

Is ambulatory oxygen therapy associated with unnecessary increased risks of adverse events, and do variable flow rates further increase these risks? An audit and population cohort study of a local home oxygen assessment service case load.

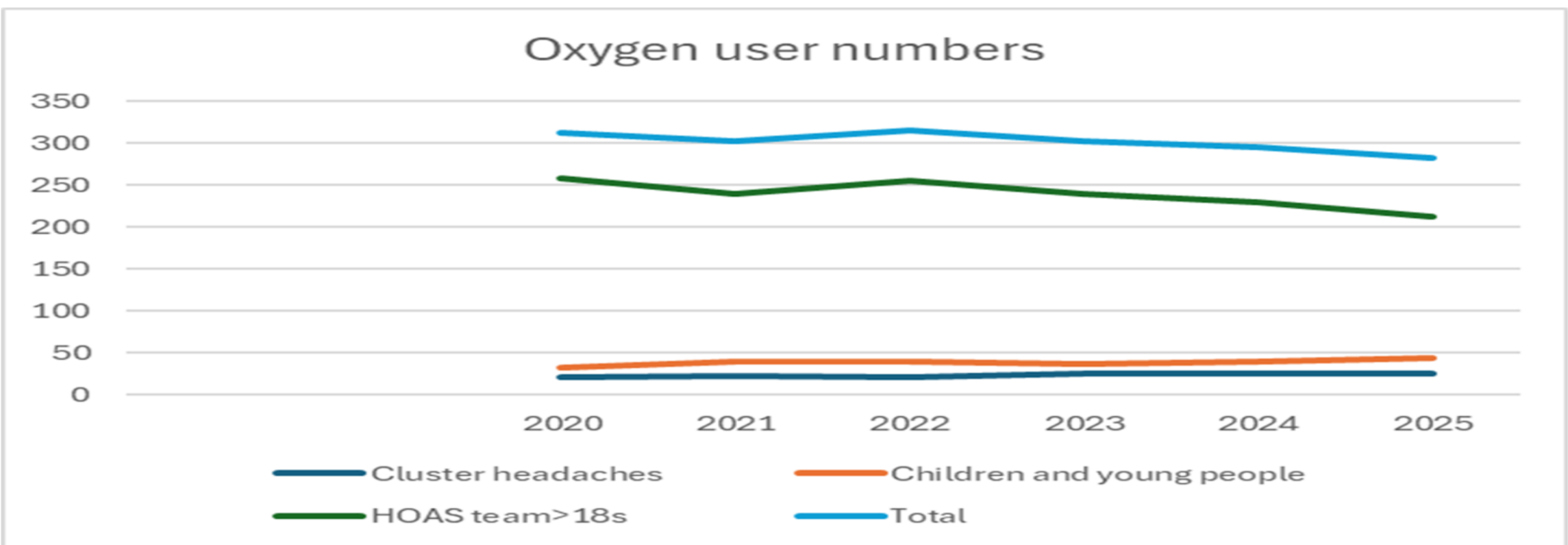
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Background

- Oxygen therapy is often associated with:
- Poor tolerability
 - Social stigma and burden
 - High financial burden
 - Potential adverse events such as fire risks, falls, nasal or oral symptoms, pressure ulcers, and hypercapnia
 - Poor concordance with ambulatory oxygen (AOT)
 - 34% used AOT to walk outside of the home
 - 90% of patients questioned did not walk further than 50m
 - Most use oxygen as short-burst for recovery (Wilson and Thomas, 2025).

The author hypothesised that ambulatory oxygen and variable flow rates often prescribed for those on long-term oxygen therapy with higher flow rate for physical activity may be associated with increased risk of adverse events

Overall home oxygen caseload since data analysis since 2020



Aims + Method

- To review incidence of oxygen related adverse events over a 6-month period (falls, hypercapnia, incorrect use of equipment, dry mouth or nose, pressure ulcers from tubing, inappropriate flow rates, oxygen associated admissions)
- Identify if ambulatory oxygen therapy or variable flow rates with lower flow rates at rest and higher flow rates on activity increases risks of adverse events compared with LTOT alone
- Benchmark and check concordance of all patients under the service including those over 18 managed on LTOT, AOT and palliative oxygen.

Data was collected over a 6-month period January-June 2025. Consent was obtained as usual through completion of the Home Oxygen Order Form (HOOF), and Home Oxygen Consent Form and data collected included:

- Diagnosis
- Gender
- Age
- History of falls
- Concordance with oxygen therapy
- History of Type 2 respiratory failure
- Adverse event occurrence and type

Ethics approval was granted by the University of South Wales ethics committee and patients continued to receive usual care.

Outcomes

Cohort: 212 patients audited with 49 patients having adverse events with 53 events; (mostly COPD).

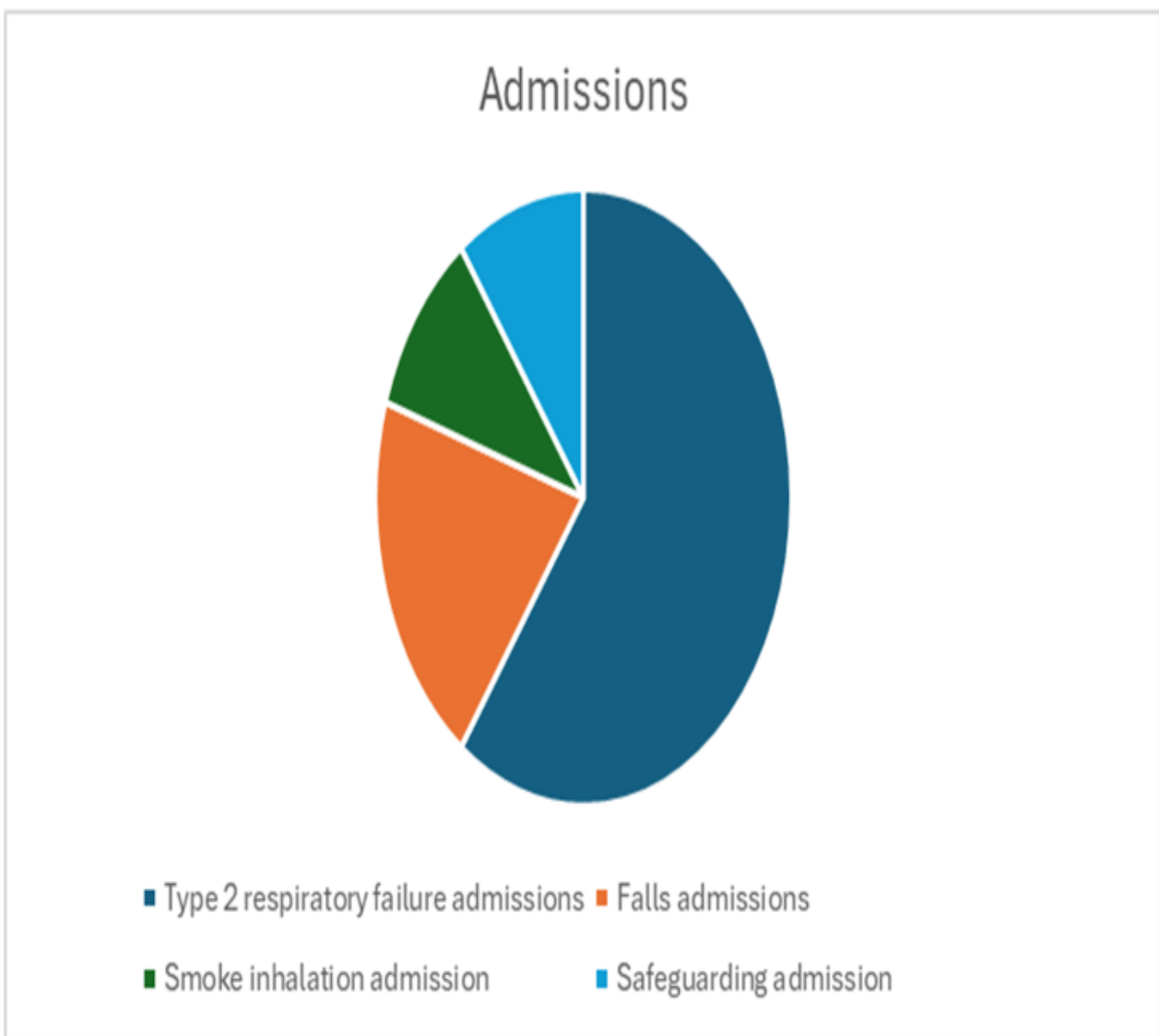
High Risk: 100% of hypercapnia admissions were associated with using activity oxygen flow rates at rest

High-Risk Profiles: Older, inactive, housebound patients on variable flow rates or AOT.

Outcomes: 10 hospital admissions; all other events minor; 0 deaths.

Recommendations: Restrict AOT to qualifying patients and avoid variable flow rates to improve safety. Study has led to reduced usage by 17.8%.

Admission DATA all admitted on LTOT/AOT or AOT or increasing flow rate



Admissions	
Type 2 respiratory failure	6
Falls admissions	2
Smoke inhalation admission	1
Safeguarding admission	1

References

1. NHS England (2020) Initial Home Oxygen Risk Mitigation Form (IHORM) and Home Oxygen Consent Form (HOCF) for new patients only. Available from: <https://www.england.nhs.uk/coronavirus/wp-content/uploads/sites/52/2020/04/IHORM-IG-approved-v1-3.pdf> accessed 01/01/25.
2. Hardinge M, Annandale J, Bourne S, et al; British Thoracic Society Home Oxygen Guideline Development Group; British Thoracic Society Standards of Care Committee. British Thoracic Society guidelines for home oxygen use in adults. Thorax. 2015 Jun;70 Suppl 1:i1-43. doi: 10.1136/thoraxjnl-2015-206865.
3. Suntharalingam J, Wilkinson T, Annandale J, et. British Thoracic Society quality standards for home oxygen use in adults. BMJ Open Respir Res. 2017 Sep 18;4(1):e000223. doi: 10.1136/bmjresp-2017-000223. PMID: 29018527; PMCID: PMC5623332.
4. Wilson, V., Thomas, R. (2025) Real-life evaluation of the concordance and provision of ambulatory oxygen using a mixed method approach with audit and questionnaire. Poster presented to: Association of Respiratory Nurses, Manchester

Adverse events
53 events
involving 49
people

