Improving efficiency in nitrous oxide hospital supply systems to aim towards a carbon neutral NHS wales.

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Background

Nitrous oxide (N2O) is a greenhouse gas with a global warming potential of 280 times that of carbon dioxide. This project aims to identify potential nitrous leak and reduce the waste of N2O in Glangwili Hospital, a small district general hospital in South Wales.

Methods

British Oxygen Company (BOC) supplied us with data on how much N2O was supplied to, and returned from, the hospital between 2021-2022. Data was collected from the anaesthetic machines over a period of three months, looking at the consumption of N2O. A leak test of the piped nitrous system was performed during which no nitrous was used. Lastly, anaesthetists were surveyed on their practice with regards to N2O.

Results

On average, Glangwili purchased 54,000L of N2O per month and consumed 2109L, a usage of 3.9%. The leak test identified a leak of 1.3L/min. From the survey of local anaesthetists, 80% of respondents state they use N2O only four times a year or less.

Conclusion

This project has identified that 96% of the N2O purchased does not reach the patient. These findings are consistent with results from Cardiff and Vale University Health board, where a similar project was performed, and other audits across the United Kingdom. These results should encourage other health boards, including smaller hospitals, to investigate the efficiency of their N2O supply, as significant gains could be made in our steps towards carbon neutrality.