### Inclusions
- Oxygen concentrator (with standard supply of nasal cannulae and extension tubing)
- Rental of one (1) backup (D-size) cylinder as an emergency backup for clients on continuous oxygen (24 hours/day) living > 2 hours from their closest hospital if requested and supported with justification.
- Ongoing rental of one (1) portable (C-size) oxygen cylinder with regulator flow meter or conserver device under special circumstances (see portable oxygen criteria)

### Exclusions
- Intermittent, episodic oxygen or emergency therapy (except in special circumstances – see section 3.3)
- The first 3 months supply of Short Term Oxygen Therapy for palliative care clients (these need to be managed by the LHN; local health network policies and procedures apply)
- The first 4 week’s supply of STOT for all other clients (these need to be managed by the discharging hospital)
- Alternate oxygen delivery systems (e.g. face masks)
- Cost of refilling portable (C-size) cylinders and ongoing delivery charges
- STOT (D/C oxygen) for clients discharged from private hospital

### Other Supply Information

<table>
<thead>
<tr>
<th>Contracts in place</th>
<th>313 Home oxygen (valid 2011)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Availability of equipment under other services</td>
<td>Consumers receiving services from any of the following are not eligible to receive support from EnableNSW: Residential aged care facilities (high care) Dust diseases board <a href="http://www.ddb.nsw.gov.au/MakingaClaim/MedicalExpenses/tabid/69/Default.aspx">http://www.ddb.nsw.gov.au/MakingaClaim/MedicalExpenses/tabid/69/Default.aspx</a> Department of Veteran’s Affairs Third Party/Worker’s Compensation Clients receiving EACH (Extended Aged Care at Home) or EACHD (Dementia) packages</td>
</tr>
</tbody>
</table>

### Eligible Prescribers
Respiratory or palliative care physician. Other prescribers such as a general practitioners will be considered in the absence of eligible prescribers particularly in rural areas.

### Recommended review timeline
**STOT:** 4-8 weeks post discharge/O2 initiation but just prior to 12 weeks if treatment is anticipated to continue to Long Term Oxygen Therapy (LTOT)
**LTOT:** Annual review
**Annual:** Blood gas sampling may be conducted if clinically indicated by the prescriber i.e. oxygen requirements have increased or for investigation of hypercapnia. If non-compliance is reported on the annual review or SpO2 ≥ 88%, ABG’s will be required to determine ongoing need.
In exceptional circumstances, where the consumer lives in a remote area and does not have ready access to specialist services, documentation other than those described in this guideline may be accepted that supports the consumer continuing requirement/benefit from home oxygen therapy, through evidence of the following at annual review:
- Ongoing need of home oxygen therapy (e.g. SpO2 ≤ 87% on oximetry whilst breathing room air)
- Compliance with LTOT prescription
Clients who continue to smoke will not be eligible for the provision of STOT/LTOT by EnableNSW.

Complete separate applications for each type of equipment requested. For example, an existing CPAP client requiring bi-level and oxygen will need to submit a separate application for bi-level and oxygen.

For existing clients already on LTOT or PAP therapy, requesting either additional therapies due to deterioration, only an application for the new therapy will need to be submitted.

### Equipment Eligibility Criteria

**Domestic oxygen may be funded by EnableNSW when:**

This guideline refers to the provision of oxygen therapy equipment for clients ≥ 16 years of age, deemed clinically stable and can be safely managed in the community (at least 4 weeks out from acute exacerbation). This includes clients prescribed oxygen long term from clinic rooms.

### 1 Short-Term Oxygen Therapy (STOT)

All clients eligible for the provision of STOT oxygen under the EnableNSW STOT guidelines will be provided an oxygen concentrator as the primary device for the 5th to 12th week post discharge.

The prescription should include the means of oxygen delivery, the duration and the rate of oxygen flow. The rate of oxygen flow prescribed should aim to achieve \( \text{PaO}_2 \geq 60 \text{ mmHg} \) (or \( \text{SpO}_2 \geq 90\% \) at rest). In addition, clients should be advised to use therapy as prescribed (≥ 16hrs/day for continuous oxygen therapy or ≥6 hours for nocturnal).

#### 1.1 STOT for clients with hypoxaemia on discharge from hospital

STOT may be provided on the treating physicians request for those clients with chronic lung disease who meet **ALL** the following criteria:

i. in hospital with an acute exacerbation **AND**

ii. in the recovery phase of their exacerbation (within 1 or 2 days of discharge) **AND**

iii. Within 48 hours prior to discharge; daytime \( \text{PaO}_2 \leq 55 \text{mmHg} \), measured at rest via ABG whilst breathing room air **OR** daytime \( \text{PaO}_2 56 - 59 \text{mmHg} \), measured at rest via ABG whilst breathing room air with evidence of significant end-organ damage due to hypoxia e.g. pulmonary hypertension, right heart failure, polycythaemia **AND**

iv. At least the first month of oxygen has been funded by the discharging service

**Review recommendation**

Clients are required to return to their prescribing physician/team for clinical review and arterial blood gases whilst breathing room air and in a stable state. Clinical assessment should be performed within 4 weeks before the end of the STOT provision period, to determine the need for ongoing therapy and preparation for LTOT application. Where the client is unable to access a specialist directly, details of the client’s clinical history, blood gases and need for ongoing therapy should be directed to an appropriate specialist by the client’s local doctor for approval.

According to the literature, on review only around 50-60% of clients still continue to meet medical criteria for LTOT.

If the client meets the criteria for LTOT for hypoxaemia (see below) an application for LTOT should be made by the prescribing physician to EnableNSW. The need for pulmonary rehabilitation should also be explored and implemented where appropriate.
1.2 **STOT for treatment of nocturnal hypoxaemia on discharge from hospital**

Isolated nocturnal hypoxemia may occur in some clients despite daytime normoxia. This may arise from ventilation/perfusion mismatch or sleep disordered breathing.

In stable clients with a low pre-test probability of sleep apnoea syndromes, nocturnal oximetry is usually adequate to confirm isolated nocturnal hypoxaemia. Daytime signs would include polycythemia, right heart failure and pulmonary hypertension. Although positive airway pressure therapy is first line therapy to control sleep disordered breathing, nocturnal hypoxemia may persist in some clients, particularly during the initial stages of therapy. In addition, some clients will be unable to tolerate positive pressure therapy. While oxygen therapy either used as primary therapy or in conjunction with CPAP/ NIV is frequently prescribed in such cases, there is currently no evidence to show this has any impact on clinical outcomes.

Clients should be advised to use supplemental oxygen either alone or in conjunction with their PAP device throughout their sleep period (≥ 6 hrs/night).

STOT may be indicated for those clients with isolated nocturnal hypoxaemia or sleep apnoea syndromes who meet **ALL** of the following criteria:

i. Polysomnography or nocturnal oximetry report with or without PAP therapy demonstrating artefact free SpO₂ ≤ 88% for more than a third of sleep time **OR** ≤ 80% for more than 10% of sleep time **AND**

ii. At least the first month of oxygen has been funded by the discharging hospital

**Review recommendation**

Clients are required to return to their prescribing physician/team for clinical review and sleep study or oximetry whilst breathing room air and in a stable state. Clinical assessment should be performed within 4 weeks before the end of the STOT provision period, to determine the need for ongoing therapy and preparation for LTOT application. This may include a clinical review in clients with isolated nocturnal hypoxaemia secondary to obstructive or fibrotic lung disease to ensure compliance with therapy and a full PSG or partial home study that includes nocturnal oxygen saturation monitoring in clients using a PAP device. Where the client is unable to access a specialist directly, details of the client’s clinical history, blood gases/oximetry and need for ongoing therapy should be directed to an appropriate specialist by the client’s local doctor for approval.

### 2 Long-Term Oxygen Therapy (LTOT)

This guideline refers to long term therapy as prescribed usage for a minimum of 12 months. All clients eligible for the provision of LTOT oxygen under the EnableNSW LTOT guidelines will be provided an oxygen concentrator as the primary device.

The prescription should include the means of oxygen delivery, duration and the rate of oxygen flow. The rate of oxygen flow prescribed should aim to achieve PaO₂ ≥ 60 mmHg (or ≥ SpO₂ 90% at rest). In addition, clients should use therapy as prescribed (≥ 16hrs/day continuous or ≥ 6hours nocturnal).

An emergency back up oxygen cylinder may be provided in addition to a concentrator for clients on continuous oxygen (24 hours/day) living ≥ 2 hours from their closest hospital.
2.1  LTOT for chronic hypoxaemia

LTOT may be indicated for those clients with chronic lung disease who meet **EITHER** of the following criteria:

i. Documented hypoxaemia i.e. daytime PaO\(_2\) ≤ 55mmHg, measured at rest via ABG whilst breathing room air when clinically stable **OR**

ii. Daytime PaO\(_2\) 56 - 59mmHg, measured at rest via ABG whilst breathing room air when clinically stable, with evidence of end-organ damage due to hypoxia e.g. pulmonary hypertension, right heart failure, polycythaemia

**Review recommendation**

A clinical review is recommended annually following commencement of therapy to ensure client stability, compliance and the need for ongoing oxygen therapy. It is recommended that the review be performed by the original prescriber or the client be referred to an appropriately trained and skilled team for review. For continuation of oxygen therapy, compliance with the therapy prescription should be confirmed (i.e. ≥ 16hrs/day), attainable through meter readings from the oxygen supply company. If non-compliance is reported, ABG’s will be required in the annual review to determine ongoing need. The role of pulmonary rehabilitation in the overall management of the condition may need to be discussed.

2.2  LTOT for nocturnal hypoxaemia

Some clients with COPD and other diseases (e.g. cystic fibrosis) may present with a daytime PaO\(_2\) ≥60mmHg but show oxygen desaturation repetitively to ≤88% during sleep. At present, there is no evidence that the use of nocturnal oxygen therapy alone has any beneficial effect on pulmonary haemodynamics, quality of life or survival in this situation.

In individuals with sleep disordered breathing, PAP therapy may be effective in controlling apneic and hypopnoeic events. However, in the presence of coexisting chronic lung disease, nocturnal hypoxaemia may persist despite effective treatment of sleep disordered breathing. In some cases, nocturnal oxygen therapy may only be required during the initial stages of treatment with PAP therapy as STOT. However, in clients with more significant co-morbidities, nocturnal oxygen therapy in conjunction with a PAP device will be required long term. There will also be clients with significant nocturnal hypoxaemia and sleep disordered breathing who are unable to tolerate appropriate PAP therapy, and the clinical decision will be made to treat with oxygen therapy alone.

Potential indications for LTOT used only at night include Cheyne Stokes respiration/Central sleep apnoea, or other sleep-related breathing disorders incompletely controlled by CPAP/NIV alone. It may also be indicated where the client is unable to tolerate these therapies. However, it should be borne in mind that there is currently no evidence that use of nocturnal oxygen in these situations has any impact on quality of life or survival.

LTOT for Nocturnal oxygen may be provided on the treating physician’s request for those clients with other sleep breathing disorders who meet **ALL** of the following criteria:

i. Identification of clients with isolated nocturnal hypoxaemia (oximetry or PSG) whilst breathing room air with artefact-free nocturnal SpO\(_2\) ≤ 88% for ≥ 30% of sleep time **OR** ≤ 80% for more than 10% of sleep time **OR** significant nocturnal hypoxaemia not meeting the above criteria if there is evidence of hypoxia-related sequelae but with daytime PaO\(_2\) levels too high to prescribe continuous oxygen therapy e.g. polycythaemia, right heart failure, pulmonary hypertension **AND**

ii. Objective evidence of improvement (e.g. improved mean nocturnal SpO\(_2\) on either a
PSG or pulse oximetry) on nocturnal oxygen with/without PAP therapy to confirm the ongoing need for oxygen therapy AND

iii. Nocturnal investigations of oxygenation were carried out during a period of clinical stability i.e. at least 4 weeks out from an acute exacerbation

Review recommendation
A clinical review is recommended annually following commencement of therapy to ensure client stability, compliance and the need for ongoing oxygen therapy. It is recommended that the review be performed by the original prescriber or the client be referred to an appropriately trained and skilled team for review. For continuation of oxygen therapy, compliance with the therapy prescription should be confirmed (i.e. ≥ 6hrs/day), attainable through meter readings from the oxygen supply company. The role of pulmonary rehabilitation in the overall management of the condition may need to be discussed.

3 Portable Oxygen

The provision of portable oxygen for intermittent and/or episodic oxygen therapy is generally not supported by EnableNSW programs except under special circumstances. In these situations, portable or portable oxygen may be provided by way of oxygen cylinders on the treating physician’s request where the client meets either of the following criteria (3.1, 3.2, 3.3).

3.1 Portable Oxygen for clients on continuous therapy (24 hours)

Clients who qualify for LTOT under section 2 of the criteria may be provided with portable oxygen. Portable oxygen may be provided in addition to continuous oxygen therapy by way of oxygen cylinders on the treating physician’s request where the client demonstrates that they meet ALL of the following criteria:

i. Client is currently in receipt and compliant with long term oxygen therapy (24 hours via concentrator) AND

ii. Clinical justification by the referring physician for need of portable oxygen, e.g.; provision of portable oxygen enables greater mobility, a break in oxygen therapy causes the consumer’s oxygen level to drop to a dangerous level, or permits participation in pulmonary rehabilitation or attendance at medical appointments AND

iii. Client is aware of and willing to partially fund the therapy including charges for cylinder refills and any delivery charges AND

iv. Satisfactory compliance with continuous oxygen therapy (24 hours) AND portable oxygen therapy as prescribed (under usage indicates that the consumer may not require portable oxygen)

3.2 Portable Oxygen for clients requiring ≥ 16 hours therapy

This may include clients with interstitial pulmonary fibrosis or pulmonary hypertension as well as clients travelling to medical appointments such as pulmonary rehabilitation while awaiting transplant or lung volume reduction surgery. Clients who qualify for LTOT under section 2 of the criteria for ≥ 16 hours may be eligible for provision of portable oxygen if demonstrated that they meet ALL the following criteria:

i. Client is currently in receipt and compliant with long term oxygen therapy (≥ 16 hours)
i. Evidence demonstrating significant desaturation during exercise (≤88%) whilst breathing room air, and distance walked improves by ≥ 30% whilst on oxygen on a six minute walk test or other endurance tests AND

ii. Clinical justification by the referring physician supporting the need for portable oxygen i.e. provision of portable oxygen enables greater mobility, ensures client safety or permits participation in pulmonary rehabilitation or attendance at medical appointments AND

iii. Client is aware of and willing to partially fund the therapy including charges for cylinder refills and any delivery charges) AND

iv. Satisfactory compliance with oxygen therapy (≥16 hours) AND portable oxygen therapy as prescribed (under usage indicates that the consumer may not require portable oxygen)

### 3.3 Portable Oxygen for clients on < 16 hours therapy

In exceptional circumstances portable oxygen may be provided by EnableNSW for clients not requiring oxygen therapy for ≥ 16 hours, and not for episodic, intermittent or emergency usage, who demonstrate significant exercise oxygen desaturation despite awake normoxia and meet ALL of the following criteria:

i. Demonstration of long term (≥ 12 month) AND evidence of daily usage requirement, AND

ii. Evidence demonstrating significant desaturation during exercise (≤ 88%) whilst breathing room air which improves with the provision of oxygen on exertion i.e. an increase by ≥ 30% distance walked on a six minute walk test or other endurance tests AND

iii. Clinical justification by the referring physician supporting the need for portable oxygen AND

iv. Client is aware of and willing to partially fund the therapy including charges for cylinder refills and any delivery charges AND

v. Client is committed to maintaining satisfactory compliance with portable oxygen therapy as per the prescription. Usage frequency will be monitored by EnableNSW (under usage indicates that the consumer may not require portable oxygen)

<table>
<thead>
<tr>
<th>Social/care criteria</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Client and/or relevant users (family/carers) must be capable of using the equipment safely and appropriately, including basic equipment care and minor troubleshooting.</td>
<td></td>
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<tr>
<td>Client is aware that they will be required to self fund the costs of portable cylinder refills including delivery charges</td>
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<tr>
<td>Client/primary carer should retain a copy of prescription settings which should be attached as a clearly visible and dated card on the device and updated where indicated by prescribing clinical team. Client must be willing to comply with device usage as prescribed by their treating physician and aware of data collection regarding compliance with therapy</td>
<td></td>
</tr>
<tr>
<td><strong>Environmental Factors</strong></td>
<td><strong>Equipment Factors</strong></td>
</tr>
<tr>
<td>--------------------------</td>
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<tr>
<td>Ensure oxygen equipment prescribed is compatible with all other equipment prescribed or in use.</td>
<td>In most clients delivery will be via nasal prongs. These should be extra soft in cases of continuous use.</td>
</tr>
<tr>
<td>Electricity rebate application is completed, for more information see: <a href="http://www.dtiris.nsw.gov.au/energy/customers/rebates#Life-Support-Rebates">http://www.dtiris.nsw.gov.au/energy/customers/rebates#Life-Support-Rebates</a></td>
<td>At flow rates above 3L/min, an alternate delivery device (e.g. face mask or oximiser) may be more comfortable. However, monitoring of the client is required to ensure rebreathing is not occurring. Alternate devices are not provided by EnableNSW.</td>
</tr>
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</table>

**It is the responsibility of EnableNSW to ensure the following:**

EnableNSW will ensure the equipment supplier arrangements as per the NSW Home Oxygen contract (313) include:

i) Delivery of the device/s to the client or Health Service

ii) Equipment that complies with the Therapeutic Goods Act and have a valid Australian Register of Therapeutic Goods (ARTG) number

iii) If equipment is to be removed for repair, maintenance or testing an equivalent loan unit will be available to the client. This loan unit will have a current Safety and performance Safety Test according to the most current version of CAS/NZS:3551 Technical management programs for medical devices.

iv) The service supplier has provided contact details that are known to the client or carer and the contact number is clearly displayed for accessing repairs, maintenance and/or replacement device with a safe turnaround time for response.

v) Serial numbers and service history of the device will be maintained by EnableNSW

vi) Durability and lifespan (typically 10 years) of the equipment is appropriate for the documented/proposed environment.

In addition, oxygen concentrator run hours and cylinder usage and reordering patterns will be collected by the supplier and reviewed by EnableNSW on a 6 monthly basis. EnableNSW will notify the consumer and the prescriber if the consumer is not achieving satisfactory compliance or cylinder reordering rates. EnableNSW will notify the consumer and prescriber if non-compliance or low cylinder usage is determined in the review.

**Additional resources:**

**Prompts for clinical decision making**

**How do you make a clinical decision about which piece of equipment is most suitable?**

1. **Short-term oxygen therapy (STOT)**

The initial supply of oxygen to a hypoxic client from the time of the client’s discharge from hospital.
2. Long-term oxygen therapy (LTOT)

Long-term oxygen therapy (LTOT) is the provision of oxygen for continuous use at home on a long term basis for clients with chronic hypoxaemia due to any cause. The aim is to maintain target saturations ≥ 90%. It may be prescribed continuously (≥16hrs/day) or for periods of sleep only (nocturnal oxygen ≥ 6hrs/day).

LTOT is supplied for clients who are found to have significant daytime hypoxaemia while in a stable clinical state. In clients with chronic obstructive pulmonary disease (COPD), domiciliary oxygen has been shown to reduce mortality\(^1\)\(^2\) in a dose dependent fashion\(^2\) (measured in hours per day). There is also evidence that continuous oxygen therapy alleviates right heart failure, enhances neuropsychological function and improves quality of life\(^3\) in this client group. Other possible indications for long-term oxygen therapy include hypoxaemia associated with cyanotic congenital heart disease, severe congestive cardiac failure, diffuse interstitial lung disease and advanced cystic fibrosis. However, there is less evidence regarding the impact and outcome in disorders other than COPD. Similarly, there are limited data regarding the clinical importance of isolated nocturnal hypoxaemia, but results extrapolated from continuous oxygen therapy studies suggest benefit from maintaining nocturnal SpO\(_2\) ≥ 88%.\(^9\) The aims of LTOT are to reduce mortality and improve quality of life. These goals are achieved after months of regular use of LTOT.

3. Portable oxygen

In clients requiring continuous oxygen therapy, additional portable oxygen may be required in order for the client to leave the house. The data regarding the long term benefits of portable oxygen in normoxic clients who exhibit significant oxygen desaturation only during exercise are conflicting. However portable oxygen may be indicated in addition to continuous oxygen therapy in selected clients with significant falls in oxygen saturation during walking. This could include clients with severe interstitial pulmonary fibrosis or those travelling to medical appointments such as pulmonary rehabilitation while awaiting transplant or lung volume reduction surgery.

Bibliography:

10. McDonald CF, Crockett AJ, Young IH. Adult domiciliary oxygen therapy Med J Aust 2005; 183 (9): 474