolla, CA.

MARK BOWYER



Dr. Bowyer is Chief of Trauma and Combat Surgery at the Uniformed Services University (the U.S. military medical school) in Bethesda, MD. He is responsible for the training of current and future military doctors learning to care for those in harm's way. As a faculty member of virtually every named trauma training course, Dr. Bowyer is an international force in trauma education. As one of the principle architects of the ASSET course he has shepherded it's promulgation to over 100 course sites in 15 countries over the last 8 years. His active practice of trauma surgery at one of the busiest trauma centers in the United States, and experiences as "Trauma Czar" in Iraq, provide him with credible real life experiences that he enthusiastically brings to the classroom. Dr. Bowyer has been on the forefront of adopting the use of surgical simulation to teach advanced skills. As an acknowledged expert in the fields of trauma and medical simulation he is in great demand as a speaker having presented in many national and international forums. Dr. Bowyer has published widely on a diverse range of critical care, trauma, and simulation topics.

MITCHELL COHEN



Mitchell Cohen is the Bruce Rockwell Distinguished Chair of Trauma Surgery at Denver Health Medical Center and Professor and Vice Chair of Surgery at the University of Colorado. Clinically he is an active Trauma, General and Acute Care Surgeon as well as a busy Intensivist. Dr. Cohen has an active NIH and DoD funded basic science research lab, which studies coagulation and inflammation perturbations after trauma. Specifically, his lab continues to examine the mechanisms of traumatic coagulopathy and mediators of protein C system activation after trauma. In addition to its basic science focus the Cohen research group transnationally studies similar topics through multiple clinical characterization and interventional trials aimed at elucidating the post trauma coagulation milieu and optimal resuscitation and treatment. Finally, the Cohen group has an active interest in in silico data and model driven approaches to modeling of biological and physiologic systems. In keeping with this his group has done extensive work on the use of Big Data towards improving personalized medicine and outcomes. His work includes multi scale modeling projects ranging from coagulation and endothelial biology to causal inference prediction of patient physiologic state and trajectory. His best job however is as Dad to Ava (11) and husband to Stephanie.



HEIDI HOTZ



Heidi Hotz is the Trauma Program Manager at Cedars-Sinai Medical Center, a Department of Health designated and ACS verified Level I Trauma Center. She is also the Immediate Past President of the Los Angeles Association of Trauma Program Managers as well as the Past President of the American Trauma Society, Past President of the Society of Trauma Nurses (STN), and Past President of the Trauma Managers Association of California. She is the recipient of the STN's Trauma Leadership Award. She has been a survey team member for the ACS Trauma Systems and Evaluation Program. She has been an invited expert panel member for many national trauma initiatives and projects such as the ATS Leadership Forums, the screening & brief intervention for alcohol in trauma initiatives, the Model Trauma

System Plan work group, to name a few. She has lectured on a wide variety of trauma related topics throughout the United States and internationally. She has extensive participation at the Member and Chair levels for local, regional, state and national trauma committees. She was the Chair of the Advanced Trauma Care for Nurses® (ATCN) Committee in Arizona for 6 years. She was then appointed the first Chair of the STN's ATCN National-International Committee and spearheaded the special projects team to attain the ACS COT approval of the program as a collaborative effort with the ATLS Subcommittee. She was a member of the STN Board of Directors for over 8 years in the positions of Director at Large, Treasurer, President Elect and President. She is an author and Faculty Member for the STN's Trauma Outcomes Performance Improvement Course (TOPIC). She has extensive experience in all aspects of trauma including clinical care, program management, trauma data, trauma performance improvement and patient safety, trauma systems, injury prevention, consultant for trauma centers and systems, educational curriculum development, conference and event planning and all trauma related issues across the continuum of care.

JOAKIM JORGENSEN



Jørgen Joakim Jørgensen is a consultant vascular and trauma surgeon at Oslo University Hospital and a lecturer at the University of Oslo. He has trauma experience from both Norway and South Africa, where he did part of his training. His surgical practice includes thoraco-abdominal vascular repair at Rikshospitalet and traumatology at the regional trauma center, Ullevål. Research areas of interests are aortic aneurisms, vascular injuries and mass casualty incidents in which he is finalizing his PhD. He is engaged in several trauma courses including ASSET, DSTC and ATLS and has been the Chair of ATLS Norway since 2012 and the Chair of ATLS Europe since 2017. He has been heavily involved in the promulgation of ATLS in both Europe and Africa as a member of the ATLS

promulgation committee for region XV.

ROSALYND POCHIN



Rosalyn Pochin is a General Surgeon. She went to medical school in the UK and moved to NZ in 1996. She underwent surgical training in NZ and spent a year in Auckland working as trauma fellow for Ian Civil and his unit. This sparked an ongoing interest in trauma and teaching. She became an EMST and CCrISP instructor then director and NZ representative on the exec committee member for both. She is now chair of the Australasian CCrISP committee. She started teaching DSTC in 2014 and has taught on the ED thoracotomy course run at Auckland hospital for ED SMOs. Over the past 2 years she was one of 5 surgeons who made up the Education Reference Group who have written the Operate with Respect module and face to face course. She works in Nelson at the top of the South

Island where she is Head of Department. Nelson is a modest provincial city which sees its fair share of trauma, not least because its population triples over the summer periods with an influx of national and international tourists.



SANDRO RIZOLI



Dr Rizoli received his M.D. and completed a General Surgery residency in Brazil. He then moved to Canada in 1992 where he underwent a second residency in General Surgery followed by fellowships in Trauma and Critical Care. During this time he also completed a PhD at the University of Toronto under the supervision of Dr Ori Rotstein. He received the Royal College Gold Medal in Surgery for the work on hypertonic resuscitation and has over 240 peer-reviewed original publications in medical journals including Journal of Biological Chemistry, Annals of Surgery, JAMA and CMAJ. He was promoted to Full Professor in 20012 and became the Medical Director of the Trauma and Acute Care Surgery Program at St Michael's Hospital in 2013. He has an endowed Chair in Trauma, is the Ex-President of the Trauma Association of Canada and current President of the PanAmerican Trauma Society.

ELMIN STEYN



Professor Elmin Steyn heads the Division of Surgery at the Faculty of Health Sciences of Stellenbosch University and is head of Surgery at Tygerberg Hospital in Cape Town. She trained as a General surgeon and is a certified subspecialist Trauma Surgeon as well as an experienced Transplant surgeon. Previously Elmin was in practice at Christiaan Barnard Memorial and Vincent Pallotti Hospitals in Cape Town, where she set up the Trauma Emergency Centers and established the first private Renal Transplant program in Cape Town. Elmin has served on various professional bodies such as the SA Transplantation Society (past president), the Trauma Society (past president), the Organ Donor Foundation (chair), the Association of Surgeons of SA, and the Surgical Research Society. As international instructor for ATLS, NTMC and DSTC, she has been privileged to train surgeons in 36 countries on 4 continents (as well as a few islands) and has presented papers and keynote presentations at Trauma conferences worldwide. Elmin is co-editor of three editions of the Oxford Handbook of Trauma and has contributed chapters to several textbooks of Trauma Surgery. She served on the Board of the Western Province Blood Transfusion Service, is a current board member of the Health Professions Council of SA and is the recipient of various awards. Elmin is President Elect of the International Association of Trauma Surgery and Intensive Care (IATSIC), affiliated to the International Surgical Society.



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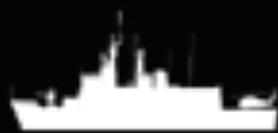
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Invited Speakers National Faculty

ZSOLT BALOGH

Professor Zsolt J. Balogh is a trauma surgeon, the Director of Trauma at the John Hunter Hospital and the Professor of Surgery and Traumatology at the University of Newcastle, NSW, Australia.

CINO BENDINELLI

Dr Cino Bendinelli is an Italian graduate General Surgeon who specializes in Trauma Surgery and Endocrine surgery. He gained extensive trauma surgical experience in war zones such as Afghanistan, Sierra Leone and Cambodia before settling in Australia in 2007. He was a Trauma Fellow at Liverpool Hospital and then appointed Deputy Director of Trauma at John Hunter Hospital in 2008. Dr Bendinelli has a particular interest in traumatic brain injury and chest trauma and has published on Endocrine Surgery and was Endocrine Research Fellow at Brown University, USA.

FRED BETROS

Dr Fred Betros is a general surgeon who has been in consultant practice since 2006 and working within Western Sydney for over 20 years. He has trained extensively in both upper and lower gastrointestinal surgery, with both areas forming a significant proportion of his practice. His area of special interest is optimisation and elective repair of complex abdominal wall reconstruction in the difficult patient, but he also has a large component of his practice that is dedicated to emergency surgical services. He is currently the Head of the Department of General Surgery at Blacktown and Mt Druitt Hospitals since 2016 and is also a current Councilor on AMA (NSW) in a Surgeon Class capacity. He is actively involved in surgical education and has been a co-developer of curriculum content for the current NSW GSA Long Course educational program for our SET program trainees. He was also the inaugural recipient of the GSA “Excellence in Surgical Teaching Award” for NSW and the ACT in 2013. His work at Blacktown and Mt Druitt Hospitals sees him working within a very busy general surgical department that provides services to one of Australia’s largest Local Government Areas, with well recognised population health issues significantly higher than that of many other areas of Sydney and Australia. Consequently, the environment in which he works and particularly, the patient demographics that he encounters, places an important emphasis on good decision making and getting management right the first time.

ERICA CALDWELL

Erica is a registered nurse with three nursing certificates: general, psychiatric and midwifery. She also holds Bachelor of Arts degree with major in Psychology and completed post graduate coursework in Public Health and Clinical Epidemiology. Her broad nursing experience over many years included emergency, aged care, community, occupational health, trauma system involvement and medical retrieval. More recently she gained UK nursing registration and worked in London. From 1995 until 2016 Erica was employed in the Trauma department at Liverpool Hospital. She played a pivotal role in the development of the South Western Sydney Area Health Service Regional Trauma Registry including development of key clinical performance indicators in trauma care delivery. During her 22 years with the Trauma Department, initially as Trauma Registry Data Manager and then as Trauma Clinical Nurse Consultant Erica played an integral role in the development and provision of tertiary Trauma Services and Trauma research projects. She is recognized for her strong activity in service to the hospital and the wider trauma service providers, during the challenging foundation years for the Trauma Department. Erica is co-author for several research papers on trauma and has contributed chapters in several clinical text books. She is recognised within Australia as having superior knowledge and expertise in trauma data management and injury scoring and analysis. Late in 2016 Erica enjoyed a brief retirement from Liverpool Hospital before taking up part time role as Patient Transport Nurse and appreciates more personal time and focus on family.



JOVY CARPIO

Dr Carpio is a General and Trauma Surgeon from the Philippines who is currently the Trauma Fellow at Liverpool Hospital. Dr Carpio is a fellow in the Trauma Department at Liverpool Hospital. She completed 5 years of general surgery training at Philippine General Hospital in 2009 gaining a Diploma with the Philippine Board of surgery in 2010. She worked as the trauma fellow at Liverpool Hospital in 2011 and 2012. Jovy has a passion for rural medicine and surgery working in Darwin for 2 years enjoying cultural challenges. She believes good communication with patients is an integral part of providing holistic surgical treatment. She has presented at conferences and workshops detailing how to do much with little using innovative approaches. Jovy is a keen educator and is an EMST and DSTC instructor. One of her long term goals is to work for an overseas aid organisation once family commitments permit.

JULES CATT

Dr. Jules Catt is an Interventional Radiologist at Liverpool and Prince of Wales Hospitals in Sydney. He is a Fellow of the Royal Australian and New Zealand College of Radiologists and certified by the European Board of Interventional Radiology. He enjoys the full range of interventional practice with particular interest in the field of embolotherapy. Significant areas of work include prostate artery embolisation for the treatment of benign prostatic hyperplasia, helping to develop one of the largest case series in Asia-Pacific. He is a proctor in specialised fields of interventional radiology and along with the IR team at Liverpool Hospital hosts regular educational workshops and conferences.

His training includes a Master's degree in Public Health from Sydney University and Graduate Program in Global Policy and Governance from Duke University. He has an interest in accreditation and national health policy and is a Director and Councilor of the Australian Medical Council and past Faculty Councilor of the Royal Australian and New Zealand College of Radiologists.

JOHN CROZIER

Dr Crozier is a Vascular and Trauma surgeon on staff at Liverpool Hospital. He is the Head of the Vascular Surgery Department Liverpool Hospital and Medical Director of the Liverpool Hospital Vascular Diagnostic service. He has been involved with DSTC teaching since 1996. He is Chair of the National Trauma Committee of the Royal Australasian College of Surgeons. He was appointed Brigadier, Director General Health Reserves - Army, with effect from Jan 2012

KATE DALE

Kate is a Trauma Nurse Practitioner with 21 years of experience in remote area, emergency and trauma nursing. She has been the lead nurse for the Trauma Service at the Gold Coast University Hospital since December 2013. She has a special interest in resuscitative and acute trauma care, EFAST and nurse case management in both hospital and community settings. She has recently established a Trauma Connect Clinic which aims to continue the case management model of nursing post discharge, which has been recognised as a unique aspect of Trauma Care delivery at GCUH. She also holds a position as a Specialist Emergency Nursing Officer Reservist in the Royal Australian Airforce.

SCOTT D'AMOURS

Dr Scott D'Amours is a Trauma Surgeon & Director of Trauma at Liverpool Hospital in Sydney. He is an enthusiastic trauma & surgical educator and senior lecturer in Trauma at the University of New South Wales. Scott is a member of the Royal Australasian College of Surgeons Trauma Committee & is currently the Chairman of DSTC Australasia as well as a member of the International DSTC Committee of IATSIC.



ANDREW ELLIS

Dr Andrew Ellis is an Orthopaedic surgeon, Director of Orthopaedics, Royal North Shore whom operates privately through the NSLHD Centres of Royal North Shore Hospital, North Shore Private Hospital and Ryde Hospital. He is a national board member of the Australian Orthopaedic Association and an examiner for the Royal Australian College of Surgeons, a member of the National Trauma Centre and a member of the Association of Military Surgeons of US and the Western Pacific Orthopaedic Association. Dr Ellis specialises in reconstructive Orthopaedic surgery aimed at restoring function and quality of life to individuals affected by forms of arthritis, acute traumatic injury and illness affecting the musculoskeletal system.

AILENE FITZGERALD

Dr Fitzgerald is a General and Trauma Surgeon and Director of the Shock Trauma Service at Canberra Hospital. She chairs the ACT Trauma Committee, is the regional representative for ACT on the RACS Trauma SubCommittee, a Committee member of the Australasian Trauma Society and Deputy Chair of RACS ACT. She is an active Commander in the Navy Health Reserves having joined the Royal Australian Navy in 1991 as a medical student. She served in a number of establishments and ships and completed a number of deployments prior to transferring to the Reserves in 2000 to pursue surgical training. She remains active in the Navy Health Reserves as the Assistant Professional Liaison Officer for Navy Surgeons, participating regularly in Defence training forums.

MARK FITZGERALD

Professor Fitzgerald is Director of the National Trauma Research Institute and Director of Trauma Services at The Alfred. He achieved Fellowship of the Australasian College for Emergency Medicine in 1987, was awarded an MD for 'Computer Aided Decision Support for Trauma Reception and Resuscitation' from Monash University in 2015 and was a Global Clinical Scholar (Epidemiology and Biostatistics), Harvard Medical School 2014-15. Professor Fitzgerald is an Ambulance Victoria Medical Advisor and a member of the Victorian State Trauma Committee. He has led the establishment of trauma resuscitation and management programs along with Trauma Systems Development in Sri Lanka, India, China, the Philippines, Myanmar and Saudi Arabia. Professor Fitzgerald's research themes include trauma systems improvement, error reduction and standardisation of resuscitation care. He has over 170 publications in peer-review journals as well as 11 book chapters and is a reviewer for multiple medical and surgical journals. Honours awarded to Professor Fitzgerald include the Ambulance Service Medal (ASM) in 2003, the Foundation Medal Australasian College for Emergency Medicine in 2003, Honorary Life Membership of the Neurotrauma Society of India in 2010 and the Gordon Trinca Medal, Royal Australasian College of Surgeons in 2013.

SALLY FORREST-HORDER

Sally has been the Trauma Case Manager at Liverpool since 2003. Sally is an experienced Emergency nurse, having experiencing trauma in rural remote and metropolitan centres since 1999. Her qualifications include Bachelor of Nursing, Graduate Certificate in Emergency and Orthopaedic Nursing, First Line Emergency Care (FLEC trained), Trauma Nursing Core Course, Disaster Training; FAST accredited and is an EMST co-ordinator. Sally's role as Trauma Case Manager is to co-ordinate the care of the trauma patient, from arrival to discharge.

NEVENKA FRANCIS

Nevenka is currently the Liverpool Trauma Area Coordinator having joined the Trauma Department in 2005, prior to this she spent six years working in Liverpool ICU, and two years as the Hospital MET coordinator. Her qualifications include Diploma in Health Sciences, Graduate Certificate in Intensive Care and Masters in Public Health she is also an EMST coordinator. In August 2008 she completed her accreditation to do FAST scans. Her role includes collecting and analysing data as well as reviewing trauma management and outcomes for regional trauma admissions and inter-hospital transfers that come via the Trauma Hotline. She also runs the PARTY Program and has won several awards for her injury prevention initiatives.



ALAN GILES

Dr Alan Giles graduated from UNSW in 1986 and gained his Fellowship in Emergency Medicine in 1995. Since then he has worked mainly in the South West of Sydney as an Emergency Physician at Liverpool Hospital and later Campbelltown Hospital. Presently Dr Giles works as a medical educator in the South West of Sydney and clinician in the Sydney Adventist Hospital. His interests are in medical education, especially Simulation and critical care ultrasound. Happily married for 20+ years he has 2 daughters at university, 2 annoying cats and a long living deaf, blind, aromatic, arthritic dog called Koichi. One day he may finally take good travel photos and speak passable conversational Spanish.

GEOFF HEALY

Dr Geoff Healy is an Anaesthetist at Royal North Shore Hospital. He is also a PreHospital and Retrieval Physician at Sydney HEMS. He is currently the Deputy Medical Manager for the Greater Sydney Region, and is heavily involved in trauma education and clinical governance. He has an extensive background in trauma care both in Australia and the UK, and has worked with many Prehospital Trauma Services including London HEMS, Kent/Surrey Sussex HEM,S and Essex and Herts HEMS. His Anaesthetic interests include Trauma, Neurosurgical and Major Vascular Anaesthesia.

JEREMY HSU

Dr Jeremy Hsu is a general surgeon with subspecialty training in trauma/surgical critical care as well as breast cancer surgery. After completing general surgical training in Sydney, Australia, a trauma/surgical critical care fellowship was completed in Seattle, USA at Harborview Medical Centre/University of Washington. Following this, a breast cancer surgery fellowship was completed at the Westmead Breast Cancer Institute in Sydney, Australia. He currently divides his time at Westmead Hospital between trauma/emergency general surgery and breast cancer surgery. He is the Director of Trauma and holds a clinical academic appointment with the University of Sydney. He is the chair of the New South Wales ITIM (Institute of Trauma and Injury Management) Clinical Review Committee. Dr Hsu was an early adopter of rib fixation within Australia and is responsible for introducing this technique into Westmead Hospital. In addition to other trauma teaching responsibilities (ATLS, ASSET), he also teaches rib fixation regularly at local and national workshops.

MARTIN JARMIN

Dr Jarmin is a Philippine trained general surgeon. His fields of interest are Trauma and Acute Care Surgery. He previously worked as a Clinical Associate in Cardiothoracic Surgery at the Singapore National Heart Centre. Since 2009, he has worked as a War Surgeon for Medecins Sans Frontieres (Doctors Without Borders) and EMERGENCY (Life Support for Civilian War Wounded) as well as ASPEN Medical in different conflict zones and disaster areas around the world. He has completed Trauma Fellowships at Liverpool Hospital in Sydney and John Hunter Hospital in Newcastle NSW. He is currently the Clinical Superintendent for Trauma and Acute Care Surgery at Liverpool Hospital.

LEON LAM

Dr Leon Lam is a Senior Radiologist at Liverpool Hospital where he is the Clinical Supervisor for Emergency and Trauma Radiology. His focus is on acute and critical care imaging with an additional interest in thoracic imaging. He is a Conjoint Clinical Lecturer at the University of Western Sydney and provides post graduate teaching to Radiology, Emergency Medicine and Intensive Care Medicine trainees at Liverpool Hospital. He is considered part of the Trauma Department and is regularly involved directly in the trauma activations and resuscitations.



PAUL LAMBRAKIS

Dr Paul Lambrakis a General Surgeon with a specific interest in Emergency General Surgery. He became the Head of the Acute Surgery Unit at Liverpool Hospital completing a post fellowship year as the hospital's first ASU Fellow in 2013. Prior to this, Paul had completed a year of post fellowship training at Nepean Hospital in Endocrine surgery and had extensive experience in Acute Surgical Units across Sydney through his specialty training. He provides a dedicated emergency surgery service, and is an enthusiastic teacher. He is also a Conjoint Lecturer with the University of New South Wales.

MARY LANGCAKE

Dr Langcake trained as a General Surgeon in Adelaide and completed Post Fellowship training in Upper GI Surgery at Westmead Hospital. She has a major interest in the management of severely injured trauma patients. As a Squadron Leader with the Royal Australian Air Force, she deployed to Afghanistan in 2008 where she dealt with trauma far outside the range of normal civilian practice. This experience, coupled with a passion for improving outcomes for injured patients saw her offered the role of Trauma Director at St George Hospital shortly after her return from military service

RYAN LOONEY

Ryan joined Liverpool Trauma Department in 2017. He graduated from Charles Sturt University in Wagga Wagga in 2005 and completed his graduate year at Wagga Wagga Base Hospital before moving to Sydney to pursue his interest in critical care, resuscitation, and trauma. Ryan worked at Prince of Wales Emergency Department and Sydney Children's Intensive Care Unit before commencing his employment at Liverpool Hospital Emergency Department in 2010. During his time at Liverpool Emergency Department Ryan became a Clinical Nurse Specialist and completed his Masters of Nursing (Advanced Practice) at the University of Newcastle (2012). He also assumed several roles including Clinical Nurse Unit Manager and Clinical Nurse Educator. In addition to his emergency and trauma qualifications Ryan has an interest in disaster management and mass casualty training. He is a MIMMS Instructor and is an AusMAT team member.

VALERIE MALKA

Dr Valerie Malka is a Trauma and General Surgeon at Liverpool Hospital. She was the previous Director of Trauma Services for Westmead Hospital and Sydney West Area Health Service for over a decade. She is an EMST Director and DSTC Instructor with a great passion for trauma and acute care surgery. With special interests in education and quality assurance she has worked extensively in patient safety and the maintenance of ethics in healthcare. Valerie has worked with the International Committee of the Red Cross and the International Rescue Committee and holds a Diploma in International Humanitarian Assistance from Geneva University and a Master's Degree in International Public Health with a major in Humanitarian Law. She also holds a Master's degree in Journalism and works freelance writing medical, health and wellbeing articles.

MARK MIDWINTER

Mark is a general surgeon with subspecialty interest in upper GI / hepatobiliary and pancreatic / Trauma and Acute Care Surgery. He trained in UK in Newcastle, London, Manchester and Oxford. After graduating in medicine (BMedSci Hons, MBBS) he obtained his MD (research) with thesis examining the utility of endoscopic ultrasound in diagnosis and staging of pancreatic cancer. He joined the Royal Navy in 1992 and served both at sea and on land with the Royal Marines seeing active service in the former Yugoslavia, Iraq, Afghanistan and Somalia / Indian Ocean. He was appointed Defence Professor of Surgery working in the UK Defence Medical Services and the University of Birmingham. He moved to Australia with his family and worked as Staff Specialist in General Surgery in Bundaberg before recently moving to Brisbane taking up the position at UQ as Professor Clinical Anatomy. Research interests include trauma and damage control resuscitation; the microcirculation; the endothelium and endothelial glycocalyx; muscle mass and blast injuries.



CHRIS PARTYKA

Chris Partyka works as both a Staff Specialist Emergency Physician at Liverpool Hospital as well as a Prehospital and Retrieval Physician for Greater Sydney Area HEMS (NSW Ambulance). His interests include resuscitation, point of care ultrasound and medical education. Chris is co-founder of the Emergency Medicine Ultrasound Group (EMUGs) and shares his critical care lessons through his FOAM blog '*thebluntdissection*'.

DAVID READ

Dr David Read is a General Surgeon and the Director of Trauma & Burns at the National Critical Care and Trauma Response Centre (NCCTRC) at the Royal Darwin Hospital. He has a very broad based surgical practice but has a particular interest in Trauma and Burns, Surgical Oncology and Paediatrics. As an Army Reservist he has deployed to East Timor, Iraq and Bali. He has also been involved in the RDH response to the Bali bombings and East Timor, Ashmore Reef, and the AUSMAT deployment to the Philippines after Typhoon Haiyan in 2013. An avid teacher, he is an instructor on EMST, EMSB, DTSC and the Surgical & Anesthetic AUSMAT course. He has extensive experience in Indigenous Health and has an interest in the delivery of specialist services to remote Indigenous communities.

SIMON ROBERTSON

Simon Robertson practices intensive care medicine, anaesthesia and retrieval medicine at the Canberra hospital. Simon has been involved in the care of trauma patients since medical school as a volunteer paramedic and firefighter. During the first decade of his career, Simon has been affiliated with the Johannesburg hospital trauma unit and emergency aeromedical services, as a junior medical officer, trainee in anaesthesia and intensive care and as a consultant in intensive care. Paradoxically, Simon immigrated to Australia 10 years ago, partially to avoid trauma, one of his keen clinical interests. He continues to manage multiply injured patients in his daily practice in retrieval, anaesthesia and intensive care. He has presented nationally and internationally on these facets of trauma care

JEFFREY ROSENFELD

Jeffrey Rosenfeld AM, OBE is Foundation Director, Monash Institute of Medical Engineering (MIME); Senior neurosurgeon at the Alfred Hospital; Professor of Surgery, Monash University; Adjunct Professor in Surgery at the F. Edward Hébert School of Medicine, Uniformed Services University of The Health Sciences (USUHS), Bethesda, MD, USA; Adjunct Professor of Surgery, Chinese University of Hong Kong; and Honorary Professor, Department of Surgery, University of Papua New Guinea. His main research interests are traumatic brain injury and bionic vision. Professor Rosenfeld is one of Australia's leading academic neurosurgeons and senior military surgeons and is internationally recognised for his neurotrauma research. He was awarded the King James IV Professorship of Royal College of Surgeons Edinburgh for his pioneering surgery for hypothalamic hamartoma in children. He was the Co-Chief Investigator on the landmark Decompressive Craniectomy Study, the first multicentre randomised controlled trial of this procedure which was published in the New England Journal of Medicine (NEJM) in 2011. He has published over 300 peer reviewed articles, 45 book chapters and 2 books. He has over 9000 citations, and has been awarded \$22 million of competitive grant funding. He is a Principal Investigator within the Monash Bionic Vision Group which aims to develop a bionic vision direct to brain implant with a first-in-human implant in 2018. He has been an invited Visiting Professor in 11 countries and an invited speaker for 12 named orations and 65 international meetings. He is a Major General in the Australian Defence Force (ADF) and was Surgeon General, ADF-Reserves 2009-2011. He is an Honorary Fellow of 3 surgical colleges. He was Pro-Vice Chancellor (Major Projects), Monash University and immediate past Chair, ADF Human Research Ethics Committee. He is a Fellow of the Australian Academy of Health and Medical Sciences, a Fellow of the Australian Academy Technological Sciences and Engineering, and is an International Fellow of the American Association of Neurological Surgeons and the American College of Surgeons.



RYAN RUDOLPH

Dr Ryan Rudolph is a board certified Interventional Radiologist. He is a fellow of the Royal Australian and New Zealand College of Radiologists, a member of the Interventional Radiology Society of Australasia, and holder of the European Board of Interventional Radiology. Dr Rudolph works at Prince of Wales Hospital, Liverpool Hospital and Spectrum, a private radiology practice. He regularly gives presentations at local and national Interventional and Diagnostic Radiology meetings. His particular interests are in vascular imaging and intervention, pain relief and injections, interventional and diagnostic oncology and urology, and radiation safety.

PHIL TRUSKETT

Phil Truskett is a General Surgeon with an interest in Upper GI and HPB Surgery at the Prince of Wales Hospital, Sydney, where he is a senior staff specialist. He has taken an active role in both the Royal Australasian College of Surgeons and the specialty society General Surgeons Australia. He is a past President of General Surgeons Australia. As a College councilor he has served on many College committees. Most recently, he was the Chair of the Board of Surgical Education and Training and then past Censor in Chief. He is the immediate past President of the College of Surgeons. He is the Chair-Elect of the Council of Presidents of Medical Colleges (CPMC). He is Patron of the Australian Indigenous Doctors Association (AIDA). He is an advocate for "closing the gap" health-care initiatives. His major interest is in the provision of Emergency Surgery to our community in our current challenging environment. As a result, he has been involved in the design and assessment of models of care to provide consultant-led timely care. These models of care are now being adopted in Australia and New Zealand. He is a strong advocate of sustainable surgical services, as the provision of patient-centred care in a safe, clinical environment is the benchmark by which we are all judged as professionals and how we should judge one another. It is education in the non-technical skills of surgery which will strengthen our place in the community. This education is a current focus.

WAYNE WALLACE

Wayne is an Intensive Care Paramedic with NSW Ambulance and has previously worked for the Victoria Police and undertaken operational service with the Australian Army. Wayne has experience in providing emergency Out of Hospital Care in regions such as rural NSW, including snowfields, and metropolitan areas. With an interest in paramedic research and development, Wayne is actively involved in mentoring paramedics and takes part in providing training for future Intensive Care Paramedics for NSW Ambulance. Wayne is currently stationed in the South West Sector of Sydney, which attracts a high volume of medical and trauma cases, and will be part of the new Paramedic Response Network at Bankstown.

MARTIN WULLSCHLEGER

Professor Martin Wullschleger is appointed as the Medical Director of Trauma Service at the Gold Coast University Hospital. He is a Swiss and Australian qualified General and Trauma Surgeon, he worked as a consultant trauma surgeon in an Alpine Trauma Centre in Switzerland, before he moved with his family to Brisbane in 2005. He completed a PhD in fracture healing at Queensland University of Technology in 2010, while also expanding his clinical experience in Trauma management at Princess Alexandra Hospital and Royal Brisbane & Women's Hospital. Apart from his clinical commitment as acute care and trauma surgeon, he is also a passionate leader in academia, in particular in the field of trauma. He is the Professor of Traumatology with Griffith University, and involved in various educational activities including teaching as senior instructor on EMST and DSTC courses. His research interests are in trauma system development, multi-trauma patient management, thoracic and pelvic trauma, and fracture and soft tissue healing. Martin Wullschleger is Chair of the QLD State-wide Trauma Clinical Network of the Clinical Excellence Division of Queensland Health, and a member of several RACS Trauma committees (National and QLD Trauma committee), DSTC and Verification subcommittees).





SWAN 2018 SCIENTIFIC PROGRAM

Friday 27th July 2018

07:30 - 07:45	WELCOME	
07:45 – 10:00	SESSION 1: TALES FROM....	
	PLENARY SESSION - Grand Ballroom	Chair: Scott D'Amours
07:45 – 07:55	California Dreaming	Walt Biffl
07:55 – 08:05	Iraqi Trauma Czar	Mark Bowyer
08:05 – 08:15	American Rockies	Mitch Cohen
08:15 – 08:25	Cape Fear	Elmin Steyn
08:25 – 08:35	The Vikings	Joakim Jorgensen
08:35 – 08:45	Land of the Maple Leaf	Sandro Rizoli
08:45 – 08:55	Regional Kiwis	Rosalynd Pochin
08:55 – 09:05	Hollywood	Heidi Hotz
09:05 – 10:00	CASE SCENARIO	Martin Jarmin
	Panel: C.Partyka, H.Hotz, S.Robertson, M.Bowyer, E.Stein, J.Catt	
10:00 – 10:30	<i>MORNING TEA</i>	
10:30 – 12:30	SESSION 2A: TRAUMA HARD TALK	
	CONCURRENT SESSION - Ballroom 1	Chair: Valerie Malka
10:30 – 10:45	Improving Outcomes in Geriatric Trauma	Walt Biffl
10:45 – 11:00	New Frontiers in Trauma Coagulopathy	Mitch Cohen
11:00 – 11:15	Paediatric and Pregnancy Imaging – To Do or Not to Do?	Rosalynd Pochin
11:15 – 11:30	Blunt Solid Organ Injury – VTE Prophylaxis and Mobility	Sandro Rizoli
11:30 – 11:45	Alcohol and Trauma – The Two Don't Mix	John Crozier
11:45 – 12:00	Question Time with the Panel	
10:30 – 12:30	SESSION 2B: FREE PAPERS	
	CONCURRENT SESSION - Ballroom 2	Chair: M.Fitzgerald/M. Langcake
10.30 – 10.42	Review of Geriatric Patients Undergoing Emergency Laparotomy	Daniel Zardawi
10.42 – 10.54	Anti – Microbial Use in Emergency Appendicectomy	Da Wei Thong
10.54 – 11.06	Development of a Simplified Trauma Mortality Score	Tan Jin Huei
11.06 – 11.18	Rib Fracture Management in an Elderly Population	James Laurent
11.18 – 11.30	Fibrinogen Early In Severe Trauma Study (FEISTY)	Elizabeth Wake
11.30 – 11.42	Predictors of Mortality in Motorcycle Crashes	Henry Tan Chor Lip



11.42 – 11.54	Diagnostic Validity of Near Infrared Spectroscopy Device in Closed Head Injury in a Philippine Trauma Centre	Brent Viray
11.54 – 12.06	A Prediction Model for Fascial Closure in the Open Abdomen	Adam Cristaudo
12.06 – 12.18	Chest Tube Complications in a Major Trauma Centre	Jovy Carpio
12.18 – 12.30	Chest Trauma on the Gold Coast	Pranav Sharma
12:30 – 13:30	<i>LUNCH</i>	
13:30 – 15:00	SESSION 3A: PREHOSPITAL / EMERGENCY ROOM CONCURRENT SESSION - Ballroom 1	Chair: Ryan Looney
13:30 – 13:45	Collars and Spine Boards – Fact or Fiction?	Jeff Rosenfeld
13:45 – 14:00	Prehospital Rapid Sequence Intubation	Mark Fitzgerald
14:00 – 14:15	Tourniquets in the ED – What Now?	Martin Wullschleger
14:15 – 14:30	ELVIS is in the Building	Chris Partyka
14:30 – 14:45	What's New in Prehospital Care	Geoff Healy
14:45 – 15:00	Question Time with the Panel	
13:30 – 15:00	SESSION 3B: HORRENDOPLASTIES – TRICKS OF THE TRADE CONCURRENT SESSION - Ballroom 2	Chair: David Read
13:30 – 13:45	Severe Necrotizing Soft Tissue Infections	Paul Lambrakis
13:45 – 14:00	Non-resolving SBO in the Irradiated Patient	Rosalynd Pochin
14:00 – 14:15	Nightmare Gallbladders	Phil Truskett
14:15 – 14:30	Pancreatitis and Pancreatic Necrosis	Mary Langcake
14:30 – 14:45	Traumatic Abdominal Wall Disruptions	Mark Bowyer
14:45 – 15:00	Question Time with the Panel	
15:00 – 15:30	<i>AFTERNOON TEA</i>	
15:30 – 17:00	SESSION 4: PLENARY SESSION - Grand Ballroom	Chair: Valerie Malka
15:30 – 16:00	Maria Seger Keynote Address	
	Terror Mass Casualties in Australia – How Prepared Are We?	John Crozier
16:00 – 16:10	Australian Defence Force – A Job Like No Other	
16:10 – 16:55	CASE SCENARIO Panel: W.Wallace, K.Dale, R.Rudolph, J.Jorgensen, S.Rizoli, S.Robertson	Jovy Carpio
16:55 – 17:00	<i>CLOSE FIRST DAY</i>	



Saturday 28th July 2018

08:30 – 10:00	SESSION 1: IS YOUR SERVICE UP TO SCRATCH?	Chair: Mary Langcake
	PLENARY SESSION - Grand Ballroom	
08:30 – 08:40	Trauma Verification – Important or Impotent ?	Zsolt Balogh
08:40 – 08:50	Morbidity & Mortality – Closing the Loop	Elmin Steyn
08:50 – 09:00	Data – Too Much or Useless?	Heidi Hotz
09:00 – 09:10	ASU Models and Outcomes	Walt Biffi
09:10 – 09:20	Trauma Connect Clinic	Kate Dale
09:20 – 10:00	Extraordinary Cave Rescues and Retrievals	Richard Harris
10:00 – 10:30	MORNING TEA	
10:30 – 12:00	SESSION 2A: CRITICAL DECISION MAKING	Chair: Paul Lambrakis
	CONCURRENT SESSION - Ballroom 1	
10:30 – 10:45	Abdominal Pain in a Pregnant Patient	Ailene Fitzgerald
10:45 – 11:00	Severe Diverticulitis	Mark Midwinter
11:00 – 11:15	Closing the Open Abdomen	Walt Biffi
11:15 – 11:30	Anaesthesia for the High Risk Patient	Simon Robertson
11:30 – 11:45	Large Bowel Obstruction	Fred Betros
11:45 – 12:00	Question Time with the Panel	
10:30 – 12:00	SESSION 2B: TRAUMA NURSING FORUM	Chair: Nevenka Francis
	CONCURRENT SESSION - Ballroom 2	
10:30 – 10:45	Career Pathways in Trauma Nursing	Kate Dale
10:45 – 11:00	Front-line Support in Decision Making	Sally Forrest-Holder
11:00 – 11:15	Trauma Outcomes	Heidi Hotz
11:15 – 11:30	Building Effective Trauma Resuscitation Teams	Ryan Looney
11:30 – 11:45	Compassion Fatigue	Erica Caldwell
11:45 – 12:00	Question Time with the Panel	
12:00 – 13:00	LUNCH	



13:00 – 15:00	SESSION 3A: TRAUMA SURGERY	Chair: Martin Jarmin
	CONCURRENT SESSION - Ballroom 1	
13:00 – 13:15	To Fix or Not To Fix – Clavicle, Scapular, Humerus	Andrew Ellis
13:15 – 13:30	Open vs Endovascular – Horses for Courses	Joakim Jorgensen
13:30 – 13:45	Exsanguinating Liver Injury – Plan A,B,C...	Elmin Steyn
13:45 – 14:00	Rib Fracture Fixation – Tips and Tricks	Jeremy Hsu
14:00 – 14:15	Neck Exploration Made Easy	Cino Bendinelli
14:15 – 14:30	Management of Rectal Injuries	David Read
14:30 - 15:00	Question Time with the Panel	
13:00 – 15:00	SESSION 3B: CRITICAL CARE COMPLEXITIES	Chair: Alan Giles
	CONCURRENT SESSION - Ballroom 2	
13:00 – 13:15	Neuroprotection – What’s New and What Works	Jeff Rosenfeld
13:15 – 13:30	DVT Prophylaxis – What’s New?	Mitch Cohen
13:30 – 13:45	Early Prediction of Outcome In Severe TBI	Sandro Rizoli
13:45 – 14:00	Intensive Care - To Whom Do These Patients Belong?	Mark Midwinter
14:00 – 14:15	Interventional Radiology – No Boundaries?	Jules Catt
14:15 – 14:30	Blunt Cardiac Injury – Diagnostic Challenge	Simon Robertson
14:30 - 15:00	Question Time with the Panel	
15:00 – 15:30	AFTERNOON TEA	
15:30 – 16:45	SESSION 4: GREAT DEBATES & CASE SCENARIO	Chair: John Crozier
	PLENARY SESSION - Grand Ballroom	
15:30 –16:00	CASE SCENARIO	Martin Jarmin
	Panel: W. Wallace, S. Forrest-Holder, L. Lam, M. Cohen, C. Bendinelli	
16:00 - 16:20	GREAT DEBATE	
	ED Physicians Should Be in Charge of Disaster Planning	
	For: M. Fitzgerald Against: D. Read	
16:20 - 16:40	GREAT DEBATE	
	Australia’s Gun Laws Are the Solution for America	
	For: A. Giles Against: M. Bowyer	
16.40 - 16.45	Prizes and Closing Remarks	



CALIFORNIA DREAMING

Walt Biffi

From ocean to mountains, wilderness to sprawling urban areas, California has it all. And the trauma reflects it. Busy highways are filled with unhelmeted motorcyclists; surface roads are shared with bicyclists. And sometimes they crash. One (large) segment of the population is aging and active, while another (small) segment continues to join gangs. People climb- and they fall. They fly- and they crash. They shoot and they stab. And tourists come in droves- to wine country, the beach, the big cities, and the National parks. California is a state with all kinds of variety, and the trauma reflects it. Fortunately, trauma systems have been functional for many years, and the trauma care is outstanding.

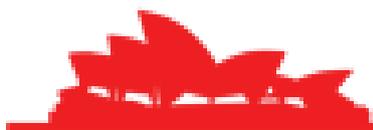
IRAQI TRAUMA CZAR

Mark Bowyer

AMERICAN ROCKIES

Mitch Cohen

Denver Health is an ACS Verified Level 1 Trauma Center with a legendary reputation for care of the injured patient. Since opening in 1860 (our first patient of any kind was a gunshot wound from a duel) Denver Health has been a pioneer in the care of the trauma patient. Recently re-verified by the American College of Surgeons we have one of the highest survival rates for the most severe trauma. In addition to a long history of quality clinical care the legacy of academic achievement is similarly legendary. Over 40+ years much of the seminal literature, the textbook and currently the journal in our field (Journal of Trauma) emanate from Denver Health. This talk will focus on the history as well as current and future of care at Denver Health as a conduit to discuss and learn about improvements of care of the injured and shocked patient.



CAPE FEAR

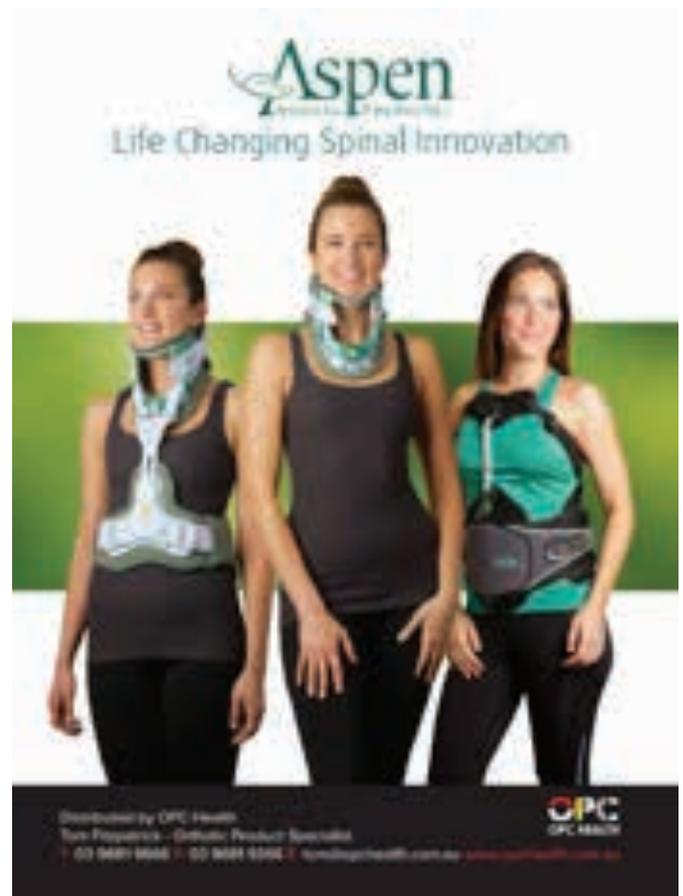
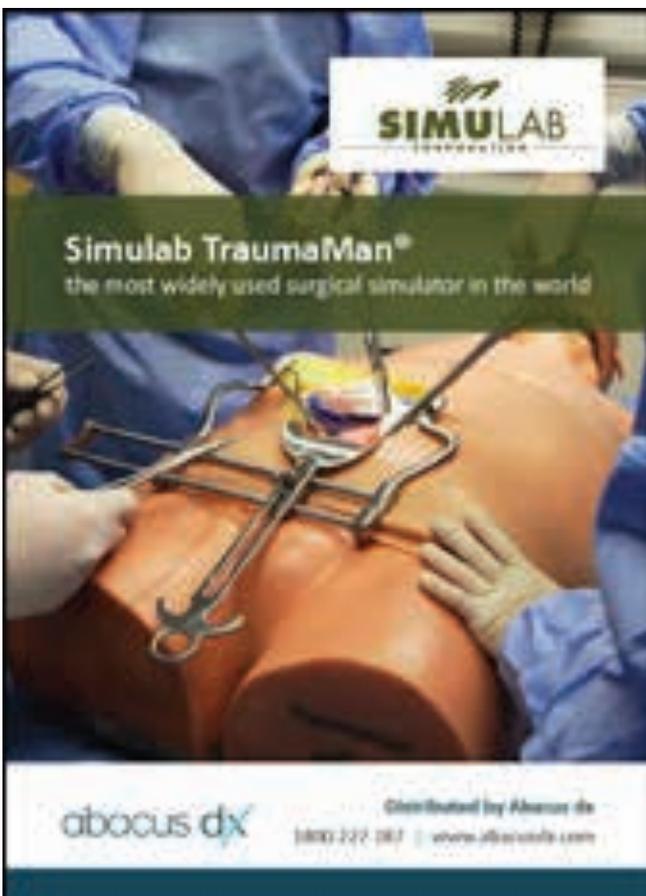
Elmin Steyn

Cape Town is a complex, multicultural city with a fascinating history that owes its *diversity* to the culture amalgamation of the original hunter-gatherer Koi-San people, Dutch settlers, Malay slaves, English colonisers and migrating African tribes. Located at the Southern part of the African continent, it is a coastal city with a mountain range right in the middle. The city is known for its harbour, for its picturesque natural setting in the Cape Floristic Region, and for landmarks such as Table Mountain and Cape Point. Tourists and locals enjoy the beaches, restaurants, wineries and spectacular outdoor pursuits offered by a coastal African city. Cape Town has an official population of 4.4 million people, but, as it is also a major destination for many less privileged tourists, there may be more. Undocumented migrants and refugees from all over Africa, swell the ranks of the estimated 8000 homeless people in the city center, or desperately seek shelter in makeshift shacks in informal settlements on the outskirts of the city.

Centuries of colonization, oppression, political and spatial inequality have created a society with a Gini coefficient of more than 6% - one of the highest in the world.

In 2014, Cape Town was named the best place in the world to visit by both *The New York Times* and *The Daily Telegraph*. In 2017, Cape Town moved up the rankings of a less illustrious list: it was ranked number 15 on the list of the most violent cities in the world. The murder rate of 62.3/100 000 inhabitants represents a 40% increase in the past decade. The vast majority of murders occur in a few notorious suburbs and involve a very specific high risk demography.

The causes, consequences, patterns and perpetrators of crime and violence in the dark underworld of Cape Town will be revealed.



Norway is a fairly peaceful country with approximately 5.3 million inhabitants, densely populated near major cities but sparsely in rural areas, along the coastline and in the north. Fjords, mountains and weather conditions makes national trauma care a challenge. The country is divided in 4 health regions with one trauma centre in each and a total of 35 acute care hospitals with trauma receiving capabilities. Long distances result in extensive air and ground ambulance services and a National Trauma plan describing all aspects of a challenging trauma system (published in 2007).

Oslo University Hospital Ullevaal (OUH-U) is located in central Oslo and is the only equivalent to a Level I trauma centre in Norway. OUH-U covers the south-eastern health region with 3,1 million inhabitants. Consistently, 35-40% of the 2000 annually admitted patients requiring trauma team activation have an Injury Severity Score > 15 and approximately 10% are from penetrating trauma.

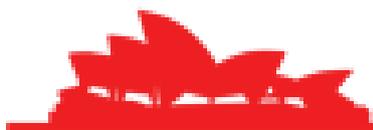
A dedicated trauma service was implemented in 2005 and as published by Groven et al in 2011, has had a major impact on survival for the critically injured patients. (1) Today the Department of Traumatology consists of 10 mostly part time surgeons covering consultant calls 24/7, 2 part time anesthetists and 7 coordinators.

The twin terrorist attack in 2011 was the ultimate test for the trauma service in Oslo. The two consecutive attacks consisting of a 950kg bomb in the governmental quarter and a shooting spree at a political youth camp resulted in 31 severely injured patients admitted at the trauma center. (2) Several challenges were encountered including treating multiple patients with injuries caused by fragmenting ammunition, with only one death due to a fatal head injury. (3)

A new ER was finalized in 2014 consisting of 3 trauma bays, a 256 slice CT scanner and a trauma dedicated Artis Zeego hybrid operating theatre. Although capable of advanced trauma surgical strategies, a recent publication from our institution indicates that optimized resuscitation protocols was one of the key elements for improved outcome after severe pelvic injuries. (4)

Reducing on-scene time, minimizing time to definitive care, aggressive resuscitation and ensuring optimal care, is still the main goal in trauma care in Norway.

1. Groven S, Eken T, Skaga NO, Roise O, Næss PA, Gaarder C. Long-lasting performance improvement after formalization of a dedicated trauma service. *J Trauma*. 2011 Feb 28;70(3):569–74.
2. Gaarder C, Jørgensen JJ, Kolstadbraaten KM, Isaksen KS, Skattum J, Rimstad R, et al. The twin terrorist attacks in Norway on July 22, 2011: the trauma center response. *J Trauma Acute Care Surg*. 2012 Jul;73(1):269–75.
3. Jørgensen JJ, Naess PA, Gaarder C. Injuries caused by fragmenting rifle ammunition. *Injury*. Elsevier Ltd; 2016 Sep 1;47(9):1951–4.
4. Gaski IA, Barckman J, Naess PA, Skaga NO, Madsen JE, Kløw N-E, et al. Reduced need for extraperitoneal pelvic packing for severe pelvic fractures is associated with improved resuscitation strategies. *J Trauma Acute Care Surg*. 2016 Oct;81(4):644–51.



REGIONAL KIWIS

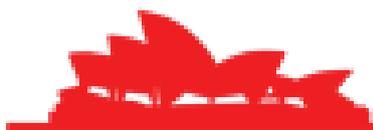
Rosalynd Pochin

New Zealand is in the southwestern most part of Oceania. It is a remote land, lying more than 1,600 km southeast of its nearest large neighbour, Australia. In the last census we had a population of 4.8 million.

Although there are similarities between the two countries, NZ trauma surgeons face quite different challenges to their Australian counterparts. We do not face the vast geographical distances that Australia has to grapple with; however, we have to contend with inclement weather, vast mountain ranges and a treacherous body of water separating our two islands. This means our air and road transfer processes have to contend with frequent weather disruption. We do not tend to have one large quaternary hospital per region. Instead we have a patchwork of differing size hospitals with minimal telemedicine capabilities. Our trauma systems are also relatively immature in their application nationwide. Injury in Australia and New Zealand is a leading cause of mortality, hospitalised morbidity and long-term disability. Our annual national incidence rate for major trauma is 35.5 per 100,000 population. In New Zealand on a population basis, injury is the fourth leading cause of death and the leading cause of potential years of life lost. There is significant variation by region. Patients aged 15-29 years and 45-59 years account for 50% of all major trauma. We also face a significant ethnic variation in trauma rates with our indigenous Maori population having a rate of 52/100,000 compared to 31/100,000 for non-Maori. Our main mechanism of injury for trauma admission is road traffic crashes (52%). However our main cause of mortality is falls (46%), followed by road traffic crash (29%). We have relatively low penetrating trauma rates that have been constant for more than a decade at 9%. The New Zealand trauma experience leads to unique challenges in trauma delivery and means that not all international trauma data is relevant to the specific challenges that we face.

References

1. New Zealand Major Trauma Registry & National Clinical Network Annual Report 2016-2017
2. NZ statistics www.stats.govt.nz
3. Traumatic injury in Australia and New Zealand. Kate Curtis et al Australasian Emergency Nursing Journal (2012) 15, 45—54
4. Alcohol and Drugs. Ministry of Transport publications. NZ Government. NZ Stats 2017
5. Fleet Statistics 2017. Ministry of Transport publications. NZ Government. NZ Stats 2017



Trauma patient care in Hollywood could cause one to conjure up images of scandalous celebrity misadventures, or unfortunate injuries sustained while filming action movies. In truth, trauma in Hollywood is really about trauma in Los Angeles supported by a system of dedicated Level I and Level II designated-verified trauma hospitals providing optimal patient care to the citizens in our communities. Hollywood is a neighborhood located in central Los Angeles and is well known world-wide as a hub for the film industry and historic movie studios. Much of what happens in “Hollywood” overshadows the day-to-day hustle and bustle of a large urban city of approximately 4 million residents.

The Los Angeles County trauma system was formed in 1983. Initially, there were 22 hospitals participating as either a level I or level II center. This number of centers was unusually high for a trauma system, and quickly “rightsized” shortly after 1983 with some hospitals dropping out of the trauma system. Today, we have 15 participating centers: 4 Level I’s, 1 Level I pediatric trauma center, and 10 level II’s. These 15 centers serve a population of greater than 40 million within the County not counting the influx of tourists.

The Department of Health-EMS Agency has oversight responsibility to ensure adherence to State Law (trauma regulations). All 15 trauma hospitals are required to go through two accreditation type surveys. The first is the site survey by the American College of Surgeons. This survey is considered the most rigorous and when successful, the highest honor attainable for a trauma hospital. The second is the regulatory survey completed by the DHS-EMS Agency to ensure all State regulations and legal requirements are met.

As a trauma system, 82% of our trauma patients have sustained blunt mechanisms of injury and 18% have sustained a penetrating mechanism (LA County Department of Health EMS Agency, 2017). As a trauma system, the top mechanism of injury are falls. Known for high crime rates, Los Angeles experienced a downward trend in homicides and gun violence in 2017 believed to be related to an increase in community prevention efforts (Chang, 2017). Trauma patients transported to trauma centers within LA county reached over 28,000 in 2016 (Los Angeles County EMS Agency, 2017).

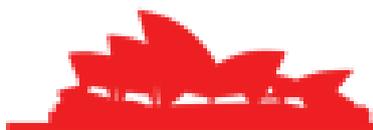
Yes, there are incidents that involve celebrities, people that work in the movie industry, and other incidents that make headline news. Truth be told, all 15 trauma centers are here to serve our communities with state of the art trauma care, no matter who you are or what you do! The true image is one of a mature trauma system with dedicated trauma centers providing optimal care for the injured.

References

Chang, C. (2017, December 30). *In Los Angeles, homicides are down, but violent crime is up for the fourth year in a row*. Retrieved July 6, 2018, from Los Angeles Times: <http://www.latimes.com/local/lanow/la-me-lapd-crime-stats-20171230-story.html#>

LA County Department of Health EMS Agency. (2017). *Trauma System Quarterly Report*. Los Angeles: LA County Department of Health EMS Agency.

Los Angeles County EMS Agency. (2017). *Reports*. Retrieved July 6, 2018, from Health Services, Los Angeles County: http://file.lacounty.gov/SDSInter/dhs/1030238_2017EMSAnnualDataReport08-31-17.pdf



IMPROVING OUTCOMES IN GERIATRIC TRAUMA

Walt Biffl

The trauma population is aging all over the world. A large body of literature has documented the inferior outcomes experienced by elderly (age 65 and older) trauma patients, as compared with younger adults. Following virtually every type of injury, the elderly suffer higher mortality and/or greater morbidity, and are less able to return home and to baseline functional status. This is primarily related to reduced physiologic reserve and a greater burden of premorbid medical conditions and frailty.

Triage of elderly patients to trauma centers has been recommended to improve outcomes, and age is incorporated into prehospital triage guidelines. Within trauma centers, criteria for trauma team activation are often modified based on patient age. Interdisciplinary care and specialized units for elderly patients may improve outcomes. Special considerations call for alternative management strategies in older patients. Traumatic brain injury may be complicated by preinjury anticoagulation therapy. Immobilization of the cervical spine may be associated with compromised pulmonary function and aspiration. The ability to tolerate rib fractures is severely compromised and thus more aggressive pain management and pulmonary toilet are critical to survival. Minor pelvic fractures may be associated with major hemorrhage. It must be noted that sometimes the best outcome is to avoid prolonged suffering. Difficult conversations and a patient-centered approach are mandatory.

References

1. Kozar RA, Arbabi S, Stein DM, et al. Injury in the aged: Geriatric trauma care at the crossroads. *J Trauma Acute Care Surg* 2015; 78:1197.
2. Stein DM, Kozar RA, Livingston DH, et al. Geriatric traumatic brain injury- What we know and what we don't. *J Trauma Acute Care Surg* Epub 2018. DOI: 10.1097/TA.0000000000001910
3. Maerz LL, Mosenthal AC, Miller RS, et al. Futility and the acute care surgeon. *J Trauma Acute Care Surg* 2015; 78:1216.

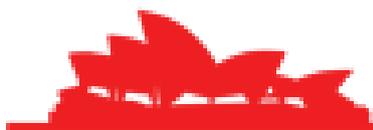
NEW FRONTIERS IN TRAUMA COAGULOPATHY

Mitch Cohen

Acute Traumatic Coagulopathy defined as an impaired hypocoagulable state occurs in approximately 30% of severely injured patients. This hypocoagulable state reflects an endogenous biological response after severe injury and shock and is separate from iatrogenic Coagulopathy (IC) which occurs as a result of resuscitative conduct. A large body of work has characterized the clinical drivers and biological mechanisms of ATC. Clinical drivers include a combination of severe tissue injury and tissue hypoperfusion (shock). Mechanisms of ATC which have been identified as drivers of this coagulation perturbations include activation of protein C, platelet dysfunction and fibrinolysis. In keeping with the emergent understanding of the drivers and mechanisms of traumatic coagulopathy the trauma community has posited multiple changes in resuscitation protocols to address ATC. Finally, we understand that ATC and IC are composed of multiple overlapping and dynamic phenotypes. A 'one size fits all' diagnosis and treatment is therefore inadequate to address this physiology and biology. Fortunately, rapid data measurement and collection, biomarker assay and advances in computation allow for a systems biology, precision medicine approach to diagnosis and treatment of this biology thereby improving outcome and saving lives. A comprehensive discussion of the history, biology and suggestions for the future of the science and care will be discussed during this talk.

References:

1. Cohen MJ. Translational approaches to coagulopathy after trauma: Towards targeted treatment. *PLoS Med*. 2017 Jul 25; 14(7). PMID: 28742833
2. Menezes AA, Vilardi RF, Arkin AP, Cohen MJ. Target clinical control of trauma patient coagulation through a thrombin dynamics model. *Sci Transl Med*. 2017 Jan 4; 9(371). PMID: 28053156
3. Cohen MJ, Christie SA. New understandings of post injury coagulation and resuscitation. *Int J Surg*. 2016 Sep; 33(Pt B): 242-245. PMID: 27212591
4. Kutcher ME, Howard BM, Sperry JL, Hubbard AE, Decker AL, Cuschieri J, Minei JP, Moore EE, Brownstein BH, Maier RV, Cohen MJ. Evolving beyond the vicious triad: Differential mediation of traumatic coagulopathy by injury, shock, and resuscitation. *J Trauma Acute Care Surg*. 2015 Mar; 78(3):516-23. PMID 2



PAEDIATRIC AND PREGNANCY IMAGING – TO DO OR NOT TO DO? Rosalyn Pochin

In NZ, Australia, USA and UK trauma is the leading cause of non-obstetric maternal death. Over 50% of this trauma is due to road traffic crashes and the rest due to assault or suicide. Clinicians concerns regarding radiation risks to the fetus have been documented to leading to failure to adhere to evidence-based guidelines for trauma imaging in pregnancy. This is despite guidelines having carefully balanced the risks of radiation against the risks of a missed injury. In an emergency, optimal resuscitation, imaging and treatment of the mother will ensure the optimal chance of fetal survival. Fetal outcome depends on injury severity and mechanism

Radiological assessment of a pregnant patient with whole body CT (WBCT) and full trauma views results in an estimated cumulative 50mGy of radiation to the fetus and this leads to an increased risk of 0.3% of childhood malignancy. This is a small risk when compared with an 80% mortality of the fetus if its mother becomes shocked. Guidelines are written with full evaluation of the evidence and risks and should be adhered to.

Children are a different group entirely. There is No safe radiation dose. This is because they have developing and maturing tissues which are more radiosensitive with a cumulative radiation risk over lifetime and a longer lifetime in which to express increased relative risk. They are not small adults and require us to think in a different way to our formulaic approach to adult trauma. This is especially true of CT imaging of the neck which should not occur automatically when scanning the head. Unlike adults and obstetric patients abdominal ultrasound has not been found to be as useful in children with a false negative of up to 45%.

There are a number of techniques that can be utilised to reduce the radiation dose. Key points are to adjust the dosing for size, only scanning the indicated area and using single phase if possible.

References

1. The Royal College of Radiologists. Paediatric Trauma Protocols. Royal College of Radiologists London 2014.
2. OBSTETRIC TRAUMA GUIDELINE Victoria State Trauma System 2014
3. National institute for health and care excellence. Using NICE guidance and quality standards to improve practice.
4. 2008 American College of Radiology practice guidelines for imaging pregnant or potentially pregnant patients
5. Guidelines for the Management of a Pregnant Trauma Patient. Maternal Fetal Medicine Committee JOCG June 2015:Vol 37,Iss 6,553–571
6. Radiation fear: Impact on compliance with trauma imaging guidelines in the pregnant patient. Shakerian R et al. J journal of Trauma Acute Care Surg. 2015 Jan;78 (1):88-93
7. Performance of Abdominal Ultrasonography in Paediatric Trauma: a meta-analysis_Holmes et al. Journal of Paediatric Surgery Sept 2007: Vol 42

BLUNT SOLID ORGAN INJURY – VTE PROPHYLAXIS AND MOBILITY Sandro Rizoli





Objective/Intro:

Geriatric patients account for about half of all emergency laparotomies and have high rates of mortality. The latest National Emergency Laparotomy Audit (NELA) performed in the United Kingdom found 19% of geriatric patients had geriatric physician review post operatively and recommended assessment by specialist geriatric physicians for all patients aged 70 and older.(1)

Methods:

A retrospective audit was performed on patients undergoing emergency laparotomy in 4 urban hospitals in the Hunter New England Local Health District (HNELHD) for 2 complete years (2016-2017). A complete NELA dataset was entered into the REDcap software. This was then filtered to identify geriatric patients (aged 70 and older), to identify those patients who had been reviewed as inpatients by specialist geriatric physicians post operatively and to report 30 day mortality. These results were analysed using Fisher's exact test.

Results:

From January 2016 to December 2017, 568 patients underwent emergency laparotomy. Geriatric patients contributed to 51.1% of patients and 10.8% had specialist geriatric physician review post operatively. The 30 day mortality for geriatric patients and non-geriatric patients was 14.1% and 6.1% respectively ($p=0.002$). The 30 day mortality for geriatric patients with and without specialist geriatric physician review was 6.5% and 15.1% respectively ($p=0.2769$, NS).

Conclusion:

Geriatric patients make up half the emergency laparotomies in HNELHD in 2016-2017 and have significantly higher 30 day mortality. Only a small proportion of geriatric patients had specialist geriatric physician review post operatively. These findings are consistent with those from the second NELA report (2) and highlight an area for potential improvement in the care of geriatric patients.

References:

1. NELA Project Team. Third Patient Report of the National Emergency Laparotomy Audit, RCoA London, 2017
2. NELA Project Team. Second Patient Report of the National Emergency Laparotomy Audit, RCoA London, 2016

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4. QUEST Collaboration

Aims

Primary outcome is to investigate surgeons' compliance to antibiotics guidelines for appendicitis in Australia peri and postoperatively, with the secondary outcome looking at predictors of post-operative complication; surgical site infection (SSI) and intra-abdominal abscess in 30 days.

Methods

A multicentre, prospective, observational study was conducted in a period of 2 months between June and October 2016. A database with prefilled variables are completed by each local principal investigators with a protocol guidance. Patients whom underwent laparoscopy with the intention of appendicectomy were recruited in the study.

Results

Total of 1189 patients were recruited. Therapeutic-guidelines-antibiotic-version15 (Australian Clinical Practice Guidelines, 2014) is used for comparison. Guidelines endorses all patients to receive antibiotics peri-operatively; 1081(92.1%) received antibiotics in this study. The rate of peri-operative antibiotic use increases with severity of appendicitis. Highest use was in the gangrenous group, 81(98.1%) followed by complicated, 191(93.2%) and non-appendicitis, 156(85.7%). 593(51.0%) and 379(32.6%) patients received post-operative intravenous (IV) and oral antibiotics respectively. Following simple appendicectomy, only 391(56.6%) patients did not receive post-operative antibiotics as per guidelines. However, in gangrenous and complicated appendicitis, it is reassuring to see 89(98.9%) and 198(97.1%) patients received antibiotics post-operatively. Aboriginal and Torres-Strait-Islander (5.5x) and laparoscopy converted open appendicectomy (9.5x) increases the odds of SSI. This is also statistically significant post multivariable logistic analysis ($p < 0.05$). Complicated appendicitis, operated by senior surgeon and received IV or oral antibiotics post-operatively increases the odds of intra-abdominal abscess.

Conclusion

We recommend more awareness and implementation are required for antibiotics prescription guidelines for optimal management of appendicitis in Australia.

References

Clinicalguidelines.gov.au. (2014). *Therapeutic-guidelines-antibiotic-version15* | *Australian Clinical Practice Guidelines*. [online] Available at: <https://www.clinicalguidelines.gov.au/portal/2406/therapeutic-guidelines-antibiotic-version-15> [Accessed 9 Jan. 2018].



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Introduction:

Most trauma scores are complex. GAP and mGAP are relatively simple. However, these scores are not validated in low/middle income countries including Malaysia and the accuracies are influenced by the fluctuating physiologic parameters. This study aims to develop a relevant simplified trauma scoring system for Malaysia.

Method:

A total of 3,831 trauma patients from 2011-2016 were extracted from the Hospital Sultanah Aminah Trauma Surgery Registry. Patients were split into a development sample (n = 2,380) and a validation sample (n = 1,143). Univariate analysis is applied to identify significant predictors. These predictors are then reanalyse using multivariate logistic regression and compared to existing score systems. The quality of prediction was determined regarding discrimination (sensitivity, specificity, receiver operating characteristic [ROC] curve), precision (predicted versus observed mortality), and calibration (Hosmer-Lemeshow goodness-of-fit).

Results:

Existing simplified score systems (GAP & mGAP) revealed areas under the ROC curve of 0.850 and 0.836. The new developed HALLS (Head, Abdomino-vascular, Liver, Lung and Spleen) score combines only five anatomic components: grade 3 and above organ injury involving head, abdomino-vascular, liver, lung or spleen. The HALLS score reached comparable values of 0.835 for the area under the ROC curve in validation samples. The score is well calibrated to predict trauma mortality (goodness of fit test, p-value = 0.466).

Conclusion:

HALLS Score is a simplified anatomic score suited to the local Malaysian population with a good predictive ability and well calibrated for trauma mortality. The score may serve as an alternative to GAP and mGAP when reliable physiologic parameters are not available.



RIB FRACTURE MANAGEMENT IN AN ELDERLY POPULATION

James Laurent

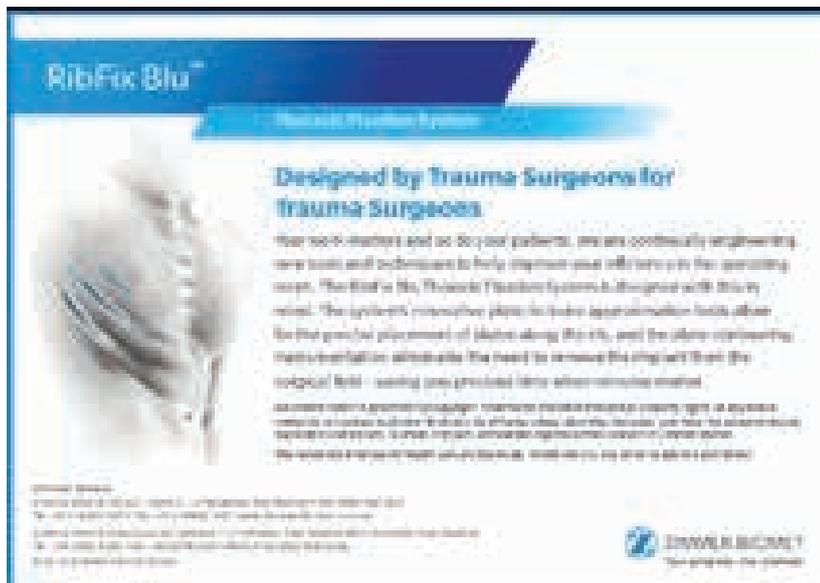
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Rib fractures are one of the most common injuries related to blunt chest trauma and cause significant problems, especially in the elderly such as pneumonia and respiratory failure. The aim of the study was to audit rib fracture management.

Patients admitted to Wellington hospital in the year 2017 with thoracic injuries were reviewed. Demographics, aetiology, complications and management were recorded.

144 patients were included in the study. Their mean age was 54 years, 35% over 65, and mean ISS of 16. Patients had a mean of 4 fractured ribs. The main cause of trauma was related to falls 41%, followed by road traffic collisions 25% and bicycle accidents 11%. 34% percent were admitted to cardiothoracic surgery, 18% orthopaedics and 13% general medicine. Patients admitted under cardiothoracic surgery had more epidural usage (22% v 6.3%, $p = 0.006$) and patient-controlled analgesia (44 % vs 20 %, $p < 0.001$) compared with other units. More aggressive analgesia was used with increasing rib fractures. (Epidural 7.47, PCA 3.61, Oral 2.38, $p < 0.05$). Patients with outcome complications, namely pneumonia and death, were more likely to be older with more comorbidities (65 v 51 years, $p = 0.02$). With 45% having comorbidities compared to 11% without complications ($p < 0.01$).

Older patients with comorbidities are more likely to have a poorer outcome. This indicates that they will require more intensive treatment and management to improve outcomes. This is important as a greater proportion of trauma is occurring in elderly patients who have a higher mortality.



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2. Princess Alexandra Hospital
3. Royal Brisbane and Women's Hospital
4. The Townsville Hospital

Objective

Fibrinogen Early In Severe Trauma study, a pilot multicentre RCT compared Fibrinogen Concentrate (FC) to Cryoprecipitate for fibrinogen supplementation in traumatic haemorrhage. Adult trauma patients with evidence of haemorrhage were randomised to receive either FC or cryoprecipitate. Primary outcome was time to fibrinogen supplementation. Recruitment relied upon the on-site multi-disciplinary clinical team working in high pressured and time critical situations. Implementation began 12 months prior to recruitment.

Method

Implementation and recruitment data was collected prospectively from January 2016 to January 2018.

Results

Implementation focused on staff engagement and high visibility of the research project team at all sites. Multiple education sessions were provided both in person and via electronic/paper resources and trial updates were continuously provided through social media and email. During recruitment there was a 24/7 phone hotline to provide sites with assistance if required. These strategies were successful as trial recruitment concluded 9 months early and under budget.

Projected Recruitment vs Actual Recruitment was 5.5 v 9.5 patients per month. Month 6 was the highest recruiting month (20 patients). Overall recruitment increased throughout the study with no trial fatigue demonstrated.

In hours vs out-of-hours recruitment was 38% v 62% respectively. Out-of-hour's recruitment ranged between 55 – 71% of total recruitment per site.

Conclusion

Performing research within the severely injured trauma patient population can be complex and challenging. Recruitment to this trial occurred faster than anticipated, with the majority being out of hours. We have demonstrated that after hours recruitment can succeed with engagement from the multidisciplinary team.



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Objective: Amongst the ASEAN countries, Malaysia has the highest road fatality risk (>15 fatalities per 100,000 population) with 50% of these fatalities involving motorcyclist. This contributes greatly to ward admissions and posed a significant burden to the general surgery services. From mild rib fractures to severe intra-abdominal exsanguinations, the spectrum of cases managed by surgeons resulting from motorcycle accidents is extensive. The objective of this study is to report on the demography and identify predictors of death in motorcycle traumatic injuries from a Malaysian trauma surgery centre.

Methods: This is a prospective cross-sectional study of all injured motorcyclist and pillion rider that were admitted to Hospital Sultanah Aminah from May 2011 to February 2015. Only injured motorcyclist and its pillion rider were included in this study. Patient demography and predictors leading to mortality were identified. Significant predictors on univariate analysis were further analysed with multivariate analysis with SPSS version 16.

Results: We included 1,653 patients with a mean age of 35±16.17 that were treated for traumatic injuries due to motorcycle accidents. The mortality rate was 8.6% (142) with equal amount of motorcycle riders (788) and pillion riders (865) that were injured. Amongst the injured were male predominant (1537) and majority of ethnic groups were the Malays (897) and Chinese (350). Severity of injury was reflected with a mean RTS of 7.31(±1.29), NISS of 19.84(±13.84) and TRISS of 0.91(±0.15). Univariate and multivariate analysis revealed that age≥35, lower GCS, head injuries, chest injuries, liver injuries, and small bowel injuries were significant predictors of motorcycle trauma related deaths with p<0.05. Higher trauma severity represented by NISS, RTS and TRISS scores were also significant for death with p<0.05.

Conclusions: Age, lower GCS, presence of head, chest, liver, small bowel injuries and higher severity on NISS, RTS and TRISS score is predictive of death in patients involved with motorcycle accidents. This information is important for prognostic mortality risk prevention and counselling.



Objective

This study aims to examine the diagnostic validity of the Near Infrared Spectroscopy (NIRS) device through sensitivity, specificity, positive predictive value and negative predictive value as applied in closed head injury patients with mild neurologic deficits in the Emergency Department of the Philippine General Hospital using CT-Scan findings as gold standard.

Methodology

All trauma patients (aged >15 years old) with closed head injury admitted (with Glasgow Coma Scale Score of 13-15, and hemodynamically stable) at the Emergency Department of the Philippine General Hospital from June 2017-September 2017 were included (Canadian CT Head Rule was adapted) in the study ⁽¹⁵⁾. The patients were scanned by a trained research assist with a NIRS device in bilateral areas of the brain (frontal, temporal, parietal and occipital) and were subsequently administered with a Cranial CT-Scan read by a blinded radiologist.

Results

The sample size was determined, and the result yielded eighty-three (83) patients enrolled were male (82%) compared to female (18%), with age range of 16-64 years (mean is 29.52 and mode of 21-30 - 42%). Average scanning time (CT-Scan) for all the patients from time of injury was 11.34 hours; while average NIRS scanning time was 8.96 minutes (the average time from NIRS to CT-Scan is 15.23 hours) Using a 95% confidence interval, the computed parameters – were as follows: Sensitivity – 85.37%, Specificity – 92.86%, Positive Predictive Value- 92.12%, and Negative Predictive Value – 86.67%. Three patients were operated for epidural hematoma while 3 patients with mild diffuse axonal injury yielded false-negative results on NIRS. Most of the positive results for NIRS and CT-Scan were from the Temporal lobe and that of the subdural type of hematoma. It was established through the difference in optical density that it is directly proportional to the amount of hematoma while inversely proportional to the distance of the lesion to the scalp.

Conclusion

NIRS device had a sensitivity of 85.37%, specificity of 92.86%, positive predictive value of 92.12%, and negative predictive value – 86.67%. In diagnosing closed head injury with mild neurologic deficit using CT-can results as gold standard. With its ease in performance, scanning with the NIRS device would be very useful in the early evaluation of patient with traumatic brain injury who needs urgent care. Diffuse axonal injury or cerebral edema and intracranial bleeding, however, may not be detected by the NIRS device.



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Objective/Introduction: The use of the open abdomen (OA) technique is an important approach for managing intra-abdominal catastrophes. However, delays in definitive fascial closure (DFC) are associated with a high incidence of complications and poor outcomes. The aim of this study is to develop a multivariate prediction model for DFC in patients being managed with an OA.

Methods: A multicentre observational study was performed involving all patients managed with an OA admitted to Cairns, Townsville and Royal Brisbane & Women's Hospitals from 2000 to 2016. Prognostic factors were based on a recent systematic review.¹ Statistical analysis was performed using multivariate logistic regression with 28 prognostic factors for DFC.

Results: In total, 312 patients were managed with an OA. DFC occurred in 219 patients (70%). Median DFC time was 2 days (interquartile range: 3 days). Significant prognostic factors included Acute Physiology and Chronic Health Evaluation III score (odds ratio (OR): 0.97; 95% confidence interval (CI): 0.96, 0.98), respiratory failure (OR: 0.38; 95% CI: 0.16, 0.82), peritoneal contamination (OR: 0.22; 95% CI: 0.05, 0.98), total procedures (OR: 0.71; 95% CI: 0.63, 0.81) and year (OR: 1.1; 95% CI: 1.0, 1.2). A multivariate prediction model was developed to demonstrate a patient's likelihood of DFC (receiver operator curve area under curve = 0.88, 95% CI: 0.83, 0.92)

Conclusion: Predictor variables were identified using clinical knowledge and statistical reasoning to develop a multivariate prediction model for DFC in patients being managed with an OA. External validation of this model will allow for this to be readily used in clinical practice.

References:

1. Cristaudo A, Jennings S, Hitos K, Gunnarsson R, DeCosta A. Treatments and other Prognostic Factors in the Management of the Open Abdomen: A Systematic Review. *J Trauma Acute Care Surg*, February 2017, 82(2): 407-418 DOI: <http://dx.doi.org/10.1097/TA.0000000000001314>



CHEST TUBE COMPLICATIONS IN A MAJOR TRAUMA CENTRE

Jovy Carpio

Introduction: Intercostal catheter (ICC) insertion is one of the most commonly performed procedures in trauma. Worldwide, the highest recorded complication rate is 30%. We investigated our complication rate to improve teaching and design credentialing to the trainees and the operators performing this procedure.

Methodology: This was a retrospective performance review of ICC complications in Liverpool Hospital, a Level 1 trauma centre in New South Wales over a 2-year period from mid 2015 to mid 2017. The review of trauma registry database, electronic medical records and clinical paper files were utilised. Insertional, positional, removal, infective and poor tube care complications were identified.

Results: A total of 134 ICCs were inserted in this period, of which 87% were males and 13% were females. Eighty percent (80%) of patients needing chest drain were from blunt trauma while 20% sustained penetrating injuries. 7 patients with ICCs were excluded from the study as they expired within an hour in emergency department. The ICC indications were pneumothorax (68%), haemothorax (2%) and haemo-pneumothorax (24%). Overall, the complication rate was 55%. Other factors predictive of the complication rate include: level of training, speciality of the operator, site of placement, and the use of prophylactic antibiotics.

Conclusion: We have a higher complication rate recorded than what was reported globally. A change in skills training and a credentialing scheme for the operators in different speciality are needed to improve the rate.

CHEST TRAUMA ON THE GOLD COAST

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Introduction: Intercostal catheter (ICC) insertion has complication rates as high as 30%, with a growing trend toward managing chest injuries expectantly.¹ The aim of this study is to determine the natural history of traumatic haemo- and pneumothorax management, including failure of conservative management and complications of ICC insertion.

Methods: A single-centre retrospective review of all patients who presented to Gold Coast University Hospital (GCUH) with traumatic chest injuries was conducted from 1st March 2015 to 1st March 2017. Demographic data was collected through the hospital trauma registry and subsequent review of electronic medical records helped determine complications resulting from ICC insertion and patients for whom conservative management had failed.

Results: A total of 280 patients presented to GCUH with chest trauma during the study period. Only 233 met the inclusion criteria. One-hundred-and-three patients were managed with ICC insertion and 130 managed conservatively. The majority of patients were male, with blunt trauma being the most common mechanism of injury. A total of 156 drains were placed in 103 patients. Forty-one complications occurred in 156 drain insertions (complication rate of 26.2%). The most common complication was chest tube malposition (24/156). Emergency surgery was required in 7/156 patients. There was no mortality associated with ICC complications. Ten cases from the conservative group failed expectant management and required insertion of chest drain.

Conclusion: This study confirms that ICC insertion for traumatic chest injures is associated with significant morbidity. Conservative management is acceptable in selected cases, but close monitoring is needed to detect failure of this approach.



POSTERS

THE ROLE OF PRE-VOCATIONAL PEER ORGANISED TRAUMA TEACHING

Wendy Liu

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Objective:

To assess whether a one-day peer-organised trauma conference increases junior doctor and medical student knowledge, skills, and interest in trauma.

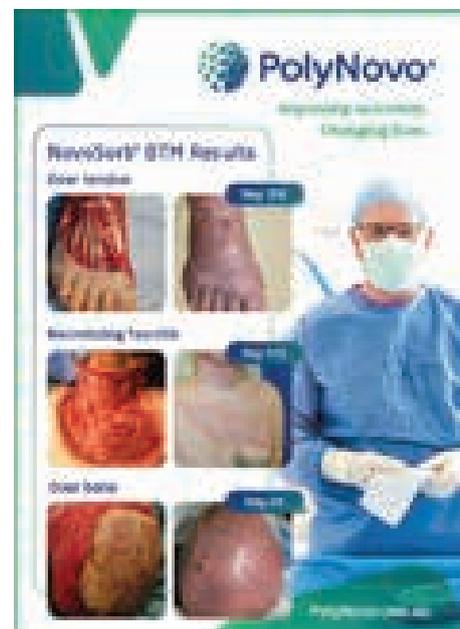
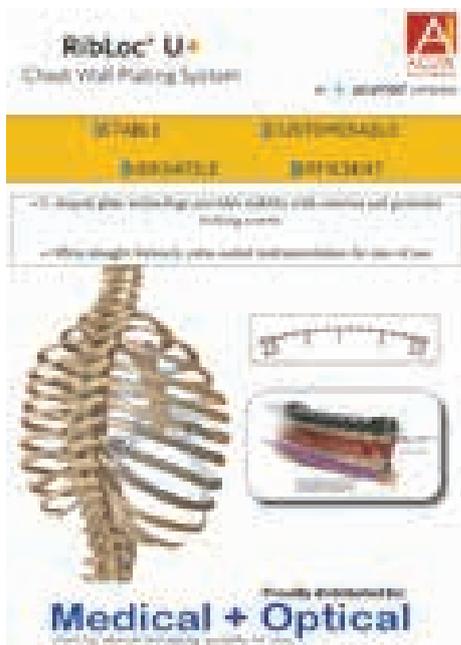
Methods:

The Introduction to Trauma Surgery Conference (ITSC) consisted of nine consultant led specialty specific talks and skills workshops, and was attended by 80 junior doctors and medical students at Westmead Hospital. Attendees completed a pre-event survey, which collected demographics, interest and knowledge in trauma, and confidence levels in practical skills (chest tube insertion, rib fixation, sternal closure, FAST scan, bone plating, suturing and trauma radiology). The post-event survey assessed for change in these confidence levels. Lecture sessions were also rated, and change in attendee's interest in trauma as a career was evaluated.

Results:

Of all attendees, 70% (56/80) completed the pre-event survey, of which 42.86% (24/56) had no previous trauma experience. The post-event survey was completed by 50% (40/80), and 97.5% reported an increase in interest in trauma as a career. Excepting suturing, 75% indicated they had no prior or only simulation-based experience in the skills. After the workshops 70% of respondents indicated they would be comfortable performing these skills with supervision or assistance, compared to 25% prior. In particular, there was a 400% increase in those comfortable performing eFAST, chest tube insertion and trauma imaging interpretation with supervision. 90% of respondents (36/40) indicated they would attend the course again.

Conclusion: Peer-organized conferences are an effective and cost-efficient method of increasing interest and knowledge in trauma as well as increasing confidence in practical skills.



SURGICAL MANAGEMENT AND OUTCOME OF 'SPHAGETTI WRIST' – A CASE REPORT **Dhanashree Tikhe**

Dhanashree Tikhe¹, Daniel Bunker², Gary Kode³

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The aim of this case report is to evaluate the combination treatment (surgical/hand therapy and social) outcome of unclean and late presenting spaghetti wrist, in terms of tendon functionality and grip strength.

'Full-house' syndrome/ Spaghetti wrist is a sharp volar wrist laceration in which multiple tendons, at least one major nerve and usually one major vessel are divided. These injuries are usually accompanied with permanent disability. A 47 year old male presented 72 hours after self-harm injury to volar aspect of wrist, with maggots in his wound. After initial washout at rural hospital he was shifted to our centre. Mental health services were involved early on for ruling out ongoing suicidal ideation, establish fitness for consenting to surgery, and provide ongoing care and arrange social supports for attending outpatient follow-up. Surgical debridement and exploration revealed cut to bone with complete laceration of all tendons of flexor compartment, radial and ulnar artery, ulnar and median nerve and dorsal branch of radial nerve. The next day repair of 14 flexor tendons with Adelaide technique, epineural repair of 3 nerves and vascular anastomoses of radial and ulnar artery was done. He was transferred to mental health facility 2 weeks postoperatively with referral to social services and hand therapy. At 4 weeks he already demonstrated independent functions of all flexor tendons and limited grip.

This case highlights the ability to achieve positive results in significant volar wrist wounds with delayed presentation with staged debridement and repair. It also underscores the need for early and ongoing involvement of mental health. Hand therapy is an inseparable part of management which relies on close follow-up and patient compliance.

SURGICAL MANAGEMENT OF PAN-FACIAL FRACTURES – A CASE REPORT **Dhanashree Tikhe**

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This article reports a 48 year old male with pan-facial fractures complicated by tracheal rupture managed with a multidisciplinary approach. It is challenging to follow an established pattern in management in these cases due to varies presentations and associated injuries, hence each case is unique. Pan-facial fractures involve the upper, middle and lower thirds of the face. Surgical management require exacting technique which is often complicated by loss of reliable landmarks. Minimising scarring and its sequelae (i.e. ectropion) and well as protection of neurovascular structures needs to be considered during surgical approach.

A 48-year old male presented following an alleged assault with open comminuted pan-facial fractures and tracheal rupture requiring immediate intubation. He underwent tracheostomy on day three followed by open reduction and internal fixation of facial fractures through intra-oral (superior and inferior buccal sulcus and mid-lid approach) and application of intermaxillary fixation on day 6. Intermaxillary fixation was kept in place for 4 weeks, during which time the patient remained in intensive care. Postoperative stability and function was satisfactory with very minimal scarring. He was discharged to a rehabilitation unit with ongoing physiotherapy for mouth-opening exercises and linked to mental health services.

Severe panfacial trauma can be addressed with good outcome by maximising intra-oral incisions, resulting in improved long term cosmetics. In minimising external approaches, intermaxillary fixation is a vital component to achieving stable reduction.



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Abstract:

Background: Rapid control of severe epistaxis is necessary to prevent life-threatening haemorrhage. Management of epistaxis in craniofacial trauma is complicated by the risk of migration of medical devices through skull fractures.

Methods: A 53-year-old male with extensive traumatic maxillofacial fractures presented to our hospital. The patient had a Rapid Rhino pneumatic nasal balloon inserted by ambulance personnel for brisk epistaxis. Imaging performed at our hospital demonstrated that migration of the balloon through the cribriform plate into the left frontal lobe had occurred.

Results: The Rapid Rhino was manually removed in the emergency department. Serial imaging demonstrated development of a traumatic encephalocele into the left nasal vault, which was repaired surgically via bifrontal craniotomy. The patient made a good recovery after a prolonged stay in the hospital brain injuries rehabilitation unit.

Conclusion: This case report is the first to describe the rare complication of inadvertent intracranial migration of a Rapid Rhino pneumatic nasal balloon in traumatic epistaxis.



EARLY PREDICTION OF MASSIVE TRANSFUSION IN TRAUMA PATIENTS WITH INITIAL HYPOTENSION

Mun Yun- Su

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Objective

Early prediction of massive transfusion is important in the management of major trauma patients. The purpose of this study is to determine the prediction factors of massive transfusion in severe trauma patients with initial hypotension.

Methods

A retrospective study was performed within the Eulji University Hospital. Review of trauma registry data identified 1779 major trauma patients (ISS >15). From January 2011 to December 2016, all major trauma patients with initial systolic blood pressure that was lower than 90 mmHg were included (N = 244). The patients were divided into two groups – those who received massive transfusion (MT group) and those who didn't receive massive transfusion (non-MT group) – and the differences in initial values were compared between the two groups. Univariate analysis determined significant factors between those who received MT and those who did not.

Results

Out of a total of 244 patients, 93 patients were MT group and 151 patients were non-MT group. MT group had higher mortality than non-MT group ($p=0.005$). The data showed almost no difference in systolic BP, heart rate, RR, GCS, ISS, and BE between the two groups. The only statically significant factor was INR, MT group was higher INR than non-Mt group ($p=0.036$).

Conclusions

From this study, the INR has demonstrated good predictability for MT in severe trauma patients with initial hypotension. Early aggressive resuscitation of the patients with initial prolongation of INR along specific guidelines is justified and may further improve outcome in severe trauma patients with initial hypotension.



INCIDENCE & PATTERN OF C- SPINE FRACTURE IN A TRAUMA CENTRE IN KOREA Byung Hee Kang

Donghwan Choi¹, Jayun Cho¹, Junsik Kwon¹, Yo Huh¹, Jonghwan Moon¹, Kyoungwon Jung¹, and John-Cook Jong Lee¹ and Byung Hee Kang¹ ¹Department of Trauma Surgery, Ajou University School of Medicine, Suwon, Korea

Introduction: Cervical spinal fracture is not common, but very important to trauma patient. Cervical spinal clearance usually determined in the emergency room, therefore knowing the risk factors and pattern of cervical spinal fracture is important.

Material and Methods : From Apr 2011 to Apr 2016, all blunt trauma patients who took cervical spinal computed tomography (CT) in emergency room of our hospital were included. Basal characteristic and risk factors of cervical spinal fracture were compared to non-fracture group. Cervical spinal fracture pattern were also investigated.

Results: Total 1,723 patients were reviewed and fracture was diagnosed in 273 patients. Most common injury mechanism was motor vehicle crash (MVC). In multivariable analysis, Injury severity score (ISS) (1.018 [1.007 – 1.030], p=0.002) and thoracic or lumbar spine injury (1.494 [1.092 – 2.042], p=0.012) were significant predictors of cervical spinal fracture, but extremity injury was lower the risk (0.661 [0.501 – 0.871], p=0.003). MVC was significantly associated with cervical spinal fracture compared with motorcycle crash (2.465 [1.454 – 4.179], p=0.001) and pedestrian injury (2.093 [1.374 – 3.189], p=0.004). Fracture was more founded in lower cervical lesion or body lesion. Most frequent fracture site was 7th transverse process.

Conclusion: Blunt trauma patient who had higher ISS, thoracic or lumbar injury and MVC mechanism would be check cervical spine CT carefully especially in lower cervical lesion.

CLINICAL APPLICATION OF DIAPHRAGMATIC HERNIA

Junsik Kwon

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Introduction: The diaphragmatic rupture of multiple trauma patients are not treated other than surgery and if the treatment is delayed it may cause many adverse effects. However, it is difficult to diagnose and it is often overlooked in the initial evaluation. The purpose of this study was to assess the reliability of the diaphragmatic height index (DHI) for the diagnosis of diaphragmatic rupture.

Methods: A retrospective review of the medical records of patients with diaphragmatic rupture confirmed the clinical characteristics of the patient and analyzed DHI using initial chest radiographs.

Results: From March 2010 to December 2016, a total of 60 patients with diaphragmatic rupture were identified as an operation. Right diaphragm rupture was found in 31 patients and left diaphragm rupture in 29 patients. There was no statistical difference in the general characteristics between the study group and the control group. The DHI of the right diaphragm rupture patients was 2.16 ± 1.58 , and the DHI of the left diaphragm rupture patients was 1.21 ± 2.10 which were statistically different from the control group. The sensitivity of 71% and specificity of 87% were able to diagnose right diaphragmatic rupture when $DHI > 1.31$ was used as a cut-off value. Sensitivity was 87% and specificity was 76% when $DHI < 0.43$ was used as a cut-off value to diagnose left diaphragmatic rupture.

Conclusions: In this study, the right and left diaphragmatic rupture showed similar prevalence, and diaphragmatic rupture diagnosis using DHI can be useful.



ENHANCED RECOVERY FOR PATIENTS OF OLDER AGE GROUPS IN EMERGENCY SURGERY

Nikolay Sizonenko

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Introduction: Studied safety and efficiency of the enhanced recovery after surgery (ERAS) in the emergency surgical treatment of elderly and senile age patients with acute obstructive colorectal cancer.

Materials and methods: The study included 67 patients aged 61-90 years. The patients of the ERAS group (n=32) and control group (n=35) were matched.

In addition to the well known components of the ERAS we also during the operation performed decompression of the colon and small (under indications) intestine, the small intestine lavage, embryology oriented surgery and D3-lymphadenectomy, rectus sheath catheterization.

Compared the post-operative pain syndrome level (NRS), terms of enteral insufficiency events relief terms, the occurrence of postoperative complications and fatal cases, duration of the post-operative period.

Results: ERAS group: the pain was 4 (3, 5; 4) points in the first day and 1 (1; 2) point by the fourth day. 24 (75%) patients had no nausea and vomiting and began to enteral feeding in 24-36h. Intestinal peristalsis sound appeared within 12-24h, gases discharge – in 24-36h and stool discharge – in the first 48h. 6 patients (18, 8%) had postoperative complications (Clavien-Dindo I-IIIa – 5, IIIb-IV – 1), three patients (9, 7%) died. The post-operative period was 8 (5, 5; 12, 5) days.

Control group: the pain was 6 (5;6) points and 21 (60%) patients had nausea and vomiting during the first 48h. Events of postoperative intestinal paralysis were eliminated by the 4-5th day. 11 cases (31, 4%) of postoperative complications were recorded (I-IIIa – 7, IIIb-IV – 4). 4 patients (11, 4%) underwent relaparotomy. 7 (20%) patients died. The post-operative period was 13 (9, 5; 18) days.

Conclusion: The ERAS is safe and effective due to improving the immediate results of surgical treatment of elderly and senile age patients with acute obstructive colorectal cancer.



Scientific Program Abstracts

COLLARS AND SPINE BOARDS – FACT OR FICTION?

Jeff Rosenfeld

The primary reason for immobilising the spine following trauma is to prevent secondary injury to the spinal cord due to mechanical compression and to therefore minimise neurological disability. The collar and spine board focus the attention of carers on spinal care. The NEXUS criteria are frequently used to determine whether a collar should be applied but should be used with caution in elderly patients who have a much greater chance of having occult injuries compared with younger patients. Particular attention is required to exclude spinal injury in elderly patients following trauma. Injuries are easily missed in this group so there should be a low threshold for collars and spinal precautions. Aggravation of an unstable spinal injury by not wearing a collar may be uncommon in selected cases but when it does occur the outcome may be quadriplegia and the medicolegal costs are considerable. We should not abandon cervical collars. Ambulance Victoria has stopped using spine boards. Strapping patients on a spine board is associated with an increased risk of aspiration particularly in older patients and also increases ICP. The modified lateral position with spinal precautions is becoming more popular prehospital in unconscious patients. At the Alfred, we do not use spine boards but we do use collars and spinal precautions until the neck and thoracolumbar spine are cleared.

IMPROVING PREHOSPITAL NOTIFICATION

Mark Fitzgerald

TOURNIQUETS IN THE ED – WHAT NOW?

Martin Wullschlegler



ELVIS IS IN THE BUILDING

Chris Partyka

Endotracheal intubation and mechanical ventilation are utilised in severely injured and critically ill patients who present to the Emergency Department (ED). There is a significant body of evidence demonstrating that lung protective ventilation strategies (tidal volumes of 6-8mL/ kg of ideal body weight and plateau pressures of <30cmH₂O) decrease mortality and increase the number of ventilator free days in patients with acute lung injury (ALI) and acute respiratory distress syndrome (ARDS).

Mechanically ventilated patients in the ED often have no features of ALI or ARDS at the time of intubation (i.e. non-injured lungs). They are however at high risk for developing ventilator-induced lung injury (VILI) through various mechanisms including interventions such as blood transfusion, general anaesthesia and surgery or coinciding pathology such as sepsis, trauma or brain injury. The implementation of lung protective ventilation strategies in this population can decrease the development of ARDS, pulmonary infection and atelectasis but not in-hospital mortality.

Evidence suggests that lung protective ventilation is uncommon in the ED, regardless of ALI status. Furthermore, only a minority of ventilated patients actually have adjustments made to their ventilation whilst still in the ED. In Sept 2017, the UK-based LOV-ED study demonstrated that an empiric lung-protective ventilation strategy significantly reduces ventilator-associated conditions, ICU and hospital length of stay and time on the ventilator whilst suggesting a trend towards a mortality benefit.

The Emergency Lung-protective Ventilation Implementation Strategy (ELVIS) is a quality improvement initiative introduced at Liverpool Hospital Emergency Department in August 2017. Its aim is to provide empiric, patient-specific lung-protective ventilation to all intubated ED patients in conjunction with early basic critical care.

WHATS NEW IN PREHOSPITAL CARE

Geoff Healy



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Abdominal radiotherapy is a therapeutic modality, commonly used in urological, colorectal and gynaecological malignancy. Almost all patients suffer some GI upset during radiation treatment with 15-20% of patients requiring alteration in therapeutic course. The degree of extent of injury relates to dose rate, fractionation of dose, total dose, field size and type of radiation. However, it is the long term sequelae that may lead to significant surgical complications. These include radiation ischaemic stricture and impaired peristalsis secondary to fibrosis. This may lead to recurrent episodes of small bowel obstruction which are both challenging and complex to manage.

Chronic small bowel radiation disease typically develops between 18 months and 6 years after a completed course of radiotherapy, but has been reported to present up to 30 years later. Progressive vasculitis within the bowel wall leads to stricturing, fistulation, ulceration and perforation. Functionally this results in issues with absorption and potentially malnutrition.

Conservative treatment for radiation enteritis includes dietary modification, medical drug therapies and has included hyperbaric oxygen.

Surgical management is reserved for obstruction, perforation and fistula formation or nutritional decompensation. Pre-operative preparation planning for surgery is critical with requirement for a clear anatomical roadmap from imaging, adequate nutritional support, possible ureteric stenting and potential multi-speciality collaboration. The mainstay of surgery is resection or bypass. Resection is mandated in perforation, fistulae or secondary neoplasm and removes the overtly diseased bowel. Despite this further radiation change may still occur. Bypass may be utilised in the presence of dense adhesions. It has the drawback of potential bacterial overgrowth in the closed loop and progression of radiation injury from disease left in situ leading to further complications. Strictureplasty is not advocated unless inadequate intestinal length is a concern. Then only in carefully selected cases as they are fraught with potential for complication. Small bowel stomas are a desperate measure and only recommended as palliation.

In summary; Don't do it unless you have to, get someone to help you if you do have to. Ensure plenty of time and multidisciplinary assistance perioperatively. Be realistic on what you can achieve.

References

1. Radiation-induced small bowel disease: latest developments and clinical guidance. Stacey and et al *Ther Adv Chronic Dis* (2014) 5(1) 15–29
2. Hyperbaric Oxygen for patients with chronic bowel dysfunction after pelvic radiotherapy (HOT2): a randomised, double blind, sham-controlled phase 3 Trial_Glover et al *Lancet Oncology* 2016; 17:224
3. Strictureplasty for Obstructing Small Bowel lesion in diffuse Radiation Enteritis- Successful Outcome in 5 patients Dietz et al *Cleveland Clinic . Dis of Colon and Rectum* Dec 2001;Vol 44 no.12
4. Surgical Therapy of Radiation-Induced Small-Bowel Lesions Report of 34 Cases With a High Share of Patients With Combined Chemotherapy. *Arch Surg.* 1987; 122(8):923–926. doi:10.1001/archsurg.1987.01400200073013
5. Radiation Enteritis . M.Bismar, F Sinicope . *Current Gastroenterology Reports* Oct 2002, Vol4 Iss5 361-65



NIGHTMARE GALLBLADDERS

Phil Truskett

There are approximately 52,000 cholecystectomies performed in Australia annually of which about 4000 are performed open. It is our commonest elective abdominal procedure. As such, all General Surgeons need to be well versed in managing the difficult gallbladder. There are nightmare gallbladders and nightmare patients. Often this can be predicted, but on occasions at operation you can find yourself in a difficult situation that was totally unexpected.

Difficult patients with conditions such as; obesity, multiple co-morbidities, pregnancy and chronic liver disease can present with biliary disease. In such settings, the need for cholecystectomy can be evaluated on a risk benefit basis and might be avoided all together. The nightmare gallbladder might also declare itself. It might be thickened or contracted. There may be complexities with associated jaundice or even imaging and biochemistry suggestive that there may be a Mirizzi syndrome. In a relatively elective setting there may be time to reflect. In the acute setting, however, delay or a period of optimisation may not always be possible. Complexities might also be encountered intraoperatively that were unexpected such as, undiagnosed cirrhosis with portal hypertension or potential unsuspected gallbladder malignancy.

As surgeons, we often find ourselves conflicted. By our very nature we want to get on with it and fix the problem with a definitive intervention; but that is not always best for the patient. When faced with the unexpected complexity in the intraoperative setting, there are a few basic things to remember:

- Be willing to admit that you are in trouble and back off immediately.
- In acute cholecystitis the goal is to control the sepsis. Drainage is always an option.
- Converting to open is not a failure.
- The aim of a cholecystectomy is to remove the stones and control the cystic duct and not damage the bile duct. A complete cholecystectomy is not always necessary.
- The most powerful surgical instrument you possess is the telephone. You can always phone a friend.

Tips and tricks in the approach of the “nightmare gallbladder” will be shared

PANCREATITIS AND PANCREATIC NECROSIS

Mary Langcake



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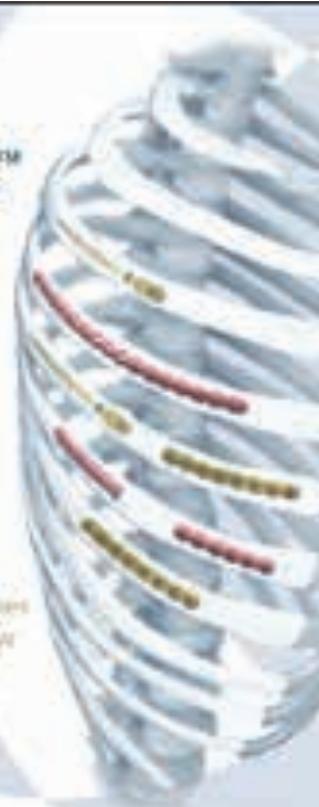
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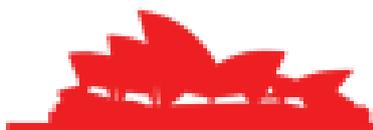
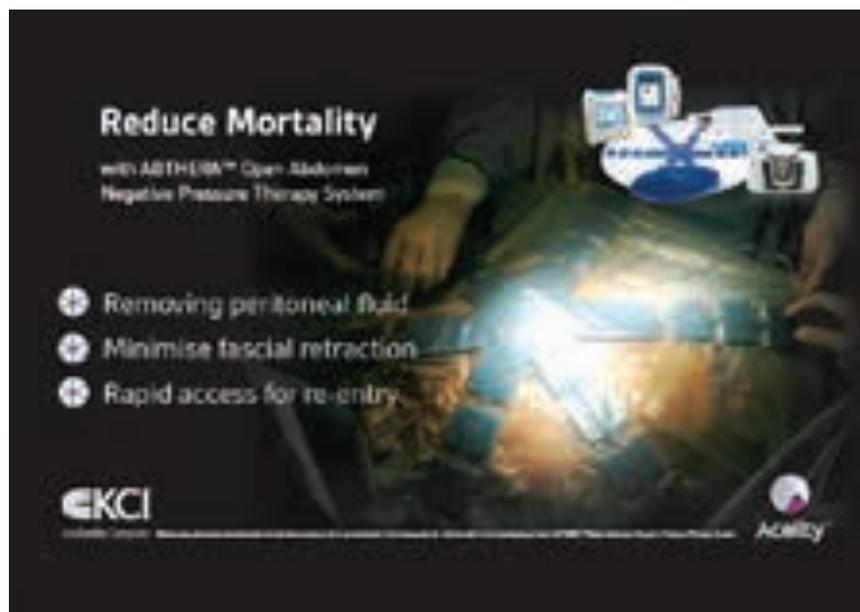
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PLENARY SESSION – MARIA SEGER KEYNOTE ADDRESS

TERROR MASS CASUALTIES IN AUSTRALIA – HOW PREPARED ARE WE? John Crozier



TRAUMA VERIFICATION – IMPORTANT OR IMPOTENT**Zsolt Balogh****MORBIDITY & MORTALITY – CLOSING THE LOOP****Elmin Steyn**

Morbidity and mortality (M&M) review meetings aim to bring together the surgical team to identify and acknowledge an error and to learn from the mistake. Ultimately the goal is to improve patient safety, improve accountability for mistakes and construct quality improvement strategies while enabling professional learning. This process may be used to identify and create patient safety initiatives, and, especially if utilised in a goal directed way, could be useful as a clinical governance tool.

M &M discussions may be challenging and participants, if not guided in a structured fashion, may tend to lose the focus, namely, facing the error and implementing measures to prevent it from recurring. The M&M should identify clear goals and the discussion should be conducted on educational principles, focusing on the problem, not the person. Outcomes and future actions should be clearly stated and documented, with targets, instructions for reporting back, and regular follow up at subsequent meetings. .

The objectives should be to address medical mistakes effectively and productively, to keep the focus on the error, not allowing the discussion to stray into more comfortable areas, while utilizing educational strategies applicable to adults and professionals. The threatening nature of public discussion of error should be minimized.

Closing the loop requires a standardised review process which includes identifying and acknowledging the error, identifying the underlying causative factor for the error, finding a remedy for the problem, implementing the remedy and reviewing the effects of the implemented remedy at a future meeting. This requires documentation of decisions and outcomes, which in turn enables audit, review and effective governance.

References:

1. The Morbidity and Mortality Conference: the Delicate Nature of Learning from Error. Orlander et al. Acad. Med. 2002; 77:1001 – 1006.
2. Morbidity and Mortality meetings. A guide to good practice. Royal College of Surgeons.
3. Mortality and Morbidity meetings: an untapped resource for improving the governance of patient safety? Higginson et al, BMJ Quality & Safety Online First. 3 May 2012



Do you care about providing great care to your trauma patients? Do you want to learn about cutting edge research and new ways of treating trauma patients? Do you want to teach injury prevention classes in your community? What about starting up an educational program for trauma care providers? What are your first steps?

Trauma data!

Data is the foundation of trauma centers and trauma systems. Yet, it is the least understood, and usually the most poorly staffed aspect of the trauma center and trauma system. Concurrent and validated trauma data must be the driver for all aspects of trauma center and trauma system activity. Trauma clinicians practice the standard of trauma care based on evidence. This evidence comes from our trauma registries (trauma databases). Front line trauma care providers, trauma center leaders and trauma system leaders should ensure that all initiatives are driven by their center and system data.

Trauma data provides the foundation for trauma performance improvement and patient safety (PIPS). Although PIPS may sound like something administrators do, it is really something that all trauma care providers are involved in. It is all about patient safety. Patient safety projects require data. The trauma registry provides this foundation. Improving patient outcomes must always be at the forefront of our trauma initiatives. We should be using robust and accurate data sources “that can support local decision-making about clinical care evaluations, reduce unwarranted clinical variations, improve care models, facilitate service planning, and effectively manage services within budget” (Damato, 2015). In the United States, trauma centers are required to adhere to the data definitions and requirements of the National Trauma Data Bank (American College of Surgeons Committee on Trauma, 2018). This data allows many to drive center and system initiatives based on clean, validated trauma data.

Trauma data also provides the foundation for center and system research. There are many other uses for trauma data. These include prioritizing injury prevention initiatives, evaluating injury prevention effectiveness, prioritizing outreach initiatives, staffing needs, financial analysis, financial initiatives, prehospital educational needs assessments and targeted activity to name a few.

There are many challenges in creating and sustaining a robust trauma registry. Budgetary restrictions, staffing cut-backs, outdated data processes all contribute to mountains of data that is not used, or poor-quality data that cannot support projects and initiatives. Leaders in trauma centers and trauma systems need to ensure they advocate for clinical data as the driver for all aspects of trauma care. Support for the trauma registry starts with adequate staffing with appropriately trained data personnel. Staffing also includes the appropriate number of competent staff to collect, analyze and report the trauma data. Consideration must be given to the number of data elements that are required as well as the total number of trauma patient encounters. Maintaining a validated, and concurrent database helps to support a data driven trauma program and trauma system.

Whether you are a front-line trauma nurse in the emergency department, operating room, or intensive care unit, a trauma surgeon, or a trauma program manager, validated concurrent trauma data can and should support your trauma projects and initiatives. Practically speaking, trauma data can and should be used to support all trauma related activity both within a trauma center and within a trauma system. Trauma data is not useless; it is always at the top of the list for trauma centers and trauma systems. Using trauma data is how standards are set; how protocols are developed and evaluated; how we monitor the care we provide. You may say you provide good trauma care but you need good data to show this.

References

American College of Surgeons Committee on Trauma. (2018). National Trauma Data Standard.

Damato, A. (2015, June 15). Improving patient outcomes: leveraging data to drive innovation in health care . *BioMed Central*. doi:10.1186/1472-6963-15-S2-A1

Society of Trauma Nurses. (2017). Trauma Outcomes Performance Improvement Course.



The field of trauma surgery has evolved. Facing extinction in an era of subspecialization and increasing nonoperative management, the trauma community has embraced the formal inclusion of surgical critical care (SCC) and emergency general surgery (EGS) into our scope of practice. The term “Acute Care Surgery (ACS)” was chosen to reflect the work. Training programs have been created, with a curriculum established by the American Association for the Surgery of Trauma. The curriculum includes formal training in Surgical Critical Care, culminating in a Certificate of Added Qualifications awarded by the American Board of Surgery. In addition, the ACS training includes focused experiences in vascular, thoracic, and hepatobiliary surgery, as well as exposure to neurosurgical and orthopedic practice.

Integration of ACS services into hospital practices in the US has resulted in improved timeliness in management of EGS problems. Job satisfaction for both acute care surgeons and non-ACS general surgeons is improved. The scope of practice varies based primarily on local politics and practice patterns.

The model varies in different countries, and local politics are often an issue.

References

1. Moore EE, Maier RV, Hoyt DB, et al. Acute care surgery: Eraritjaritjaka. *J Am Coll Surg* 2006; 202:698.
2. The Committee on ACS, AAST. The acute care surgery curriculum. *J Trauma* 2007; 62:553.
3. Burlew CC, Davis KA, Fildes JJ, et al. Acute care surgery fellowship graduates’ practice patterns: The additional training is an asset. *J Trauma Acute Care Surg* 2017; 82:208.

TRAUMA CONNECT CLINIC

Trauma Case Management during an inpatient stay significantly improves Allied Health utilisation, increases the detection of missed injuries and improves staff satisfaction, communication and medical record documentation¹. Currently in most trauma centres nationally this type of care ceases after discharge from hospital and little is known about patient health status in the weeks immediately following discharge². Severely injured trauma patients face a spectrum of physical and psychological problems post discharge which may interfere with patient wellbeing and the rehabilitation process³. The Nurse Practitioner led Trauma Connect Clinic was designed to continue the case management of the multi trauma patient past discharge involving the Trauma Service multidisciplinary team when required.

The Nurse Practitioner uses the Trauma Connect Clinic to identify and manage patients in crisis to prevent or mitigate readmission. Readmissions adversely impact on a patients wellbeing, their ability to work and their quality of life⁴. After reviewing a large cohort of general surgical readmissions one research group found that half of the potentially avoidable readmissions could have been prevented with adequate symptomatic relief e.g. analgesia and laxatives, an adequate follow up plan and better patient information⁴. The Nurse Practitioner is well positioned and skilled to manage these problems in the outpatient setting.

Trauma patients are reviewed in the clinic if they have met the following:

- ICU admission
- Chest trauma requiring follow up imaging
- Patients with ongoing complex wounds

In the 12 months since commencement of the clinic 95 patient reviews have taken place on 52 patients. The median ISS of patients seen was 14 and 73% (n=38) of patients scored an ISS > 12. 47 patients required chest review, 40 were seen for case management and 23 required wound review. Over the past 12 months Trauma Connect Clinic has been well supported by all teams involved in trauma care and praised by our patients and their families.

1. Curtis, K. (2002). The impact of trauma nursing case management on selected patient outcomes. *University of Wollongong Thesis Collection*.
2. Daffrun, K., Bishop, G.F., Hillman, K.M. & Bauman, A. (1994). Problems following discharge after intensive care. *Intensive and Critical Care Nursing*, 18(1). 244-251.



3. Samuelson, K.A.M. & Corrigan, I. (2009). A nurse led intensive care after care programme – development experiences and preliminary evaluation. *British Association of Critical Care Nursing, Nursing in Critical Care*, 14(5), 245-263.
4. Naumann, D.N., Quinn, M., Sivanesan, S., Farooq, U., Hendrickse, C.W. & Bowley, D.M. (2013). Preventing readmission: are we doing enough? *British Journal of Healthcare Management*, 19(7), 348- 53.

ABDOMINAL PAIN IN A PREGNANT PATIENT

Ailene Fitzgerald

SEVERE DIVERTICULITIS

Mark Midwinter

Acute diverticulitis is a common disease and a significant burden on health services, accounting for 70-160 admissions/100,000 population in developed countries. Perforated diverticulitis has an estimated incidence of 3.5/100,000 population.

Hinchey III & IV [diverticulitis with generalised purulent peritonitis and diverticulitis with generalised faecal peritonitis] can be considered as a working definition of severe disease.

The surgical management for acute severe diverticulitis has been the subject of debate in recent years. In particular there have been randomised controlled trials endeavouring to elucidate the optimum treatment strategy for severe diverticulitis.

It is widely accepted patients having colonic resection may in many instances have a primary colonic anastomosis (with or without covering defunctioning ileostomy) as an effective alternative to a Hartmann's procedure.

Damage Control procedures have been advocated in patients developing signs of septic shock¹.

The question as to the best surgical management for Hinchey III without shock remains. Five RCTs are largely focussed on comparing laparoscopic lavage and drainage versus resectional surgical strategies in Hinchey III disease. Three of these have reported their primary results². While initial results would suggest that laparoscopic lavage and drainage is an option in some of these patients, the reporting of the remaining trials will be critical in developing the preferred strategy and may challenge the current World Society of Emergency Surgery (WSES) guidelines 2016³.

However, more detailed analysis as to how the results of such trials should best be applied to individual patients with specific disease history and co-morbidities will need careful consideration. The wealth of data potentially available from the 5 RCTs when reported may potentially allow a more imaginative data pooling than a merely a meta-analysis by developing clinical algorithms and utilising artificial intelligence to support clinical decisions to apply the best strategy for an individual patient.

1. Kafka-Ritsch R, Birkfellner F, Perathorner A, et al. Damage control surgery with abdominal vacuum and delayed bowel reconstruction in patients with perforated diverticulitis Hinchey II/IV. *J Gastrointest Surg* 2012; 16:1915-22
2. Eva Angenete, David Brock, Jacob Rosenberg, Eva Haglind Laparoscopic lavage is superior to colon resection for perforated purulent diverticulitis – a meta-analysis. *Int J Colorectal Dis* 2017; 32: 163-169
3. Sartelli M, Catena F, Ansaloni L, Coccolini F et al. WSES Guidelines for the management of acute left sided colonic diverticulitis in the emergency setting. *World J Em Surg* 2016; 11: 37 <https://doi.org/10.1186/s13017-016-0095>



CLOSING THE OPEN ABDOMEN

Walt Biffl

The open abdomen (OA) has saved lives, primarily as a component of damage control laparotomy and to help avoid abdominal compartment syndrome. The OA is also indicated for staged procedures, planned second-look laparotomy, severe acute pancreatitis, and the management of abdominal sepsis.

Management of the open abdomen requires a temporary abdominal closure, physiologic support to facilitate resolution of the abdominal process, and closure. Closure is important to achieve within 8 days, as the incidence of fistula and frozen abdomen increase after that time.

Numerous strategies exist to manage and close the open abdomen. In general, the combination of negative pressure wound therapy and fascial traction offer the best chance for primary fascial closure. If primary fascial closure cannot be achieved within 8 days, the surgeon should plan coverage with mesh or skin closure, with planned ventral hernia management and reconstruction at a future date.

References

1. Burlew CC, Moore EE, Biffl WL, et al. One hundred percent fascial approximation can be achieved in the postinjury open abdomen with a sequential closure protocol. *J Trauma Acute Care Surg* 2012; 72:235.
2. Coccolini F, Biffl W, Catena F, et al. The open abdomen, indications, management, and definitive closure. *World J Emerg Surg* 2015; 10:32.
3. Cirocchi R, Birindelli A, Biffl WL, et al. What is the effectiveness of negative pressure wound therapy (NPWT) in patients treated with open abdomen technique? A systematic review and meta-analysis. *J Trauma Acute Care Surg* 2016; 81:575.

ANAESTHESIA FOR THE HIGH RISK PATIENT

Simon Robertson

Epidemiological data allows us to make two very important points: Emergency laparotomy is a common and high risk procedure. Peri-operative risk is best assessed using the P-POSSUM score. This should be calculated for patients on presentation. Online resource for this is <http://www.riskprediction.org.uk/index-pp.php>

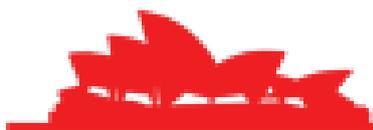
Patients with a peri-operative risk of death of greater than 5% should have consultant surgical and anaesthetic presence pre-operatively and intra-operatively. These patients should all be admitted to ICU post-operatively.

Practice standardisation allows for safe, uniform practice and is likely to improve outcomes. Bundles of care, such as those applied to ERAS programs can be used for this purpose. At the present time, there are fewer than 10 clinical trials examining the role, benefit and safety of the ERAS principles to emergency laparotomy.

The talk will focus on the available evidence for the bundle approach to peri-operative care and some intra-operative anaesthetic aspects.

The most important aspects of current recommendations for emergency surgery are:

1. Pre-operative:
 - a) Resuscitation
 - b) Antibiotics
2. Intra-operative
 - a) Use short acting anaesthetic agents
 - b) Consider epidural analgesia
 - c) Use non-opioid analgesia
 - d) Do not cause fluid overload
3. Post-operative
 - a) Early mobilisation
 - b) Nutritional support
 - c) Intensive care involvement, especially for patients at high risk of death



LARGE BOWEL OBSTRUCTION

Fred Betros

Large bowel obstruction (LBO) occurs less commonly than small bowel obstruction but it is not rare, comprising approximately 7-10% of all types of gastrointestinal obstruction.¹ Due to the diverse underlying aetiologies, anatomical considerations of the site of obstruction, institutional resources, expertise and experience of the treating staff and variable patient factors, the surgical decision making in managing LBO can still remain a challenge for even the most experienced colorectal surgeon. Nearly 75% of acute LBO will be due to malignant obstruction with the remainder consisting largely of benign causes such as volvulus and diverticular related strictures. Despite carcinoma of the colon being the commonest cause of LBO, this only accounts for 8-29% of all colon cancer presentations in many series.² Differentiating between mechanical obstruction vs acute colonic pseudo-obstruction is usually clear to the clinician, but at times, even this can be challenging. Once mechanical LBO is established as a diagnosis, the underlying aetiology will play a large role in dictating best treatment options. In the case of malignant obstruction, for appropriate cases, the concept of stenting as a bridge to surgery or as a palliative procedure, has gained significant momentum in the last decade with varying results. Whilst stenting may seem to be cost effective and safe in the palliative setting³, its value as a bridge to surgery in the potentially curative setting is still uncertain. In addition to that, the availability of timely stenting in many smaller and remote centres is often not feasible, with surgical intervention often being the only viable option. Whilst specialist colorectal units will often deal with this acute decision making in larger tertiary referral centres, it still falls upon the general surgeon to provide the expertise to manage this problem outside of these larger institutions. The surgical decision-making options and supporting evidence will be revisited from the perspective of the general surgeon managing the acute LBO emergency.

1 Sawai S. *Management of Colonic Obstruction: A Review*. Clin Colon Rectal Surg. 2012 Dec; 25(4): 200-203.

2 Phillips RK, Hittinger R, Fry JS, Fielding LP. *Malignant Large Bowel Obstruction*. Br J Surg 1985; 72: 296-302.

3 Young CJ, Zahid A. *Randomised controlled trial of colonic stent insertion in non-curable large bowel obstruction: a post hoc cost analysis*. Colorectal Disease 2018; 20(4): 288-295.

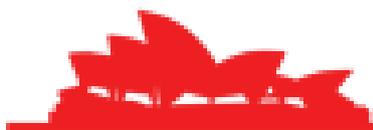
CAREER PATHWAYS IN TRAUMA NURSING

Kate Dale

A Trauma nurse is a nurse that treats patients in a state of emergency after a traumatic mechanism of injury. Their work begins in the hospital emergency department and follows the patient to the Intensive Care Unit, the wards and sometimes rehabilitation. They often need to coordinate with doctors, allied health, the patient and their family members and other nurses. But the Trauma Nurse role is forever evolving and far more varied than this. In Australia we have a number of trauma nurses that have led the way providing leadership, mentorship and expertise in all aspects of trauma care, not only clinically but in human resource management, data management, research and education. What a better way to highlight the career pathways in Trauma Nursing than to highlight some of these Trauma Nurse Leaders and their achievements.

FRONT-LINE SUPPORT IN DECISION MAKING

Sally Forrest-Holder



The reality of trauma care is that no clinician and no trauma team provide perfect trauma care 100 percent of the time. Trauma care is provided under circumstances considered to be low volume, high risk, high acuity, and time sensitive. Life-saving decisions are often made based on small amounts of information obtained from rapid primary and secondary assessments. Combined, these circumstances lead to unfavorable outcomes.

All trauma care providers should be involved in looking at patient outcomes and preventing errors. The level of involvement varies, but every clinician has a role in trauma performance improvement and patient safety (PIPS). The reality of trauma PIPS is that it is difficult; nobody is perfect yet many have difficulty participating in peer review and PIPS activities for fear of retribution. Understanding that adverse outcome does not always mean bad care may help to increase participation and generate honest discussions about cases, case reviews, and system design and flaws. Most errors are related to system failure or a sequence of system failures (Society of Trauma Nurses, 2017).

Trauma clinician involvement varies and may include event reporting; case review, participation in case review, education (giving or receiving), counseling, mentoring, or guideline development (Society of Trauma Nurses, 2017). Any clinician active in health care has a professional obligation to be part of PIPS. It's simply, the right thing to do.

When there is an error made during trauma patient care, it can be attributed to a provider(s), a flaw in the system, faulty equipment, and human factors, to name a few. Human factors principles, applied to trauma care systems include team training, adjusting work areas and access to equipment and supplies, check lists, clinical practice management guidelines, and careful review of patient outcomes (Catchpole, Ley, & Weigmann, 2014).

Corrective actions are no longer about the blame game. Creating an environment of just culture provides a safe environment for everyone to learn from errors, and participate in corrective actions (Edwards, 2018). The goal is to create and implement appropriate corrective actions so the same errors are not repeated. Layered with this goal is the fact that error analysis and corrective actions are time sensitive. Case review, discussions, and corrective actions are most effective when they are initiated very shortly after an event.

Good patient outcomes are attained through multidisciplinary PIPS efforts. PIPS activities are something every trauma clinician should be involved in. Striving for excellence in trauma care should be a shared goal.

References

Catchpole, K., Ley, E., & Weigmann, D. (2014, September). A Human Factors Subsystems Approach to Trauma Care . *JAMA Surgery*, 962-968. doi:doi:10.1001/jamasurg.2014.1208

Edwards, M. T. (2018, April 16). An Assessment of the Impact of Just Culture on Quality and Safety in US Hospitals. *American Journal of Medical Quality*. doi:doi.org/10.1177/1062860618768057

Society of Trauma Nurses. (2017). Trauma Outcomes Performance Improvement Course.



BUILDING EFFECTIVE TRAUMA RESUSATATION TEAMS

Ryan Looney

A critical part of any trauma patient journey occurs as the receiving facility accepts the patient into the hospital system. In mature trauma systems the most severely injured patients are dispatched to designated receiving trauma facilities to be resuscitated and stabilised in an effort to reach definitive care. Often occurring within the Emergency Department (ED), patients are retrieved from the field to be greeted by a growing number of healthcare professionals of varying disciplines and specialty. The resuscitation of trauma patients is complex and time critical, often requiring fast and accurate decision making with information that is sometimes inaccurate, unavailable or equivocal. The trauma team is required to function effectively, conducting multiple technical procedures and investigations. It is a stressful environment and team members are typically compiled from various disciplines and specialties, team members are sometimes previously unknown to each other with varying experience and skill levels

As a result of these complexities and challenges trauma care can be deficient in a number of ways, and multiple deficiencies may result in the impairment of team success and patient outcomes. Therefore the need to build and train effective trauma resuscitation teams remains an important aspect for health care facilities. Current training focuses on combining technical and non-technical skills, team dynamics and crisis resource management through simulation team training in an effort to reduce errors and improve team efficiency.

This session explores challenges faced by trauma resuscitation teams and looks towards possible solutions that can help build effective trauma teams. What does an effective trauma resuscitation team look like? Is the aviation industry right? Is simulation the only answer?

COMPASSION FATIGUE

Erica Caldwell

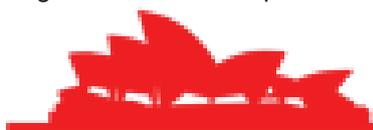
Compassion fatigue refers to the emotional and physical exhaustion that can affect helping professionals and caregivers over time. It has been associated with a gradual desensitization to patient stories, a decrease in quality care for patients and clients (sometimes described as “poor bedside manners”), an increase in clinical errors, higher rates of depression and anxiety disorders among helpers, and rising rates of stress leave and degradation in workplace climate. Helping professionals have also found that their empathy and ability to connect with their loved ones and friends is impacted by compassion fatigue. In turn, this can lead to increased rates of stress in the household, divorce, and social isolation. The most insidious aspect of compassion fatigue is that it attacks the very core of what brings helpers into this work: their empathy and compassion for others.

Secondary traumatic stress (STS) refers to individuals becoming traumatized not by directly experiencing a traumatic event, but by hearing about a traumatic event experienced by someone else. This may occur in the context of a familial, social, or professional relationship. The negative effects include intrusive imagery, avoidance of reminders and cues, hyperarousal, distressing emotions, and functional impairment. In severe instances, where symptoms result in significant distress or impairment in functioning, STS may warrant a diagnosis of Posttraumatic Stress Disorder (PTSD).

Burnout is a state of physical, emotional, and spiritual depletion. It manifests in depression-like symptoms such as lost motivation, decreased productivity, and feelings of cynicism and hopelessness. It shows up in physical symptoms of extreme stress, including digestive shut-down, inflammation, adrenal fatigue, and a compromised immune system. High job demands are key to the development of burnout and exhaustion. Other factors that increase burnout risk are: low job control, high workload, low reward and job insecurity. Prolonged exposure to a stressful and demanding environment is structurally conducive to burnout. Burnout is a progressive loss of idealism, energy, and goals as the result of personal or occupational stress. The burnout syndrome can be described as exhaustion mixed with anxiety and depression.

This session explores compassion fatigue and burnout with focus on recognition and steps towards recovery.

Bride, B.E., Radey, M., Figley, C.R. (2007). Measuring compassion fatigue. *Clinical Social Work Journal*, 35:155-163
Figley, C. R. & Stamm, B. H. (1996). Psychometric review of the compassion fatigue self test. In B. H. Stamm (Ed.), *Measurement of stress, trauma and adaptation*. Lutherville, MD: Sidran Press
Nolte AGW, Downing C, Temane A, Hastings-Tolsma M. Compassion fatigue in nurses: A metasynthesis. *J Clin Nurs*. 2017;26:4364–4378.



OPEN Vs ENDOVASCULAR – HORSES FOR COURSE**Joakim Jorgensen**

“The only people who gain from warfare are the young surgeons” stated by Ambroise Paré in the 16th century, and centuries of experience with vascular injuries have evolved from ligation to damage control vascular surgery. (1) Over the past decades, the evolution of endovascular techniques and equipment has had a major influence on treatment modalities not only in vascular surgery but also in trauma. The introduction of hybrid trauma operating theatres have further expanded the possibilities in treating trauma patients.

Today’s protocols and guidelines include TEVAR for traumatic thoracic aortic injuries, non-operative management (NOM) with or without angioembolization (AE) for liver, spleen, renal and pelvic injuries, with a major impact on mortality and morbidity. Recent publications with endovascular repair of subclavian and axillary artery injuries contributes to the ever expanding endovascular possibilities. (2) The prehospital and ER deployment of REBOA for non-compressible hemorrhage is the latest contribution to trauma care.

Trauma care includes care from the scene to discharge to home, and trauma systems are designed to ensure optimal care. We therefore have to critically evaluate all new modalities before implementation.

Oslo University Hospital Ullevaal (OUH-U) is located in central Oslo and is the only equivalent to a Level I trauma centre in Norway. The trauma ER constitutes of 3 trauma bays, a 256 slice CT and a trauma dedicated hybrid operating theatre, providing us with a wide range of treatment possibilities with interventional radiologists being part of the operating team 24/7 on 30 minutes notice.

Endovascular repair for suitable thoracic aortic, axillary, subclavian and iliac artery injuries and NOM with or without AE for solid organ and pelvic injuries are part of our protocols. The endovascular possibilities of intraoperative proximal vascular control have further expanded our trauma toolbox.

Consistently, 35-40% of the 2000 annually admitted patients requiring trauma team activation have an Injury Severity Score > 15 and approximately 10% are from penetrating trauma. Over the years, the number of ER thoracotomies has been reduced to 2-3 / year suggesting an optimal use of prehospital- and ER time. Although a wider range of intraoperative possibilities, our data suggest that optimization of resuscitation including a massive transfusion protocol is one of the key elements in the reduced number of surgical end endovascular procedures for solid organ injuries and pelvic bleeds. (3)

Our trauma system is designed to care for the patient through the whole chain, minimizing time to definitive care and with optimal use of endovascular techniques.



References:

1. Rich NM. Vascular Trauma Historical Notes. Perspectives in Vascular Surgery and Endovascular Therapy. 2011 Oct 10;23(1):7–12.
2. DuBose JJ, Rajani R, Gilani R, Arthurs ZA, Morrison JJ, Clouse WD, et al. Endovascular management of axillo-subclavian arterial injury: a review of published experience. Injury. 2012 Nov; 43(11):1785–92.
3. Gaski IA, Barckman J, Naess PA, Skaga NO, Madsen JE, Kløw N-E, et al. Reduced need for extraperitoneal pelvic packing for severe pelvic fractures is associated with improved resuscitation strategies. J Trauma Acute Care Surg. 2016 Oct; 81(4):644–51.

EXSANGUINATING LIVER INJURY – PLAN A,B,C...

Elmin Steyn

Life-threatening exsanguination from blunt or penetrating liver injury presents a major challenge to the trauma surgical team. The liver is a highly vascular organ and bleeding from major intrahepatic or retro-hepatic blood vessels is not easily accessed, visualized or controlled. Significant liver injuries usually presents with hemodynamic instability, an indication that no time should be wasted to obtain control of bleeding, whether by endovascular or by surgical means. Most universally recommended techniques for haemorrhage control for liver injuries include early implementation of damage control principles, peri-hepatic packing and angio-embolization. The simultaneous early implementation of haemostatic resuscitation and prevention of hypothermia are essential steps to optimize haemostasis.

Unfortunately not all liver injuries are suitable for packing followed by angio-embolization. Major hepatic arterial bleeding may not be amenable to packing, as compression pressure required for sustained control of arterial bleeding, inevitably exceeds arterial perfusion pressure of the liver parenchyma, leading to extensive ischemia and necrosis. Furthermore, over aggressive packing, will compress the IVC, leading to decreased venous return to the heart and intra-abdominal hypertension. Therefore the challenging surgical techniques for access and control of bleeding from deep and complex liver injuries, as well as juxta-hepatic vein injury and major porta hepatis vascular injury, need to be mastered. As these injuries are rare, training opportunities are few and far between. Training models such as simulators, cadavers and live tissue training may be imperfect, but should be optimized and utilized as best possible.

Advanced surgical techniques of obtaining haemostasis for exsanguinating complex liver injuries include inflow control, tractotomy, resectional debridement, lobectomy, suture ligation, direct repair, shunting, plugging, packing, and liver resection with transplantation. In addition, there are more haemostatic aids and devices available, many of which are extremely effective if applied in the correct setting.

The first, second and third-line options for control of exsanguinating live haemorrhage will be discussed.

References

1. Operative Techniques for Severe Liver Injury., Ed. Springer, New York 2014. Rao R. Ivatury. <https://books.google.co.za/books?isbn=1493912003>
2. Exsanguination protocol improves survival after major hepatic trauma January 2010 Volume 41, Issue 1, WD.Dutton, V Zaydfudim, K. Feurer, C. Pinson, B Cotton DOI: <https://doi.org/10.1016/j.injury.2009.09.019>
3. Balloon Tamponade With Sengstaken-Blakemore Tube for Penetrating “Core” Liver Injury. J Curr Surg • 2013;3(1):47-48A Beckera, H Mizrahia , A Chulskyb



There has been a renewed interest in operative stabilisation of chest wall trauma over the last decade. Patients with flail chest have been definitively shown to have improved outcomes with operative stabilisation. Multiple prospective studies are underway to determine the utility of rib fixation in the non-flail chest patient.

The main challenge with the operative technique, is that rib fixation does not clearly fall into an easily defined surgical category. Most patients with rib fractures are cared for by the trauma surgeon or general surgeon. The operative anatomy is relevant to thoracic surgeons, however the actual fixation of the ribs requires a sound understanding of orthopaedic principles.

It is critical to understand the individual fixation systems. Each system has specific features that may be more appropriate for particular fracture patterns. Some systems allow access percutaneously or beneath the scapula, while other systems conform to the rib and therefore allow maintenance of reduction during fixation.

The key technical aspects of rib fixation include:

1. Planning. 3D reconstructions of the chest wall, with a translucent scapula allow accurate identification of fractures. Intraoperative marking of fractures utilising ultrasound, allows appropriate skin incision placement
2. Positioning. The fracture pattern will determine the correct position for the patient intraoperatively eg bilateral anterior fractures are best approached with the patient in the supine position
3. Thoracoscopy. This allows evacuation of any retained haemothorax as well as freeing up any lung adhered to the fractures. In addition an extrapleural pain catheter can be inserted with thoracoscopic assistance.
4. Incision and exposure. Again, the fracture pattern will determine the appropriate incision. Muscle sparing/splitting techniques should be utilised to obtain the submuscular plane. Large formal thoracotomy incisions can be avoided by targeted incision placement
5. Reduction and fixation of fractures. Orthopaedic principles and techniques are paramount. The fracture should be reduced to ensure good cortical contact. Soft tissue should be preserved, particularly over comminuted segments. Use of a longer plate distributes the force across a longer area. Non-locking screws can assist in bringing the bone to the plate. It is important to understand the pitfalls associated with each system eg over-tightening the u-plates can result in further fracturing of the bone; anterior plates, particularly longer plates, should be contoured and fixed accurately, as they can be unintentionally placed obliquely across the rib.

References:

- Marasco S, Saxena P. Surgical Rib Fixation – Technical Aspects. Injury. 2015 May;46(5):929-32
- Pieracci et al. Consensus statement: Surgical stabilization of rib fractures rib fracture colloquium clinical practice guidelines. Injury. 2017 Feb;48(2):307-32



NECK EXPLORATION MADE EASY

Cino Bendinelli

The neck is small and packed with vital organs. Patients with extremely severe neck trauma die in the field from hypoxia, exsanguination or a combination of both. Hemodynamically normal patients with penetrating or blunt trauma benefit from triple phase CT, in order to avoid an operation or cautiously plan an urgent procedure. In these patients angiography with stenting should be considered for clotted injuries to the brachiocephalic or subclavian artery. Instead patients with compromised airways and/or ongoing bleeding require prompt and strategic surgical management. Surgical airways are best obtained through a long longitudinal skin incision over the larynx to gain access to either the cricothyroid membrane or the trachea. In case of penetrating trauma the same incision that divided the airway can be used to intubate over a boogie inserted with extreme care (to avoid ripping the membranous trachea that could be the only tissue holding the distal airway). Massive bleeding is first managed with compression (and intubation to avoid strangulating the patient). Long extensile incisions performed over the sternocleidomastoid muscle are most useful. Proximal control can be obtained with a sternotomy or mini sternotomy. Veins should be ligated with impunity. The carotid should be repaired or reconstructed only if there is back bleeding either before or after thrombus clearance with a Fogarty.

MANAGEMENT OF RECTAL INJURIES

David Read

Colon and rectal trauma has been heavily influenced by the successive experiences of military surgeons. From a policy of universal defunctioning after WW2, evolved into a more prescriptive 'Four D's' of rectal trauma from Vietnam war times, (direct repair, divert, drain and distal rectal washout). In the late 70's, routine defunctioning was questioned as successive civilian series showed equivalent or superior results to direct closure or resection. In the last two decades, this conservatism learned from civilian times was translated to the battlefield, with a subsequent 10% leak rate for battlefield wounds. This talk will discuss the current management of rectal trauma which is summarised as;

- the rectum is different from the colon, and should be managed differently
- civilian and battlefield rectal injuries are different and should be managed differently
- although the intraperitoneal rectum can be treated like the colon and usually not defunctioned, the extraperitoneal rectum is not so forgiving
- distal rectal washout and presacral drains are not routinely necessary
- surgically, be aware of the surrounds, especially the rectal side wall
- the lower the injury the more you should consider defunctioning

NEUROPROTECTION – WHAT'S NEW AND WHAT WORKS

Jeff Rosenfeld

There is surprisingly no effective specific treatment for traumatic brain injury. Many hundreds of new drugs and molecules have been trialled. Many have shown beneficial effects in animal models but this has not translated into efficacy in humans. Drug companies have largely lost interest in neuroprotective drugs for brain injury. Contrast this with heart disease. The reasons for this are many including pharmacokinetics, dosage, drug delivery, sex, heterogeneity of pathology, variables in care of brain injured patients, design and statistical power of studies etc. Operation Brain Trauma Therapy may identify new agents with a better chance of success. Combination therapies may have also be more effective. Some promising therapies include prehospital therapeutic hypothermia, NMDA receptor antagonists, and molecules/drugs which inhibit the effects of the tissue plasminogen activator (t-PA) system on the blood brain barrier such as RAP and Fasudil. These will be described.



DVT PROPHYLAXIS – WHAT’S NEW?

Mitch Cohen

In keeping with the discussions of coagulation after trauma in the New Frontiers in Traumatic Coagulopathy session, this talk will focus on the biology and treatment of hypercoagulable states and thromboembolic complications after trauma. For decades, thrombotic complications including deep vein thrombosis (DVT) and pulmonary embolism (PE) have been recognized as significant causes of morbidity and mortality after trauma. Before the current emerging understanding of coagulation biology VTEs were thought to be from direct injury along with stasis and immobility of the injured patient. Interestingly in 1992 seminal work from Kundson et al identified that patients with an initial hypocoagulable state were likely to develop later DVT/PE. While this was thought to be due to increasing injury severity our new understanding of the dynamics of coagulation and inflammation biology after injury make it clear that there is a rapid transition from a hypocoagulable to hypercoagulable state after injury. Indeed, early after injury (12-48 hours) nearly all patients have transitioned into a hypercoagulable milieu which is manifest by VTE. This talk will focus on the underlying injury and physiology characteristics as well as the underlying biology driving these changes and risk to our patients. We will additionally discuss new data and guidance on treatment and prophylaxis. Finally, we will discuss the use of rapid diagnostics and precision medicine approaches for future improvements on targeted treatment of our injured patients

References:

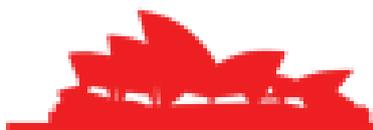
Knudson MM, Collins JA, Goodman SB, and McCrory DW. Thromboembolism following multiple trauma. *The Journal of trauma* 32: 2-11, 1992.

Wu TB, Wu S, Buoni M, Orfeo T, Brummel-Ziedins K, Cohen MJ, Petzold L. Computational Model for Hyperfibrinolytic Onset of Acute Traumatic Coagulopathy. *Ann Biomed Eng.* 2018 Apr 19; PMID 29675813

Christie SA, Kornblith LZ, Howard BM, Conroy AS, Kunitake RC, Nelson MF, Hendrickson CM, Calfe CS, Callcut RA, Cohen MJ. Characterization of distinct coagulopathic phenotypes in injury: Pathway-specific drivers and implications for individualized treatment. *J Trauma Acute Care Surg.* 2017 Jun;82(6): 1055-1062. PMID: 28338598

EARLY PREDICTION OF OUTCOME AFTER SEVERE TBI

Sandro Rizoli



INTENSIVE CARE – TO WHOM DO THESE PATIENTS BELONG?

Mark Midwinter

INTERVENTIONAL RADIOLOGY – NO BOUNDARIES?

Jules Catt



BLUNT CARDIAC INJURY – DIAGNOSTIC CHALLENGE

Simon Robertson

Blunt cardiac injury remains a spectrum of heterogenous disease. The incidence of blunt injury to the conducting and contractile systems is high in patients with thoracic trauma.

There are three principles life-threatening forms of blunt cardiac injury which may co-exists in the same patient

1. Structural injury to the cardiac anatomy
2. Injury to the conducting system resulting in arrhythmia and conduction blockade
3. Injury to the myocardium resulting in contractile failure

Early echocardiography cannot be overemphasised as a helpful tool in the assessment of any patient with haemodynamic instability after thoracic injury.

Structural injury can occur to any part of the cardiac anatomy, from free wall rupture to dissection of the coronary vessels. A high index of suspicion must be maintained. Free wall rupture carries a high mortality and is associated with immediate tamponade. This injury is often diagnosed at post mortem examination, but in patients arriving at the hospital alive, FAST scanning will demonstrate haemopericardium. Cardiac valve and interventricular septal rupture are less common and require formal echocardiography to establish the diagnosis. Mechanisms involving direct AP compression of the chest appears to be the most common pattern of injury. The least common (< 2%) structural injury is dissection of the coronary arteries. The right coronary appears to be most frequently affected.

Non-specific conduction and depolarisation disturbance is common following blunt cardiac injury. Abnormalities on the admission ECG are a level I indication for continuous cardiac monitoring due to the risk of malignant ventricular arrhythmia. Complete conduction blockade is also well described and may require permanent pacing.

Myocardial contusion is a very difficult entity to diagnose and accounts for the contractile failure and cardiogenic shock in the multi trauma patient. The value of "cardiac specific" troponins and other biomarkers of myocardial injury is low. Serial echocardiography and cardiac output monitoring are essential in the early management of these patients when titration of intravenous fluid, blood products, inotropes and vasopressors can be very difficult.

GREAT DEBATE

ED PHYSICIANS SHOULD BE IN CHARGE OF DISASTER PLANNING

For: M. Fitzgerald

Against: D. Read

GREAT DEBATE

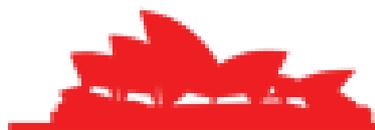
AUSTRALIA'S GUN LAWS ARE THE SOLUTION FOR AMERICA

For: A. Giles

Against: M. Bowyer



NOTES



NOTES



Save the date

SWAN 2019

**TRAUMA, CRITICAL
CARE & EMERGENCY
SURGERY
CONFERENCE**

25th -27th JULY 2019

Venue : Sydney CBD Hotel to be confirmed



