
ONTARIO'S ANESTHESIOLOGISTS: A SECTION OF THE ONTARIO MEDICAL ASSOCIATION



POSITION STATEMENT: APPLYING CIRCULAR ECONOMY PRINCIPLES TO THE PROCUREMENT AND USE OF OPERATING ROOM MEDICAL DEVICES AND SUPPLIES

The Canadian health-care industry is responsible for producing approximately 5% of our country's greenhouse gas (GHG) emissions, in addition to generating other pollutants affecting the air, water, and soil (1,2,3). Climate change and environmental pollution pose both immediate and long-term threats to global health (4). A healthy population requires a healthy planet, and positive action needs to be taken to mitigate the effects of climate change on human health and well-being (5,6). Concurrently, there is increasing concern around the sustainability of our health-care system and rising health care costs (7).

Hospital systems not only share responsibility to address climate change and environmental sustainability but are uniquely positioned to take meaningful action. One of these actions is applying circular economy principles to the procurement and use of medical devices and supplies. This step can have a significant impact as 60-80% of health care related GHG emissions originate in the supply chain (8). Single-use equipment has become ubiquitous in health care, with limited benefits but significant negative impacts on the environment and human health that are well-documented (9,10,11,12). In many cases, life cycle analyses have demonstrated higher per-use costs and greater overall emissions of single-use disposables when compared to reusable options (9,10,13). A linear economy model, where products are manufactured, transported, used once and then discarded, is inherently unsustainable and prone to supply chain interruptions, which can impact the ability to provide patient care (10,13).

Health care must move towards a circular economy model where medical devices and supplies are maintained and reused in a high-quality state for as long as possible and then refurbished, repurposed or recycled (7). Such a model maximizes resource productivity while minimizing waste, which can lower costs and reduce negative downstream health effects (9,10). High-value care, which includes improved health for populations and reduced per capita health care costs, requires applying circular economy principles to the production, procurement and ongoing use of operating room supplies (9,10).

Physicians are called upon to act as health advocates and to positively influence the determinants of health (12,14,15). High-value care that protects the health of our planet is urgently needed. Ontario's Anesthesiologists supports the application of circular economy principles to the procurement and use of operating room medical devices and supplies. Collaboration with all members of the perioperative team, other health-care leaders and relevant organizations is necessary to achieve this objective.

**THIS POSITION STATEMENT WAS CO-AUTHORED BY DR. DAVID OHRLING, DR. S. ALI ABBASS, MR. MIKE APOSTOL,
DR. CONNOR BRENNAN, DR. ROHIT KUMAR AND DR. ANITA RAO, IN FEBRUARY 2023, WITH THE
ASSISTANCE AND SUPPORT OF THE EXECUTIVE OF ONTARIO'S ANESTHESIOLOGISTS.**

ONTARIO'S ANESTHESIOLOGISTS: A SECTION OF THE ONTARIO MEDICAL ASSOCIATION



POSITION STATEMENT: APPLYING CIRCULAR ECONOMY PRINCIPLES TO THE PROCUREMENT AND USE OF OPERATING ROOM MEDICAL DEVICES AND SUPPLIES

References

1. Eckelman MJ, Sherman JD, MacNeill AJ. Life cycle environmental emissions and health damages from the Canadian healthcare system: an economic-environmental epidemiological analysis. *PLoS Med* 2018; <https://doi.org/10.1371/journal.pmed.1002623>
2. Pichler, P. et al. International Comparison of health care carbon footprints. *Environmental Research Letters*. 2019;14 064004 <http://doi.org/10.1088/1748-9326/ab19e1>
3. Eckelman MJ, Sherman J. Environmental Impacts of the U.S. Health Care System and Effects on Public Health. *PLoS One*. 2016 Jun 9;11(6):e0157014. <https://doi.org/10.1371/journal.pone.0157014>
4. Watts N, Amann M, Arnell N, et al. The 2020 report of The Lancet Countdown on health and climate change: responding to converging crises. *Lancet* 2020; 397: 129–70 [https://doi.org/10.1016/S0140-6736\(20\)32290-X](https://doi.org/10.1016/S0140-6736(20)32290-X)
5. Prescription for Ontario: Doctor's 5-Point Plan for Better Healthcare. [Internet] Ontario Medical Association. Oct. 26, 2021 [cited Feb 5, 2023]. Available from: <https://www.oma.org/uploadedfiles/oma/media/public/prescription-for-ontario-doctors-5-point-plan-for-better-health-care.pdf>
6. Toward an Environmentally Responsible Canadian Health Sector. [Internet] Joint Position Statement, The Canadian Coalition for Green Healthcare. September 2009 [cited Dec 11,, 2022]. Available from: <https://greenhealthcare.ca/joint-position-statement/>
7. CMA Policy: Environmentally Sustainable Health Systems in Canada. [Internet]. The Canadian Medical Association. October 2022. Available from: <https://policybase.cma.ca/viewer?file=%2Fmedia%2FPolicyPDF%2FPD23-02.pdf#page=1>
8. MacNeil, A, McGann, F, Sherman, J. Planetary Health: A Framework for Sustainable Health Systems. *The Lancet Planetary Health*. 2021; 5/2. E66-68 [https://doi.org/10.1016/S2542-5196\(21\)00005-X](https://doi.org/10.1016/S2542-5196(21)00005-X)
9. Xiao, M., Abbass, S.A., Bahrey, L., Rubinstein, E., Chan, V. A Roadmap for Environmental Sustainability of Plastic Use in Anesthesia and the Perioperative Arena. *Anesthesiology* 2021; 135. <https://doi.org/10.1097/ALN.0000000000003845>

ONTARIO'S ANESTHESIOLOGISTS: A SECTION OF THE ONTARIO MEDICAL ASSOCIATION



POSITION STATEMENT: APPLYING CIRCULAR ECONOMY PRINCIPLES TO THE PROCUREMENT AND USE OF OPERATING ROOM MEDICAL DEVICES AND SUPPLIES

References (continued)

10. MacNeill A, et al. Transforming the Medical Device Industry: Road Map to a Circular Economy. *Health Affairs* 2020; 39/12: 2088-2097 <https://doi.org/10.1377/hlthaff.2020.01118>
11. Sherman JD, Thiel C, MacNeill A, et al. The green print: advancement of environmental sustainability in healthcare. *Resour Conserv Recycling* 2020; 161: 104882. <https://doi.org/10.1016/j.resconrec.2020.104882>
12. White, S.M. et al. Principles of Environmentally-Sustainable Anaesthesia: a global consensus statement from the World Federation of Societies of Anaesthesiologists. *Anaesthesia* 2022; 7/2: 201-12 <https://doi.org/10.1111/anae.15598>
13. Eckelman M, et al. Comparative Life Cycle Assessment of Disposable and Reusable Laryngeal Mask Airways. *Anesthesia and Analgesia* 2012; 114: 1067-72 <https://doi.org/10.1213/ANE.0b013e31824f6959>
14. CanMEDS: Better Standards, Better Physicians, Better Care. [Internet] The Royal College of Physicians and Surgeons of Canada. [cited Dec. 2022] Available from; <https://www.royalcollege.ca/rcsite/canmeds/canmeds-framework-e>
15. Why Canada Needs a Net-Zero Health System. [Internet]The Canadian Medical Association. [cited Mar. 30, 2023]. Available from: <https://www.cma.ca/why-canada-needs-net-zero-health-system>