

Reducing the environmental impact of anaesthetic gases in England without worsening clinical outcomes for patients or increasing resource use

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Background

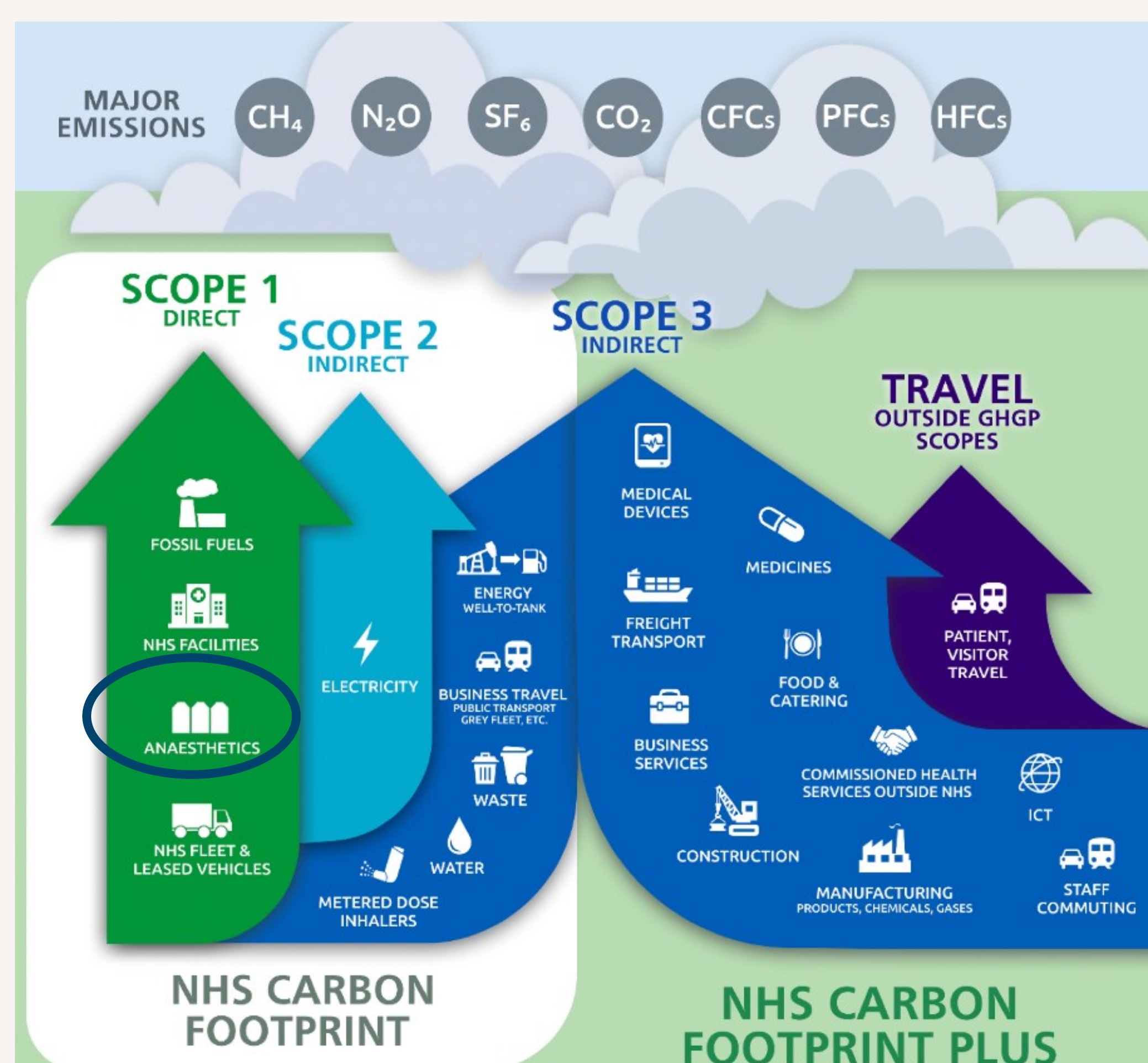
Desflurane has a higher global warming potential than other general anaesthetic agents. NHS England aims to be carbon neutral by 2045, acknowledging the link between planetary and human health. In 2023, NHS England, the Royal College of Anaesthetists and the Association of Anaesthetists announced the decommissioning of desflurane for routine use. To inform the content of, and the need for any exceptions to, the decommissioning policy, NHSE commissioned NICE to review the evidence on the clinical and resource benefits of using desflurane compared with other general anaesthetic agents.

What we did

The scope was set by NHS England, the Royal College of Anaesthetists and the Association of Anaesthetists, following extensive clinical expert engagement. We identified the following as relevant populations: people having neurological procedures; and people with a body mass index (BMI) of at least 30 kg/m² having any procedure.

We conducted systematic searches in 7 databases. Records were reviewed based on title and abstract, then in full text. All studies meeting the selection criteria were included. Results were summarised narratively and reviewed by specialist commentators (clinical experts, NHS England).

Greenhouse Gas Protocol scopes in the context of the NHS



Source: NHS - Delivering a 'Net Zero' National Health Service

What we found

Seven randomised controlled trials were included: 5 for people having neurological procedures; 2 for people with high BMI having any procedure. A large retrospective cohort study was also included for the high BMI population.

Study quality issues were identified in all but 2 studies.

None of the studies indicated that desflurane is associated with improved clinical or resource outcomes compared with alternatives. Overall, the results did not favour one general anaesthetic over another.

Review protocol

P – Population and indication

People with any BMI having neurological procedures
People with BMI ≥ 30 kg/m² having any procedure

I – Intervention

Desflurane

C – Comparator(s)

Sevoflurane; Isoflurane; Total intravenous anaesthesia

O – Outcomes (from Boney et al. 2021)

- (i) Mortality or survival (postoperative mortality, long-term survival)
- (ii) Perioperative complications (major postoperative complications/adverse events; complications or adverse events causing permanent harm)
- (iii) Resource use (length of hospital stay, unplanned readmission within 30 days)
- (iv) Short-term recovery (discharge destination, level of dependence, or both)
- (v) Longer-term recovery (overall health-related quality of life)

Outcomes and impact

No high-quality evidence was found to suggest that desflurane is associated with improved clinical or resource outcomes compared with other general anaesthetic agents in these populations.

The findings have informed the content of NHS England's desflurane decommissioning policy, published on the same day as the NICE evidence summary.

The study demonstrates how bodies like NICE can help ensure that patient outcomes are not compromised by the system's environmental sustainability goals.

Identifying the evidence

