

Nitrous Oxide Waste Reduction Project

PROJECT CHARTER

1. General Project Information				
Project Name:	Nitrous Oxide Waste Reduction Project Charter			
Executive Sponsors:	[VP or EVP senior executive level]			
Department Sponsor:	[insert the department who will lead the project]			
Impact of project:	Primary: Environmentally Sustainable Health Care Secondary: Patient and staff safety			
2. Project Team				
	Name	Department	Telephone	E-mail
Lead:				
Co-Lead				
Plant Ops rep				
Anesthesia rep				
Dentistry rep				
Birth unit				
3. Stakeholders (e.g., those with a significant interest in or who will be significantly affected by this project)				
[examples to consider: Dentistry; Mother and Babies Unit; OR; anesthesia; Plant Ops; vendor; procurement or group purchasing organization]				

Nitrous Oxide Waste Reduction Project

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 unnecessarily 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, [our institution] has purchased [insert kg purchased] **Kg of N₂O - equivalent to [multiply your kg purchased by 298] 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.

Nitrous oxide wastage can come from:

- ineffective stock management
- system design
- poor security
- system leaks
- clinical wastage
- unawareness of the issue

Let's #nixthenitrous

To find out more about The Nitrous Oxide Project, please contact: thenitrousoxideproject@gmail.com

Problem:

Nitrous Oxide (N₂O) is a potent greenhouse gas and ozone depleting substance. It makes up to 75% of the total anaesthetic gas footprint within the UK. Most of this comes from wastage in piped supplies in acute settings.

Solution:

- Conduct a N₂O use review in clinical settings (maternity wards, theatres)
- Investigate system waste (system design, stock management)
- Introduce leaner N₂O supply - flow metres, portable supply

To register your interest and find out more info around this project, please contact: thenitrousoxideproject@gmail.com #nixthenitrous

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 quantitative (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 information 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.

Nitrous Oxide Waste Reduction Project

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 stakeholders 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. Ideally, where there are appropriate options, providers will begin to select alternatives.
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
Miscommunication and Rumours [depending on the institution, this may be a risk]	Low: communication will need to be managed. Although the goal is not to restrict access to N2O, misperception of the goals is a possibility.

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).*

[Ideally there is a defined budget and resources.]

[other constraints to consider?]

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

Nitrous Oxide Waste Reduction Project

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.)

[A communication strategy is essential to the success of any project]

6. Sign-off

	Name	Signature	Date (MM/DD/YYYY)
Executive Sponsor			
Department Sponsor			
Project Lead			

7. Notes

Nitrous Oxide Waste Reduction Project

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



Controlling
Exposures to Nitrous