

Invited Editorial

Code blues: The role of anesthesia assistants in anesthesia care teams

Homer Yang¹^a

¹ Department of Anesthesia & Perioperative Medicine, Western University

Keywords: Anesthesia Care Team, anesthesia assistant, Respiratory Therapy, anesthesia

<https://doi.org/10.29390/001c.138402>

Canadian Journal of Respiratory Therapy

Vol. 61, 2025

Ward et al.¹ provided a retrospective analysis of anesthesia assistant (AA) roles at in-hospital code blue events in two academic adult hospitals. Anesthesiologists generally attend code blue events because of their expertise in resuscitation, particularly when advanced airway management is required. However, since 1970 in Quebec, and for at least two decades in the other provinces, AAs have taken on increasing patient care roles in many Canadian healthcare centres, which reflects AAs' advanced skillsets and the growing recognition of the value of the Anesthesia Care Team (ACT) approach. The report by Ward et al.¹ is another important step in documenting the advancing roles of AAs and another step in the progress of an anesthesia physician-led ACT. For the benefit of Canadian patients and the sustainability of our healthcare system, those are positive developments indeed.

In this retrospective study of 320 code blue events,¹ 246 cases required some form of airway management, 140 of which were managed by AAs. Endotracheal intubation (ETI) was required in 181 cases. In 83 cases, AA was the only one to attempt the ETI, with a success rate of 96%. The number of times an anesthesiologist or an anesthesia resident was unavailable to attempt ETI was not reported. Nevertheless, due to a shortage of anesthesiologists nationally,²⁻⁹ it is increasingly common across Canada that an anesthesiologist is unavailable for a code blue event or trauma code. This retrospective analysis provides strong evidence that AAs, as part of the ACT, are good for patient care and the healthcare system.

Given this new initiative, a look at the evidence of outcomes is naturally the next step. Advanced airway management during code blue events may be performed in-house or out-of-hospital, and on adults or on pediatrics. In the current study,¹ the mean age of patients was 63 years (SD=14, range 18 – 94). Most existing evidence about airway management is during out-of-hospital cardiac arrest (OHCA) events, by paramedics or emergency technicians, and the quality of evidence is not high-grade.^{10,11} One should consider that when looking at existing evidence on advanced airway management during code blue events.

Airway management modalities during OHCA may include ETI, supraglottic airway, or bag-valve-mask ventilation (BVM). Some studies have shown that supraglottic airway is associated with better 72-hour survival than ETI¹² or that BVM is non-inferior to ETI.¹³ Aspiration pneumonia was noted in some studies to be similar, with or without ETI.^{12,14} However, confounders exist for OHCA,^{15,16} which are different from in-hospital events: the incidence of witnessed versus non-witnessed cardiac arrests, or the unknown duration of unconsciousness prior to ETI. These confounders may result in aspirations before ETI, and the lack of difference between groups may be unrelated to airway modalities in OHCA. Some studies raise concerns about complications in ETI by non-physicians.¹²⁻¹⁴ In North America, paramedics or emergency technicians have performed airway management in OHCA events for decades. Complications cited include unrecognized endotracheal tube (ETT) dislodgement (1.8% - 6%)¹²⁻¹⁴; or recognized ETT dislodgement (8%).¹⁴ Of note is that after ETI, OHCA patients still have to be transported to the hospital, raising the question of whether some esophageal intubations (1.8 - 2%)¹²⁻¹⁴ might be a result of unrecognized ETT dislodgements.

The deterioration of advanced airway management skills contributing to complications during ETI has also been poorly studied. A study on OHCA showed that emergency technicians' competency in intubations deteriorates rapidly, especially without regular practice or refreshers. It concluded that skill maintenance was impractical in OHCA ETI for emergency technicians.¹⁷ In contrast, AAs regularly participate in airway management in the operating rooms with advanced training in emergency drugs, among other skill sets. Therefore, the maintenance of airway skills for AAs who work regularly in the OR is quite different from emergency technicians, suggesting that AAs fill a unique role in the healthcare system.

Ward et al.¹ must be commended for their initiative and retrospective analysis. With AAs now on the code blue team, outcome research on ETI for in-house events is even more important, given the current state of evidence. One suggestion could be to include AAs in the Canadian Periop-

^a Corresponding author at: Homer.Yang@lhsc.on.ca

erative Anesthesia Clinical Trials group, which could help to organize national clinical trials.¹⁸

Canada is a big country, and healthcare is under provincial jurisdiction. As a result, the evolution and formalization of AA roles has differed among provinces: AAs in Quebec are Registered Respiratory Therapists (RRT) with training and practice regulated by l'Ordre professionnel des inhalothérapeutes du Québec; in Manitoba, Clinical Assistants – Anesthesia (ACA) are regulated by the College of Physicians and Surgeons of Manitoba (CPSM); and in the remaining provinces, training and credentialing is accredited by the CSRT and the practice is regulated by individual provincial RT regulatory body although some provinces do not have a provincial RT regulatory body, further fragmenting AA regulation.¹⁹ AAs across the country may comprise RTs, nurses, or international medical graduates. Such diversity across Canada may be seen as an advantage in local

jurisdictions adapting to local needs; others may see such fragmentation as a potential to weaken the voice of advocacy for AAs and RTs nationally. Without a doubt, there is increasing support for AAs.^{9,19-24} In this climate of reducing or removing provincial barriers, provinces have indicated that they are interested in dropping the interprovincial barriers for physicians.²⁵ This may be the time to explore and advocate for the similarities among AA practices in different provinces while respecting the differences. A unified voice would be a stronger voice advocating for AAs and ACTs, especially for new initiatives as those reported by Ward et al.¹ This also may be the time for multicentre outcome research to support these important initiatives further.

Submitted: May 20, 2025 EST. Accepted: May 20, 2025 EST.

Published: May 22, 2025 EST.



This is an open-access article distributed under the terms of the Creative Commons Attribution 4.0 International License (CCBY-NC-4.0). View this license's legal deed at <https://creativecommons.org/licenses/by-nc/4.0> and legal code at <https://creativecommons.org/licenses/by-nc/4.0/legalcode> for more information.

REFERENCES

1. Ward CA, Berry M, Bou-Habib M, Law J, Milne AD. Roles of anesthesia assistants within the code blue team at in-hospital cardiopulmonary arrests: A retrospective analysis. *Can J Respir Ther*. 2025;61:78-86. doi:[10.29390/001c.136463](https://doi.org/10.29390/001c.136463)
2. CTV News. There simply aren't enough people': Canada's shortage of anesthesiologists contributing to surgical backlog, group says. August 4, 2023. Accessed August 4, 2023. <https://www.ctvnews.ca/health/article/there-simply-arent-enough-people-canadas-shortage-of-anesthesiologists-contributing-to-surgical-backlog-group-says/>
3. CBC News. What an anesthesiologist shortage means for pregnant women in Yarmouth. 2019. Accessed April 25, 2019. <https://www.cbc.ca/news/canada/nova-scotia/anesthesiologist-shortage-pregnant-women-in-yarmouth-drive-out-of-town-1.5109707>
4. CBC News. At least 300 Winnipeg surgeries in September postponed over anesthesia staff shortages. August 5, 2022. Accessed September 1, 2022. <https://www.cbc.ca/news/canada/manitoba/wrha-surgeries-cancelled-september-memo-1.6542611>
5. CBC News. Canadian kids' spinal surgery waits "far exceed" recommendations: report. Canadian Broadcast Corporation. 2023. Accessed September 25, 2023. <https://www.cbc.ca/news/health/scoliosis-children-canada-1.6977327>
6. CBC News. Patients, doctor raise alarm over anesthesiologist shortage in Sask. hospital. 1 anesthesiologist at Swift Current hospital serving region spanning hundreds of square kilometres. August 23, 2023. Accessed April 21, 2025. <https://www.cbc.ca/news/canada/saskatoon/patients-doctor-raise-alarm-over-anesthesiologist-shortage-1.6944263>
7. CBC The Current. An anesthesiologist shortage is delaying surgeries across Canada, physicians say. 2024. Accessed January 23, 2024. <https://www.cbc.ca/radio/thecurrent/anesthesiologist-shortage-delaying-surgeries-1.7092392>
8. White Coat Black Art. The anesthesiologist shortage is now a "full-blown crisis." Should Canada use nurse anesthetists? Certified Registered Nurse Anesthetists administer 58 million anesthetics a year in the U.S. January 18, 2025. <https://www.cbc.ca/radio/whitecoat/certified-registered-nurse-anesthetists-1.7431100>
9. White Coat Black Art. Want to be sedated (for surgery)? Anesthesia assistants could help shorten wait times. Anesthesiologists say increasing the ranks of anesthesia assistants is critical. Candian Broadcast Corporation. April 13, 2025. Accessed April 13, 2025. <https://www.cbc.ca/radio/whitecoat/anesthesia-assistants-surgery-wait-times-1.7506107>
10. Granfeldt A, Avis SR, Nicholson TC, et al. Advanced airway management during adult cardiac arrest: A systematic review. *Resuscitation*. 2019;139:133-143. doi:[10.1016/j.resuscitation.2019.04.003](https://doi.org/10.1016/j.resuscitation.2019.04.003)
11. Wang HE. Prehospital Airway Management - the Continued Search for Evidence. *Prehosp Emerg Care*. 2024;28(4):558-560. doi:[10.1080/10903127.2023.2281361](https://doi.org/10.1080/10903127.2023.2281361)
12. Wang HE, Schmicker RH, Daya MR, et al. Effect of a Strategy of Initial Laryngeal Tube Insertion vs Endotracheal Intubation on 72-Hour Survival in Adults With Out-of-Hospital Cardiac Arrest: A Randomized Clinical Trial. *JAMA*. 2018;320(8):769-778. doi:[10.1001/jama.2018.7044](https://doi.org/10.1001/jama.2018.7044)
13. Jabre P, Penaloza A, Pinero D, et al. Effect of Bag-Mask Ventilation vs Endotracheal Intubation During Cardiopulmonary Resuscitation on Neurological Outcome After Out-of-Hospital Cardiorespiratory Arrest: A Randomized Clinical Trial. *JAMA*. 2018;319(8):779-787. doi:[10.1001/jama.2018.0156](https://doi.org/10.1001/jama.2018.0156)
14. Gausche M, Lewis RJ, Stratton SJ, et al. Effect of out-of-hospital pediatric endotracheal intubation on survival and neurological outcome: a controlled clinical trial [published correction appears in JAMA 2000 Jun 28;283(24):3204]. *JAMA*. 2000;283(6):783-790. doi:[10.1001/jama.283.6.783](https://doi.org/10.1001/jama.283.6.783)
15. Kyriacou DN, Lewis RJ. Confounding by Indication in Clinical Research. *JAMA*. 2016;316(17):1818-1819. doi:[10.1001/jama.2016.16435](https://doi.org/10.1001/jama.2016.16435)
16. Carney N, Totten AM, Cheney T, et al. Prehospital Airway Management: A Systematic Review. *Prehosp Emerg Care*. 2022;26(5):716-727. doi:[10.1080/10903127.2021.1940400](https://doi.org/10.1080/10903127.2021.1940400)
17. Youngquist ST, Henderson DP, Gausche-Hill M, Goodrich SM, Poore PD, Lewis RJ. Paramedic self-efficacy and skill retention in pediatric airway management. *Acad Emerg Med*. 2008;15(12):1295-1303. doi:[10.1111/j.1553-2712.2008.00262.x](https://doi.org/10.1111/j.1553-2712.2008.00262.x)

18. Hall R, Beattie S, Cheng D, et al. Can we develop a Canadian Perioperative Anesthesiology Clinical Trials group? *Can J Anaesth*. 2010;57(12):1051-1057. doi:[10.1007/s12630-010-9385-2](https://doi.org/10.1007/s12630-010-9385-2)
19. Yang H, Littleford J, Orser BA, et al. The evolution and formalization of anesthesia assistant roles across Canada. Évolution et formalisation des rôles d'assistant-e en anesthésie au Canada. *Can J Anaesth*. 2024;71(12):1627-1645. doi:[10.1007/s12630-024-02812-3](https://doi.org/10.1007/s12630-024-02812-3)
20. Yang H, Orser BA. SUBMISSION TO OH: ANESTHESIA ASSISTANTS IN ONTARIO 2021-07-22. Accessed May 8, 2025. <https://static1.squarespace.com/static/53753bcde4b02080802a6711/t/6111065cc387a702e77120b7/1628505692693/Submission+to+OH+re+Anesthesia+Assistants+%282%29.pdf>
21. Yang H, Littleford J, Orser BA, et al. In reply: Comment on: The evolution and formalization of anesthesia assistant roles across Canada. *Can J Anaesth*. 2025;72(2):371-372. doi:[10.1007/s12630-025-02914-6](https://doi.org/10.1007/s12630-025-02914-6)
22. Salvatori M, Shum S, Filici AL, et al. Safe use of a 5:1 coverage model for anesthesia assistants performing conscious sedation in an independent health facility. *Can J Anaesth*. 2024;71(12):1769-1771. doi:[10.1007/s12630-024-02827-w](https://doi.org/10.1007/s12630-024-02827-w)
23. Ward C, Munro A, Houser C, Brousseau P. A survey of how the role and specialty training of anesthesia assistants in Canadian teaching hospitals have changed over the past 12 years. *Can J Anaesth*. 2021;68(8):1260-1262. doi:[10.1007/s12630-021-01996-2](https://doi.org/10.1007/s12630-021-01996-2)
24. *A Plan to Evolve the Anesthesia Care Team Model in Ontario: Report of the ACT Implementation Advisory Committee*. Ontario. ACT Implementation Advisory Committee; 2009. Accessed May 30, 2021. https://www.crto.on.ca/pdf/Misc/Anesthesia_Care_Team_Ontario.pdf
25. The Globe and Mail. Doctors hopeful governments will slash interprovincial barriers that restrict mobility. March 7, 2025. Accessed May 4, 2025. <https://www.theglobeandmail.com/canada/article-doctors-hopeful-governments-will-slash-interprovincial-barriers-that/>