Nitrous Oxide Waste Reduction Project

PROJECT CHARTER

1. General Project Information	
Project Name:	**Nitrous Oxide Waste Reduction Project Charter**
Executive Sponsors:	**Michael Young, EVP Chief Administrative Officer**
Department Sponsor:	**Danette Beechinor and Eric Cohen (Co-Chairs Clinical Operations Working Group of Green Task Force)**
Impact of project:	Primary: Environmentally Sustainable Health Care Secondary: Patient and staff safety

2. Project Team	Name	Department	Telephone	E-mail
Lead: Clin Ops Working Group members	Danette Beechinor	Pharmacy	437-224-1184	Danette.beechinor@sunnybrook.ca
	Eric Cohen	Cardiology	5880	Eric.Cohen@sunnybrook.ca
	Susan Deering	Department of Family and Community Medicine	3496	Susan.deering@sunnybrook.ca
	Barb McArthur	Holland OR	416-967-8561	Barbara.McArthur@sunnybrook.ca
Plant Ops rep	TBD			
Anesthesia rep	TBD			
Dentistry rep	TBD			
Birthing unit	TBD			

3. Stakeholders *(e.g., those with a significant interest in or who will be significantly affected by this project)*
Dentistry; Mother and Babies Unit; OR; anesthesia; Plant Ops; vendor; procurement (eg Plexxus)

4. Project Scope Statement

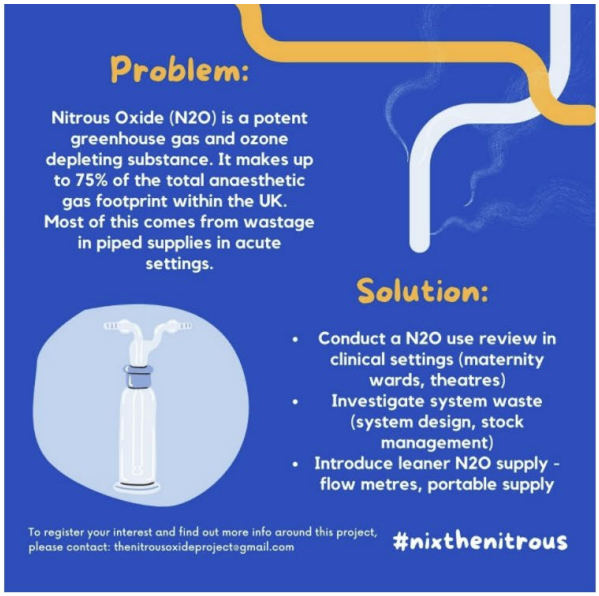
Background/Problem

Nitrous Oxide (N2O) as a greenhouse gas is almost 300 times as toxic as CO2, and contributes 75% of the global medical gas greenhouse emissions. Having already eliminated Desflurane from formulary, N2O is the next large impact target for Sunnybrook to reduce anesthesia related greenhouse gases (GHGs).

WASTAGE is suspected to be a significant source of N2O consumption in the hospital environment; this damages the environment unecessarily and wastes money.There are also potential exposure risks to staff and patients that may be mitigated by reducing N2O use. See appendix for details on exposure related risks- "Controlling Exposures to Nitrous Oxide During Anesthetic Administration" from National Institute for Occupational Safety and Health (NIOSH).

A project by Lothian Health Board in the UK (see graphic below) reduced hospital usage by 75-100% through waste reduction.

In the past 5 years, Sunnybrook has purchased **32,599 Kg of N2O - equivalent to nearly ten million kg of CO2 in terms of global warming potential (GWP.** Initial enquiries with clinicians suggests – anecdotally – that current clinical use is low. Review of the literature and the UK's National Health Service (NHS) Nitrous Oxide Project identifies wastage as the principle source of consumption of N2O - specifically leaks at the manifold, outlets with Schrader valves, leaks in OR and leaking in aging piped infrastructure as well as poor stock management and flaws in system design.



Objectives (in business terms) *Describe the measurable outcomes of the project, e.g., reduce cost by xxxx or increase quality to yyyy*

1. Reduce in hospital waste by 90% and total consumption by 75%

Nitrous Oxide Waste Reduction Project

Deliverables *List the high-level "products" to be created (e.g., improved xxxx process, employee manual on yyyy)*

1. Educate on the GWP of N2O
2. Identify clinical usage of N2O at Sunnybrook through qualitative and quantitive (if available) methods
3. Correlate reported usage with purchases to determine volume of waste
4. Identify sources of waste within the system through audit of :
    a. Manifold logs
    b. Gas company sales and delivery data
    c. Manifold leak tests
5. Identify current gas management practices
    a. Determine stock rotation processes in manifold banks
    b. Review and document piped N2O schematics with Plant ops
6. Establish a best-practice protocol for N2O storage and distribution in the hospital to minimize wastage
7. Encourage the use of clinically appropriate alternatives where possible, through the use of clinical champions.

Scope *List what the project will and will not address*

Inside Scope:

- Review N2O storage and delivery system and identify opportunities to reduce waste
- Provide education and informaiton to the organization on the impact of N2O in terms of GWP
- Share information with other organizations by providing project charter templates and briefing notes for their use (via PEACH and Cascades).
- Encouraging the use of alternatives when available.

Outside Scope

- Changing clinical practice of individual practitioners. Practice may change as a result of the information and education delivered by this project, but is not directly targeted as the major focus is on wastage.
- Individual practice will not be measured as an outcome of the project, although practice by unit or group (eg dentistry, birthing, main OR) will be measured where feasible.

Project Milestones *Propose start and end dates for Project Phases (e.g., Inception, Planning, Construction, Delivery) and other major milestones*

1. Establish a core implementation team
2. Develop education and key communication messages.
3. Engage stakeholers via sharing the key messages at the business meetings of the various clinical teams who use N2O in their practice.
4. Determine if it is possible to quantify usage volumes for average cases with chart reviews.
5. Develop and implement a survey for clinicians on usage (qualitative) and conduct chart reviews if feasible
6. Compare usage information with consumption information to determine if there is a mismatch.
7. Work with Plant Ops to review the system and determine if there is opportunity in their opinion to reduce areas of leakage.
8. Determine if it is possible to adjust N2O pressures to address usage and residual volumes.

Major Known Risks (including significant Assumptions) *Identify obstacles that may cause the project to fail.*

Risk	Risk Rating (Hi, Med, Low)
Complexity of system (N2O provided via multiple systems, multiple sites and to multiple areas at each site via different mechanisms)	Medium
Provider resistance	Low – the project does not seek to prevent access, merely to reduce waste, provider resistance should be minimal, but miscommunication and misperceptions will need to be addressed. Ideallly, where there are appropriate options, providers will begin to select.
Vendor (and purchasing agent) engagement	Unknown, may be a risk in terms of external influence.
Project team expertise	Low- we will engage the expertise of Plant Ops, and seek to have representation on the project team

Constraints *List any conditions that may limit the project team's options with respect to resources, personnel, or schedule (e.g., predetermined budget or project end date, limit on number of staff that may be assigned to the project).*

No defined budget, and costs unknown

No defined resources in terms of dedicated time to devote to project, depends upon goodwill.

External Dependencies *Will project success depend on coordination of efforts between the project team and one or more other individuals or groups? Has everyone involved agreed to this interaction?*

Collaboration of Plant Ops

Collaboration with the various clinical teams

5. Communication Strategy *(specify how the project manager will communicate to the Executive Sponsor, Project Team members and Stakeholders, e.g., frequency of status reports, frequency of Project Team meetings, etc.*

6. Sign-off			
	Name	**Signature**	**Date (MM/DD/YYYY)**
Executive Sponsor	Michael Young		
Department Sponsor			
Project Manager			

7. Notes

Appendix - **Controlling Exposures to Nitrous Oxide During Anesthetic Administration**

Controlling Exposures to Nitrous