ORIGINAL ARTICLE

Ten-year retrospective study on medico-legal risk of family physicians providing anaesthesia care in Canada, 2013–2022

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Abstract

Introduction: Anaesthesiologist medico-legal risk is well reported in the literature, however, there is little data regarding the medico-legal risk of family practice anaesthetists (FPAs) in Canada. We aimed to describe the expert criticisms from medico-legal cases involving family physicians providing care within the scope of anaesthesia.

Methods: Medico-legal cases involving FPAs providing anaesthesia-related care were identified from a national repository at the Canadian Medical Protective Association. Civil legal cases, medical regulatory authority (college) complaints and hospital complaints were included in the descriptive analysis where medical coding was available. Cases were closed between 1 January 2013 and 31 December 2022.

Results: There were 50 medico-legal cases involving 50 FPAs providing anaesthesia-related care to 50 patients. At least half of the cases involved American Society of Anaesthesiologists Physical Status Classification I and II patients in an outpatient or ambulatory setting. Thirty patients experienced healthcare-related harm, of which most were classified as moderate, severe or death. Expert criticisms were mainly associated with situational awareness, clinical decision-making, documentation and communication issues with the patient, family or substitute decision-maker.

Conclusion: This study presents family physicians providing anaesthesia-related care with an opportunity to increase their awareness of commonly identified expert criticisms from medico-legal cases related to their area of practice. While the medico-legal risk we report is predominantly associated with provider and team factors, the retrospective nature of medico-legal cases makes the assessment of system factors difficult and thus requires further investigation. Nonetheless, FPAs are pivotal to and growing in number in the Canadian healthcare context and, therefore, this study could contribute to developing targeted training and education programmes to promote patient safety within their scope of practice.

Keywords: Anaesthesia, family physicians, medico-legal risk, patient safety, rural medicine

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Résumé

Introduction: Les risques médico-légaux auxquels sont exposés les anesthésiologistes sont bien étayés par la littérature. En revanche, peu de données ont été publiées sur les risques médico-légaux auxquels font face les médecins de famille exerçant l'anesthésie au Canada. Dans cette étude, nous avons cherché à décrire les critiques formulées par des expertes et experts dans des dossiers médico-légaux qui mettent en cause des médecins de famille prodiguant des soins qui relèvent de l'anesthésie.

Méthodes: Des dossiers médico-légaux portant sur des médecins de famille prodiguant des soins ayant trait à l'anesthésie ont été recensés dans une base de données d'envergure nationale à l'Association canadienne de protection médicale. Des actions civiles, des plaintes auprès d'organismes de réglementation de la médecine (Collèges) et des plaintes intrahospitalières ont été incluses dans l'analyse descriptive lorsqu'un codage médical était accessible. Les dossiers analysés ont été conclus entre le 1er janvier 2013 et le 31 décembre 2022.

Résultats: En tout, 50 dossiers médico-légaux ont été recensés; ces dossiers mettaient en cause 50 médecins de famille ayant prodigué des soins liés à l'anesthésie à 50 patientes et patients. Au moins la moitié des dossiers portaient sur des cas correspondant aux niveaux I et II de la classification de l'état physique de l'American Society of Anesthesiologists, dans un contexte ambulatoire ou en clinique externe. Trente personnes traitées ont subi un préjudice découlant de la prestation de soins. Dans la majorité des cas, il s'agissait d'un événement d'intensité modérée ou grave ou encore d'un décès. Les critiques formulées par des expertes ou experts portaient essentiellement sur la conscience situationnelle, la prise de décision clinique, la tenue de dossiers et les problèmes de communication avec la personne traitée, sa famille ou la personne prenant les décisions en son nom.

Conclusion: Cette étude, qui porte sur des dossiers mettant en cause des médecins de famille prodiguant des soins relevant de l'anesthésie, est l'occasion d'éclairer ces médecins sur les critiques couramment formulées par les expertes et experts dans des dossiers médico-légaux portant sur leur champ d'exercice. Les risques médico-légaux dont nous faisons état dans l'article découlent principalement de facteurs liés aux médecins et à l'équipe. Cela dit, il y aurait lieu d'approfondir l'analyse des facteurs systémiques; la nature rétrospective de l'examen des dossiers médico-légaux rendant cet aspect difficile à évaluer. Il n'en demeure pas moins que le nombre de médecins de famille exerçant l'anesthésie est en croissance dans le système de santé canadien et que leur rôle y est incontournable. Cette étude pourrait servir de tremplin à l'élaboration de programmes de formation ciblés pour promouvoir la sécurité des soins dans ce champ d'exercice.

Mots-clés: Anesthésie, médecins de famille, risques médico-légaux, sécurité des patients, médecine rurale

INTRODUCTION

The history of general practice anaesthesia as a distinct subspecialty of general practice started around the 1970s. General practice anaesthetists (GPAs) were expected to complete a 6-month training programme approved by the Royal College of Physicians and Surgeons to receive hospital anaesthesia privileges. In 1988, the Association of Canadian University Departments of Anaesthesiology required a minimum of 1 year's training to acquire the range of skills necessary to deliver such anaesthesia care that included critical care, paediatric and adult anaesthesia, in rural communities.[1] Family practice anaesthetists (FPAs) have since provided an essential service to small hospitals in Canada. Ten-year physician billing data from 2011/12 to 2020/21 indicated that nerve block procedures performed by FPAs in Canada have doubled to 27% and FPAs performed 19%–21% of total anaesthesia and other anaesthesia procedures.[2]

Patient safety is a hallmark of anaesthesia practice. Clinical care algorithms, research, behaviour change approaches and rigorous training programmes have helped in making the delivery of anaesthesia safer for patients.[3-6] New technologies, protocols, guidelines and cognitive aids taught during the training of graduates have resulted in improving care across urban and rural communities in Canada.[7-10] Physicians providing anaesthesia-related care have benefitted from research from around the world through the National Audit Projects in the United Kingdom, the American Society of Anesthesiologists (ASAs) Closed Claims Project in the United States and the Canadian Medical Protective

Association (CMPA) closed medico-legal cases in Canada.[11-13]

The CMPA supported an analysis of civil legal cases in 2007–2016 involving airway-related anaesthesia performed by Fellow of the Royal College of Physicians of Canada (FRCPC) anaesthesiologists.[13] The study identified areas for practice improvement for anticipated and unanticipated difficult airway management. The findings from Crosby *et al*. may not be generalisable to FPAs. Therefore, this study reports the number of closed medico-legal cases supported by the CMPA between 2013 and 2022 involving FPAs and describes the expert criticisms linked to the FPA's care. This information could be used to inform quality improvement or education initiatives for anaesthesia-related care provided by FPAs in Canada. Further, FPAs will be able to increase their awareness of current issues associated with medico-legal risk within their scope of practice.

METHODS

Study design

The CMPA provides medico-legal support, advice and education to its over 110,000 physician members, including trainees, in Canada. The CMPA also uses its medico-legal repository to conduct safe medical care research. The repository relies on physician members to voluntarily contact the CMPA and submit materials when seeking advice or support for medico-legal matters. We performed a retrospective study of medico-legal cases supported by the CMPA that were closed between 1 January 2013 and 31 December 2022. Cases included civil legal matters, medical regulatory authority (college) complaints and hospital complaints.[14]

Case selection

Cases were eligible for inclusion if the case was coded and contained a family physician who had provided anaesthesia-related care. General practice physicians were included and considered synonymous to family physicians due to similarities in anaesthesia training programmes. Medico-legal cases assisted by the CMPA are routinely coded using the contributing factors framework.[15] An overview of how medico-legal cases were coded by the CMPA has been described elsewhere.[14] Cases were identified for inclusion using Statistical Analysis System (SAS) Enterprise Guide 8.3 to select for cases that included a family physician who had provided anaesthesia-related care and that the case contained medical coding. If the same patient incident had more than 1 medico-legal case, then only the highest case ranking was retained (civil legal matters > regulatory college complaints > hospital complaints). Cases were manually reviewed to remove cases that involved corticosteroid injections into the joint, obstetrics or where cases did not relate to the anaesthesia care provided by the family physician.

Data collection

Confidentiality for both patients and healthcare providers was ensured by de-identification of the data. SAS was used to abstract frequency data which included the case type, population size where care was provided, care location, years of practice as a family physician, patient harm [Appendix 1], ASA physical status classification and contributing factor classifications.

Data analysis

Two authors (AS and KL) manually reviewed peer-expert opinions assessing the care of the FPA. Examples pertaining to the categories of the contributing factor classifications [Appendix 2] were written as composites representative of issues identified by the peer experts. Composites were written such that anonymity was reasonably maintained by removing identifying components (e.g. locations, names, dates and overly specific case details).

Ethics

Ethics approval was obtained from the Canadian ethics review panel of the Advarra Institutional Review Board (PRO00020829) in compliance with Canada's Tri-Council Policy Statement on the Ethical Conduct for Research Involving Humans (TCPS 2).

RESULTS

Case, physician and patient characteristics

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Table 1: Case characteristics for closed medico-legal cases involving family physicians providing anesthesia-related care, 2013–2022 (*n*=50 cases; 50 physicians; 50 patients)

Characteristic	*n* (%)
Case type	
Civil-legal action	22 (44)
College and hospital complaints	28 (56)
Population size where care was provided	
Rural and small urban (<30,000)	36 (72)
Medium urban (30,000–99,999)	9 (18)
Large urban (≥100,000)	5 (10)
Care location	
Outpatient and ambulatory care	30 (60)
Inpatient	20 (40)
Physician years of practice	
≤10	22 (44)
>10–20	10 (20)
>20	18 (36)
ASA physical status	
1	13 (26)
2	18 (36)
3	6 (12)
4	2 (4)
5	0
Not applicable or unknown	11 (22)
Patient harm*	
None or mild	6 (13)
Moderate** or severe	14 (26)
Death	10 (17)
Inherent risk	6 (12)
Not applicable	14 (32)

*Patient harm categories defined in Appendix 1, **Moderate harm classification was not a classification before 2017. ASA: American Society of Anaesthesiologists

summarised in Table 1. The CMPA coded and closed 12,771 cases between 2013 and 2022 involving family physicians. From these cases, we identified 50 medico-legal cases that met inclusion criteria. Cases were evenly represented by civil-legal action and college or hospital complaints. Care was predominantly provided in outpatient and ambulatory care within rural and small urban settings with a population <30,000.

The 50 cases involved 50 family physicians providing anaesthesia-related care to 50 patients. Nearly half (22/50) of named physicians had 10 or less years of practice [Table 1]. Thirty-one patients had an ASA physical status of 1 or 2, and 60% of the patients experienced healthcare-related harm [Table 1]. Despite well-managed care, 6 patients encountered harm related to inherent risks of the investigation, medication or treatment provided.

Contributing factors

In 33 (66%) of the 50 cases, peer experts criticized aspects of care related to provider, team or system factors [Table 2]. Each case may have criticism associated with 1 or more of these factors. Table 2 provides additional subcategories for provider and team factors, which were identified in 76% and 64% of cases containing peer expert criticism, respectively.

Provider factors relate to a healthcare provider's decisions, actions or influences which contributed to a patient safety incident, increased the risk of an incident or negatively affected the physician and patient relationship. In the 25 cases that contained criticism linked to provider factors, our analysis indicated that the most common factors related to clinical decision-making and situational awareness. These themes are associated with the healthcare provider's ability to make appropriate decisions about tests and investigations as well as to interpret, understand and make inferences based on the information gathered. Specifically, in 13 and 10 cases, a deficient assessment or insufficient knowledge/skill was identified as a criticism, respectively. Anonymized, composite examples of provider factors are provided in Table 3.

Coordination of healthcare requires team interaction. In our analysis, the patient is considered part of the healthcare team reflecting the importance of communication and documentation amongst team members. In the 21 cases that contained criticism linked to team factors, our analysis indicated that the most common factors related to documentation for the medical record and communication with the patient, family or substitute decision-maker. Specifically, 5 of 9 cases, where criticisms of communication with the patient, family or substitute decision-maker were present, were related to consent processes. Anonymized, composite examples of team factors are provided in Table 4.

With the increasing complexity of patients and increasing burden of administrative tasks on family physicians, expert criticism of system factors was identified in 3 cases. Due to confidentiality with respect to small case numbers, no composite examples are provided, however, cases were related to inadequate protocols, insufficient resources and inefficient clinical practices within an office setting.

Table 2: Contributing factors in cases with peer expert criticisms of family physicians providing anaesthesia-related care, 2013–2022 (*n*=33 cases)

Contributing factor classification	*n* (%)*
Provider factors	25 (76)
Clinical decision-making (e.g., deficient assessment, failure to perform a test/intervention)	18 (55)
Situational awareness (e.g., insufficient knowledge/skill, inadequate monitoring or follow-up)	14 (42)
Procedural violations (e.g., deviation in clinical procedures or clinical practice guidelines)	6 (18)
Team factors	21 (64)
Documentation issues	12 (36)
Communication breakdown with patient, family, or substitute decision–maker	9 (27)
Communication breakdown and coordination of issues between physicians	4 (12)
System factors**	3 (9)

*There may be more than 1 contributing factor on a case, **Number of cases is too few to provide detail

Table 3: Case examples associated with peer expert criticisms of provider factors of family physicians providing anaesthesia-related care, 2013–2022

Clinical decision-making
Example 1: A FPA failed to arrange for monitoring of a patient when they temporarily left the operating room
Example 2: A patient developed complications when a FPA extubated a patient without realizing the patient remained partially paralyzed, and then failed to re-intubate the patient immediately
Example 3: A patient experienced respiratory and cardiac arrest when an FPA failed to secure the patient's airway and did not recognise the cause of the patient's hypoxia was oesophageal intubation
Example 4: A situation involving a potentially difficult airway warranted the FPA to have used capnography, and it was not optimal to wait until the emergency medical services personnel arrived to secure the airway with an endotracheal tube
Situational awareness
Example 1: A FPA did not recognise that inability to ventilate a patient, absent end-tidal carbon dioxide and gastric insufflation were signs of endotracheal tube dislodgement
Example 2: Choice of patient monitoring, such as an inappropriate cycle time for blood pressure monitoring and absence of end-tidal carbon dioxide monitoring was considered inadequate for the level of ASA physical status categorisation
Procedural violations
Example 1: An FPA inadvertently administered the incorrect medication due to not reading the label on the syringe
Example 2: Propofol was administered in an office setting by an FPA who was also performing the procedure

ASA: American Society of Anaesthesiologists, FPA: Family practice anaesthetist

Table 4: Case examples associated with peer expert criticisms of team factors of family physicians providing anaesthesia-related care, 2013–2022

Documentation issues
Example 1: Documentation in the anaesthesia record was missing descriptions of apnoeic events
Example 2: Details of dose and timing of medications that were administered were not recorded in the anaesthesia record
Communication breakdown with patient, family or substitute decision-maker
Example 1: A sudden change to general anaesthesia was made while the patient was on the OR table, when consent for spinal anaesthesia was discussed and agreed to in the pre-admission clinic, for an elderly patient with multiple high-risk respiratory comorbidities
Example 2: A FPA inappropriately suggested that a patient's procedure would be cancelled in the event that they refused to consent to pre-operative medication
Communication breakdown and coordination of care issues between physicians
Example 1: A nurse expressed concerns about a patient's position to the FPA shortly before the patient slid off the operating table
Example 2: When a patient developed haemodynamic deterioration, the FPA failed to inform the OR team of the critical situation
Example 3: An incision was initiated on the wrong extremity before the team's completion of the surgical safety checklist

FPA: Family practice anaesthetist, OR: Operating room

DISCUSSION

We described medico-legal case characteristics and expert criticisms of family physicians providing anaesthesia-related care. Almost 3-quarters (36/50) of the cases occurred in rural and small urban areas, and of patients with an ASA physical status reported, 31/39 (79%) were 1 or 2. Patient harm was at least moderate in 80% (24/30) of cases where healthcare-related patient harm had occurred.

The care locations were expected to be mostly rural and small urban areas and ASA physical status to predominantly be 1 or 2. Family physicians providing anaesthesia-related care are often located in rural regions and must make decisions about the suitability of providing anaesthesia care for the patients' specific ASA physical status classification with respect to the available resources and their respective training.[16] Further, there may be limitations on the anaesthesia privileges that a family physician may provide based on their training. For example, British Columbia defines within their family practice an anaesthesia privileging dictionary that physicians generally support ASA physical status 1 or 2, with the ability to provide anaesthesia care to higher risk patients under specific circumstances such as when the hospital has appropriate peri-operative surgical programme capabilities.[17]

Expert criticisms identified by our study highlight the importance of a physician's ability to appropriately monitor and perform additional investigations as required by their analysis of a patient's condition over time. Further, communication with the patient, as well as documentation in the medical record, were prominent areas of expert criticism. Broadly, the categories of expert criticisms are similar to those identified in Canadian medico-legal cases involving FRCPC anaesthesiologists reported by Crosby *et al.*, however, due to differences in case selection criteria, the cases from our study are not directly comparable.[13] Focused continuing professional development courses are available to address the types of issues identified by the expert criticisms in our study. A few Canadian-designed courses such as Ottawa Anaesthesia Skills in Simulation and Simulating Crises for Optimal Response in Emergencies focus on clinical decision-making and situational awareness for FPAs.[18,19] The Universities of Calgary and British Columbia organise refresher courses for FPAs to cover most aspects of provider and team factors involved in patient harm.[20,21]

Access to anaesthesia care in rural and remote areas is a current issue. Improving access to care in rural and remote communities in Canada requires addressing shortages in the medical workforce providing rural anaesthesia care.[16] Estimates from 2018 by Simkin *et al*. indicate that there are at least 534 FPAs practising in Canada, excluding data from Québec, Nunavut and Northwest Territories.[22] In 2018, about 15% of the anaesthesia workforce were FPAs and although these FPAs make up only a small proportion of all family physicians, we anticipate that this number will potentially grow to address the deficit of anaesthesia services in rural and remote regions.[16]

Strengths and limitations

CMPA medico-legal cases represent a small proportion of patient safety incidents overall because not all events lead to a complaint against a physician in a civil legal, college or hospital matter. Further, physician members choose to report complaints to the CMPA at the physician's discretion. Therefore, these cases may not represent all complaints across Canada. Furthermore, clinical information and the level of detail available in cases varies. Nonetheless, the CMPA has access to a rich source of medico-legal information that can provide valuable insights related to medico-legal risk for physicians in Canada.

This study is a descriptive study that is retrospective in nature. Medico-legal cases are influenced by recall bias, and analyses of these cases are prone to hindsight bias and outcome bias because the analysis of our data relies on the accuracy of medico-legal records and opinions.

Patient harm reported in this study may not be directly related to the anaesthesia provided by the family physician. Patient harms are influenced by other unmeasured variables such as patient comorbidities and care provided by other healthcare providers. Thus, the proportion of severity of harms cannot be generalised as a reflection of the safety of family physicians providing anaesthesia care. However, the cases presented do illustrate potential ways to improve

anaesthesia care and educational opportunities to improve skills.

Future research directions

Systems factors have not been adequately addressed by this study due to limitations in the type and source of information used. Future research could examine the impact of the integration of checklists and protocols such as the World Health Organization's surgical safety checklist on patient safety in rural settings and explore how it has been or could be implemented in a Canadian setting.[23] These settings are more common where FPAs practise and thus would be the most beneficial settings to evaluate. Further, addressing system factors issues would include other providers in the circle of care, therefore, extending beyond FPAs.

CONCLUSION

We are not aware of any recent literature describing a national set of medico-legal cases of family physicians providing anaesthesia-related care in Canada. This study has addressed a gap therein by describing the types of provider and team factors identified by expert criticism in medico-legal cases in Canada. As the need for FPAs increases, it is incumbent that the quality of care continues to improve to promote patient safety. This study has identified areas for improvement to facilitate the goal of safer medical care in rural and remote communities.

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Conflicts of interest: Karen Lemay, Shan Jin, Anne Steen, Jeffrey Smith and Gary Garber were employees of the Canadian Medical Protective Association, a not-for-profit mutual defence organisation for physicians, at the time of this study. No other competing interests were declared.

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