



CAI
THE COLLEGE OF
ANAESTHESIOLOGISTS
OF IRELAND

Guidelines For Responsible Anaesthesia

Delivering High-Value Care with Lower Environmental Impact

1. Anaesthetic Gases

Reducing the use of anaesthetic gases with high global-warming potential, particularly desflurane and nitrous oxide, offers substantial environmental benefit.

- Minimise all anaesthetic gases and do not use desflurane unless specifically clinically indicated (see the [CAI Desflurane Guidance](#) for more information). Use end-tidal controls when using vapours, titrate oxygen flows during sedation, and ensure flowmeters are turned off at the end of the day.

Nitrous Oxide:

- Avoid where possible, prefer oxygen/air as carrier gases.
- Decommission nitrous oxide manifolds and consider using portable cylinders instead (see the [CAI National Nitrous Oxide Mitigation Project](#) for more information). If this is not performed, perform regular leak tests on manifolds and pipeline networks.
- Waste capture and destruction technologies exist. However, due to their current cost and limited evaluation, we do not recommend their routine implementation at this time.

Alternatives:

- Encourage total intravenous anaesthesia (TIVA) using appropriate gas flows (4-6L/min) to minimise soda lime consumption.
- Use central neuraxial or regional anaesthesia where appropriate.



Entonox:

- Collaborate with midwifery teams to promote safe and sustainable use.
- Remove demand valves when Entonox is not used.
- Perform regular leak tests on manifolds and pipeline networks.
- Optimise stock management to avoid waste.
- Waste capture and destruction technologies exist. However, due to their current cost and limited evaluation, we do not recommend their routine implementation at this time.

2. Pharmaceutical Waste

- Dispose of drawn-up and unused medications in the appropriate container(s).
- Use prefilled syringes where appropriate.
- Use oral medications when appropriate e.g. administer oral paracetamol prior to procedures in elective cases or when neuraxial or regional anaesthesia is planned.

3. Equipment and Procedure Waste

- Open only equipment intended for immediate use.
- Avoid unnecessary gloves or equipment use e.g. gloves when drawing up drugs or gowns when not required for asepsis.
- Favour reusable or reprocessed equipment over disposable items. Work with theatre managers and procurement teams to source reusable alternatives to disposable items.
- Reprocess or recycle suitable single-use items where facilities allow.
- Adjust stock levels to minimise expiry-related waste.
- Rationalise anaesthesia supply carts and remove unnecessary items.
- Remove unnecessary items from pre-made procedure packs (e.g. neuraxial or central access kits) and from standard anaesthetic equipment setups.
- Donate unused or unopened equipment to appropriate organisations.

4. Solid Waste Segregation and Recycling

- Segregate waste according to type (pharmaceutical, solid, biohazard).
- Do not dispose of general waste in biohazard or sharps bins.
- Recycle or repurpose batteries safely.
- Implement a recycling policy for theatre waste, including clean plastics, paper, and cardboard.

5. Energy and Resource Conservation

- Conserve electricity by switching off ventilation, AGSS, anaesthetic machines, monitors, and other systems when theatres are not in use.
- Use reusable scrubs, gowns, warming jackets, patient gowns, and theatre caps.

6. Monitoring, Auditing, and Research

- Conduct regular waste audits to identify opportunities for waste reduction.
- Audit sustainability metrics and support related research initiatives.

7. Leadership and Advocacy

- Educate staff on the health, safety, and cost benefits of pollution mitigation projects.
- Develop or participate in sustainability committees and advocate for dedicated sustainability roles.
- Collaborate with hospital leadership to embed sustainability into core operational strategies.
- Contribute to environmentally preferable purchasing and contracting standards.
- Evaluate new equipment, facilities, and workflows for sustainability benefits.
- Lead sustainability-focused quality improvement and research projects.

These guidelines have been developed by the College of Anaesthesiologists of Ireland's Sustainability Committee in collaboration with the HSE Climate and Sustainability Programme.

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