RD 2026 MAY 11th

PROGRAM & ABSTRACTS

2026 ANESTHESIA RESEARCH DAY

A PARTNERSHIP WITH
DALHOUSIE PAIN NETWORK

Innovation | Collaboration | Scientific Discovery

FEATURING PRESENTATIONS BY
Department of Anesthesia, Pain Management & Perioperative Medicine trainees and Dalhousie trainees conducting pain-related research

KEYNOTES:

Collaborative Keynote

Dr. Brian Nosek, PhD

Professor, University of Virginia

Title: Shifting incentives from getting it published to getting it right

Anesthesia Keynote

Dr. Jessica Spence, MD, PhD

Assistant Professor, McMaster University

Title: Perioperative benzodiazepines: should we use them in our patients?

FOR MORE INFORMATION CONTACT THE OFFICE OF RESEARCH
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Halifax Convention Centre
1650 Argyle Street, Halifax

SCHEDULE OF EVENTS

08:30 - 08:45	**REGISTRATION & COFFEE**		[Convention Hall Pre Function] [Room C4]
08:45 - 09:00	**OPENING REMARKS**		[Room C4]
		Stuart Wright & Adam Law	Event Facilitation
		Janice Chisholm	Department Opening Remarks
		Javeria Hashmi	Land Acknowledgement
		Neville Burke	Keynote Introduction
09:00 - 10:00	**ANESTHESIA KEYNOTE ADDRESS**		[Room C4]
		Jessica Spence	Perioperative benzodiazepines: should we use them in our patients? (15 minutes for Q&A)
10:00 - 10:15	**MORNING BREAK**		[Room C4]
10:15 - 11:45	**PRESENTATIONS**		[Room C4 and Room 104]

SESSION A, [Room C4]
6min presentation + 4min Q&A

1	**Aarushi A** Undergrad - BSc *Javeria Hashmi*	Resilience Profiles in Chronic Pain: The Role of Trauma Exposure & Symptoms.

SESSION B, [Room 104]
6min presentation + 4min Q&A

10	**Lynn Jazzar** Undergrad - BSc *Christian Lehmann*	Effects of Propofol in Addition to Isoflurane Anesthesia on the Immune Response within the Microcirculation: An Intravital Microscopy Study.

2	**Liam Sheridan** Medical Student *Andrew Milne*	A Comparison of the Ease of Tracheal Tube Passage Through the Unique and iGel Supraglottic Airways as Intubation Conduits for Difficult Airways.
3	**Adam Mariotti** Medical Student *Andrew Milne*	Epidemiological Analysis of Rural and Urban Patients Undergoing Laryngotracheal Surgery At The Regional Referral Center For Atlantic Canada.
4		*Submission withdrawn*
5	**Cameron Calder** Grad/MSc *Javeria Hashmi*	Chronic pain uncouples functional brain network segregation from cognitive performance in aging.
6	**Janlyn Hoffman** Resident *Javeria Hashmi*	ICD-11-based Phenotyping of Chronic Primary versus Secondary Pain using Electronic Medical Records reveals Distinct Pain Profiles.
7	**MengQi Zhang** Resident *Mathew Kiberd*	Rocuronium and Sugammadex Use Among Canadian Pediatric Anesthesiologists: A National Cross-Sectional Survey.
8	**Nnamdi Chiekwe** Medical Student *Mathew Kiberd*	Where is the place for Regional Anesthesia? Assessing Attitudes, Practice, and Barriers in the Pediatric Emergency Department.
9	**Shan Bal** Medical Student *Michael Wong*	Recruitment and Retention of Anesthesiologists in New Brunswick: A Qualitative Study of Key Factors and Burnout Implications.
11	**Abby Pirapaharan & Ella Kang** Undergrad - BSc *Christian Lehmann*	New Applications of Microcirculatory Methods.
12	**Anjuli Gosal** Undergrad - BSc *Jason McDougall*	An Investigation of Spinal 5-HT7 Receptor Involvement in Green Light Therapy-Induced Analgesia in Rat Model of Osteoarthritis.
13	**Kaela Fraser & Olivia Pappin** Medical Students *Tural Alakbarli, Ana Sjaus*	Assessment of Current Perioperative Analgesic Practices and Outcomes in Breast Surgeries at IWK Health.
14	**Katie Clark** Undergrad - BSc *Melissa O'Brien*	Evaluation of Prolactin Receptor Expression on Nociceptive Sensory Neurons.
15	**Kristian McCarthy** Resident *Hilary MacCormick*	Perspectives of Queer Individuals Regarding the Training and Education of Anesthesiologists in Canada.
16	**Kristin Robin Ko** Resident *Carolyn Thomson*	Sink or Swim, Transition Experiences Through Dalhousie Residency.
17	**Iriana Theoharopoulos** Undergrad - BSc *Jason McDougall*	Effects of 5-HT7 Receptor Antagonism on Locomotor Behaviour Following Green Light Therapy, in an Osteoarthritis Rat Model.
18	**David Jones** Resident *Kwesi Kwofie*	Postoperative Coagulopathy Following Major Surgery in Patients Receiving Thoracic Epidurals: Incidence and Perioperative Risk Factors.

11:45 - 12:45 **LUNCH BREAK** [Room C5]

12:15 - 12:45	**RESEARCH LIVE! With Rishi Gupta & Special Keynote Guests** Trainee & Early Career Researcher Focused but all welcome		Pick-up Lunch [Room C5] Meeting [Room C4]
		All Trainees	Please join keynote speakers for a networking session.
13:00 - 13:45	**COLLABORATIVE KEYNOTE ADDRESS** **Chair Balwantray Chauhan**		[Room C1/C2]
		Brian Nosek	Shifting incentives from getting it published to getting it right (15 minutes for Q&A)
13:45 - 14:15	**PRESENTATIONS: 3-D PRESENTATIONS: A SPOTLIGHT ON INTERDISCIPLINARY RESEARCH IN THE DEPARTMENTS OF ANESTHESIA, OPHTHALMOLOGY AND SURGERY** **Chair Balwantray Chauhan**		7min presentation + 3min Q&A, [Room C1/C2]
	Surgery	**Regan Duffy** Undergraduate Student	Pediatric FFP-free cardiopulmonary bypass prime solution QI initiative.
	Ophthalmology	**Brianna Samson** Graduate Student	Quantifying The Compressive Mechanical Properties of Retinal Tissue Using Spherical Indentation.
	Anesthesia	**Emma Nielsen** Resident	Experiences and Correlates of Adverse and Traumatic Events in Pediatric Perioperative Providers.
14:15 - 14:45	**AFTERNOON BREAK**		
14:45 - 16:15	**PRESENTATIONS**		[Room C4 and Room 104]

	SESSION C, [Room C4] 6min presentation + 4min Q&A		**SESSION D**, [Room 104] 6min presentation + 4min Q&A	
19	**Tom Lorenz** Undergrad - BSc *Andrew Milne*	Increased Tracheal Tube Size and Airway Adjunct Use Are Associated with Significantly Higher Tracheal Intubation Forces.	**28** **Alexander MacPherson** Resident *Orlando Hung*	Trachlight 2 Prototype vs. CMAC-Macintosh Laryngoscope for the Tracheal Intubation of Cadavers with a Simulated Upper Gastrointestinal (GI) bleed model.

20	**Jennika Veinot** PhD *Javeria Hashmi*	Working Memory and Post-Traumatic Stress Contribute to Different Chronic Pain Symptoms but Share a Common Pain Modulation Mechanism.
21	**Jiah Bhutani** Undergrad - BSc *Javeria Hashmi*	The Role of Trauma History in Chronic Pain: Distinguishing the Effects of Trauma Type, Timing, and Cumulative Exposure on Pain, Affective & Trauma Outcomes.
22	**Alison Sampson** Resident *Andrew Milne*	Success Rates and Rescue Methods Employed In 11144 Supraglottic Airway Cases: A Retrospective Analysis.
23		*Submission withdrawn*
24	**Yatin Pratap Singh** Grad - MSc *Javeria Hashmi*	Trauma and Body Mass Index as Predictors of Systemic Dysregulation and Sensory Abnormalities in Fibromyalgia.
25	**Livia Anthes** Resident *Vanessa Sweet*	The Central Zone Sepsis Action Improvement Team: an Interdisciplinary Approach to Improve Sepsis Recognition and Treatment in Nova Scotia Emergency Departments.
26	**Meghan Wentzell** Fellow *Ana Sjaus, Allana Munro*	A Comparison of Two General Anesthesia Techniques for Cesarean Delivery.
27	**Valancy Cole** Resident *Arnim Vlatten*	Vie Scope vs CMAC Miller vl in a Pierre Robin Manikin: A Randomized Crossover Comparison of the Vie Scope to the STORZ CMAC Miller Video Laryngoscope in a Pierre Robin Manikin.
29	**Bridgette Chan** Resident *David MacDonald*	Revising the Central Zone Maximum Surgical Blood Ordering Schedule.
30	**David Greencorn** Resident *Stephanie Power*	Patient Handling Injuries in the OR: Underreported Functional Impact and Mismatch in Transfer Aid Use.
31	**Nathan Barton** Medical Student *Pieter de Jager*	AIRO-SSI: A Dynamic Machine Learning Model for Risk Assessment of Cardiac Surgical Site Infections.
32	**Ryan Ong** Medical Student *Pieter de Jager*	Implementation of In-Operating Room Extubation After Cardiac Surgery: A Single-Center Quality Improvement Initiative.
33	**Rachel Vaughan** Resident *Patricia Livingston*	A Simulation-Based Course Designed for Team Management of Neurosurgical Emergencies in Variable Resource Settings.
34	**Jack Wile** Medical Student *Karim Mukhida*	The Effects of Cannabis Use on Postoperative Pain in Patients Undergoing Hip and Knee Arthroplasty.
35	**Nina Harris** Resident SCHOLARLY PROJECT *Patricia Livingston*	Creating an Instructional Video for Take Home Messages: Gamified Simulation Faculty Development.
36	**Jesse Moreau** Resident SCHOLARLY PROJECT *Patricia Livingston*	VAST Foundation Year Objective Structured Clinical Examination development and piloting.

16:15 - 16:20	**EVALUATION SURVEYS**	https://redcap.link/RD2026-Evaluation
16:20 - 17:00	**WINE & CHEESE SOCIAL**	[Room C5]
17:00 - 17:30	**AWARD PRESENTATIONS & CLOSING REMARKS**	[Room C5]
	Christian Lehmann	
17:30	**Event End**	

ABSTRACTS – SESSION A

Presentation (#): 1

Title: Resilience Profiles in Chronic Pain: The Role of Trauma Exposure & Symptoms

Presenting Author: Aarushi A

Presenter's Affiliations: Department of Psychology and Neuroscience, Dalhousie University

Supervisor: Javeria Hashmi

Other authors and affiliations: Hashmi, J.A.

Department of Anesthesia, Pain Management & Perioperative Medicine.

Abstract

Background:
Chronic pain is a prevalent and complex condition that causes physical, psychological and functional difficulties. Such populations usually have had exposure to traumatic events, which have been linked to worse psychological & pain-related outcomes. Individual responses to such traumatic exposure, however, differ greatly: some may develop post-traumatic stress symptoms (PTSS), but others may maintain relatively adaptive daily functioning. These differences suggest that psychological and clinical pain outcomes, specifically after trauma exposure, may be significantly influenced by resilience. Understanding these variations is particularly important in interdisciplinary contexts, where psychological factors intersect with medical pain management.

Methods:
We used pre-existing data from a chronic pain study to examine resilience profiles. Participants were grouped based on trauma exposure and PTSS levels. A one-way ANOVA was conducted to compare groups on 16 variables that comprise of psychological resilience resources, emotional burden, and pain-related outcomes. A non-trauma-exposed group was included for comparison.

Results:
Findings revealed that while the resilient and vulnerable groups differed in their psychological resilience and emotional burden, there were no significant differences in the clinical pain outcomes. These findings highlight a divergence between subjective psychological functioning and reported pain intensity.

Conclusions:
These results suggest that resilience and vulnerability may be more strongly reflected in psychological and emotional domains rather than in pain intensity itself. Hence, this study aims to advocate for more individualized trauma & resilience-informed approaches into chronic pain assessment and management, supporting more individualized and comprehensive care strategies. This has important implications for interdisciplinary care models, including anesthesia and pain medicine, where integrating psychological resilience factors may improve patient-centered outcomes.

ABSTRACTS – SESSION A

Presentation (#): 2

Title: A Comparison of the Ease of Tracheal Tube Passage Through the Unique and iGel Supraglottic Airways as Intubation Conduits for Difficult Airways

Presenting Author: Liam Sheridan

Presenter's Affiliations: Dalhousie Medical School - Research in Medicine Program

Supervisor: Andrew Milne

Other authors and affiliations: Milne, AD (1, 2)

(1) Department of Anesthesia, Pain Management & Perioperative Medicine; (2) School of Biomedical Engineering

Abstract

Background:
Supraglottic airways (SGA) can act as an intubation conduit to rescue difficult airways. While specialized intubating SGAs (Intubating LMA or ILMA) are designed specifically for tracheal intubation, traditional SGAs can also be used as a conduit for tracheal intubation. One study reported forces ranging from 2.2 to 6.8 N during tracheal tube (TT) insertion through an ILMA. However, insertion of a full-sized adult TT's can be problematic in conventional SGA devices. The purpose of this study was to measure the forces required for TT passage through conventional SGAs.

Methods:
Peak tracheal tube passage forces were measured using a custom-built testing system with an in-line digital load cell. Two SGA sizes (#4 and #5) and two brands (Unique/iGel) were tested using the recommended "small" and "large" TT sizes (range 5.5-8.0 mm ID). Each tube was pre-lubricated with 2 mL of water-soluble lubricant and ten insertion trials were performed for each configuration. Peak insertion forces were analyzed using a 3-way ANOVA.

Results:
Peak TT passage forces ranged from 1.1 to 17.6 N. Significantly reduced insertion forces were observed for the iGel versus the Unique SGA brands ($p<0.001$) and with the use of smaller tubes in either brand ($p<0.001$). Three mechanisms causing increasing insertion forces during tube passage were identified: initial SGA connector passage, pilot line interference and impingement with the fenestrations at the distal opening.

Conclusions:
This study demonstrates that TT passage through the iGel requires significantly less force, which may increase tracheal intubation success rates by reducing the risk of dislodgement during airway management.

ABSTRACTS – SESSION A

Presentation (#): 3

Title: Epidemiological Analysis Of Rural And Urban Patients Undergoing Laryngotracheal Surgery At The Regional Referral Center For Atlantic Canada

Presenting Author: Adam Mariotti

Presenter's Affiliations: Dalhousie Medical School (1)

Supervisor: Andrew Milne

Other authors and affiliations: Timothy Brown (2), Geoff Maksym (3), Andrew D. Milne (3,4)

(1) Dalhousie Medical School; (2) Division of Otolaryngology - Head & Neck Surgery, Dalhousie University; (3) School of Biomedical Engineering, Dalhousie University; (4) Department of Anesthesia Pain Management and Perioperative Medicine, Dalhousie University

Abstract

Background:
Chronic laryngotracheal disorders (LTD) can require recurrent surgical procedures and follow up appointments. Halifax is the sole referral center in Atlantic Canada for laryngotracheal surgery. Travel to appointments can impose appreciable burdens on rural patients in terms of both time and financial costs. Remote care technologies can help to ameliorate disparities in health care for vulnerable rural populations. Our team is developing a device for home use to monitor for the recurrence of tracheal stenosis via measured airway resistance. The purpose of this study was to determine the extent of LTD and potential need for remote monitoring in the rural population of Atlantic Canada.

Methods:
After REB approval, a retrospective study of adult laryngotracheal surgeries between 2010 and 2025 was conducted. Demographic variables and type and date of surgery were collected from the electronic anesthetic records. Geographic residency was determined using postal codes and defined as either "urban" residing within Halifax Regional Municipality (HRM), or "rural" for those outside of HRM.

Results:
There were a total of 2351 surgical procedures among 1353 unique patients (757 females/596 males). The mean age at the first surgery was 56.1 years, and 368 patients required multiple procedures with a mean of 3.7 repeated surgeries. At the patient level, 866/1353 (64%) were from rural areas/outside Nova Scotia (NS), whereas at the procedure level, 1600/2351 (68%) were rural/outside NS (z-test, p=0.007).

Conclusions:
This study demonstrates a significant and disproportionate burden of LTD procedures for rural patients in Atlantic Canada, thus supporting the potential utility of a home monitoring system.

ABSTRACTS – SESSION A

Presentation (#): 4 *Submission withdrawn*

ABSTRACTS – SESSION A

Presentation (#): 5

Title: Chronic pain uncouples functional brain network segregation from cognitive performance in aging

Presenting Author: Cameron Calder

Presenter's Affiliations: Department of Medical Neuroscience, Dalhousie University

Supervisor: Javeria Hashmi

Other authors and affiliations: Calder, C. (1,2,3) Hashmi, JH (1,2,3)

(1) Department of Medical Neuroscience, Dalhousie University; (2) Department of Anesthesia, Pain Management, and Perioperative Medicine, Dalhousie University; (3) Nova Scotia Health Authority

Abstract

Background:
Chronic pain disproportionately affects older adults and is linked to cognitive decline and dementia risk, yet the mechanisms underlying this relationship remain unclear. System segregation (SS) measures the organizational tendency of functional brain networks towards segregation. This metric declines with age, is associated with cognitive decline, and the development of dementia. Whether chronic pain alters age-related SS-decline or its relationship with cognition remains unknown.

Methods:
Resting-state functional MRI and cognitive assessments were completed by 60 healthy controls and 141 individuals with chronic pain. Cognitive performance was evaluated across working memory, attention interference inhibition, and response inhibition. SS was quantified from resting-state functional connectivity and averaged across sparsity thresholds. PROCESS moderation analysis (SPSS) was used for exploring interaction effects.

Results:
Chronic pain was associated with greater age-related decline in working memory and inhibitory control. However, despite support for accelerated cognitive aging in chronic pain, we observed less SS-decline chronic pain in chronic pain patients compared to healthy controls. Furthermore, we noted that the association between SS and working memory showed abnormalities in chronic pain: higher SS typically predicts improved working memory in healthy controls, but this relationship was reversed in chronic pain, with effect particularly observed in younger adults.

Conclusions:
The observed impact of chronic pain on cognitive and functional brain aging emphasizes the importance of accounting for chronic pain status in the development and interpretation of SS as a biomarker of cognitive aging and dementia.

ABSTRACTS – SESSION A

Presentation (#): 6

Title: ICD-11-based Phenotyping of Chronic Primary versus Secondary Pain using Electronic Medical Records reveals Distinct Pain Profiles

Presenting Author: Janlyn Hoffman

Presenter's Affiliations: Department of Anesthesia, Dalhousie University

Supervisor: Javeria Hashmi

Other authors and affiliations: Aleali, A. (2), Mukhida, K.(1), & Hashmi, J.A..(1,2,3,4)

(1) Department of Anesthesia, Pain Management & Perioperative Medicine; (2) Department of Medical Neuroscience; (3) Department of Physics & Atmospheric Science; (4) Department of Psychology and Neuroscience

Abstract

Background:
Chronic pain is a leading contributor to global disability and health-care utilization worldwide. Despite its prevalence, ~30% of patients are classified as treatment-refractory and ~15% continue to have chronic pain post-surgery. The ICD-11 distinguishes chronic primary pain (CPP), where pain is a disease itself, from chronic secondary pain (CSP), where pain is a symptom of an underlying condition; however, their clinical relevance remains uncertain. Here, we evaluated whether ICD-11-based classifications of CPP and CSP correspond to clinical differences across affective, cognitive, sensory, and pharmacologic domains.

Methods:
Using electronic medical records, 87 patients were classified as CPP (n=61, 88% female) or CSP (n=26, 54% female) using ICD-11 criteria. Multidimensional pain assessment included structured chart review, validated self-report questionnaires, and testing with experimental heat stimulus to quantify expectancy-related modulation of pain.

Results:
In comparison to CSP, those with CPP demonstrated greater affective burden, pain severity, distribution, and disability ($p<0.05$). Pain catastrophizing was elevated in CPP, whereas pain vigilance did not differ. CPP had greater use of antidepressants and analgesics, whereas opioids and benzodiazepines did not differ. CPP also demonstrated reduced pain tolerance ($p=0.035$), and enhanced sensitivity to expectancy violations, while pain threshold did not differ ($p=0.055$).

Conclusions:
In summary, CPP demonstrates significantly greater affective burden, pain severity, and altered pain-expectation processing when compared to CSP, suggesting altered cognitive pain processing. These findings support the clinical validity of ICD-11 classification and underscore its relevance for mechanism-informed stratification and targeted management of chronic pain.

ABSTRACTS – SESSION A

Presentation (#): 7

Title: Rocuronium and Sugammadex Use Among Canadian Pediatric Anesthesiologists: A National Cross-Sectional Survey

Presenting Author: MengQi Zhang

Presenter's Affiliations: Department of Anesthesia, Dalhousie University

Supervisor: Mathew Kiberd

Other authors and affiliations: Dumbarton, T. (1); Bailey, J.G. (1); Kiberd, M. (1)

(1) Department of Anesthesia, Pain Management & Perioperative Medicine, Dalhousie University, Halifax

Abstract

Background:
Muscle relaxation in pediatric anesthesia has traditionally been achieved using high-dose hypnotics and opioids rather than neuromuscular blocking agents. The advent of sugammadex, capable of rapid and complete reversal, has renewed interest in use of neuromuscular blockade. The objective of this study was to characterize rocuronium use among Canadian pediatric anesthesiologists, identify perceived barriers and facilitators, and explore decision-making factors.

Methods:
We conducted a cross-sectional survey study of pediatric anesthesiologists using a 26-item survey distributed via the Canadian Pediatric Anesthesia Society (CPAS) mailing list. The survey captured demographics, neuromuscular blocker usage patterns, reversal practices, monitoring modalities, and free-text clinical rationale. Quantitative data were analyzed descriptively with inferential testing, and free-text responses underwent thematic analysis.

Results:
Sixty anesthesiologists responded. Following sugammadex introduction, 25% reported increased rocuronium use, while 70% reported no change. Reported benefits of rocuronium included improved intubating (80%) and surgical (78%) conditions. Concerns included residual neuromuscular blockade (58%) and anaphylaxis (33%). Endorsing concern for airway trauma was associated with increased rocuronium use. Sugammadex was valued for complete reversal (88%) and rapid airway rescue capability (72%), though cost was identified as a major barrier (67%). Despite concerns regarding residual blockade, 42% of respondents did not use neuromuscular monitoring, and only 25% reported routine use of quantitative monitoring.

Conclusions:
Adoption of rocuronium and sugammadex in Canadian pediatric anesthesia is cautious and influenced by clinical and system-level factors. A gap exists between concern for residual blockade and limited use of quantitative monitoring. Addressing monitoring access and cost barriers may optimize practice.

ABSTRACTS – SESSION A

Presentation (#): 8

Title: Where is the place for Regional Anesthesia? Assessing Attitudes, Practice, and Barriers in the Pediatric Emergency Department

Presenting Author: Nnamdi Chiekwe

Presenter's Affiliations: Department of Anesthesia, Pain Management, & Perioperative Medicine, Dalhousie University, Halifax, Nova ScotiaDalhousie University

Supervisor: Mathew Kiberd

Other authors and affiliations: Kiberd, M., Dumbarton, T., Gardner, K., Cox, C., Weerdenburg, K., Morash, K., Chiekwe, N.

Abstract

Background:
Regional anesthesia (RA) is increasingly used in adult emergency medicine to manage acute traumatic events and high pain injuries. However, RA use in the pediatric population remains variable and underdeveloped with procedural sedation being the favoured approach. The use of RA offers advantages in safety, resource utilization, patient comfort, and ability to avoid systemic opioid or full sedation. Factors that impact uptake of RA include lack of provider training, logistical complexity, concerns about procedural safety, and uncertainty from consulting surgical teams. It has been identified that key stakeholders involved in the peri-injury pathway, orthopedic surgery and Emergency medicine, can influence institutional, cultural, and knowledge-based barriers to implementation of RA in the ED. This work looks to explore what factors and influences impact practice and use of RA within the pediatric Emergency department.

Methods:
Study design - Cross-sectional survey study that will be reported in accordance with the Checklist for Reporting Results of Internet E-Surveys (CHERRIES) checklist. Participants – licensed orthopedic surgeons practicing across Canada; licensed emergency physicians who provide care to the pediatric population in the emergency department. Recruitment – Separate REDCap survey links will be sent to the two groups via national mailing lists. Surveys will be open for 6 weeks, with a reminder email sent at week 4. Analysis – Quantitative data will be analyzed using descriptive statistics; open-ended responses will undergo a thematic analysis by 3 independent reviewers.

Results:
Orthopedic surgeons and Emergency physicians are in support (77% vs 95%) and believe there is a role (81% vs 93%) of RA in pediatric emergency care. Orthopedic surgeons supported having RA performed by an anesthetist (78% agree/strongly agree), and majority were in favour of a trained ED physician performing RA (63%). Emergency physicians showed greater agreeance for Anesthetist led RA (95%) and ED led RA (79%). Organizational gaps were identified to RA implementation. 70% of Emergency physicians identified that they perform RA on pediatric patients, however, 58% identified no formal training. Additionally, both orthopedic surgeons and emergency physicians identified, amongst many others, a lack of protocol/policy, equipment, and confidence in technical skills were limiting factors to implementation.

Conclusions:

Overall, there is shared consensus that RA has a role and purpose in pediatric emergency care. Implementation has been limited to systemic factors, education and training, with less concern to safety and clinical flow.

ABSTRACTS – SESSION A

Presentation (#): 9

Title: Recruitment and Retention of Anesthesiologists in New Brunswick: A Qualitative Study of Key Factors and Burnout Implications

Presenting Author: Shan Bal

Presenter's Affiliations: Dalhousie Medicine New Brunswick, Saint John, New Brunswick

Supervisor: Michael J Wong

Other authors and affiliations: Wong, M. (1) & Leiter, M. (2)

(1) Department of Anesthesiology, Pain Management & Perioperative Medicine, Dalhousie University, Saint John, NB; (2) Department of Psychology, Acadia University, Wolfville, NS

Abstract

Background:
There is a shortfall of anesthesiology providers, particularly in rural New Brunswick (NB), with implications for surgical access, wait times, and service sustainability. Factors influencing recruitment, retention, wellness, and professional satisfaction remain unclear. We interviewed practicing anesthesiologists in NB to explore these factors via qualitative thematic analysis.

Methods:
We interviewed practicing anesthesiologists in NB. We conducted semi-structured interviews with 12 anesthesiologists across Anglophone and Francophone centres. Interviews were transcribed, de-identified, and analyzed using an inductive thematic approach. Participants completed the 9-item Maslach Burnout Inventory-General Survey (MBI-GS9).

Results:
Factors that supported recruitment and retention in NB included family ties and suitability for raising children, lower cost of living, strong collegial departments described as friendlyand quick to help, and a broad scope of practice, with work that includes complex cases, teaching, and leadership roles. Many felt that flexible scheduling and fee-for-service remuneration helped maintain work-life balance and reinforced participants' desire to stay in NB. Barriers included limited national awareness of NB practice opportunities, resource constraints, frustration with hospital administration and regional health authorities, allied health shortages, high nursing turnover, and inefficiencies in care contributing to workload strain. MBI scores suggested low to moderate emotional exhaustion and cynicism, with professional efficacy (mean EX 1.67, CY 2.24, PEF 4.73).

Conclusions:
Anesthesiologists in NB described a mix of lifestyle, collegial, and practice-related factors favouring recruitment and retention, alongside concerns about administrative decision-making, allied health staffing, and academic and continuing medical education. Limitations include a small sample and under-representation of Francophone and smaller community sites.

ABSTRACTS – SESSION B

Presentation (#): 10

Title: Effects of Propofol in Addition to Isoflurane Anesthesia on the Immune Response within the Microcirculation: An Intravital Microscopy Study

Presenting Author: Lynn Jazzar

Presenter's Affiliations: Department of Pharmacology, Dalhousie University

Supervisor: Christian Lehmann

Other authors and affiliations: Zhou, J. (1,4), Dastan, M. (1,4) & Lehmann, C. (1,2,3,4)

(1) Department of Anesthesia, Pain and Perioperative Management; (2) Department of Pharmacology; (3) Department of Microbiology and Immunology; (4) Dalhousie University, Halifax.

Abstract

Background:
Volatile as well as intravenous anesthetics have been reported to exert immunomodulatory effects that may influence inflammatory responses and microcirculatory function during and after surgery. Because inflammatory signaling and leukocyte-endothelial interactions play a key role in host defense and postoperative outcomes, understanding how anesthetic regimens affect immune responses is clinically relevant. However, the effects of combining inhalational and intravenous anesthetics on the inflammatory response remain insufficiently understood.

Methods:
Twenty male C57BL/6J mice were randomly assigned to receive either isoflurane anesthesia alone or a combination of isoflurane and propofol. Under general anesthesia, animals were challenged with lipopolysaccharide (LPS) to induce an inflammatory response while control animals received saline injection. Intravital fluorescence microscopy of the intestinal submucosal microcirculation was used to quantify leukocyte rolling flux and leukocyte adhesion in collecting (V1) and post-capillary (V3) venules. In addition, functional capillary density (FCD) was measured in the intestinal mucosa and muscularis layers as an indicator of microvascular perfusion.

Results:
Compared to isoflurane alone, propofol co-administration attenuated the inflammatory response to LPS by reducing leukocyte adhesion and partially preventing the decline in rolling in both V1 and V3. Intestinal FCD remained stable across both mucosal and muscular layers in both anesthetic regimens under baseline and inflammatory conditions.

Conclusions:
Propofol appears to exert anti-inflammatory effects in the intestinal microcirculation during endotoxin-induced inflammation. The potential implications of these effects should be considered in situations involving pre-existing inflammation, where they may be protective, or during surgical trauma, where suppression of the physiological inflammatory response could be detrimental.

ABSTRACTS – SESSION B

Presentation (#): 11

Title: New Applications of Microcirculatory Methods

Presenting Author: Abby Pirapaharan, Ella Kang

Presenter's Affiliations: Department of Anesthesia, Dalhousie University

Supervisor: Christian Lehmann

Other authors and affiliations: Zhou, J. (1), Dastan, M. (1), Lehmann, C. (1)

(1) Department of Anesthesia, Dalhousie University, Halifax

Abstract

Background:
Infrasound refers to sound below the human hearing range of 20 Hz and is emitted by many everyday structures. Exposure to chronic infrasound has become an important environmental stressor that has received little attention so far and can have significant biological effects on various body systems. It is hypothesized that infrasound may activate PIEZO1 and PIEZO2 ion channels, which sense mechanical forces like pressure and vibrations, leading to various downstream effects such as Ca2+ and NO release. As a result, alterations in the microcirculation may occur.

Methods:
C57BL/6 mice (6-8 weeks old) were exposed to 100 dB/1 Hz infrasound for 4 hours. Baseline and post-exposure measurements of vasomotion and flow motion of the sublingual blood vessels were made using Sidestream Dark Field (SDF) imaging and Laser Doppler Flowmetry (LDF) imaging, respectively. Results from both methods were then analyzed using Fast Fourier Transform (FFT) to be separated into three frequency bands: very low (0.005-0.15 Hz), low (0.15-2 Hz), and high (2-8 Hz), which correspond with endothelial/myogenic, respiratory, and cardiac activity, respectively.

Results:
Significant increases in vasomotion were observed in the low and high frequency bands, while flow motion was significantly increased in the very low frequency band. Overall, an increasing trend in both vasomotion and flow motion was shown in all frequency bands.

Conclusions:
These results demonstrate that infrasound causes physiological changes in the microcirculation. Further research is needed to determine if these effects are pathological or reversible, and whether these effects of infrasound can be therapeutic in controlled settings.

ABSTRACTS – SESSION B

Presentation (#): 12

Title: An Investigation of Spinal 5-HT7 Receptor Involvement in Green Light Therapy-Induced Analgesia in Rat Model of Osteoarthritis

Presenting Author: Anjuli Gosal

Presenter's Affiliations: Department of Psychology and Neuroscience, Dalhousie University

Supervisor: Jason McDougall

Other authors and affiliations: McDougall, J. (1,2)

(1) Department of Pharmacology, Dalhousie University, Halifax; (2) Department of Anesthesia, Dalhousie University, Halifax.

Abstract

Background:
Osteoarthritis (OA) is a major source of chronic pain and disability, yet current pharmacological treatments provide limited pain relief and are associated with systemic side effects. Consequently, there is growing interest in safe, non-pharmacological approaches for chronic pain management. Green light therapy (GLT), a visual intervention using low-intensity green light-emitting diodes (LEDs), has demonstrated analgesic potential in clinical and preclinical studies, with evidence supporting centrally mediated descending inhibition. This study examined GLT's ability to attenuate OA-associated pain and evaluated the contribution of spinal 5-HT7 receptor signalling to its analgesic effects.

Methods:
Adult male Wistar rats (200-250g) underwent monosodium iodoacetate (MIA) induced knee OA followed by daily exposure to green or white light (525 nm) at 100 lux for 8 hours per day (Days 9 - 14). Pain behaviour was assessed using dynamic hindlimb weight bearing and von Frey hair tactile sensitivity before and after light exposure. The role of descending serotonergic mechanisms was tested by systemic administration of the selective 5-HT7 receptor antagonist SB-269970 (10 µg, intraperitoneal).

Results:
GLT significantly reduced nociceptive behaviour in OA rats, as evidenced by increased mechanical withdrawal thresholds and improved weight-bearing. Administration of SB-269970 selectively inhibited GLT-induced analgesia, while having no significant effect in WLT-treated animals. These effects differed across behavioural measures, with sustained inhibition observed in von Frey hair testing and transient effects in dynamic incapacitance.

Conclusions:
These findings demonstrate that GLT reduces OA-associated pain by engaging serotonergic descending inhibitory pathways. These results provide further mechanistic evidence of the therapeutic potential of GLT for chronic pain management.

ABSTRACTS – SESSION B

Presentation (#): 13

Title: Assessment of Current Perioperative Analgesic Practices and Outcomes in Breast Surgeries at IWK Health.

Presenting Author: Kaela Fraser, Olivia Pappin

Presenter's Affiliations: Dalhousie University

Supervisor: Tural Alakbarli, Ana Sjaus

Other authors and affiliations: Alakbarli, T. (1,2) & Sjaus, A (1,2)

(1) Department of Women's & Obstetric Anesthesia, IWK Health, Halifax; (2) Dalhousie University, Halifax

Abstract

Background:
Postoperative pain affects 9-70% of patients after breast surgery. Effective pain control is crucial to prevent delays in recovery or negative impacts on functional capacity. The current postoperative pain protocols at the IWK Health Centre include perioperative and postoperative opioid use, but no routine use of regional anesthesia. Regional anesthesia improves pain outcomes and reduces opioid-related adverse effects. Our goal was to understand current analgesic practices and pain outcomes at our institution.

Methods:
We retrospectively reviewed adult patients undergoing breast surgery under general anesthesia (Oct 1-Nov 30, 2024). Procedures included mastectomy, lumpectomy, and reconstructive surgeries. Collected data included intraoperative opioid use, PACU pain scores, rescue analgesia, length of stay, and PONV. PONV severity was defined by antiemetic use and vomiting episodes.

Results:
106 patients were included. All patients received surgical local anesthetic infiltration. Intraoperative opioid use was common, with 70.8% receiving long-acting opioids. Despite this, 43.4% of patients reported moderate and 24.5% severe pain on PACU arrival. Overall, 40.5% required rescue opioid analgesia, with 48.8% received in 20 minutes, and 67.4% received in 30 minutes cumulatively. At PACU discharge, 21.7% of patients continued to report moderate-to-severe pain. Moderate PONV occurred in 9.4% of patients based on antiemetic requirements.

Conclusions:
Current IWK strategies are associated with substantial postoperative pain and rescue analgesia use. These findings indicate further investigation is needed to standardize analgesia protocols to reflect current evidence on opioid use and education on employing regional anesthesia.

ABSTRACTS – SESSION B

Presentation (#): 14

Title: Evaluation of Prolactin Receptor Expression on Nociceptive Sensory Neurons

Presenting Author: Katie Clark

Presenter's Affiliations: Department of Anesthesia, Dalhousie University

Supervisor: Melissa O'Brien

Other authors and affiliations: O'Brien, M. Department of Anesthesia, Dalhousie University

Abstract

Background:
Prolactin, a pituitary hormone best known for its role in lactation, has recently been shown to activate sensory nociceptive neurons in a sexually dimorphic manner with enhanced activation observed in female neurons across species. Prolactin's actions are mediated by their cognate prolactin receptors (PRLRs). These type I cytokine receptors have three known isoforms (short, intermediate, long), each with distinct signal transduction pathways. The reason for these sex-differences in neuronal activation has yet to be fully elucidated but likely relates to differential receptor expression and signal transduction. The aim of this summer project is to examine the expression of PRLRs in sensory tissue from male and female Wistar rats.

Methods:
Immunohistochemistry will be used to quantify PRLR expression according to sensory neuron subtypes (A delta and C fibres) in the trigeminal and dorsal root ganglion. Tissue will be harvested from naïve animals as well as from animals with pathology causing increased nociceptive signalling by using models of joint damage and migraine. PRLR expression will be compared across neuronal subtypes as well as between animal cohorts, and by sex.

Results:
Immunohistochemical data collection is underway. Preliminary data will be presented.

Conclusions:
This project will further our understanding of PRLRs in sensory neurotransmission and identify how PRLR expression differs between sex and with increased nociceptive drive.

ABSTRACTS – SESSION B

Presentation (#): 15

Title: Perspectives of Queer Individuals Regarding the Training and Education of Anesthesiologists in Canada

Presenting Author: Kristian McCarthy

Presenter's Affiliations: Department of Anesthesia, Pain Management and Perioperative Medicine, Dalhousie University

Supervisor: Hilary MacCormick

Other authors and affiliations: Nicholas Hennessey (2), Ana Sjaus (1,2), Ardath Whynacht (3), Hilary MacCormick (1,2)

(1) Department of Anesthesia, Pain Management and Perioperative Medicine, Dalhousie University; (2) Department of Women's & Obstetric Anesthesia, IWK Health Centre; (3) Department of Sociology, Mount Allison University

Abstract

Background:
Queer individuals experience health disparities often linked to stigma and barriers within healthcare systems. While anesthesiologists are vital in perioperative care, little research examines how training addresses queer patients' needs. This study aimed to (1) identify themes around queer patients' expectations of anesthesiology education, and (2) suggest ways to enhance inclusive perioperative care.

Methods:
We conducted semi-structured interviews with queer adults in Nova Scotia. Before data collection, a PowerPoint explaining anesthesiologists' roles and Canadian training was developed and validated. Participants viewed this presentation before interviews to establish baseline understanding. Interviews were audio-recorded, transcribed, anonymized, and analyzed in MAXQDA using inductive, reflexive thematic analysis.

Results:
Twenty-two interviews revealed themes within two overarching categories. "Medical Education and Training" included: (1) queer health training seen as minimal, optional, and reliant on individual interest; (2) knowledge gaps among providers about queer lives and health; (3) educational sessions should be queer-led and experiential; (4) queer health should be integrated into medical school, residency, and continuing education; (5) curriculum should cover queer history, language, medications, and mental health intersection. "Queering Medical Spaces" included: (1) importance of queering the physical environment; (2) using preferred names/pronouns, and inclusive language; (3) diverse/queer staff and allies as safety signals.

Conclusions:
Participants emphasized the need for integrated, experiential curricula on queer topics. They noted that making medical spaces inclusive requires more than symbolic acts; it involves creating environments, teams, and practices that show safety, respect, and expertise in queer health. These insights support efforts to improve medical education and increase inclusivity in perioperative care.

ABSTRACTS – SESSION B

Presentation (#): 16

Title: Sink or Swim, Transition Experiences Through Dalhousie Residency

Presenting Author: Kristin Robin Ko

Presenter's Affiliations: Department of Anesthesia, Dalhousie University

Supervisor: Carolyn Thomson

Other authors and affiliations: Preston, R. (1) Galema, G. (2), Thomson, C. (1).

(1) Resident Affairs, Dalhousie University, Halifax; (2) University Medical Center Groningen, Groningen, Netherlands

Abstract

Background:
Resident physicians undergo multiple challenging transitions throughout residency. To adapt and facilitate these transitions, strategies are developed both at an individual and organizational level. However, residents come from variable backgrounds and experiences. In this study, we explored Dalhousie resident/fellow perspectives on these transition strategies and evaluated unique preferences across different training backgrounds.

Methods:
We conducted semi-structured virtual interviews with 14 Dalhousie-affiliated residents and fellows from various specialties and medical training backgrounds (5 Dalhousie Medical School graduates [CMG-Dal], 5 other Canadian medical school graduates [CMG], 3 international medical graduates [IMG], and 1 visa trainee [VT]). Thematic analyses were performed using NVivo software.

Results:
Several residents reported limited electronic medical record (EMR) training at the organizational level. Fundamental charting, workflow, and hidden curriculum information largely circulated through peer support. Residents trained outside of Halifax, especially IMG/VTs, reported lacking these connections and expressed struggles navigating a new environment, culture, and city. While organizational strategies such as formal postgraduate and program-led onboarding exist, experiences varied across work environments. Most residents reported "sink or swim" experiences regardless of perceived onboarding quality. Interestingly, CMGs reported feeling better prepared entering residency compared to their CMG-Dal peers and suggested acclimating medical students to resident workload earlier may be beneficial.

Conclusions:
Improved EMR training, creating more opportunities for peer connections, and re-evaluating organizational onboarding practices to better fit unique needs may be some initial steps to take. With the upcoming Dalhousie accreditation review and new EMR system, the coming year offers an opportunity for significant change and improvement.

ABSTRACTS – SESSION B

Presentation (#): 17

Title: Effects of 5-HT7 Receptor Antagonism on Locomotor Behaviour Following Green Light Therapy, in an Osteoarthritis Rat Model.

Presenting Author: Iriana Theoharopoulos

Presenter's Affiliations: Department of Pharmacology, Dalhousie University

Supervisor: Jason McDougall

Other authors and affiliations: McDougall, J.

Department of Pharmacology, Dalhousie University, Halifax

Abstract

Background:
Osteoarthritis (OA) is a prevalent joint disease causing chronic pain and reduced mobility, with 60% of patients describing inadequate pain control. Current treatments have limited effectiveness and adverse side-effects. Green light therapy (GLT) is shown to reduce pain in animal models, through effects on descending modulatory pathways likely via the spinal cord. Serotonin (5-HT) is known for its role in pain regulation, and the 5-HT7 receptor has been linked to descending inhibition. This study investigated whether locomotive behaviour in OA rat models was altered by GLT and blocking of the 5-HT7 receptor could inhibit these analgesic effects.

Methods:
OA was induced in male Wistar rats (200 -300g) by intra-articular injection of monosodium iodoacetate (MIA, 3mg). Animals were exposed to either green light therapy (GLT) or white light treatment (WLT), 8 hours per day, over 5 days post-MIA. Locomotor activity was assessed by three measures: (1) quadrant crossings, (2) rearing frequency, (3) rearing duration. After light exposure, 5-HT7 receptor antagonist (SB269970, 10 mg i.p.) was administered, behavioural changes tracked over 3 hours.

Results:
GLT-treated animals showed improved locomotor activity following OA induction compared to WLT. Administration of SB269970 reduced locomotor activity; however, this effect was not significant between treatments.

Conclusions:
GLT improved pain-related decreases in locomotion; although, the mechanism for pain modulation through the serotonergic system remains unclear. The lack of treatment-specific effects with 5-HT7 antagonism between the two wavelengths of light suggests no involvement of the serotonergic system. However, a vehicle control group is required to further test drug responses in these studies.

ABSTRACTS – SESSION B

Presentation (#): 18

Title: Postoperative Coagulopathy Following Major Surgery in Patients Receiving Thoracic Epidurals: Incidence and Perioperative Risk Factors

Presenting Author: David Jones

Presenter's Affiliations: Department of Anesthesia, Perioperative Medicine and Pain Management, Dalhousie University

Supervisor: Kwesi Kwofie

Other authors and affiliations: Kwofie, Kwesi (1)

(1) Department of Anesthesia, Perioperative Medicine and Pain Management, Dalhousie University

Abstract

Background:
Thoracic epidurals improve postoperative analgesia and outcomes following major surgery. Epidural hematoma remains a rare but catastrophic complication, often resulting in permanent neurologic injury. Because of its low incidence, randomized controlled trials are lacking. Observational data suggest most epidural hematomas occur in the presence of coagulation abnormalities; however, postoperative coagulation monitoring is not adequately addressed in major guidelines and varies across institutions. This study aimed to determine the incidence and predictors of postoperative coagulopathy in patients receiving thoracic epidural analgesia.

Methods:
Following ethics approval, we conducted a retrospective cohort study of 2,750 adult patients undergoing major surgery with thoracic epidural analgesia at QEII Health Sciences Centre (2012 - 2024). Patients with postoperative bloodwork available were included. Coagulopathy was defined as INR >1.4, PTT >38 s, or platelet count <100 $\times 10^9$/L; severe coagulopathy as INR >1.7, PTT >44 s, or platelet count <70 $\times 10^9$/L. Multivariable logistic regression evaluated predictors including age, sex, surgical type, operative duration, blood transfusion, and kidney dysfunction.

Results:
Postoperative coagulopathy occurred in 431 patients (16%), with severe coagulopathy in 145 (6%). Independent predictors included vascular surgery (OR 3.89, 95% CI 2.13-6.87, p<0.001), operative duration (OR 1.16 per hour, 95% CI 1.08-1.25, p<0.001), kidney dysfunction (OR 2.28, 95% CI 1.47-3.47, p<0.001), and blood transfusion (OR 3.23, 95% CI 2.13-4.90, p<0.001). No epidural hematomas occurred.

Conclusions:
Postoperative coagulopathy is common in thoracic epidural patients and associated with identifiable risk factors. Risk stratification may support targeted laboratory monitoring and inform safer epidural catheter removal.

3D INTERDISCIPLINARY ABSTRACTS

Presentation (#): Department of Surgery

Title: Pediatric FFP-free cardiopulmonary bypass prime solution QI initiative.

Presenting Author: Regan Duffy

Presenter's Affiliations: Department of Surgery

Supervisor: David Horne & Joel Bierer

Other authors and affiliations: Duffy, R., Bierer, J., Deshaies, C., Kiberd, M., Moulton, D., Conrad, D., & Horne, D.

Abstract

Background:
Fresh frozen plasma (FFP), commonly used in pediatric cardiopulmonary bypass (CPB) prime, contains high complement concentrations that may contribute to complement activation and systemic inflammatory response syndrome (SIRS). We describe the IWK "FFP-free CPB-prime" quality improvement initiative to minimize complement driven SIRS.

Methods:
Quarterly multidisciplinary meetings involving cardiac surgery, anesthesia, perfusion, hematopathology, peri-operative nurses and blood bank began in June 2025. After expert input, group discussion reached consensus on initiative. Meeting 1 (M1) identified risks associated with removing FFP and discussed replacement fluids, monitoring requirements, and mitigation strategies. Meeting 2 (M2; September 2025) finalized replacement fluid, drafted version 1 mitigation protocol for weight-based phased roll-out. Meeting 3 (M3; January 2026) reviewed phase 1 systemwide protocol compliance, blood product derivate dosing and activated phase 2. Osmolarity is checked on all FFP-free prime patients.

Results:
Risks identified in M1: 1) difficulty achieving goal anti-coagulation (AT III present in FFP), 2) osmolarity/oncotic prime solution differences, 3) post-operative bleeding (factor dilutional coagulopathy). M2 identified 5% Human serum Albumin (HSA) replacement for FFP (normal oncotic pressure). Quarterly Phased roll out stages agreed upon: 1) immediate for patients 6-8kg ("safe group" system logistics & mitigation protocol), 2) 4-6kg (intermediate risk), 3) <4kg (high risk). M3 confirmed system readiness, activated phase 2, and added dosing for blood derivatives (version 2). Osmolality is normal in FFP-free prime (mean 289 mOsm/kg [285–293]). One of six patients had post-operative bleeding. Protocol version3 increased blood derivative doses.

Conclusions:
Early phase implementation supports FFP-free CPB prime feasibility, but ongoing safety monitoring continues with phased rollout.

3D Disciplines: Divisions of pediatric cardiac surgery, pediatric anesthesiology, pediatric hematopathology, perfusion, peri-operative nursing & blood bank staff.

3D Findings: Our recent findings support removing FFP from cardiopulmonary bypass prime to mitigate FFP-complement transfer to patients. No protocols exist in literature to perform this safely. In June 2025, an IWK cardiac

surgery quality Improvement team (cardiac surgery, perfusion, anesthesiology, hematopathology, blood bank, peri-operative nurses) was established and meets quarterly. The “IWK Cardiac Surgery FFP-free transition protocol” was developed, distributed to stakeholders and subsequent in-person sessions confirmed practice changes throughout the peri-operative environment. It outlines: 1) a phased safety rollout by decreasing weight cohorts, 2) adjustments including pre-operative testing (lab, nurses and surgeons), prime modifications (bloodbank & perfusion), anti-coagulation monitoring/dosing and recombinant blood product management (hematopathology & anesthesiology). Phase two is underway, with six patients safely transitioned to FFP-free prime. Meetings continue for safety review and progression to next phases. Anti-coagulation and bleeding outcomes will be investigated using propensity matched cohort comparisons, followed by future RCT to investigate inflammatory benefits.

3D INTERDISCIPLINARY ABSTRACTS

Presentation (#): Deparmtent of Opthamology

Title: Quantifying The Compressive Mechanical Properties of Retinal Tissue Using Spherical Indentation.

Presenting Author: Brianna Samson

Presenter's Affiliations: Department of Biomedical Engineering, Dalhousie University

Supervisor: Corey Smith

Other authors and affiliations: Smith, C. (1,2) (1) Department of Ophthalmology and Visual Sciences, Dalhousie University; (2) Department of Biomedical Engineering, Dalhousie University

Abstract

Background:
Quantifying the compressive mechanical behaviour of retinal tissue is essential for understanding the role of mechanical forces in healthy tissue and during disease progression. Existing approaches focus on nanoscale surface mechanics and do not capture depth-dependent or region-specific mechanical behaviour, resulting in limited data at the tissue scale. The aim of this study is to develop a methodology for quantifying the apparent compressive modulus of retinal tissue using spherical indentation.

Methods:
Rabbit retinal tissue samples were subjected to indentation testing using the Biomomentum Mach-1 system, equipped with a 0.5mm spherical indenter at a velocity of 0.07 mm/s. Samples were mounted photoreceptor-side down onto a polydimethylsiloxane substrate to ensure stability. Using force-displacement data, the apparent compressive modulus was calculated using the Hayes model, incorporating thickness measurements from optical coherence tomography.

Results:
Indentation mapping was performed at over 15-25 locations per retina, in central and peripheral regions. Testing was conducted in PBS at two time points, <6 hours or 24-hours post-dissection. The methodology enabled separation of tissue and substrate response and supports analysis of regional and time-dependent variations in apparent compressive modulus.

Conclusions:
This framework enables tissue-scale characterization of retinal mechanics and may inform biomechanical modelling and calibration of robotic and microsurgical systems that require precise force control.

3D INTERDISCIPLINARY ABSTRACTS

Presentation (#): Department of Anesthesia

Title: Experiences and Correlates of Adverse and Traumatic Events in Pediatric Perioperative Providers

Presenting Author: Emma Nielsen

Presenter's Affiliations: Department of Anesthesia, Dalhousie University, Halifax

Supervisor: Sally Bird

Other authors and affiliations: Nielsen, E. (1), Gowie, J. (2), Blackman, S. (1), Kiberd, M. (1) & Bird, S. (1)
(1) Department of Anesthesia, Dalhousie University, Halifax; (2) Faculty of Medicine, Dalhousie University, Halifax.

Abstract

Background:
There is growing evidence of the prevalence of secondary traumatic stress (STS) and its negative impacts on healthcare workers (HCWs). Physicians can also be affected by adverse, or unintended, events (AEs), referred to as second victims of medical error. This interdisciplinary study evaluates the experiences and correlates of AEs and STS across pediatric perioperative personnel and identifies support preferences.

Methods:
A cross-sectional survey was administered to pediatric perioperative HCWs. STS was quantified using the Professional Quality of Life measure. The Second Victim Experience Support Tool - Revised identified dimensions of impact following AEs and preferences for support.

Results:
The 74 respondents represented anesthesia, surgery, and nursing disciplines (n=21,17,36) with a mean (SD) age and years of experiences of 43 (±11) and 18.6 (±11). 75% identified as female. Of participants, 97.3% reported experiencing at least one AE and 91.9% had experienced one traumatic event. STS over the past month was characterized as low by 52.6% and moderate by the remaining 48.4%. Women had a higher likelihood of experiencing moderate STS, ($\chi^2(1) = 7.21$, p=0.007) with no differences between disciplines. The probability of experiencing moderate STS decreased with age (OR=0.92, p=0.07) and years of experience (OR=0.94, p=0.027). The most strongly desired support was respected peer-based discussions, 4.52 (±0.65).

Conclusions:
Experiences of adverse and traumatic events were common. As nearly half of HCWs reported moderate STS, regardless of position, interdisciplinary discourse and action is recommended. This study reinforces the importance of peer-based discussion for support and the protective nature of prior clinical experience.

ABSTRACTS – SESSION C

Presentation (#): 19

Title: Increased Tracheal Tube Size And Airway Adjunct Use Are Associated With Significantly Higher Tracheal Intubation Forces

Presenting Author: Tom Lorenz

Presenter's Affiliations: Department of Anesthesia, Dalhousie University

Supervisor: Andrew Milne

Other authors and affiliations: Haslam, S, Law JA, Milne AD

Abstract

Background:
Excessive force during intubation may be associated with post-operative sore throat (POST) and glottic injuries. Stylet extraction forces exceeding 10.3 N are associated with risk of POST. The forces exerted upon upper airway structures during laryngoscopy has been reported in the literature. However, these studies do not assess the forces acting directly upon peri-glottic structures during tracheal tube passage. The purpose of this study was to measure the forces incident upon the glottis for different adult tracheal tube sizes and airway adjuncts.

Methods:
Testing was performed using a custom-built test fixture with a plastic larynx model (Laerdal) and digital load cell. Four sizes of adult TTs were tested. Each TT was lubricated (0.5 ml) and inserted under direct vision through the glottis. The peak insertion force was recorded with ten intubation trials for each experimental variable. Peak TT insertion forces during adjunct use were also tested for a standard bougie and three different stylet configurations.

Results:
Increasing TT sizes required significantly higher insertion forces (median force range 0.9-4.3 N, ANOVA, $P<0.001$). Use of a TT alone versus any adjunct required significantly less force ($P<0.001$). Stylet usage resulted in a twofold increase in insertion force whereas tube passage over a bougie required nearly a threefold increase in force.

Conclusions:
This study is the first to quantify the forces incident upon the peri-glottic structures during intubation. Our results suggest that the use of a smaller TT or stylet instead of a bougie can reduce forces upon the glottis, which may reduce the risk of POST.

ABSTRACTS – SESSION C

Presentation (#): 20

Title: Working Memory and Post-Traumatic Stress Contribute to Different Chronic Pain Symptoms but Share a Common Pain Modulation Mechanism

Presenting Author: Jennika Veinot

Presenter's Affiliations: Department of Anesthesia, Nova Scotia Health; Dalhousie University, Halifax

Supervisor: Javeria Hashmi

Other authors and affiliations: Hashmi, J (1,2)

(1) Department of Anesthesia, Nova Scotia Health; (2) Dalhousie University, Halifax

Abstract

Background:
Chronic pain (CP) is a heterogeneous disease, comprised of pain severity and pain affect symptoms. CP is commonly associated with trauma exposure and is comorbid with post-traumatic stress and impaired working memory, yet the relationship between these conditions and how they contribute to CP symptoms such as pain intensity and affect remains poorly understood. Previously, we have shown that impaired working memory is associated with alterations in pain modulation circuitry and predicted increased chronic pain severity. In another study, we demonstrated that post-traumatic stress was associated with increased pain affect in CP, but this relationship was not associated with working memory or pain severity. In both studies, results were associated with increased connectivity between regions involved in top-down pain modulation: dorsolateral prefrontal cortex (dlPFC) and periaqueductal gray (PAG). Together, these findings indicate that working memory and PTSS may affect CP symptoms through common mechanisms, but this remains to be tested.

Methods:
Here, using principal components analysis in a larger sample (N=159),

Results:
we demonstrate that chronic pain intensity and affect are associated with partially dissociable factors, namely working memory accuracy and PTSS severity, respectively. However, behavioral scores for expectation-induced pain modulation (EIPM) were associated with both factors. Additionally, we report that EIPM was linked with increased resting-state functional connectivity between the dlPFC and PAG.

Conclusions:
Taken together, these findings provide preliminary work suggesting that while distinct phenotypes may be present in a CP population, aberrant pain modulation and altered brain connectivity may represent a shared mechanism through which chronic pain persists across phenotypes.

ABSTRACTS – SESSION C

Presentation (#): 21

Title: The Role of Trauma History in Chronic Pain: Distinguishing the Effects of Trauma Type, Timing, and Cumulative Exposure on Pain, Affective & Trauma Outcomes

Presenting Author: Jiah Bhutani

Presenter's Affiliations: Department of Psychology & Neuroscience, Dalhousie Un

Supervisor: Javeria Hashmi

Other authors and affiliations: Bhutani, J. (1), Calder, C. (2), & Hashmi, J.F. (2,3)

(1) Department of Psychology and Neuroscience, Dalhousie University; (2) Department of Anesthesia, Pain Management & Perioperative Medicine, Nova Scotia Health, Halifax; (3) Dalhousie University, Halifax

Abstract

Background:
Trauma exposure is highly prevalent among individuals with chronic pain and has been implicated in the maintenance and exacerbation of pain-related symptoms. However, trauma is often treated as a single construct, limiting understanding of how trauma type, developmental timing, and cumulative exposure differentially relate to pain and psychological outcomes. This study examined these trauma dimensions in relation to pain intensity, affect, and trauma symptoms in adults with chronic pain.

Methods:
Participants were 149 adults with fibromyalgia, chronic back pain, or both. Lifetime trauma was assessed using the Brief Trauma Questionnaire, and developmental trauma was assessed using the Childhood Trauma Questionnaire and Adverse Childhood Experiences questionnaire; Interpersonal trauma was based on endorsement of relevant items. Outcomes included pain threshold, pain tolerance, pain severity, pain interference, pain catastrophizing, depressive symptoms, state and trait anxiety, post-traumatic stress symptoms, and dissociative symptoms.

Results:
Trauma exposure was prevalent and the most frequently reported events were sexual violence (46%), serious accidents (38%), and witnessing trauma (36%). Women reported significantly higher rates of sexual violence, whereas men reported higher rates of combat exposure. Approximately 60% of participants endorsed at least one interpersonal trauma, which was associated with greater depressive symptoms, anxiety, and post-traumatic stress symptom burden. Lifetime trauma exposure was positively associated with pain severity and pain interference, whereas developmental trauma was associated with reduced pain tolerance.

Conclusions:
Trauma exposure shows strong prevalence, and its dimensions showed distinct associations with chronic pain outcomes. These findings support a trauma-informed, multidimensional approach to chronic pain assessment and management.

ABSTRACTS – SESSION C

Presentation (#): 22

Title: Success Rates And Rescue Methods Employed In 11144 Supraglottic Airway Cases: A Retrospective Analysis

Presenting Author: Alison Sampson

Presenter's Affiliations: Department of Anesthesia Pain Management and Perioperative Medicine, Dalhousie University

Supervisor: Andrew Milne

Other authors and affiliations: Law J.A. (1) & Milne A.D. (1)

(1) Department of Anesthesia Pain Management and Perioperative Medicine, Dalhousie University

Abstract

Background:
Supraglottic airways (SGAs) are a common method of airway management during general anesthesia (GA). SGAs can be placed without the need for muscle relaxant medications and may avoid some complications associated with tracheal intubation. The aim of our study was to determine the rates of SGA usage at our institution, identify the first-pass success rate, and explore what rescue methods were employed after unsuccessful placement.

Methods:
After REB approval, electronic airway records for all GA cases occurring at our center between Dec 2021 to Sept 2025 (46 months) were retrieved. SGA cases were analyzed for monthly usage rates, number of attempts, and rescue modalities employed for cases with more than one placement attempt.

Results:
There were 11144 cases of SGA use within a total of 61436 GA cases (18.1%). Over the 46 months, SGA use was observed to gradually decline (-0.04 % per month, p=0.007). The SGA first pass success rate was invariable at 77.8% (p=0.06), however 14.7% of SGA cases did not document the number of attempts. Conversion to tracheal intubation was documented in 229/11144 SGA cases (2.1%), with direct laryngoscopy used in 74% of conversions. The most frequent initial rescue methods employed after an unsuccessful SGA placement were change in SGA size (35%), tracheal intubation (21%) or change in SGA type (19%).

Conclusions:
The gradual decline in SGA use at our institution could have future implications for clinical teaching and skills acquisition. Immediate conversion to tracheal intubation after an initial failed SGA placement attempt was a common rescue modality.

ABSTRACTS – SESSION C

Presentation (#): 23 *Submission withdrawn*

ABSTRACTS – SESSION C

Presentation (#): 24

Title: Trauma and Body Mass Index as Predictors of Systemic Dysregulation and Sensory Abnormalities in Fibromyalgia.

Presenting Author: Yatin Pratap Singh

Presenter's Affiliations: Department of Anesthesia, Dalhousie University

Supervisor: Javeria Hashmi

Other authors and affiliations: Hashmi JA & Friedman A

Department of Anesthesia, Pain Management and Perioperative Medicine, Nova Scotia Health Authority and Dalhousie University, Halifax, NS

Abstract

Background:
Fibromyalgia (FM) is a chronic pain condition characterized by widespread pain, fatigue, and sensory hypersensitivity. Mild inflammation, insulin resistance, thyroid dysfunction, and elevated body mass index (BMI) have been reported as potential markers of physiological disturbances in FM patients. These abnormalities have also been shown to have associations with trauma which is a risk factor for greater symptom severity and altered stress regulation in FM. However, no studies to date have examined whether trauma and BMI jointly explain variance in FM symptoms, markers of system wide dysregulation and sensory abnormalities.

Methods:
31 FM patients and 25 healthy control (HC) participants; these groups were age matched and all participants were females. Blood samples were collected and Trauma exposure was measured using Childhood Trauma Questionnaire (CTQ) and Brief Trauma Questionnaire (BTQ). To address sensory mechanisms we examined pain ratings during a schema based heat pain task involving noxious heat stimuli preceded by expectancy cues of varying intensity.

Results:
The majority of our sample of FM patients had high BMI and insulin resistance. A significant negative correlation was found between BMI and pain ratings in the pain schema task. BMI and CTQ Total were significantly positively correlated with insulin, insulin resistance and level of white blood cells (WBCs). BTQ Total had significant positive correlations with thyroid-stimulating hormone (TSH) and level of red blood cells (RBCs).

Conclusions:
Our findings demonstrate that system wide dysregulation in our FM sample was associated with trauma. The extent of such dysregulation is indicative of abnormalities in sensory/pain processing.

ABSTRACTS – SESSION C

Presentation (#): 25

Title: The Central Zone Sepsis Action Improvement Team: an Interdisciplinary Approach to Improve Sepsis Recognition and Treatment in Nova Scotia Emergency Departments

Presenting Author: Livia Anthes

Presenter's Affiliations: Department of Anesthesia, Pain Management, and Perioperative Medicine, Dalhousie University

Supervisor: Vanessa Sweet

Other authors and affiliations: V. Sweet (1,2,3), E. Leith (2,3), C. Smith (2,3), M. Smith, H. Peddle-Bolivar (3), J. Gillis (3), J. Leblanc (3), C. Jabalee (3), C. Caudle (3), K. Dort (3), V. Ross (3), E. Mullaly (3), R. Duchesne, E. MacGibbon (3), C. Bussey (3).

(1) Department of Anesthesia, Pain Management, and Perioperative Medicine, Dalhousie University, Halifax; (2) Quality Improvement and Patient Safety, Nova Scotia Health, Halifax; (3) Nova Scotia Health, Halifax.

Abstract

Background:
Sepsis is a major cause of hospitalization and mortality in Canada. Nova Scotia has consistently performed worse than the national average in terms of in-hospital sepsis rates and sepsis-attributed deaths, highlighting serious patient safety concerns.

Methods:
In 2024, the NSH Central Zone Sepsis Action Improvement Team was launched as a prototype for interdisciplinary design, testing, and implementation of strategies to enable timely recognition and treatment of sepsis in NS emergency departments. The primary aim was for 85% of patients who screened positive for sepsis to receive antibiotics within the recommended timeframe of 3 hours. Novel tools were tested in 3 CZ emergency departments and expanded to 3 further sites by September 2024.

Results:
Change idea testing resulted in a highly-adoptable ED Sepsis Improvement Package. Components included improved training for frontline staff, pocket cards, pre-printed order sets to standardize sepsis best practices, Sepsis Kits, and a novel Sepsis Care Directive allowing nurses and paramedics to independently administer first-dose antibiotics. Audits demonstrated that antibiotic administration within 3 hours increased from 55% to 92% at initial sites and 82% across the Central Zone.

Conclusions:
The interdisciplinary work of the Sepsis Action Improvement Team has led to improved recognition and early treatment of sepsis in Central Zone emergency departments. A September 2025 NSH mandate aims to scale up this initiative to all NS EDs and Urgent Care Centers. The AIT serves as a model for effective design and implementation of tools for quality improvement and patient safety.

ABSTRACTS – SESSION C

Presentation (#): 26

Title: A Comparison of Two General Anesthesia Techniques for Cesarean Delivery

Presenting Author: Meghan Wentzell

Presenter's Affiliations: Department of Anesthesia, Dalhousie University, IWK Health Centre

Supervisor: Ana Sjaus, Allana Munro

Other authors and affiliations: Munro, A. (1,2,3), Sjaus, A. (1,2,3), MacDonald, E. (2)

(1) Department of Anesthesia, Nova Scotia Health, Halifax; (2) IWK Health Centre, Halifax; (3) Dalhousie University, Halifax.

Abstract

Background:
For cesarean delivery under general anesthetic, maintenance with total intravenous anesthesia (TIVA) using propofol infusion has theoretical advantages over volatile anesthesia, including less uterine relaxation, reduced blood loss, and less postoperative nausea. The primary outcome of this study was to compare the difference in maternal preoperative and postoperative hemoglobin values between TIVA and standard volatile maintenance for cesarean delivery requiring general anesthetic.

Methods:
This retrospective cohort study reviewed cesarean deliveries performed under general anesthesia at IWK Health. 157 records were included in preliminary analysis. Patients were grouped according to maintenance anesthetic exposure: no propofol infusion versus propofol infusion. Unadjusted analyses were performed using Welch's t-test, and adjusted analyses used a multiple-imputation dataset with regression modeling.

Results:
107 received no propofol infusion and 47 received propofol infusion; 3 had missing exposure data. In the unadjusted analysis, the mean hemoglobin decrease was numerically greater in the no-propofol group in the original dataset (25.43 vs 22.82 g/L; p=0.23) and in the multiple-imputation dataset (24.28 vs 22.49 g/L; p=0.42). Similarly, in the adjusted multiple-imputation analysis, the estimated hemoglobin decreased 21.89 g/L in the no-propofol group and 18.93 g/L in the propofol group (p=0.15). The standardized effect size was small (Hedges' g = 0.22).

Conclusions:
This study found a consistent but non-significant trend toward a smaller postoperative hemoglobin decrease in patients receiving propofol-based maintenance. The observed effect in the current dataset was much smaller than anticipated, suggesting the study is underpowered for the effect size seen. These preliminary findings support continued investigation of modern TIVA techniques in obstetric anesthesia, ideally in a larger cohort with a subgroup restricted to pure TIVA cases.

ABSTRACTS – SESSION C

Presentation (#): 27

Title: VIE SCOPE VS CMAC MILLER VL IN A PIERRE ROBIN MANIKIN: A randomized crossover comparison of the Vie Scope to the STORZ CMAC Miller video laryngoscope in a Pierre Robin Manikin

Presenting Author: Valancy Cole

Presenter's Affiliations: epartment of Anesthesia, Pain Management and Perioperative Management, Dalhousie University, Halifax, Canada

Supervisor: Arnim Vlatten

Other authors and affiliations: Bird, Sally (1,2), Vlatten, Arnim (1,2) and Vlatten, David (3)

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Abstract

Background:
The Pierre Robin sequence, characterized by micrognathia, glossoptosis, and airway obstruction, presents a significant challenge to pediatric airway management (1). While flexible fiberoptic intubation is considered the gold standard, video laryngoscopy is commonly used due to greater accessibility and familiarity (2). A standard blade video laryngoscopy is currently the recommended practice for first attempt laryngoscopy in the normal pediatric airway and can be used in the anticipated difficult airway (3). The Bébé Vie Scope (BVS) is a novel, disposable airway device inspired by the anterior commissure scope, used by ENT surgeons for microlaryngoscopy (4). Previous studies have shown the BVS to be non-inferior to video laryngoscopy in adults with difficult airway anatomy and to provide improved visualization in pediatric manikin models (4,5). It may offer a clinical advantage in managing difficult airways in scenarios involving staff with limited expertise in neonatal or infant airway management.

Methods:
This randomized crossover trial evaluated intubation performance using the Bébé Vie Scope (BVS) (Adroit Surgical LLC, Oklahoma City, OK, USA) versus the STORZ CMAC Miller 1 video laryngoscope (VL) (Karl Storz, Germany) in a simulated pediatric difficult airway. 50 Anesthesia staff and residents with limited pediatric airway experience were randomized to intubate a Pierre Robin manikin (AirSim Pierre Robin A: TrueCorp, Belfast, Northern Ireland). The manikin features an anatomically correct 3 month old child with Pierre Robin based on real computed tomograph (CT) data. Participants were asked to intubate once using each of the BVS and the VL with a styletted 3.5 mm ID tracheal tube. Time to best view (TTBV), time to intubate (TTI), success rate and percentage of glottic opening visualized (POGO) were measured. A failed intubation was defined as TTI greater than 60 sec or esophageal intubation. Ease of use with each device was measured using a 100mm visual analog scale (VAS). A Mann-Whitney rank-sum test for non-normal distributed data was used. $P < 0.05$ was deemed statistically significant. Data are presented as median and interquartile range.

Results:
Intubation success rates were high for both devices (BVS 96%, VL 98%). VL provided a faster TTBV (6 s vs 8 s, $P < 0.001$), while TTI was comparable (22 s vs 20 s, $P= 0.191$). VL yielded higher POGO scores (90% vs 80%, $P < 0.05$). Ease of use ratings slightly favoured VL (9 vs 8, $P = 0.066$).

Conclusions:
Both the BVS and VL demonstrated high intubation success rates and comparable TTI. Although VL achieved a faster TTBV and was rated slightly easier to use, these advantages did not translate into a clinically meaningful difference in intubation time. The BVS represents a viable alternative for managing difficult pediatric airways, particularly in resource-limited environments or emergent scenarios outside the operating room. Further research is warranted to assess its utility in real-world practice.

ABSTRACTS – SESSION D

Presentation (#): 28

Title: Trachlight 2 Prototype vs. CMAC-Macintosh Laryngoscope for the Tracheal Intubation of Cadavers With a Simulated Upper Gastrointestinal (GI) bleed model

Presenting Author: Alexander MacPherson

Presenter's Affiliations: Department of Anesthesia, Dalhousie University

Supervisor: Orlando Hung

Other authors and affiliations: Zhekova, R. (2), Selvaraj, S. (1), Hung, D. (3), Parks, A. (3), Poulton, A. (1), Sparrow, K. (4), Hung, C. (4), Sedak, I. (5), Hung, O. (1)

(1) Department of Anesthesia, Dalhousie University; (2) Dalhousie Medical School; (3) Department of Emergency Medicine, Dalhousie University; (4) Department of Anesthesia, Memorial University; (5) Department of Pathology.

Abstract

Background:
The effectiveness of video-laryngoscopy in contaminated airways has long been a concern, as blood and secretions can obscure the camera lens and impair glottic visualization. According to the ASA Difficult Airway Guidelines, lightwand remains to play an important role as an alternative intubation technique when visualization of the glottis becomes difficult. In this study, we evaluated the performance of a novel lightwand prototype Trachlight™ 2 (LW) with the C-MAC® Macintosh video-laryngoscope (CM) using a cadaveric model simulating active upper GI bleed.

Methods:
8 staff anesthesiologists were recruited and consented to perform 4 intubations with each device on 4 human cadavers with a simulated upper GI bleed model. Time To Intubation, attempts, success rate, and comments were recorded. Participants rated the intubation experience using a Visual Analogue Scale. Selected their preferred device for this simulated difficult airway.

Results:
Primary outcome analysis revealed significantly shorter TTIs for LW (Median = 21.45s for LW vs. Median = 39.15s for CM; p = .0015). Secondary outcomes showed significantly lower difficulty when using LW (Median = 2.95) versus CM (Median = 7.30; p = .00027). No significant differences were observed in number of intubation attempts between devices (p = .33) or the success rate of either device (p = .56). 62.5% would prefer to use the LW over the CM for this study's model.

Conclusions:
The LW had significantly shorter intubation time and lower ratings of perceived difficulty by experienced staff anesthesiologists. Moreover, there were no significant differences in success rate or intubation attempts between the two devices.

ABSTRACTS – SESSION D

Presentation (#): 29

Title: Revising the Central Zone Maximum Surgical Blood Ordering Schedule

Presenting Author: Bridgette Chan

Presenter's Affiliations: Dalhousie University Department of Anesthesia, Pain Management and Perioperative Medicine

Supervisor: David MacDonald

Other authors and affiliations: Dr. Jason Quinn (1) Dr. David MacDonald (2)

(1) Department of Pathology and Laboratory Medicine, Dalhousie University; (2) Department of Anesthesia, Pain Management and Perioperative Medicine, Dalhousie University

Abstract

Background:
Maximum surgical blood ordering schedules (MSBOS) are guidelines that provide recommendations for preoperative transfusion blood orders for surgical procedures i.e. type and screen (T/S) and cross match (C/T). Ideally, an MSBOS is a regularly-updated, user-friendly document that reflects institutional data. Our local institutional MSBOS has not been rewritten since 2007. This project used perioperative transfusion rates in elective surgery to update the MSBOS.

Methods:
Intra-operative anesthesia and transfusion data was obtained for non-emergent surgeries performed between Jan 2018-Oct 2021 between 0730-1700 Monday to Friday. Using clinical experience and transfusion risk, these were grouped into practical surgical categories in an iterative process. Thresholds for T/S and C/T were determined using transfusion risk and index values suggested by the literature, while also considering feasibility and practicality.

Results:
Our search yielded 66,392 surgical cases. After removal of emergency surgeries and uncategorizable cases (2.5%), 53,580 elective surgeries were analyzed. These surgeries were categorized into 114 surgical groupings, a reduction of >90% compared to the previous MSBOS. Only 42 surgical groupings require a T/S, including 8 surgical groupings that also require a C/T. During this study period, 9,196 surgical procedures would have required a T/S. This represents an 82.8% reduction in pre-operative transfusion testing and based on cost-analysis from 2013 a $2,141,084 cost savings.

Conclusions:
In the previous version of the MSBOS, every surgery at the QEII required a T/S. This project will dramatically reduce the amount of T/S performed, resulting in cost savings to the system, and convenience for patients.

ABSTRACTS – SESSION D

Presentation (#): 30

Title: Patient Handling Injuries in the OR: Underreported Functional Impact and Mismatch in Transfer Aid Use

Presenting Author: David Greencorn

Presenter's Affiliations: Department of Anesthesia, Dalhousie University

Supervisor: Stephanie Power

Other authors and affiliations: Power, S (1)

(1) Department of Anesthesia, Dalhousie University

Abstract

Background:
Over one quarter of lost-time claims in Canada arise from healthcare. While prior studies focus on reported patient handling injuries, unreported morbidity (e.g., missed workdays, functional limitation) is not described. This study examined workplace injury patterns (including unreported injury or lost time) and patient handling aid preferences among perioperative staff.

Methods:
A cross-sectional survey was distributed to perioperative staff at the QEII Health Sciences Centre, including nurses, residents, anesthesiologists, and surgeons. Data collected included demographics, injury patterns, missed work, and handling practices/preferences using Likert scales. Results were summarized descriptively.

Results:
Fifty-four participants responded, including 34 nurses, 12 anesthesia providers, 6 surgeons, and 1 allied health professional. Most were <35 years old (55%) and had ≤5 years of operating room experience (54%). Many respondents (n=37, 73%) reported soreness or reduced function from patient handling without missing work, though some respondents (n=13, 25%) had taken sick leave or disability. Air-assisted devices were reportedly used frequently in 17% and 38% of transfers for patients 110-135 kg and >135 kg, respectively, though 38% and 43% of respondents preferred their use. No respondents reported using mechanical lifts, although 10% and 21% identified them as ideal for these weight categories, respectively.

Conclusions:
Patient handling injuries impose a greater burden than reflected in time-loss claims, with many perioperative team members missing work without disability leave at least once. Preferred transfer aids appear underutilized or unavailable in the perioperative setting compared to team member preference.

ABSTRACTS – SESSION D

Presentation (#): 31

Title: AIRO-SSI: A Dynamic Machine Learning Model for Risk Assessment of Cardiac Surgical Site Infections

Presenting Author: Nathan Barton

Presenter's Affiliations: Faculty of Medicine, Dalhousie University, Halifax

Supervisor: Pieter de Jager

Other authors and affiliations: Gainer, R. (2), Singh, P. (3), Dougherty, J. (1,5), Rudzicz, F. (4,6), Hirsch, G. (1,2), & de Jager, P. (1,5)

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Abstract

Background:
Surgical Site Infection (SSI) is a serious but preventable complication of cardiac surgery, leading to prolonged hospitalization, readmission, and increased healthcare utilization. Conventional SSI risk models rely on static preoperative variables and cannot incorporate dynamic physiologic or intraoperative factors. The goal of AI-Driven Dynamic Risk Assessment (AIRO) is to develop a dynamic, machine learning (ML) model to improve perioperative risk prediction.

Methods:
The study used >30,000 adult cardiac surgery cases (1995-2024). Data was pre-processed by removing missing datapoints, outlier handling, and feature engineering informed by clinical acumen. Feature selection incorporated point-biserial correlation, Cramer's V, minimum redundancy-maximum relevance, regularized regression, and permutation importance. Multiple ML algorithms were trained using cross-validation. Resampling techniques were applied to address class imbalance.

Results:
The superficial SSI model achieved an area under the receiver operating characteristic curve (AUC) of 0.63. The composite SSI model achieved an AUC of 0.70, outperforming established general risk tools such as IRIC (AUC 0.66). Suggesting that AIRO provides superior versatility across broader cardiac surgery SSI. Key predictors included age, cardiopulmonary bypass pump time, aortic cross-clamp time, transfusion, preoperative hemoglobin, smoking status, and frailty.

Conclusions:
These findings demonstrate the feasibility of ML to predict SSI following cardiac surgery within a governance-driven framework. Although predictive performance was modest, the models outperformed other general cardiac surgery risk assessment tools and maintained competitive performance even compared to CABG-specific models like BHIS. Our framework provides interpretable, clinically relevant insights and establishes a foundation for future refinement and prospective integration into clinical workflows.

ABSTRACTS – SESSION D

Presentation (#): 32

Title: Implementation of In-Operating Room Extubation After Cardiac Surgery: A Single-Center Quality Improvement Initiative

Presenting Author: Ryan Ong

Presenter's Affiliations: Faculty of Medicine, Dalhousie University

Supervisor: Pieter de Jager

Other authors and affiliations: Rosa, A. (1), Alli, A. (2), Hirsch, G.M. (3), Dougherty, J. (4), de Jager, P.(4) (1) Queen Elizabeth II Health Sciences Centre, Halifax Infirmary, Halifax; (2) Department of Anesthesia and Pain Medicine, St. Michael's Hospital, University of Toronto, Ontario; (3) Faculty of Medicine, Division of Cardiac Surgery, Department of Surgery, Dalhousie University, Halifax; (4) Faculty of Medicine, Department of Anesthesia, Pain Management & Perioperative Medicine, Dalhousie University, Halifax.

Abstract

Background:
In-operating room extubation (ORE) has been suggested to improve outcomes after cardiac surgery but remains underutilized. This quality improvement project described the implementation of ORE at the Halifax Infirmary and evaluated its feasibility and safety by assessing outcomes across extubation pathways following implementation.

Methods:
A pilot Plan-Do-Study-Act (PDSA) cycle was conducted between August 2024 and June 2025 to implement a standardized ORE protocol in adult median sternotomy cardiac surgery patients identified through the Halifax Infirmary ERACS registry. A total of 358 patients were included, and extubation occurred as ORE, early (<6 hours), or late (>6 hours). Post-implementation outcomes were compared across extubation pathways using Chi-square or Fisher's exact tests.

Results:
Reintubation rates among patients undergoing ORE (n = 37; mean age 65 years), early extubation ≤6 hours (n = 108; mean age 65 years), and late extubation >6 hours (n = 213; mean age 66 years) were 0%, 1%, and 5%, respectively. Pulmonary complications occurred in 16%, 16%, and 20% of patients, while surgical site infections occurred in 11%, 3%, and 7%. Prolonged cardiovascular intensive care unit stay was observed in 16%, 8%, and 29%, and prolonged hospital stay in 62%, 68%, and 75%. In-hospital mortality rates were 3%, 0%, and 6%. No significant differences were observed between ORE and the other groups.

Conclusions:
ORE was successfully introduced within a standardized implementation framework and was not associated with increased adverse outcomes in selected patients. However, adoption remained limited, informing future PDSA cycles to improve uptake and consistency of use.

ABSTRACTS – SESSION D

Presentation (#): 33

Title: A Simulation-Based Course Designed for Team Management of Neurosurgical Emergencies in Variable Resource Settings

Presenting Author: Rachel Vaughan

Presenter's Affiliations: Division of Neurosurgery, Department of Surgery, Dalhousie University

Supervisor: Patricia Livingston

Other authors and affiliations: Rachel Vaughan (1); Adam Mossesson (2,5); Betty Nantongo (3); Dumisa Nzama (4); Patricia Livingston

(1) Division of Neurosurgery, Department of Surgery, Dalhousie University, Halifax, Canada; (2) SJOG Midland Public and Private Hospital, Perth, Australia; Curtin University School of Medicine, Perth, Australia; (3) Department of Anaesthesia, , CURE Children's Hospital, Mbale, Uganda; (4) Neuroscience Institute, Division of Neurosurgery, Department of Surgery, University of Cape Town, Cape Town, South Africa; (5) Department of Anesthesia, Pain Management and Perioperative Medicine, Dalhousie University, Halifax, Canada

Abstract

Background:
Safe neurosurgical care depends not only on technical skill but also on non-technical skills such as teamwork, communication, and leadership during high-stress situations. There is a lack of short courses that build non-technical skills specifically for neurosurgical teams. Simulation can be an effective modality for learning non-technical skills but there are barriers to simulation in low-resource global settings. Vital Anaesthesia Simulation Training (VAST) was designed overcome resource limitations and to bring effective, immersive simulation to healthcare teams around the world. This project sought to apply VAST methodology to development of a simulation curriculum for neurosurgical teams with the goal of strengthening non-technical skills that are critical to patient safety.

Methods:
Curriculum development followed Kern's six-step model. A needs assessment included a review of the literature, mapping common neurosurgical crises to established non-technical skills frameworks, and consultation with interdisciplinary stakeholders. Educational objectives focused on leadership, communication, situational awareness, and task management during neurosurgical emergencies. Simulation scenarios were designed using an adapted VAST framework. Early scenario piloting was conducted to assess realism, feasibility, and alignment with learning objectives.

Results:
The resulting curriculum includes immersive neurosurgical crisis simulations, structured pre-briefing, facilitated debriefing, and faculty development. Scenarios focus on high-risk, low-occurrence intraoperative and clinical events and emphasize team coordination between neurosurgeons, anesthesiologists, and nurses. Results from the pilot testing will be presented.

Conclusions:

We applied Kern's curriculum design model to develop a neurosurgical non-technical skills simulation curriculum using the VAST framework. Ongoing pilot testing and future implementation will evaluate educational impact and support broader dissemination.

ABSTRACTS – SESSION D

Presentation (#): 34

Title: The Effects of Cannabis Use on Postoperative Pain in Patients Undergoing Hip and Knee Arthroplasty

Presenting Author: Jack Wile

Presenter's Affiliations: Dalhousie University, Halifax

Supervisor: Karim Mukhida

Other authors and affiliations: Michael Smyth (1), Jack Wile (2), Pearla El-Rabahi (2), Karim Mukhida (1) (1) Department of Anesthesia, Pain Management & Perioperative Medicine, Dalhousie University; (2) Dalhousie University

Abstract

Background:
Cannabis use is increasing in Canada, with literature suggesting potential links to heightened postoperative pain. This study evaluated the impact of preoperative cannabis use on postoperative pain, opioid consumption, and nausea and vomiting (PONV) following total hip and knee arthroplasty.

Methods:
This retrospective study analyzed 596 patients (October 2022-January 2025). Participants were categorized as cannabis users (CU) or non-users via self-report. Primary outcomes were peak post-anesthesia care unit (PACU) pain scores and total PACU opioid consumption (oral morphine equivalents [OME]). Secondary outcomes included PONV.

Results:
Thirty-seven patients reported cannabis use. No significant differences were found in PACU pain scores in unadjusted (B = −0.88, 95% CI −1.81 to 0.06, p = 0.67) or covariate-adjusted analyses (B = −0.79, 95% CI −1.74 to 0.17, p = 0.107). Although mean pain scores were numerically higher among CU (6.7 ± 2.8 vs. 5.8 ± 3.0), this trend was not statistically significant. PACU OME also showed no significant differences (adjusted B = −2.64, p = 0.656). While unadjusted analysis suggested increased PONV odds for CU (OR = 1.96, p = 0.048), significance was lost after adjustment (OR = 1.76, p = 0.106).

Conclusions:
Preoperative cannabis use was not associated with statistically significant differences in postoperative pain, opioid consumption, or PONV following total hip or knee arthroplasty.

ABSTRACTS – SESSION D

Presentation (#): 35

Title: Creating an Instructional Video for Take Home Messages: Gamified Simulation Faculty Development

Presenting Author: Nina, Harris

Presenter's Affiliations: Department of Anesthesia, Pain Management and Perioperative Medicine, Dalhousie University, Halifax, NS, Canada

Supervisor: Patricia Livingston

Other authors and affiliations: Livingston, P (1) & Mossenson, A (1,2)

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Scholarly Project Description

Simulation-based education is a key component of anesthesia training to improve both clinical and non-technical skills for managing high acuity, low frequency events. Vital Anesthesia Simulation Training (VAST) was developed to meet the need for high-quality interdisciplinary simulation training particularly in low-resource settings. There is a focus on core clinical practices and non-technical skills.

To strengthen simulation faculty development, Take Home Messages, a serious card game, was developed as an educational tool with focus on the Analysis phase of VAST debriefing. While written instructions for Take Home Messages exist, the interactive and dynamic nature of the game makes it easier to grasp with demonstration. The objective of this project was to create a high-quality instructional video that conveys the rules, flow and educational purpose of Take Home Messages.

A script was written outlining the audio and visual components of each scene of the video. Volunteer actors were recruited and the video was filmed and edited with help from Dalhousie MedIT. Feedback was gathered from VAST facilitators to arrive at the final version of the video.

This project produced a high-quality educational video for use in VAST Facilitator Courses and for simulation faculty development more widely.

The creation of this video will help novice simulation facilitators understand how to play Take Home Messages. Next steps for this project include translating the subtitles to French and Spanish. A mixed methods study of the impact of Take Home Messages on debriefing skill acquisition is being prepared.

ABSTRACTS – SESSION D

Presentation (#): 36

Title: VAST Foundation Year Objective Structured Clinical Examination development and piloting

Presenting Author: Moreau, Jesse

Presenter's Affiliations: Department of Anesthesia, Dalhousie University

Supervisor: Patricia Livingston

Other authors and affiliations: Patricia Livingston (1)

(1) Department of Anesthesia, Pain Management and Perioperative Medicine, Dalhousie University, Halifax, Canada

Scholarly Project Description

Vital Anesthesia Simulation Training (VAST) is an educational initiative designed to deliver high-quality, contextually relevant healthcare education across diverse settings, including low-resource environments. A key component is the VAST Foundation Year, a 48-session active learning curriculum for first year anesthesia trainees. The VAST Foundation Year has been run in Ethiopia, India, Nepal, Rwanda, Sudan, and Tanzania and is currently being introduced in Latin America.

There is no formalized method to assess learner competency following completion of the VAST Foundation Year. This scholarly project aimed to develop an Objective Structured Clinical Examination (OSCE) to provide a standardized assessment tool of learning after completing the VAST Foundation Year. The OSCE will be a component of a comprehensive multi-site assessment of the value of the VAST Foundation Year. The OSCE may support participant assessment, identify knowledge gaps, and provide data for learner feedback with the goal of enhancing global anesthesia education.

2026 ANESTHESIA RESEARCH DAY

LEARNING OBJECTIVES

- After this program, participants will be able to:
  - Review and discuss research in the Department of Anesthesia *(CanMEDS roles: Scholar, Collaborator)*
  - Identify innovative research approaches for impactful health care *(CanMEDS roles: Medical Expert, Health Advocate)*
  - Develop oral presentation skills needed to effectively present scientific research data. *(CanMEDS roles: Scholar, Communicator)*
  - Develop skills related to defending their research results *(CanMEDS roles: Medical Expert, Scholar, Communicator)*

Dr. Jessica Spence – ANESTHESIA KEYNOTE

TITLE: **Perioperative benzodiazepines: should we use them in our patients**?

LEARNING OBJECTIVES

- After this program, participants will be able to:
  - Describe the evidence supporting the benefits of perioperative benzodiazepines in patients undergoing cardiac and noncardiac surgery *(CanMEDS roles: Medical Expert, Scholar, Health Advocate)*
  - Describe the evidence supporting the harms of perioperative benzodiazepines in patients undergoing cardiac and noncardiac surgery *(CanMEDS roles: Medical Expert, Scholar, Health Advocate)*
  - Develop a practical approach to the clinical application of benzodiazepines during the perioperative period surgery *(CanMEDS roles: Medical Expert, Scholar, Collaborator)*

Dr. Brian Nosek - COLLABORATIVE RD KEYNOTE:

TITLE: **Shifting incentives from getting it published to getting it right**

LEARNING OBJECTIVES

- After this program, participants will be able to:
  - Summarize the scholarly norms and values of research *(CanMEDS roles: Medical Expert, Scholar)*
  - Assess the gap between those values and the culture and reward system for researchers *(CanMEDS roles: Medical Expert, Scholar)*
  - Describe strategies that are changing the norms, incentives, and policies for researchers and consider their applicability for one's own research area *(CanMEDS roles: Scholar, Communicator, Collaborator)*

ACKNOWLEDGEMENTS

We acknowledge the dedication and efforts of the Scientific Planning Committee, whose time, expertise, and commitment were essential to the successful planning and execution of this event.

- Christian Lehmann, co-Chair
- Heather Butler, co-Chair
- Sharon Amey
- Ashley Zahavich

This event would not have been possible without the hard work and collaboration of our entire Office of Research team. Thank you.

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