Project Title

Reducing Environmental Pollution via Sustainable Practices in the Operating Theatre Environment

Project Lead and Members

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Organisation(s) Involved

Sengkang General Hospital

Healthcare Family Group(s) Involved in this Project

Medical

Applicable Specialty or Discipline

Operating Theatre

Aims

Aim to implement the following environmentally sustainable practices in the OT.

1. Reduced Desflurane usage by 50% in 6 months (January 2022 – June 2022)
2. Increased recycling efforts
3. Eliminated disposable meal boxes and plastic cutlery

Background

See poster appended/ below

Methods

See poster appended/ below

Results

See poster appended/ below

Conclusion

See poster appended/ below

Project Category

Care & Process Redesign

Green Building

Keywords

Recycling, Reducing Carbon Emissions from Desflurane, Environmentally Sustainable Practices

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Reducing Environmental Pollution via Sustainable Practices in the Operating Theatre Environment

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Background/ Aim

There has been a global shift towards environmentally sustainable practices in the operating theatre (OT) in recent years due to a growing awareness of the impact of hospital practices on the environment.

Healthcare contributes significantly to global warming (4.4% of global emissions).

At Sengkang General Hospital's (SKH) Department of Anaesthesiology, we implemented the following environmentally sustainable practices in the OT:
1. Reduced Desflurane usage by 50% in 6 months (January 2022 – June 2022)
2. Increased recycling efforts
3. Eliminated disposable meal boxes and plastic cutlery

Methods

<u>Reducing carbon emissions from Desflurane</u>
- Placing posters on the anaesthetic machines to highlight the detrimental environmental impact of Desflurane
- Reducing the availability of Desflurane refills from 'always available' to 'available on demand'
- Encouraging alternative anaesthetic volatile agent Sevoflurane and anaesthetic techniques (e.g. regional anaesthesia, and total intravenous anaesthesia with Propofol)

<u>Promoting recycling efforts</u>
- Placing recycling bins prominently in each OT
- Posters indicating non-contaminated medical materials for recycling: plastic, paper/cardboard, glass, metal etc.

<u>Eliminating disposable meal boxes and cutlery</u>
- Collaborative effort with food caterer
- Replacing disposables with reusable bento boxes and cutlery

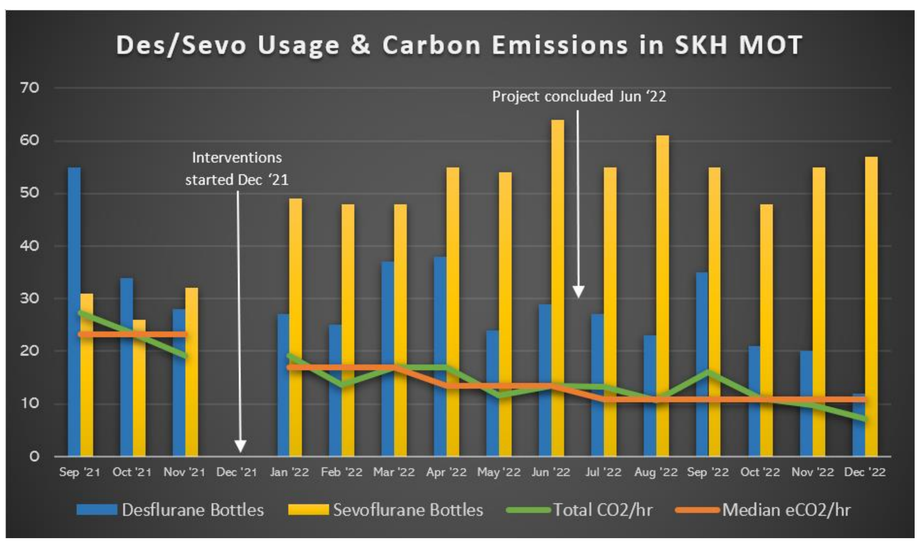
Results

<u>Reducing carbon emissions from Desflurane</u>
- Monthly usage of Desflurane decreased by **26.1%**, with an estimated resultant reduction of carbon emissions by **42.6%** from Jan – Jun '22

<u>Promoting recycling efforts</u>
- Consistent utilization of recycling bins, with at least 900 kg/month of materials being recycled

<u>Eliminating disposable meal boxes and cutlery</u>
- 100% elimination of disposable meal boxes and cutlery

Month	Oct '22	Nov '22	Dec '22	Jan '23	Feb '23
OT recyclables (kg)	1072	997	912	970	1048



	Pre-intervention	Post-intervention	% Change
Avg. GA hours	1517	1741	+ 14.7%
Avg. Desflurane bottles/month	39	28.8	- 26.1%
Avg. Sevoflurane bottles/month	29.7	54.25	+ 82.6%
Avg. Des + Sevo eCO2/GA hour	23.32	13.38	- 42.6%
Avg. Des + Sevo $/GA hour	$13.84	$12.52	- 9.54%

Conclusion / Future plans

Contribution to environmental sustainability requires a multi-prong approach of reduce, reuse and recycle. Significant recycling and reduction in plastic expenditure, as well as reduction of carbon emission from Desflurane were achieved. These interventions have proven to be sustainable, with ongoing efforts past the conclusion of the QI project.