

- Adherence with smoking abstinence can be monitored with urinary cotinine, and/or carboxyhaemoglobin and carbon monoxide measurements
- Consideration should be given to withdrawing domiciliary oxygen therapy if the user continues to smoke, or if there are other concerns regarding fire risk
- Home visits by healthcare personnel may be an opportunity to provide additional information regarding fire and falls risks
- Potential psychosocial impact of domiciliary oxygen therapy should be considered and discussed with patients and caregivers as indicated
- Potential risk of hypercapnia should be considered on a case-by-case basis

ASSESSMENT AND SUPPORT FOR DOMICILIARY OXYGEN THERAPY

Assessment and support are key components for prescribing domiciliary oxygen therapy (Table S26 in the Supporting Information). In Australia and New Zealand, government-funded domiciliary oxygen therapy is generally prescribed by a respiratory physician, general physician, cardiologist or paediatrician, with additional approval from a specified respiratory physician required in some jurisdictions.¹ In selected states of Australia and in New Zealand, oncologists, geriatricians, palliative care specialists and nurse practitioners (respiratory) are listed as approved prescribers for domiciliary oxygen therapy.¹ For patients who reside in aged care facilities, domiciliary oxygen may be ordered by any registered medical officer.¹ The availability of a domiciliary oxygen therapy clinic, which may assist with appropriate assessment, prescription, support and follow-up of patients considered for domiciliary oxygen therapy varies across regions.^{68,186–189}

Oxygenation status assessment

a. Resting hypoxaemia

Room air arterial blood gas (ABG) analysis at rest is required to ascertain the presence of severe resting hypoxaemia. After the patient is rested for 5–10 min breathing room air and an Allen's test is performed, an arterial sample using a small 25-gauge needle without anaesthetic should be obtained by a trained operator experienced in the technique. This approach will minimize pain and associated trauma, although patient preference should be considered.¹ Of note, using a topical anaesthetic has not been demonstrated to reduce pain associated with radial artery sampling.^{190,191} While pulse oximeters are non-invasive and easily available,

measurements of oxygen saturation do not provide an accurate estimation of PaO₂, and should only be used for screening purposes.^{192–195} In order to determine the optimal oxygen prescription to achieve SpO₂ >90% or PaO₂ >60 mm Hg, assessment with pulse oximetry or repeat ABG on supplemental oxygen may be performed. In patients with a background or at risk of hypercapnia, assessments using ABG on supplemental oxygen are required. Of note, the source of supplemental oxygen for the testing is preferably a stationary oxygen concentrator rather than wall oxygen which may lead to underestimation of the oxygen prescription.^{196,197} While oximetry monitoring in the home setting has been evaluated in small studies for assessing both eligibility for LTOT and adequacy of oxygenation,^{198–204} such an approach requires additional resources and it remains uncertain whether it leads to better patient health outcomes.

b. Nocturnal hypoxaemia

Overnight pulse oximetry can be used for assessment of nocturnal hypoxaemia, as well as for evaluation of nocturnal oxygen prescription in patients on LTOT.^{205–210} Pulse oximeters with onboard memory capable of recording ≥8 h of data are suitable for this purpose, with data analysis providing estimates of average oxygenation overnight.¹ Nocturnal polysomnography (in laboratory or home-based) is required if there are concerns of sleep disordered breathing contributing to nocturnal hypoxaemia to allow appropriate management.

c. Exertional desaturation

Exercise tests are performed for assessment of exertional desaturation and prescription of supplemental oxygen during activities. The 6-min walk test (6MWT) is the most commonly used exercise test in clinical practice and has been extensively used in clinical research regarding ambulatory oxygen therapy, acknowledging some limitations in its performance.^{211–213} Supplemental oxygen should be titrated during the test to determine the prescription of oxygen flow required to maintain SpO₂ >88%.²¹⁴ To assess the effects of supplemental oxygen (including on dyspnoea severity and walk distance), a 6MWT using an air-filled cylinder is recommended to mitigate the known placebo effect.²¹⁵ While other exercise tests, such as shuttle walk tests, and assessments during domestic activities have been studied for evaluation of exertional desaturation,^{216–218} their utility for prescribing domiciliary oxygen therapy is yet to be established.

d. Reassessment

Regular reassessments following initiation of domiciliary oxygen therapy are required in order to assess patients' ongoing oxygen needs over time.^{189,219} Approximately 10%–58% of patients were no longer eligible for LTOT during re-evaluation at a range of follow-up duration between 1 month and 1 year.^{220–222} While the optimal interval for reassessment is yet to be established, a period between 6 and