CAS 2026

Resident Oral Competition Abstracts

Contents

Assessment of electronic cognitive aids for perioperative emergencies used at a major tertiary care hospital: a quality improvement initiative using the theoretical domains and plan-do-study-act framework

Submission ID

219

AUTHORS

Semenova, Dar'ya;[1] Rietchel, Lauren;[1] Pysyk, Christopher;[1] Bryson, Greg;[1] Gu, Yuqi[1]

[1]Department of Anesthesiology and Pain Medicine, University of Ottawa, Ottawa, Canada

INTRODUCTION

Cognitive aids (CAs) are tools, such as checklists and algorithms, designed to reduce human error and improve performance in high-risk environments [1,2]. Widely adopted across safety-critical industries, CAs in healthcare have demonstrated benefits including improved teamwork, increased adherence to critical management steps, and reduced perioperative complications [1-4]. Accordingly, Canadian anesthesia practice guidelines recommend the use of CAs during perioperative emergencies [4,5]. Traditional paper-based anesthesia CAs are being replaced by electronic CAs (eCAs) as part of modern digital integration efforts. Despite improved accessibility, effective eCA use remains dependent on clinician engagement and compliance [2]. This quality improvement study aims to assess patterns of eCA use within the Department of Anesthesiology at a tertiary care hospital**.** The Theoretical Domains Framework (TDF) will be applied to identify behavioural barriers and facilitators to eCA utilization; with findings used to inform iterative Plan–Do–Study–Act (PDSA) cycles to optimize eCA engagement in peri-operative clinical practice.

METHODS

Research ethics board approval was waived as our study and questionnaire were classified as a Quality Improvement (QI) initiative. An initial retrospective audit was performed to determine the usage of eCAs using the Epic™ electronic medical record (EMR) system and the SlicerDicer™ data information modeler since the start of EMR in 2022 to 2024 at a tertiary care hospital. Audited components included eCA records, case characteristics, basic patient demographics, and clinical context. Subsequently, a department-wide online survey was distributed over a six-week period to assess clinicians' beliefs, attitudes, and experiences related to eCAs. The survey included demographic items, general eCA usage items, and a TDF–informed component with Likert-scale responses. Statistical analysis was

conducted using SPSS version 24 and qualitative information was coded based on the Handbook of Emergent Methods qualitative methodology.

Survey findings informed sequential PDSA cycles with incrimental interventions aiming to improve knowledge and utilization of eCAs. Cycle 1 focused on departmental education through recurring communications detailing eCA location, content, and documentation over six months. Concurrently, Cycle 2 involved updating EMR-embedded eCAs to reflect current evidence and best practices. Following Cycle 1, a repeat TDF-based survey and EMR audit will evaluate changes in attitudes and eCA utilization.

RESULTS

Baseline audit of 48,382 anesthetic records 2022-2024 demonstrated minimal eCA use (Table 1). A total of 37 surveys were completed, responders included 28 attending anesthesiologists, 5 residents, 2 fellows, and 2 anesthesia assistants. 16% of the participants used eCA's for perioperative emergencies, emergency drills, preparation for complex cases, debriefing clinical events, and educational review. Nearly half, 49%, of respondents had never used eCAs due to unawareness, difficulty locating them, or lack of training.

Thematic analysis identified facilitators, including perceived alignment with anesthesiologist roles and belief that eCAs improve patient safety and teamwork. Furthermore, most of the respondents believed they possessed the requisite knowledge and skills to use CA's, notably in rare perioperative emergencies. Key identified barriers included difficulty accessing eCAs in current EMR, reliance on alternative CAs resources, lack of resources to support eCA used during peri-operative emergencies, and perceived cultural stigma associating eCA use with clinical inadequacy.

DISCUSSION

At this tertiary hospital, eCAs are infrequently used and are primarily accessed for educational or non-emergent purposes. Low utilization appears to be driven by knowledge gaps, lack of formal training, and perceived negative cultural attitudes toward eCA use during perioperative emergencies. Based on these findings, subsequent PDSA cycles will prioritize education and awareness through a comprehensive e-module detailing eCA location within the EMR, application during emergencies, documentation and supporting evidence. Ongoing PDSA cycles are intended to progressively improve eCA utilization, with a goal of achieving at least 90% clinician awareness and proficiency of eCA use at this institution.

REFERENCES

1. Hepner DL, Arriaga AF, Cooper JB, et al (2017) Operating Room Crisis Checklists and Emergency Manuals. Anesthesiology 127:384–392. https://doi.org/10.1097/ALN.0000000000001731

2. Webster CS (2017) Checklists, cognitive aids, and the future of patient safety. British Journal of Anaesthesia 119:178–181. https://doi.org/10.1093/bja/aex193
3. Haynes AB, Weiser TG, Berry WR, et al (2009) A Surgical Safety Checklist to Reduce Morbidity and Mortality in a Global Population. N Engl J Med 360:491–499. https://doi.org/10.1056/NEJMsa0810119
4. Dobson G, Chow L, Flexman A, et al (2019) Guidelines to the Practice of Anesthesia – Revised Edition 2019. Can J Anesth/J Can Anesth 66:75–108. https://doi.org/10.1007/s12630-018-1248-2
5. Dobson G, Chau A, Denomme J, et al (2023) Guidelines to the Practice of Anesthesia: Revised Edition 2023. Can J Anesth/J Can Anesth 70:16–55. https://doi.org/10.1007/s12630-022-02368-0

	Jan 1st to Dec 31st 2022	Jan 1st to Dec 31st 2023	Jan 1st to October 30th 2024
Handover checklist	28	3	2
Delayed emergence	0	0	0
Hemorrhage	0	1	0
High-spinal	0	1	0
Hyperglycemia	2	0	1
Hypertension	0	1	1
Hypotension	0	1	3
Malignant hyperthermia	2	1	0
Pneumothorax	0	1	0
Power failure	1	0	0
Right heart failure	0	2	1
Transfusion reacHon	1	0	0
ACLS	0	0	0
CRM protocol	0	0	0
Trauma	0	0	1
Code bleed	1	0	0
Anaphylaxis	0	0	1
Total	**35**	**11**	**10**

Table 1. Frequency of documented electronic cognitive aid use by aid type identified through retrospective audit of anesthesia records in the electronic medical record from January 2022 to October 2024.

Lessons learned from the design and implementation of pediatric transfusion camp: a national pediatric transfusion medicine curriculum for subspecialty pediatric trainees

Submission ID

144

AUTHORS

Zuna, Ines;[1] Arsenault, Valérie;[2] Murto, Kimmo;[3] Beno, Suzanne;[4] Steele, MacGregor;[5] Young, Jennifer;[6] Leir, Sarah;[3] Punnett, Angela;[7] Peters, Cheryl;[1,8,9] Barcat, Lucille;[9] Lin, Yulia;[10,11] Kapitany, Casey;[12] *Lieberman, Lani;[10, 11,13] *Skelton, Teresa[1,8]

[1]Department of Anesthesiology, Pharmacology, & Therapeutics, University of British Columbia, Vancouver, BC, Canada; [2] Hémato-oncologue pédiatre, CHU Sainte-Justine, Université de Montréal, Montreal, QC, Canada; [3]Department of Anesthesiology and Pain Medicine, Children's Hospital of Eastern Ontario (CHEO) Research Institute, University of Ottawa, Ottawa, ON, Canada; [4]Division of Paediatric Emergency Medicine, The Hospital for Sick Children, Department of Paediatrics, Temerty Faculty of Medicine, University of Toronto, Toronto, ON, Canada; [5] Alberta Children's Hospital, University of Calgary, Calgary, AB, Canada; [6]Department of Pediatrics, Mount Sinai Hospital, Neonatal-Perinatal Training Program, University of Toronto, Toronto, ON, Canada; [7]Division of Haematology/Oncology, Department of Paediatrics, The Hospital for Sick Children, University of Toronto, Toronto, ON, Canada; [8]Division of Pediatric Anesthesiology, BC Children's Hospital, University of British Columbia, Vancouver, BC, Canada; [9]BC Children's Hospital Pediatric Intensive Care Unit, BC Children's Hospital, University of British Columbia, BC, Canada; [10]University of Toronto Quality in Utilization, Education and Safety in Transfusion (QUEST)Research Program, Toronto, ON, Canada; [11]Precision Diagnostics and Therapeutic Program, Sunnybrook Health Sciences Centre and Department of Laboratory Medicine and Pathobiology, University of Toronto, Toronto, ON, Canada; [12]Canadian Blood Services, Ottawa, ON, Canada; [13]Laboratory Medicine Program , University of Toronto, Toronto, ON, Canada

INTRODUCTION

Transfusion medicine is a core competency in pediatric anesthesiology, particularly in perioperative bleeding, massive hemorrhage, and blood conservation strategies. However, pediatric transfusion education remains variable and is often extrapolated from adult practice, despite significant differences in physiology, dosing, and transfusion-related risks[1,2] Children experience higher rates of transfusion-related adverse events including errors (e.g., delayed transfusion, over transfusion, wrong product), many of which are preventable through improved clinical decision-making[1]. We aimed to address this gap by adapting the established adult, evidence-based *Transfusion Camp*[3] into a national pediatric transfusion curriculum. We describe the design, implementation, and lessons learned from *Pediatric Transfusion Camp* to support Canadian pediatric subspecialty trainees managing pediatric transfusion scenarios.

METHODS

Pediatric Transfusion Camp was developed using Kern's six-step approach to curriculum design and principles of constructive alignment. Curriculum content was informed by a national multidisciplinary Delphi consensus study identifying core pediatric transfusion medicine topics[4]. Educational modalities included didactic teaching and facilitated case-based seminars using a modified team-based learning approach, with emphasis on pediatric-specific considerations including weight-based dosing, neonatal and infant care, pediatric algorithms and guidelines, and evidence-based blood conservation strategies. A national multidisciplinary steering committee comprised of Canadian pediatric anesthesiologists, hematologists, intensivists, and emergency physicians adapted the adult *Transfusion Camp* content to pediatric contexts using a standardized case-development template. Knowledge assessment was performed using the Pediatric Transfusion Knowledge Test, which was designed and validated using robust psychometric testing methodology and demonstrated strong alignment with core Delphi-derived competencies[5].

The pilot *Pediatric Transfusion Camp* program was delivered virtually from September 2024 to May 2025 using synchronous and asynchronous formats to 28 participants, including 13 pediatric anesthesiology fellows. Learner knowledge assessments and feedback informed iterative curriculum refinement. Ongoing reflection across Kern's framework identified key design and implementation insights.

RESULTS

Key lessons emerged at each stage of curriculum development (Figure 1). Problem identification highlighted the importance of accurately characterizing pediatric-specific transfusion risks and the impact of underreporting adverse events on educational priorities. Constructive alignment between learning objectives, educational strategies, and assessment supported targeted curricular refinement. Standardized objectives and case-development templates facilitated multidisciplinary collaboration while enabling context-specific adaptation to perioperative blood management scenarios. With support from *Transfusion Camp* and Canadian Blood Services, national virtual delivery was feasible and enabled participation across four Canadian universities. Pediatric subspecialty trainees reported high engagement and perceived relevance to clinical practice. Case-based seminars were particularly well-suited for anesthesia-specific topics such as perioperative anemia, massive hemorrhage, and transfusion reactions. Learners reported improved confidence in interpreting blood bank investigations and managing transfusion-related clinical scenarios. However, performance on rare, complex, and high-stakes transfusion scenarios highlighted the need for additional exposure and complementary educational strategies.

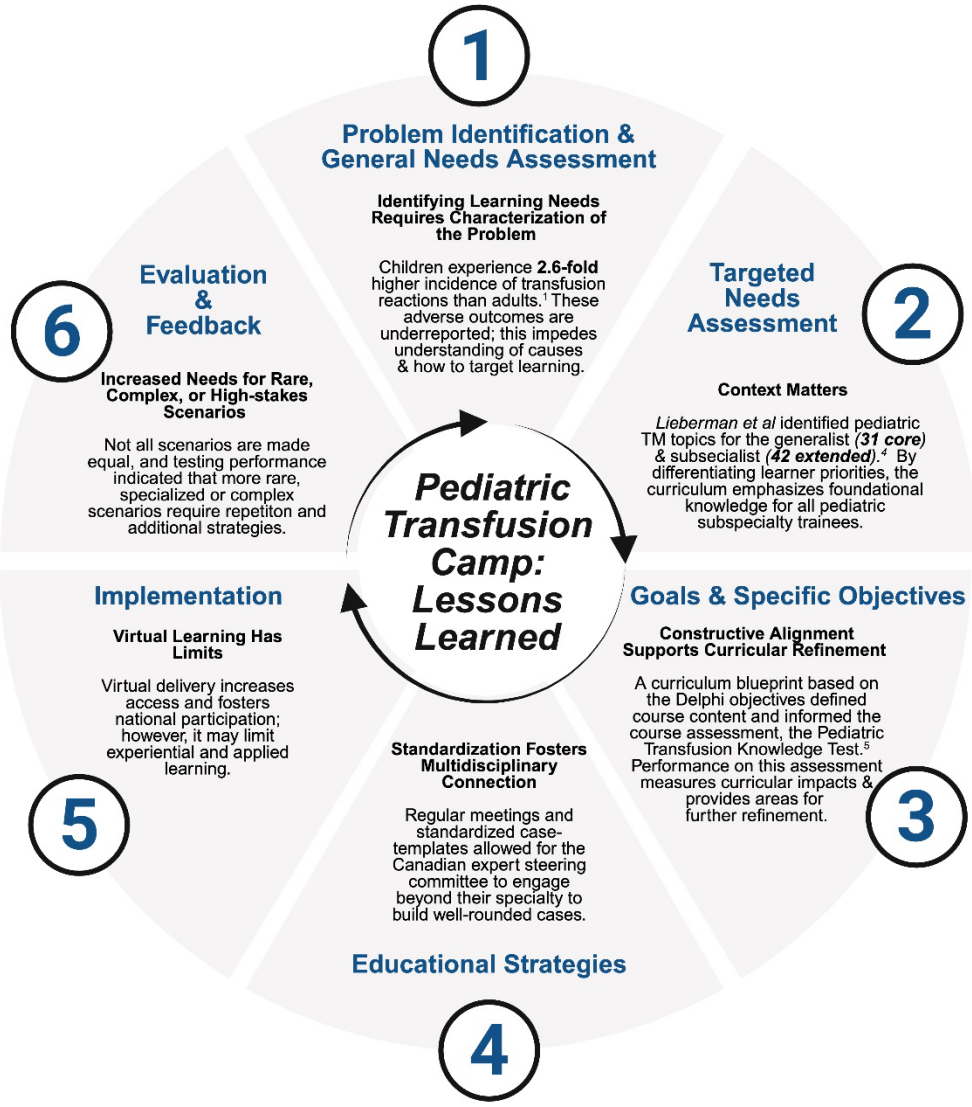
DISCUSSION

Lessons learned from the national design and implementation of *Pediatric Transfusion Camp* demonstrate how a structured curriculum framework can support scalable, multidisciplinary education while enabling specialty-specific adaptation. Incorporating

perioperative anesthesia contexts required deliberate alignment of learning objectives, case design, and faculty expertise. Key insights included the benefits and limitations of virtual delivery, which enhances accessibility but restricts experiential learning, and the need for repeated exposure or simulation for rare, high-stakes transfusion scenarios. Collectively, these lessons provide transferable guidance for integrating multidisciplinary medical curricula across diverse clinical and educational settings, including transfusion medicine, anesthesiology, and other perioperative disciplines.

REFERENCES

1. Oakley FD, Woods M, Arnold S, Young PP. Transfusion reactions in pediatric compared with adult patients: A look at rate, reaction type, and associated products. Transfusion. 2015 Mar 1;55(3):563–70.
2. Tan GM, Murto K, Downey LA, Wilder MS, Goobie SM. Error traps in Pediatric Patient Blood Management in the Perioperative Period. Pediatr Anesth. 2023;33(8):609–619.
3. Lin Y, Tilokee E, Chargé S, Alam A, Cserti-Gazdewich C, Lau W, et al. Transfusion Camp: a prospective evaluation of a transfusion education program for multispecialty postgraduate trainees. Transfusion. 2019 Jun 1;59(6):2141–9.
4. Lieberman L, Hajjaj OI, Walsh CM, Lin Y. Transfusion medicine curricular content for general pediatricians and pediatric subspecialists: A national multi-specialty Delphi consensus study. Transfusion. 2023 Aug 1;63(8):1571–9.
5. Zuna I, Lin Y, Haspel R, Walsh CM, Bone JN, Kapitany C, Lieberman L, Skelton T. Development and validation of a pediatric transfusion medicine education assessment tool. Transfusion. 2025 Nov 4. doi: 10.1111/trf.18477. Epub ahead of print.



TM: Transfusion Medicine

Figure 1. Lessons learned in designing and implementing *Pediatric Transfusion Camp*
Kern's six-step approach to curriculum design was used to adapt and implement *Transfusion Camp* for the pediatric context. This figure summarizes key insights and lessons learned at each stage of curriculum development, highlighting considerations relevant to the integration of multidisciplinary medical curricula. This includes content adaptation, case design, educational modalities, and delivery strategies that are applicable across diverse clinical and educational contexts, including transfusion medicine and anesthesiology within increasingly multidisciplinary perioperative environments. Created in BioRender. Zuna, I. (2026) https://BioRender.com/skc5xxb

Figure 1

Methylene blue for acute and chronic pain management: a systematic review and meta-analysis

Submission ID

142

AUTHORS

Chan, Victoria;[1] Xiang, Alexander;[2] Vaarsi, Jordan;[3] Khan, James[4]

[1]Department of Anesthesiology and Pain Medicine, University of Toronto, Toronto, Canada; [2]DeGroote School of Medicine, McMaster University, Hamilton, Canada; [3]School of Medicine, Royal College of Surgeons In Ireland, Dublin, Ireland; [4]Mount Sinai Hospital, Department of Anesthesia and Pain Medicine, University of Toronto, Toronto, Canada

INTRODUCTION

Methylene Blue (MB) is a synthetic, cationic thiazine dye that has been widely utilized in medicine. Originally used as the first antiseptic biological stain and chemical indicator, MB now has been shown to have potential uses in treating septic shock, neurocognitive disorders, vasoplegic syndrome, hepatopulmonary syndrome, and malaria. This is in part due to its anti-oxidant and anti-inflammatory properties as an inhibitor of nitric oxide synthase and guanylate cyclase. More specifically, MB has been clinically used to manage both acute and chronic pain, yet there is no established consensus of the analgesic effects of MB. This systematic review and meta-analysis aimed to summarize the efficacy and safety of MB in the management of acute and chronic pain.

METHODS

A systematic search was conducted using MEDLINE, Cochrane, EMBASE, PubMed and Web of Science until August 25th, 2025 using a librarian-approved search strategy. References of systematic reviews were also screened for potential citations. Studies captured from the search underwent screening and data extraction in duplicate. Studies were included into the review if they enrolled adult patients (≥ 18 years of age) and used MB in any route to treat acute and chronic pain symptoms regardless of study design. Studies were excluded if the study was basic research, utilized animal models, if MB was administered perioperatively, used to treat septic shock, used as an indicator dye, and used as photodynamic therapy for dental procedures. Primary outcomes included pain scores following MB administration, patient satisfaction, and post-procedure analgesic use. Secondary outcomes included functional capacity, complication rates, fatigue and ability to perform daily activities. A meta-analysis was performed on pain scores of included randomized controlled trials (RCTs) and reported using mean differences (MD) and 95% confidence intervals (CI). A random-effects model was used, and heterogeneity assessed using the I^2 statistic. The remaining

outcomes were qualitatively analyzed and thematically summarized based on chronic pain type, route and dose of MB administration.

RESULTS

Ten RCTs (n=647) and 12 observational studies (n=549) were included into the review that evaluated MB across a range of pain conditions including discogenic low back pain, post-herpetic neuralgia, facetogenic back pain, neuropathic pain, oral mucositis pain, anal fissures, and propofol-induced pain. Of the included RCTs, eight showed positive findings on pain scores, three for improved function, four for reduced analgesic consumption, and three for improved sleep quality. In the pooled analysis of injectable MB for chronic pain, MB demonstrated a significant reduction in pain scores at one (MD -1.13, 95% CI -1.66 to -0.61, I^2=70%) and six months (MD -1.71, 95% CI -3.14 to -0.28, I^2=96%) post-treatment. Only 2 of out 22 studies commented on adverse complications, with one reporting no adverse effects [4] and the other reporting insignificantly, one case of hyperglycemia, one of nausea, two of hypertension and three of dizziness post-procedure in the MB group [5].

DISCUSSION

Despite being limited by a small number of included studies and substantial heterogeneity, our results suggest that MB may provide an analgesic effect across a number of pain conditions. Specifically, our meta-analysis indicated that MB can be helpful in providing short (one month) and long-term relief (six months) in the use of interventional chronic pain management. However, further large high-quality RCTs investigating the safety and effectiveness of MB on chronic pain need to be conducted before MB can be advocated into routine chronic pain management.

REFERENCES

1. Arain A. The effects of intradiscal methylene blue injection on discogenic low back pain, (2010).
2. Ji M, Yao P, Han Z, Zhu D. Pulsed radiofrequency combined with methylene blue paravertebral nerve block effectively treats thoracic postherpetic neuralgia. Frontiers in neurology. 2022 Jun 3;13:811298.
3. Peng B, Pang X, Wu Y, Zhao C, Song X. A randomized placebo-controlled trial of intradiscal methylene blue injection for the treatment of chronic discogenic low back pain. PAIN®. 2010 Apr 1;149(1):124-9.
4. Wang M, Zhang J, Zheng L, Fang H, Zhang Y, Deng H, Wang M, Yu X, Meng Q, Chen Y, Liao L. Ultrasound-guided continuous thoracic paravertebral infusion of methylene blue in the treatment of postherpetic neuralgia: a prospective, randomized, controlled study. Pain and Therapy. 2021 Jun;10(1):675-89.
5. Yu X, Zhang J, Wang M, Yang Y, Zhang W, Su D, Liao L, Yang H, Fang H, Wang X. Clinical effects and safety of the use of methylene blue for the treatment of lumbar facet joint syndrome. Pain Physician. 2022;25(1):E15.

SUPPLEMENTARY FILE (FIGURES)

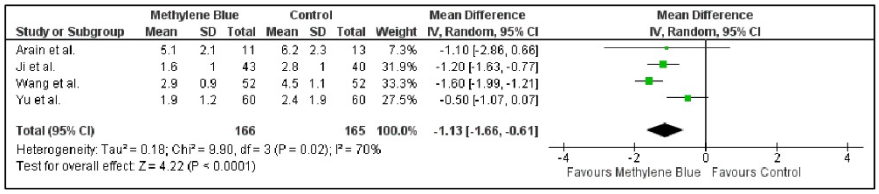


Figure 1: Forest plot for 1-month post-MB intervention. CI = confidence interval.

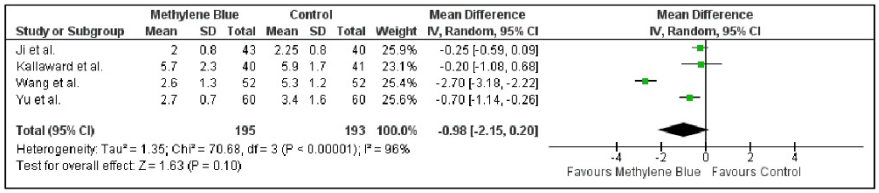


Figure 2: Forest plot for 3-month post-MB intervention. CI = confidence interval.

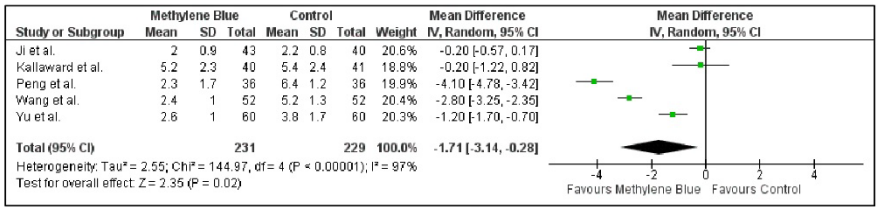


Figure 3: Forest plot for 6-month post-MB intervention. CI = confidence interval.

Opioid tapering strategies and patient outcomes in long-term opioid therapy: a systematic review and meta-analysis

Submission ID

226

AUTHORS

Saeed, Huzaifa;[1] Hussain, Adam;[2] Bajwa, Husnaat[2]

[1]Department of Anesthesiology, Perioperative Medicine and Pain Management, University of Saskatchewan, Saskatoon, SK, Canada; [2]College of Medicine, University of Saskatchewan, Saskatoon, SK, Canada

INTRODUCTION

Nearly 8 million Canadians live with chronic pain, and long-term opioid therapy remains a common treatment modality despite evolving evidence on benefits and risks. Approximately 12% of Canadians receive opioid prescriptions annually. The 2017 Frank et al. systematic review found inconclusive evidence on tapering outcomes, identifying only 3 "good-quality" studies among 67 examined. Since then, multiple large-scale studies have emerged with conflicting findings on tapering safety. A pivotal 2022 comparative effectiveness study (n=415,123) found opioid tapering associated with increased overdose and suicide events compared to stable dosages, directly challenging assumptions underlying prescribing guidelines. The updated 2022 CDC guideline acknowledged that misapplication of the 2016 guideline led to patient harm, including untreated pain, withdrawal symptoms, psychological distress, and suicidal ideation. Provincial and state tapering policies vary widely based on incomplete evidence. We conducted this systematic review to synthesize contemporary evidence on tapering strategies and patient outcomes.

METHODS

We searched PubMed, Embase, Cochrane CENTRAL, PsycINFO, CINAHL, and Web of Science from April 2017 (end of Frank et al. search) through January 2026 following PRISMA guidelines. We included randomized controlled trials (RCTs) and controlled observational studies evaluating opioid dose tapering or discontinuation in adults aged ≥18 years receiving long-term opioid therapy (≥90 days, ≥50 morphine milligram equivalents daily) for chronic non-cancer pain. Tapering was defined as ≥15% dose reduction. Comparators included stable dosing, dose escalation, or no treatment change. Primary outcomes included overdose events (fatal and non-fatal), suicide attempts or completed suicide, and self-harm. Secondary outcomes included pain severity (NRS, BPI), functional status (WOMAC, ODI), quality of life, healthcare utilization, and care termination. Two reviewers independently screened titles, abstracts, and full texts; extracted data using standardized forms; and assessed quality using Cochrane Risk of Bias 2.0 for RCTs and Newcastle-Ottawa Scale for

observational studies. Disagreements were resolved by consensus with a third reviewer. Where sufficient homogeneity existed, we performed random-effects meta-analysis; meta-regression examined tapering rate and support intensity as effect moderators. Heterogeneity was assessed using I^2 statistics. GRADE methodology evaluated certainty of evidence.

RESULTS

Database searches identified 1,247 records; after screening, 28 studies met inclusion criteria: 4 RCTs, 18 controlled cohort studies, and 6 comparative effectiveness studies involving over 600,000 patients. Two large comparative effectiveness studies (n=113,618 and n=415,123) found tapering associated with significantly increased overdose risk: adjusted incidence rate ratio 1.68 (95% CI 1.53-2.04) for overdose/withdrawal events versus stable dosing. Mental health crisis events (depression, anxiety, suicide attempt) showed adjusted IRR 2.28 (95% CI 1.96-2.65). Abrupt discontinuation conferred higher risk than gradual tapering (HR 1.34, 95% CI 1.08-1.67). Meta-regression indicated faster tapering rates (>10% monthly reduction) associated with significantly worse outcomes ($p<0.01$). Care termination occurred in 17% of tapered versus 4% of non-tapered patients (aOR 1.49, 95% CI 1.14-1.95). Pain severity remained stable or improved in 85% of voluntary taper participants receiving intensive multidisciplinary support, though only 3 RCTs examined this population. Quality of evidence was moderate for harms and low for benefits.

DISCUSSION

Contemporary evidence indicates opioid tapering in stable long-term therapy patients may paradoxically increase short-term overdose and suicide risk, particularly with rapid tapers or inadequate psychosocial support. These findings challenge mandatory tapering policies and support the 2022 CDC and Health Canada emphasis on individualized, patient-centered approaches with shared decision-making. Voluntary tapers with intensive multidisciplinary support demonstrate more favorable outcomes than clinician-initiated or policy-mandated tapers. Limitations include observational study predominance, heterogeneous tapering definitions, and limited long-term (>12 month) follow-up. These findings have direct implications for Canadian practice guidelines and provincial opioid stewardship policies.

REFERENCES

1. Frank JW, Lovejoy TI, Becker WC, et al. Patient outcomes in dose reduction or discontinuation of long-term opioid therapy: a systematic review. Ann Intern Med. 2017;167(3):181-191. doi:10.7326/M17-0598
2. Larochelle MR, Lodi S, Yan S, et al. Comparative effectiveness of opioid tapering or abrupt discontinuation vs no dosage change for opioid overdose or suicide. JAMA Netw Open. 2022;5(8):e2226523. doi:10.1001/jamanetworkopen.2022.26523
3. Agnoli A, Xing G, Tancredi DJ, et al. Association of dose tapering with overdose or mental health crisis among patients prescribed long-term opioids. JAMA. 2021;326(5):411-419. doi:10.1001/jama.2021.11013

4. Dowell D, Ragan KR, Jones CM, et al. CDC clinical practice guideline for prescribing opioids for pain—United States, 2022. MMWR Recomm Rep. 2022;71(3):1-95. doi:10.15585/mmwr.rr7103a1
5. Busse JW, Craigie S, Juurlink DN, et al. Guideline for opioid therapy and chronic noncancer pain. CMAJ. 2017;189(18):E659-E666. doi:10.1503/cmaj.170363

Perioperative management of breastfeeding patients undergoing day surgery

Submission ID

28

AUTHORS

Valji, Yasmin;[1] Sim, Jaime[1]

[1]Department of Anesthesiology and Pain Medicine, University of Alberta, Edmonton, Canada

INTRODUCTION

The perioperative period poses unique challenges to patients who are breastfeeding and undergoing day surgery. These may include separation from baby, breast engorgement and mastitis, and inadequate pain control[1]. Current guidelines recommend that the majority of patients should be encouraged to resume breastfeeding as soon as they are awake and alert after surgery[2]. However, some providers may routinely instruct all breastfeeding patients to discard breastmilk immediately after surgery, based on past practices that were not evidence based. Additionally, there may be excessive reluctance for practitioners to prescribe, and for patients to take, pain medication post-operatively. Limited provider knowledge of hospital policies pertaining to access to pumps, milk storage, and bringing baby to the hospital can also cause challenges in the perioperative period. Our study aims to survey breastfeeding patients undergoing day surgery to determine the amount and quality of preoperative information and instructions they receive from healthcare providers.

METHODS

After obtaining approval from our local ethics board, a brief survey was designed and distributed to breastfeeding patients undergoing day surgery in five local hospitals. The survey was completed by patients prior to their day surgery procedure. Patients self-identified as breastfeeding in order to be included in the study. Data collection spanned from November 2023 to August 2025. The survey consisted of 10 optional multiple choice questions that addressed the following topics: patient demographics, breastfeeding challenges, and perception of the amount and quality of information received from health care providers regarding perioperative breastfeeding management. Descriptive analysis of the resulting data was then completed to identify trends and patterns. To be included in analysis, a minimum of one answered question was required.

RESULTS

A total of 60 responses were received and analyzed. The most common type of surgery that respondents underwent was gynecological surgery (52%), with general surgery (22%) also being common. The majority of respondents (60%) reported experiencing challenges with breastfeeding, with the most common challenges being painful engorgement (35%) and low supply (33%). 37% of respondents responded neutral, disagree or strongly disagree when asked if they were provided with sufficient information regarding managing breastfeeding around their operation. 45% of respondents responded neutral, disagree or strongly disagree when asked if they were provided with sufficient information regarding managing breastfeeding around their operation from their surgeon. The majority of respondents (57%) still had questions about the perioperative management of their breastfeeding before their surgery, the most common being regarding pumping and dumping (33%), painkiller safety (38%), and access to baby (13%).

DISCUSSION

This study demonstrates that breastfeeding can be challenging for many patients, and inappropriate management in the perioperative period could potentially exacerbate these challenges. The majority of respondents still had questions regarding the perioperative management of their breastfeeding after speaking with a provider. This demonstrates that patients who are breastfeeding would benefit from the provision of standardized information, particularly focusing on topics such as resuming breastfeeding after surgery, pain management, and access to baby. Future education initiatives could target surgical services, anesthesiologists, and nursing staff to ensure consistent knowledge of current breastfeeding best practices, which can then be disseminated to patients.

REFERENCES

1. Rieth EF, Barnett KM, Simon JA. Implementation and organization of a perioperative lactation program: A descriptive study. Breastfeeding Medicine. 2018 Mar 1;13(2):97-105.
2. Statement on resuming breastfeeding after anesthesia. American Society of Anesthesiologists'. Last updated Oct. 23 2024. https://www.asahq.org/standards-and-practice-parameters/statement-on-resuming-breastfeeding-after-anesthesia.

Semaglutide and gastric residual volumes: implications for perioperative risk and anesthesia planning

Submission ID

19

AUTHORS

Rice, Tracey;[1] Stacey, Danielle;[2] Skipper, Andre;[3] Ip, Vivian;[4] Endersby, Ryan V.W.;[4] Walker, Andrew;[4] Fifen, Joanna J.[4*]

[1]Resident, Department of Anesthesiology, Perioperative and Pain Medicine, University of Manitoba; Winnipeg, Canada; [2]Resident, Family Medicine Residency Eastern Rural, Memorial University of Newfoundland; St John's, Canada; [3]Medical Student, Cumming School of Medicine, University of Calgary; Calgary, Canada; [4]Department of Anesthesia, Perioperative and Pain Medicine, University of Calgary; Calgary, Canada

*Principal Investigator, South Health Campus, 4448 Front Street S.E., Calgary, AB, T3M 1M4, Joanna.Fifen@albertahealthservices.ca, phone: 403-956-3690, fax: 403-956-1599.

INTRODUCTION

Semaglutide, a glucagon-like peptide-1 (GLP-1) receptor agonist, originally developed for glycemic control in type 2 diabetes mellitus (T2DM), has gained widespread use for weight management. In addition to improved cardiovascular outcomes and reduction in chronic kidney disease progression, its association with weight loss through appetite suppression has been a key driver in the momentum of increasing semaglutide use.[1,2] However, its mechanism of delayed gastric emptying has raised concerns among anesthesiologists regarding the potential for increased aspiration risk, even in patients adhering to standard preoperative fasting guidelines. Our primary study objective was to determine the incidence of a full stomach, defined as either >1.5 mL·kg^{-1} of clear fluid, having the presence of solid content represented by thick hyperechoic fluid or heterogeneous echogenicity[3], using preoperative gastric ultrasonography in fasted adult participants presenting for elective surgery taking semaglutide compared to non-users.

METHODS

Ethics approval was obtained from our local REB. This was a prospective, single-centre, observational cohort study of 94 adult elective surgical patients, evenly divided into non-users and semaglutide users. All participants followed fasting guidelines of 6 hours for solid content and 2 hours for clear fluids.[4] Participants had a preoperative gastric ultrasound using a 2-5 MHz curvilinear probe, completed by one of three anesthesiologists on the study who remained blinded to the participants. Qualitative assessment of the gastric antrum was completed using the 3-point Perlas Grading Scale.[3] The averaged antral cross-sectional area

(CSA) was calculated from three images captured in the right lateral decubitus (RLD) position. Gastric volume (mL/kg) was estimated using the formula: 27.0 + 14.6 × RLD CSA (cm^2) - 1.28 × age (y).[3] Our secondary objectives included comparing estimated gastric volume between groups, if changes to preoperative anesthetic management plans were required and whether surgical delays, cancellations, or aspiration events were associated with semaglutide users. We used a Z-test to assess differences in full stomach incidence and logistic regressions to present unadjusted and adjusted odds ratios (OR) with 95% CIs. We used entropy weighted balancing for a sensitivity analysis to balance baseline characteristics between groups. $P < 0.05$ was considered significant.

RESULTS

Twenty (43%) and 16 (34%) semaglutide users were taking exclusively for T2DM or weight management. Six (13%) and 15 (32%) participants had full stomachs in the non-user and semaglutide groups ($P = 0.03$). Of the 15 full stomachs in semaglutide users, 13 were taking for T2DM. The unadjusted OR of a full stomach in semaglutide users was 3.2 (1.2 to 9.8; $P = 0.03$). The OR after adjusting for preoperative HbA_{1c} was 2.3 (0.73 to 8.0; $P = 0.17$). The entropy balanced adjusted OR was 3.8 (1.2 to 15; $P = 0.04$). Estimated median [IQR] preoperative gastric volumes were 0.48 [0.14-0.94] $mL \cdot kg^{-1}$ and 0.82 [0.56-1.7] $mL \cdot kg^{-1}$ in non-user and semaglutide groups ($P < 0.001$) (Figure 1). The anesthetic management plan was changed for 21 (24%) participants (16 taking semaglutide). Presurgical gastric emptying was required in 11 (13%) participants (9 using semaglutide). No surgical delays, cancellations, or aspiration events were reported.

DISCUSSION

Semaglutide use was associated with both increased full stomach incidence and residual preoperative gastric volumes despite adherence to standard fasting protocols. Among the 15 semaglutide users with full stomachs, all but two were participants taking it for T2DM management. These findings suggest a need for heightened perioperative vigilance and may warrant individualized fasting strategies or preoperative gastric ultrasound in this population. Analysis is ongoing to explore the interventions used successfully within our study for participants identified with full stomachs that reduced aspiration risk to avoid disruption or cancellation of their surgical procedures.

REFERENCES

1. Ozempic Product Monograph [Internet]. Novo Nordisk Canada. 2023 Aug 04. [cited 2023 September 1]. Available from: https://pdf.hres.ca/dpd_pm/00071939.PDF
2. *Vannabouathong C, Crotty C, Le K, Eurich D, Dyrda P*. Current utilization patterns glucagon-like peptide-1 receptor agonists: report [Internet]. Ottawa (ON): Canadian Agency for Drugs and Technology in Health; 2022 Sep. https://doi.org/10.51731/cjht.2022.434

3. *Perlas A, Mitsakakis N, Liu L, et al*. Validation of a mathematical model for ultrasound assessment of gastric volume by gastroscopic examination. Anesth Analg 2013. 116: 357-63. Epub 9 Jan. https://doi.org/10.1213/ANE.0b013e318274fc19
4. *Dobson GR, Chau A, Denomme J, et al*. Guidelines to the Practice of anesthesia: Revised Edition 2025. Can J Anesth; 72. https://doi.org/10.1007/s12630-024-02906-y

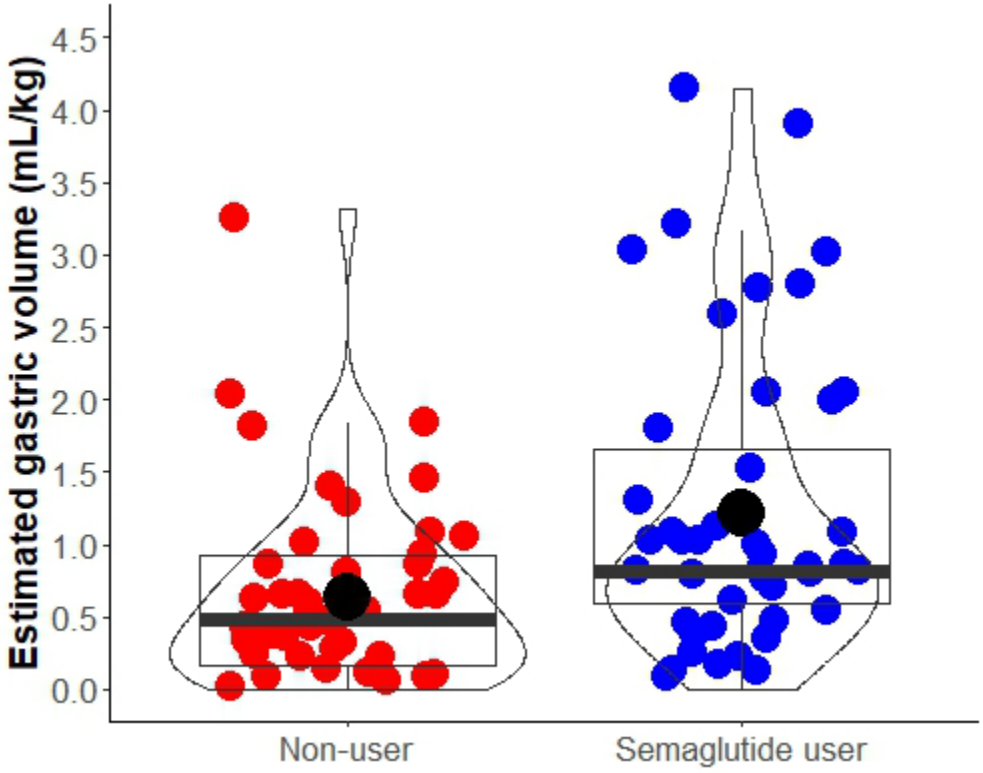


Figure 1