



Desflurane needs to “Des-appear”:

Reducing a harmful anesthetic gas across Newfoundland and Labrador

Krista Mahoney, PhD

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Quality of Care NL is proud to partner
with **Choosing Wisely Canada**



Faculty/Presenter Disclosure



Faculty/Presenter: Krista Mahoney

Relationships with financial sponsors:

- None

Environmental Sustainability Agenda



Environmental Sustainability of the Healthcare System in NL

- Team assembled
- Partnerships created
- Priorities determined
- Projects underway

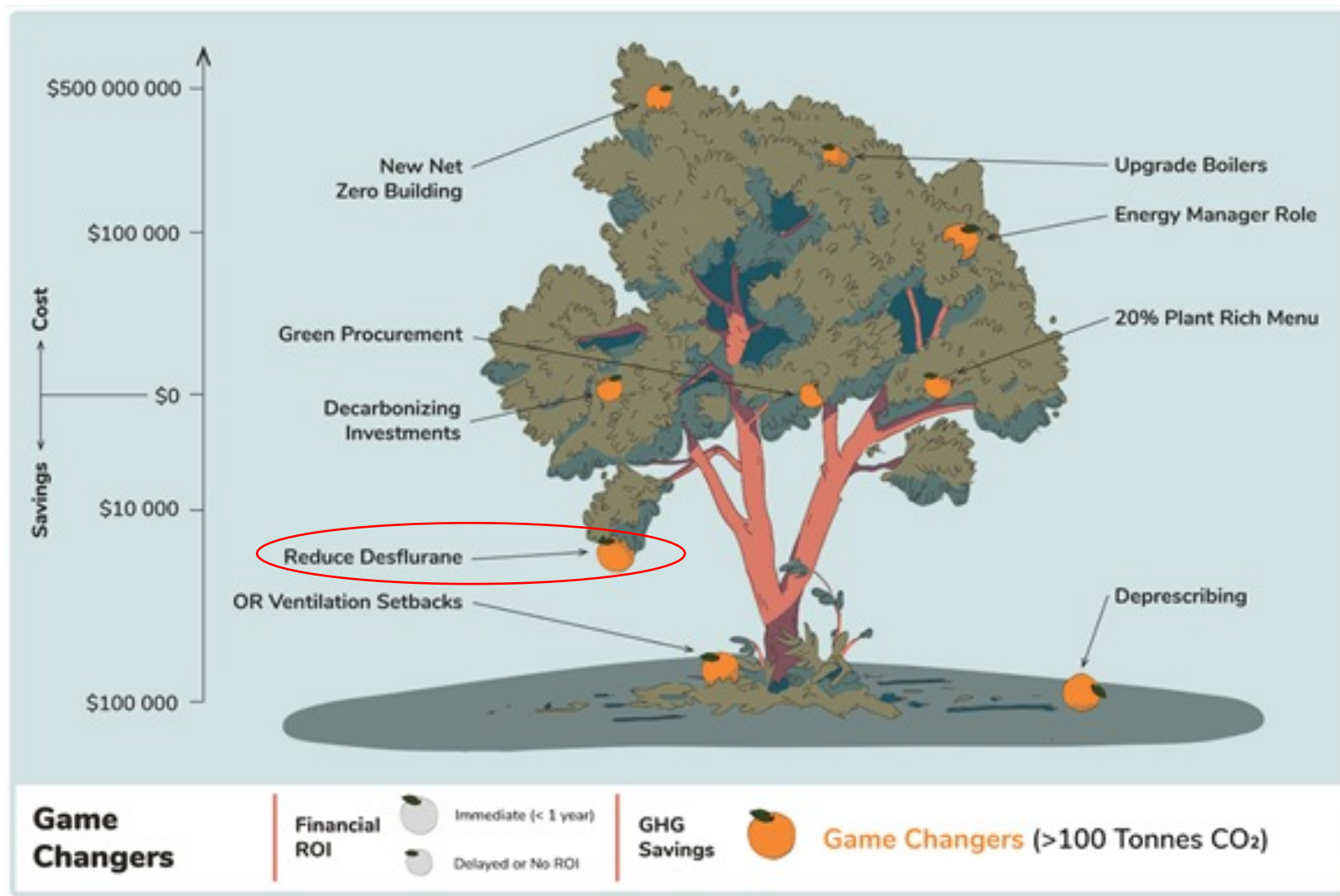


Look for the leaf



- KT tools: QCNL/CWNL projects that focus on Environmental Sustainability are denoted by a leaf icon
- April 22: Upcoming **Earth Day** social media and blog posts

Desflurane: Low hanging fruit



Graphic borrowed from:



Partnerships for
Environmental Action by
Clinicians and Communities
for Hospitals / Health
care facilities

The Numbers on Desflurane



- Makes up 80% of greenhouse gases stemming from anesthetics in the atmosphere
- 2500 x more potent as a greenhouse gas than carbon dioxide
- 25 x more warming than Sevoflurane (common alternative)



CLINICALLY SIMILAR ALTERNATIVES



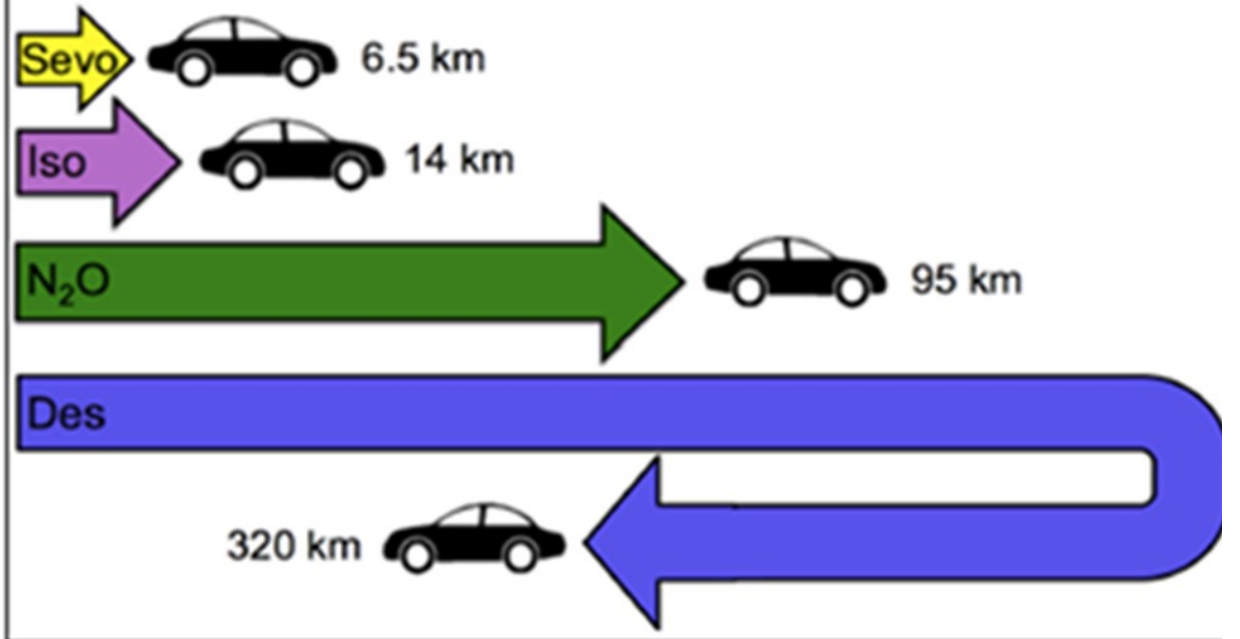
CLINICALLY SIMILAR ALTERNATIVES

One hour of **desflurane** is equivalent to the CO₂ produced from driving a car 320 kms, while **sevoflurane** is comparable to driving 6.5 kms.

Desflurane persists in the atmosphere for 14 years, while **sevoflurane** lasts for one.



CO₂ Equivalent for 1 MAC-hour of Common Anesthetic Gases in Kilometers



Banning Desflurane



Canada

- 17 Ontario hospitals have removed Desflurane from their ORs
- Vancouver General Health eliminated Desflurane in 2023

Europe

- European Union has planned a ban of desflurane by Jan 1, 2026
- Scotland and England: first health systems in the world to announce a ban/phase out of desflurane (2023 and by 2024, respectively)
- Desflurane use across NHS has decreased from 20% of all anesthetic gases used to 3% over the last 4-5 years
- Amsterdam University Medical Center has phased out several anesthetic gases, including desflurane

Australia

- Brisbane Women's Hospital:
 - Achieved a 96% reduction in Desflurane use from 2016-2021



Banning Desflurane



Royal Brisbane and Women's Hospital methods:

1. Behavioural changes:

- Raised awareness of the environmental impact
- Face-to-face departmental meetings
- Posters
- Journal club presentations
- Encouraged regional anesthesia and total intravenous anesthesia
- Encouraging the use of low fresh gas flow
- Encouraging the use of end-tidal control mode
- Regular updates on achievements
- Director of department support

2. System changes:

- Gradual removal of desflurane vaporizers from ORs
- Upgraded intravenous pump fleet and anesthetic machines
- Automated control of circuit anesthetic concentrations
- Configuring anesthetic machines to recirculate sampling gas
- Anesthetic machines default to low FGFs with volatile anesthetics

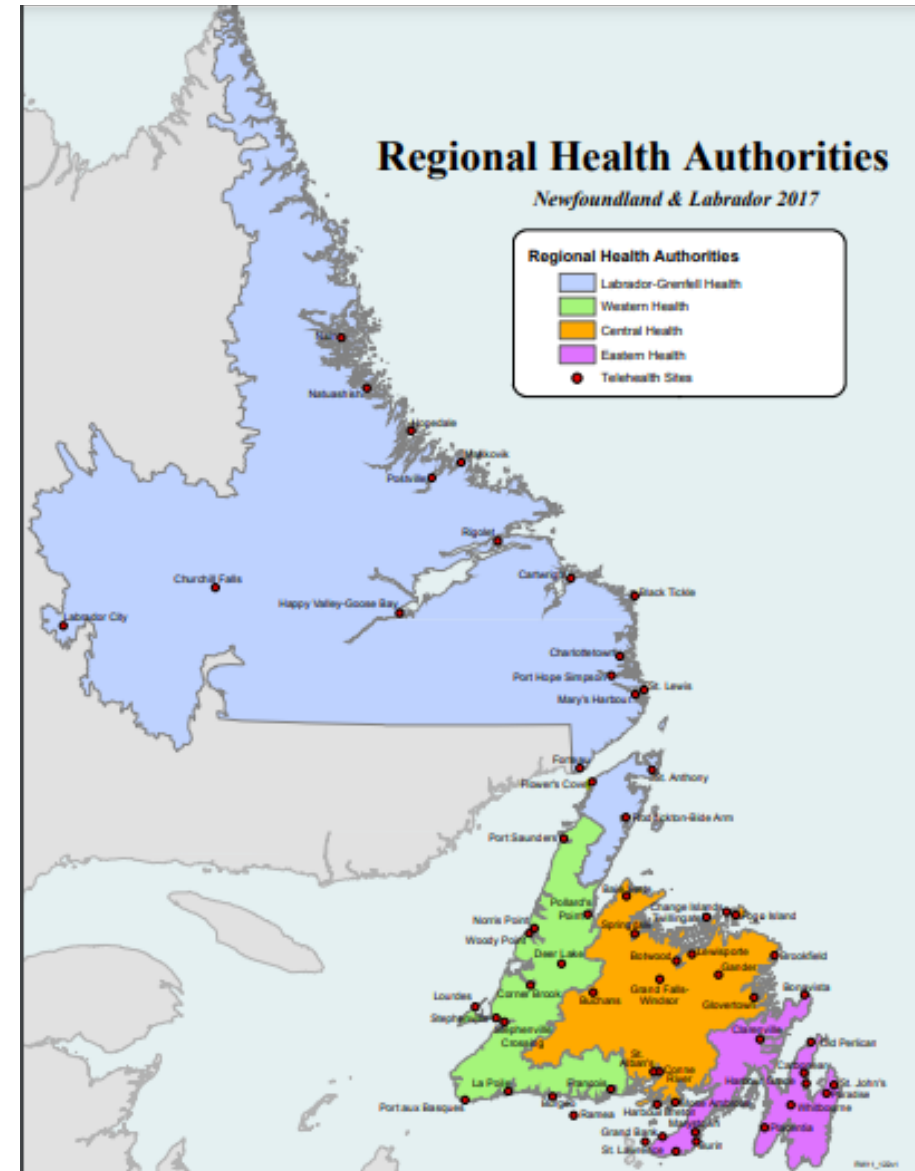


What we've done in NL

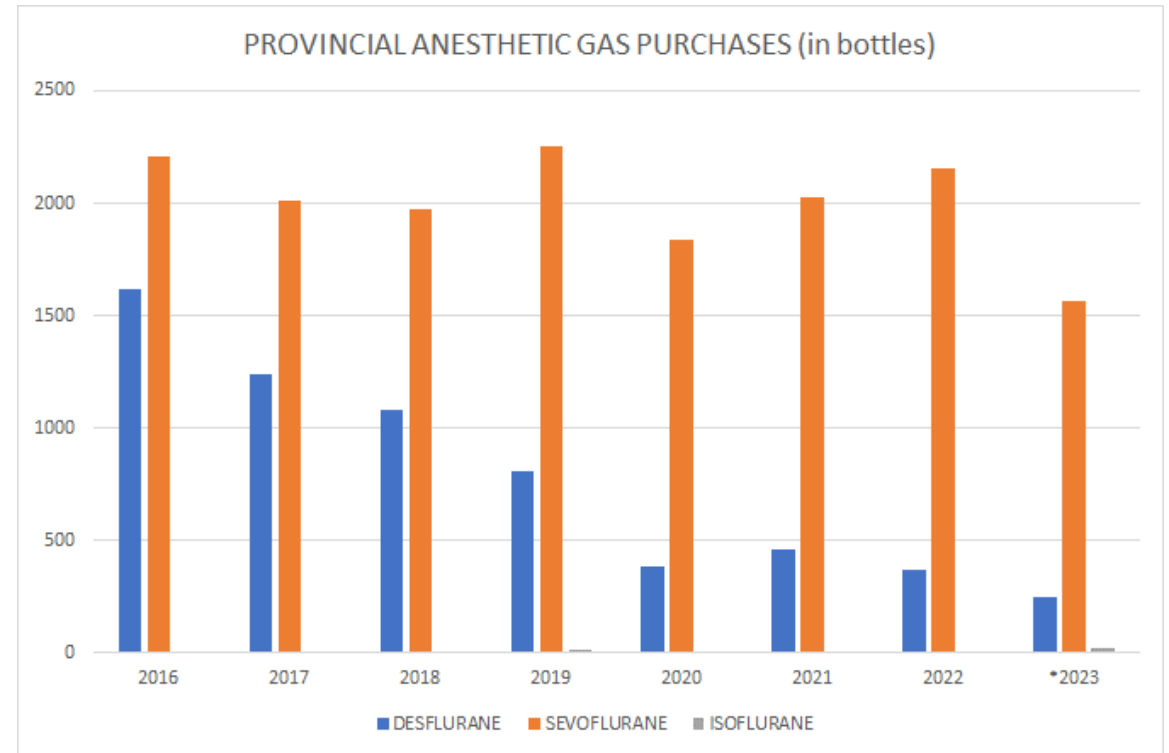


- Lit review
- Purchasing data obtained and examined
- Communication with anesthesiologists and health administrators revealed existing informal initiative to reduce Desflurane use:
 - Chief of Anesthesia had Desflurane removed from anesthesia gas machines in ORs so that additional steps are required to retrieve the gas and load it into the machine.
- Purchasing trends are being used to inform target zones/facilities.
- Peer-to-peer communication with target zones to share data and suggest changes (Jan 2024)

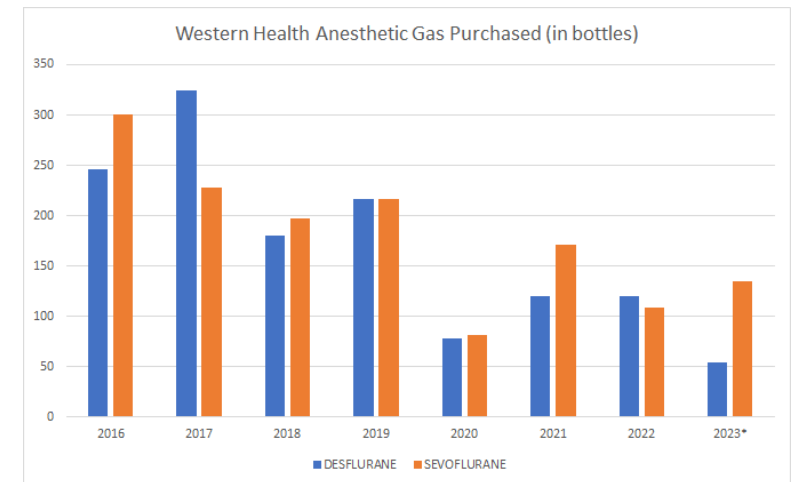
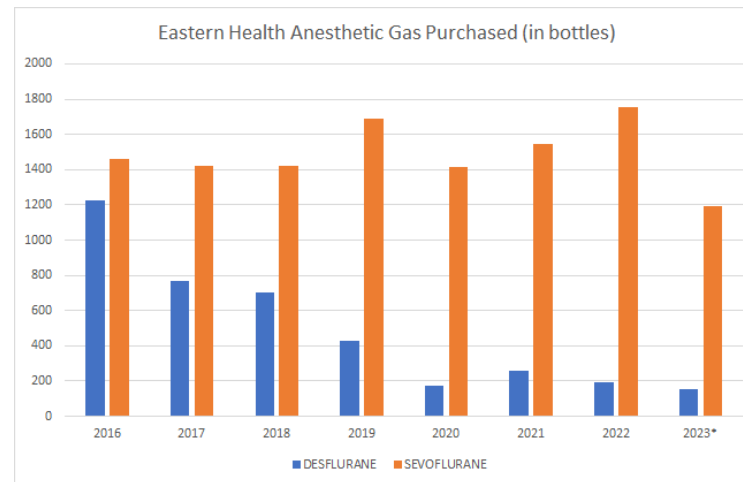
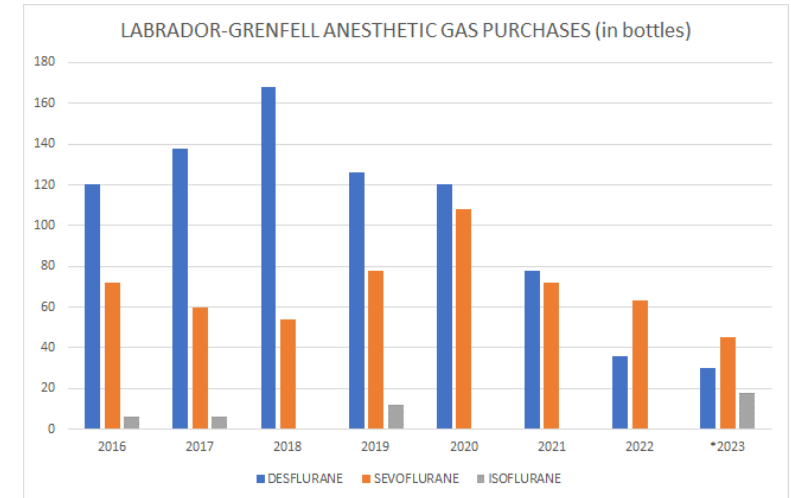
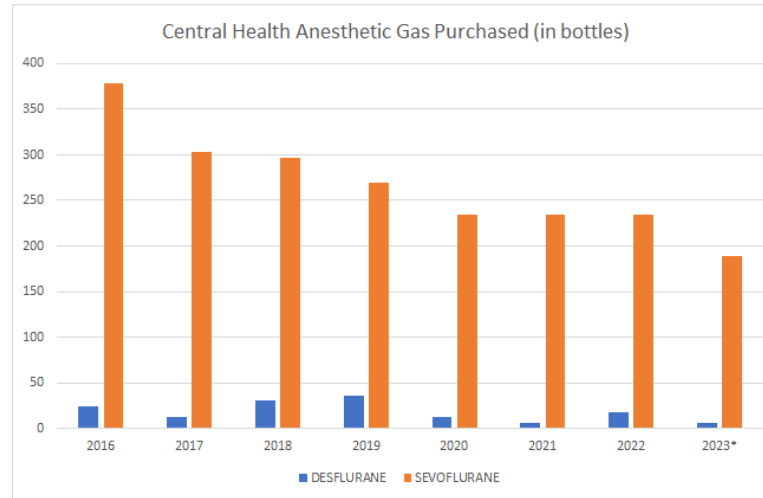
HOW NL HEALTH ZONES ARE DIVIDED



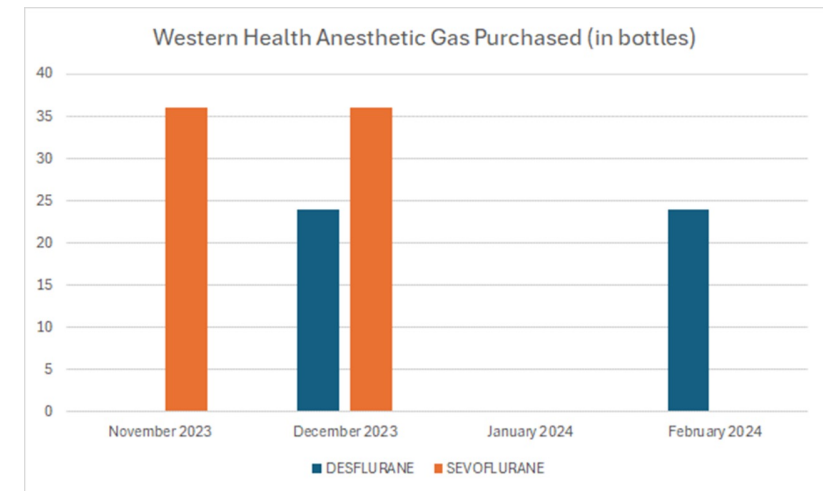
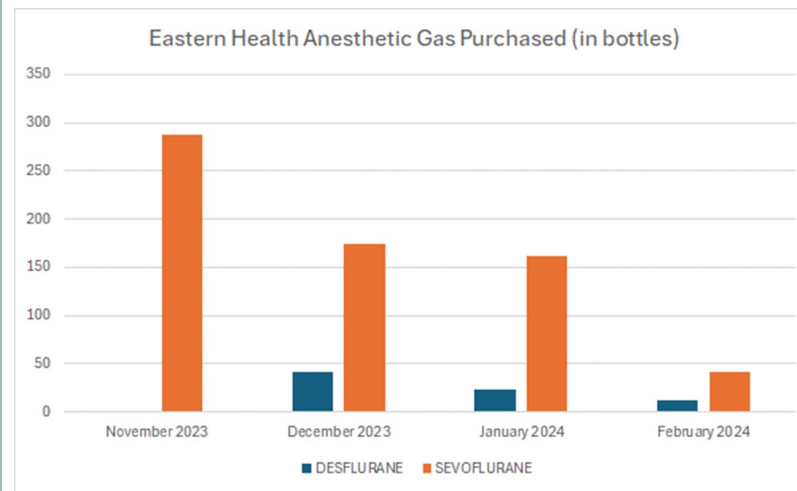
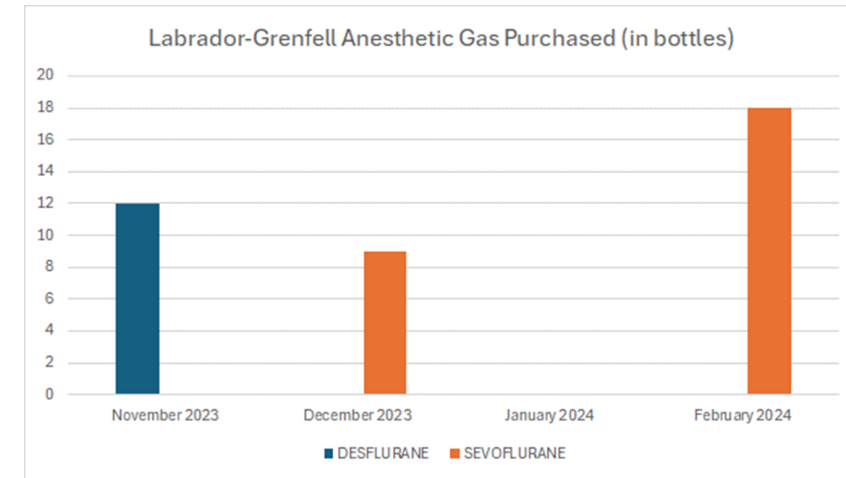
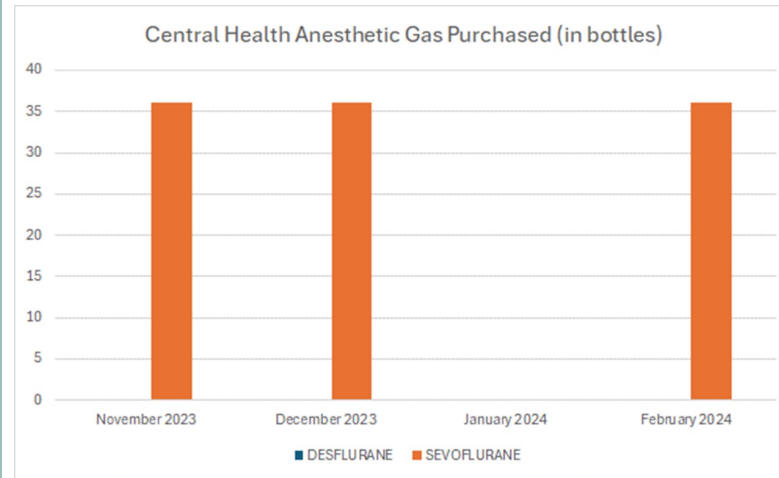
ANNUAL PURCHASING TRENDS FOR THE ENTIRE PROVINCE OF NL (2016-2023)



ANNUAL PURCHASING TRENDS FOR EACH OF THE 4 PROVINCIAL HEALTH REGIONS (2016-2023)



4 MONTH UPDATE: PURCHASING TRENDS FOR EACH OF THE 4 PROVINCIAL HEALTH REGIONS NOV 2023-FEB 2024



Next Steps



- Re-examine purchasing trends in June 2024
 - Consider adapting some behaviour change/ Implementation Science techniques at that time
- Concerns about a past global shortage of Sevoflurane has led some departments to want to maintain stock of Desflurane as a back-up alternative in the event of another future shortage.
 - A complete ban may not be possible without a readily available safe alternative.



Questions?



Krista Mahoney



Quality of Care NL



qualityofcarenl.ca



kmahoney@mun.ca