Oxygen Therapy – Inpatient & STOT Ordering

Contents

Oxygen Therapy – Inpatient & STOT Ordering

1. Overview

1.1 Purpose

This document outlines the processes for safe Oxygen Therapy administration. Patients who require supplemental oxygen must receive the correct amount via the correct device, safely, appropriate to their clinical condition and in line with the national and international guidance (TSANZ and BTS)

1.2 Scope

All health professionals responsible for the administration, prescription and/or monitoring of oxygen therapy.

This guideline is restricted to the use of acute oxygen therapy in ADULT inpatients at Waitemata District Health Board.

- It does not apply to resuscitation or treatment of critically ill or injured.
- It does not apply to Critical Care (ICU and HDU), nor to the use of oxygen routinely in anaesthesia or when IV sedation is given for procedures or invasive investigations such as endoscopy or percutaneous biopsy under x-ray guidance. In these circumstances, patient pathways appropriate to the procedure should be utilised that reflect these oxygen guidelines. If such patients return to the ward area and need to continue oxygen therapy, an oxygen prescription will need to be completed prior to handover.

2. Key Expectations

The principles outlined in this document apply to all for general use within general adult wards and departments. All documents relating to oxygen therapy management should reflect the principles within this policy.

1. Oxygen is considered as a medicine that is **prescribed and administered for specific indications**, with a documented target oxygen saturations range and regular monitoring of the patient's response.
2. Oxygen is prescribed for the relief of hypoxemia and not breathlessness. A pulse oximetry of $\geq$92% excludes Hypoxemia which is defined as an SaO2 of <90% **or** an arterial partial pressure of oxygen (PaO_2) of 8kPa (60mmHg)
3. Hypoxemia is both a marker of risk of a poor outcome due to the severity of underlying disease that has caused hypoxemia, and an independent risk factor of poor outcome.

Specialist areas have particular processes

- Where specific clinical guidelines are required for oxygen administration within specialist areas, they must be approved via the appropriate clinical governance forum.

Patients transferring from specialist areas must be transferred with a prescription for their oxygen therapy utilising target saturation, if the clinical indication is ongoing.

If a patient transfers from an area not utilising the target saturation system, their oxygen should be administered as per the transferring area's prescription until the patient is reviewed and transferred over to the target saturation scheme, which should occur as soon as possible.

Oxygen should not be withheld if required whilst awaiting prescription

Oxygen Therapy – Inpatient & STOT Ordering

3. Indications and Assessment

The rationale for use of oxygen therapy is prevention of cellular hypoxia, caused by hypoxemia (low PaO_2), and thus prevention of potentially irreversible damage to vital organs.

Therefore the most common reasons for oxygen therapy to be initiated are:

- ***Acute hypoxemia*** for example pneumonia, shock, asthma, heart failure, pulmonary embolus
- ***Ischaemia*** for example myocardial infarction, but only if associated with hypoxaemia (abnormally high levels may be harmful to patients with ischaemic heart disease and stroke).
- ***Abnormalities in quality or type of haemoglobin*** for example acute GI blood loss or carbon monoxide poisoning.

Other indications include:

- ***Post operative state*** (general anaesthesia can lead to decrease in functional residual capacity of up to 50% of the pre-anaesthesia value)
- ***Pneumothorax*** – Oxygen may increase the rate of resolution of pneumothorax in patients for whom a chest drain is not indicated.

Reduced capacity within the lungs (especially following thoracic or abdominal surgery) resulting in hypoxaemia (Ferguson 1999). There is some evidence to suggest a decreased incidence of post-operative wound infections with short-term oxygen therapy following bowel surgery.

3.1 Emergency Oxygen

In an emergency situation oxygen administration without a prescription is appropriate while waiting for medical assessment of the patient.

- In these situations, use high concentration oxygen (15L/min via non-rebreathe mask).

3.2 Pulse oximetry

Pulse oximetry should be available with appropriate probes in all clinical situations is which oxygen is used. In the first instance oxygen saturations can be determined by pulse oximetry.

- There is variable accuracy of pulse oximetry to predict SpO_2 in acutely ill patients, both over and underestimating. The accuracy may worsen with increasingly severe hypoxia.
- Accuracy decreases when probes used on alternative sites to those intended for the device for example – using a finger probe on an ear.

3.3 Arterial blood gases

Arterial blood gas should be considered in the following situations:

- Critically ill patients with cardiorespiratory or metabolic dysfunction
- In patients with an SpO_2 of <92% in whom hypoxemia may be present
- The patient has deteriorating SpO_2 and is requiring increased FiO_2
- Patients at risk of hypercapnia (see section 5.2)
- Breathless patient in whom an accurate SpO_2 cannot obtained
    - Venous blood gases does not provide an accurate estimate of arterial partial pressure of carbon dioxide ($PaCO_2$) or PaO_2
    - Hypoxaemia requires investigation and treatment of underlying cause.

Oxygen Therapy – Inpatient & STOT Ordering

4. Hazards

- **Fire Hazard – Oxygen is an accelerant of fire**
- Administration of prophylactic oxygen to a patient who is not hypoxemic may cause a delay in recognizing clinical deterioration.
- Not recommended in the absence of hypoxemia for treatment of ACS and CVA
- High concentration oxygen in myocardial infarction is associated with greater infarct size
- Oxygen toxicity
- For patients with type 2 respiratory failure the administration of high concentration of oxygen (above 2L/minute) may result in ventilatory depression

Hypoxemia should always be treated in acute deterioration

5. Prescription

As oxygen is considered a drug at concentrations higher than ambient air**, it must be prescribed by a doctor** or independent prescriber, except in emergency situations.

Oxygen is used to alleviate hypoxaemia (low arterial oxygen content).

- It is not a treatment for breathlessness and should therefore not be prescribed or administered if the oxygen saturation is $\geq$ 92% on air.

5.1 Target saturations range

Oxygen must be prescribed according to a specific target saturation range. This should be indicated on e-prescribing MedChart or the '8 Day National Medication Chart' drug chart, under 'Oxygen Therapy and Medical Gases' section.

The doctor or independent prescriber must clearly document their name, signature, registration number and contact number in the boxes provided

- **In the presence of hypoxemia in most acutely unwell patients the target saturation range is 92-96%**
- **For patients with known or suspected CO_2 retention the target saturation range is 88-92%**

5.2 Patients at risk of CO_2 retention

Hypercapnia is defined as "an elevation in the arterial carbon dioxide tension ($PaCO_2$)"
http://www.uptodate.com/contents/the-evaluation-diagnosis-and-treatment-of-the-adult-patient-with-acute-hypercapnic-respiratory-failure

- COPD
- Cystic fibrosis
- Bronchiectasis
- Chest wall deformity – such as severe kyphoscoliosis
- Neuromuscular disease
- Obesity Hypoventilation
- Opioid narcosis

Oxygen Therapy – Inpatient & STOT Ordering

5.3 Oxygen in end of life care

Hypoxaemia should be present to justify oxygen therapy treatment, in cases where oxygen therapy may be considered for symptom relief during end of life process. It must be discussed with The Palliative Care Team and Respiratory Physician.

[P] Referral Criteria for Palliative Oxygen

5.4 Oxygen Prescription examples

For areas where E-prescribing is not available. Oxygen must be prescribed via the 8 day National Medication Chart.

8 day National Medication Chart

Nasal Prongs

Oxygen Therapy & Medical Gases

Tick Target Oxygen Saturation (%): 88-92 Greater than 92 □✓

START DATE	DEVICE/DELIVERY	FLOW RATE	SIGNATURE	STOP DATE
09/05/2016	Nasal prongs	1-4L	Dr Bloggs	Review daily

High Flow Nasal Oxygen Therapy (HHFNP)

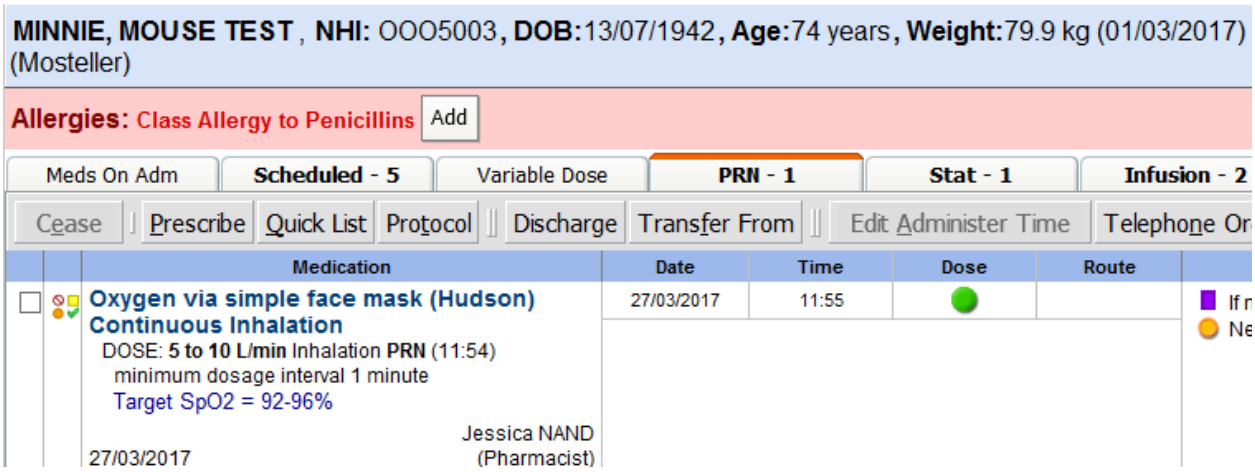
Oxygen Therapy & Medical Gases

Tick Target Oxygen Saturation (%): 88-92 ✓ Greater than 92 □

START DATE	DEVICE/DELIVERY	FLOW RATE	SIGNATURE	STOP DATE
09/05/2016	HHFNP 35-45L air flow	Oxygen 21-45%	Dr Bloggs	Review daily
If >45L air flow or >45% oxygen required, inform own medical team/on call and CCOT				

Oxygen Therapy – Inpatient & STOT Ordering

5.5 E-prescribing medchart

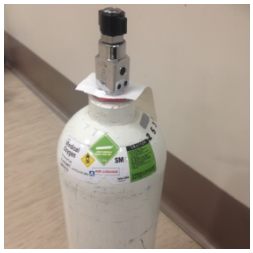


6. Administration and Monitoring

6.1 Supply Point

In hospital patients may receive oxygen through a piped system via wall mounted sockets as shown

Or from oxygen cylinders



In either case the connecting mount to the flow meter should be checked for leaks. Usually a leak is audible on careful listening

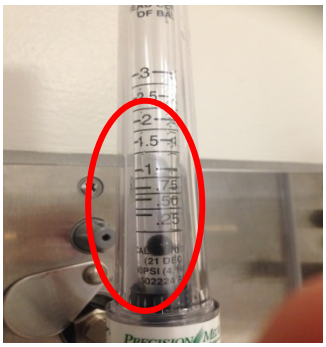
Oxygen Therapy – Inpatient & STOT Ordering

6.2 Flow Meter

The flow meter calibration levels may be high flow (15L/min. max) or low flow (2.5L/min. max). Careful attention should be made to check which meter is in place when setting up oxygen for a patient.

High Flow meter

Low flow meter



NOTE : A patient who has an underlying respiratory disorder where high flow oxygen may be detrimental should be considered for a low flow meter.

Connections between the flow meter itself and the wall socket outlet, or the gas cylinder head, must be inspected for leaks.

6.3 Oxygen tubing

Oxygen tubing should be attached to the flow meter as pictured and selected device (see equipment) attached to the other end.

Oxygen tubing should be checked to ensure it is

- Not kinked
- Not leaking at an extension connection
- Kept clear of any contaminating fluid or other substance

6.4 Patient consent and education

After obtaining prescription and prior to commencement of oxygen, ensure informed consent from patient is obtained.
Verbal education will need to be provided regarding:

- the need and use of the oxygen
- The inability to mobilise freely whilst connected to piped oxygen
- Smoking and naked flame are prohibited (see hazards)

Oxygen Therapy – Inpatient & STOT Ordering

6.5 Observations

Patients on oxygen therapy require regular vital signs monitoring as per NEWS chart including:

- Respiration rate – note depth of respiration, bilateral chest movements and work of breathing
- oxygen saturation

Staff should monitor the patient's oxygen saturation and adjust the oxygen delivery device and flow rate as necessary to ensure that oxygen saturation remains within the target range.

Oxygen saturation is assessed by pulse oximetry. Ensure a good trace and a stable reading is obtained before recording the oxygen saturation plus delivery device and flow rate on the observation chart.

- If the oxygen saturation falls within the target range, oxygen therapy should be continued at the current level.
- If oxygen saturations fall outside of the target range, oxygen therapy should be titrated up or down as required to bring saturations back within the target range.

After any change to delivery device or flow rate, wait 5 minutes for oxygen saturations to stabilize before re-checking to ensure they are within the desired target saturation range.

Ensure clear and careful documentation of oxygen delivery device, flow rate and FiO_2

If it is necessary to increase the oxygen flow rate to maintain the desired target saturation range in a previously stable patient, then a review of the patient's clinical condition by the medical team and ICU outreach is required as per the NEWS algorithm

The frequency of observations should be based on the observation and NEWS policy.

[P] Observations - Vital Signs including N

6.6 Humidification

If oxygen is delivered at a level of 4 litres or more, it should be humidified for comfort and to prevent drying of secretions.

A major role of the upper airway is to heat and humidify inspired air. When patients receive supplemental oxygen without heat and humidification, they will incur increased heat and water losses from the airway mucosa. If cold dry air is delivered to the trachea, mucociliary transport of lower secretions is affected. Mucocilliary transport gradually slows and can stop, leading to mucous plugging, atelectasis and infection. Heated humidification of supplemental oxygen ensures continued mucociliary transport.

- Humidification of oxygen via Tracheostomy is available at:

[P] Tracheostomy Management Nov16.p

6.7 Transporting patients on oxygen

Any patient requiring oxygen administration during transit requires the attendance of a registered nurse.

Oxygen Therapy – Inpatient & STOT Ordering

6.8 Infection control

- Masks should be washed with soap and water **daily and dried**
- Masks and nasal cannula should be changed on a **weekly basis**
- Masks, nasal cannula and tubing should **be labelled and dated** for the patient to whom the oxygen is going
- **Oxygen tubing used on a single patient should be changed every 30 days**
- If **moisture is visible in the oxygen tubing it should be replaced** to prevent mould and mildew as it may contribute to a respiratory infection
- Oxygen equipment should be discarded when treatment is discontinued
- Oxygen equipment should not be left on the floor or lockers, it should be hung on the flow meter behind the patient's bed

Wet circuits: HHFNP and MR850 circuits should be changed every 7 days

- If the wet circuit has not been used for the last 24 hours it should be replaced before re-commencing therapy

Oxygen Therapy – Inpatient & STOT Ordering

6.9 Oxygen administration flow chart

Patient with suspected Hypoxaemia:
Obtain oximetry
Consider ABG in:

- Critically ill patients with cardiorespiratory or metabolic dysfunction
- In patients with an SpO_2 of <92% in whom Hypoxia may be present
- Deteriorating SpO_2 requiring increased FiO_2 outside treatment parameters
- Patients at risk of Hypercapnia
- Breathless patient in whom an accurate spO_2 cannot obtained

Is the patient at risk of hypercapnic respiratory failure?

YES

SpO_2 <88%

-Start O2 therapy
Venturi 24% set at 2L/min
OR Venturi 28% set at 4L/min
OR Humidified High Flow Nasal Prongs
-Titrate O_2 to achieve SpO_2 88-92% target
-Give Bronchodilator (if prescribed) by air driven nebuliser or MDI with spacer
-Obtain ABG

pH <7.35 and pCO_2 >6.0kpa

-Consult COPD pathway –
COPD_pathway.pdf
and refer to ICU/HDU
-Controlled O_2 as needed to maintain SpO_2 88-92% target saturations range.

$SpO_2 \geq 88\%$

No O_2 therapy
Continue monitoring
Consider ABG

SpO_2 <88%

$pH \geq 7.35$

-Controlled O_2 as needed to maintain SpO_2 88-92% target

NO

SpO_2 <85%

-Start O_2 4L/min nasal cannula, 5-10L/min via mask, 15L/min via a reservoir mask
-Titrate O_2 to achieve SpO_2 92-96% target range
-Obtain ABG

$PaCO_2$ >6kpa or paO_2 8kpa

-Senior medical review
- Controlled O_2 as needed to maintain target saturations range 92-96%.

SpO_2 85-91%

-Start 2-4L/min via standard nasal prongs and/or
-Titrate O_2 to achieve SpO_2 92-96% target range
-Consider ABG

$PaCO_2$ <6kpa and $PaO_2 \geq 8$kpa

-Monitor SpO_2
-Titrate O_2 to maintain SpO_2 92-96%
-consider medical review

Oxygen Therapy – Inpatient & STOT Ordering

7. Equipment

Device	How does it work?	Prescription
Nasal Cannula 	Patient inhales room air with O_2 flow from the wall to create approximate oxygen concentration	Oxygen via standard nasal prongs Continuous Inhalation Usual 0.25-4 L/min (max 4L/min) Target SpO_2 = 88-92 Usual 1-4 L/min (max 4L/min) Target SpO_2 = 92-96%
Simple face mask (Hudson) 	Patient inhales room air with O_2 flow from the wall to create approximate oxygen concentration. Use a minimum of 5L O_2 flow to prevent rebreathing CO_2	Oxygen via simple face mask (Hudson) Continuous Inhalation 5-10 L/min Target SpO_2 = 92-96%
Reservoir mask 	Inflate the bag to create a reservoir of oxygen. This delivers approximately 85-90% oxygen	Oxygen via reservoir mask Continuous Inhalation 10-15 L/min Target SpO_2 = 92-96%
Ambu bag 	For use in emergency situation when the patient requires greater than 80% FiO_2. Valves in the device control the flow of oxygen from the reservoir to the patients and prevent the exhaled carbon dioxide from entering the reservoir and diluting the oxygen concentration.	
Venturi mask 	Nozzles blend with O2 with room air to provide a fixed concentration of oxygen	Oxygen via Venturi mask Continuous Inhalation FiO_2 = 24% Oxygen flow rate 3 L/min (blue) (increase flow rate to 4.5 L/min if RR > 30 breaths per minute) Target SpO_2 = 88-92% FiO_2 = 28%

Oxygen Therapy – Inpatient & STOT Ordering

		Oxygen flow rate 6 L/min (yellow) (increase flow rate to 9 L/min if RR > 30 breaths per minute) Target SpO_2 = 88-92% FiO_2 = 31% Oxygen flow rate 8 L/min (white) (increase flow rate to 12 L/min if RR > 30 breaths per minute) Target SpO_2 = 88-92% FiO_2 = 35% Oxygen flow rate 12 L/min (green) (increase flow rate to 18 L/min if RR > 30 breaths per minute) Target SpO_2 = 88-92% FiO_2 = 40% Oxygen flow rate 15 L/min (pink) (increase flow rate to 22.5 L/min if RR > 30 breaths per minute) Target SpO_2 = 88-92% FiO_2 = 50% Oxygen flow rate 15 L/min (orange) (increase flow rate to 22.5 L/min if RR > 30 breaths per minute) Target SpO_2 = 88-92%
Humidified High Flow Nasal Prongs (HHFNP) 	[P] Oxygen Therapy - Humidified High Flow	Oxygen via humidified high flow nasal prongs Continuous Inhalation FiO_2 21-40% Airflow rate 35 L/min Target SpO_2 = 88-92% FiO_2 21-40% Airflow rate = 35 L/min Target SpO_2 = 92-96% For specialist use. FiO_2 prescriber to complete %Airflow rate = prescriber to complete L/min Target SpO_2 = prescriber to complete %
Non-Invasive Ventilation	Requires prescription for therapy on a paper chart and separate prescription for oxygen delivery.	Oxygen via non-invasive ventilation (NIV) Continuous Inhalation FiO_2 21-50%

Oxygen Therapy – Inpatient & STOT Ordering

		Target SpO_2 = 88-92% Airflow rate as per NIV prescription
MR850 Humidifier 	Controlled concentration humidified oxygen. Select percentage of oxygen required with arrow dial. For support call CCOT/Physiotherapists/Respiratory CNS. Face mask deliver only	

8. Discontinuation (weaning) of oxygen

In most cases of acute illness, oxygen therapy will be reduced gradually as the patient recovers.

The need for continuing oxygen therapy must be assessed on a daily basis by the medical team and documented in the medical notes.

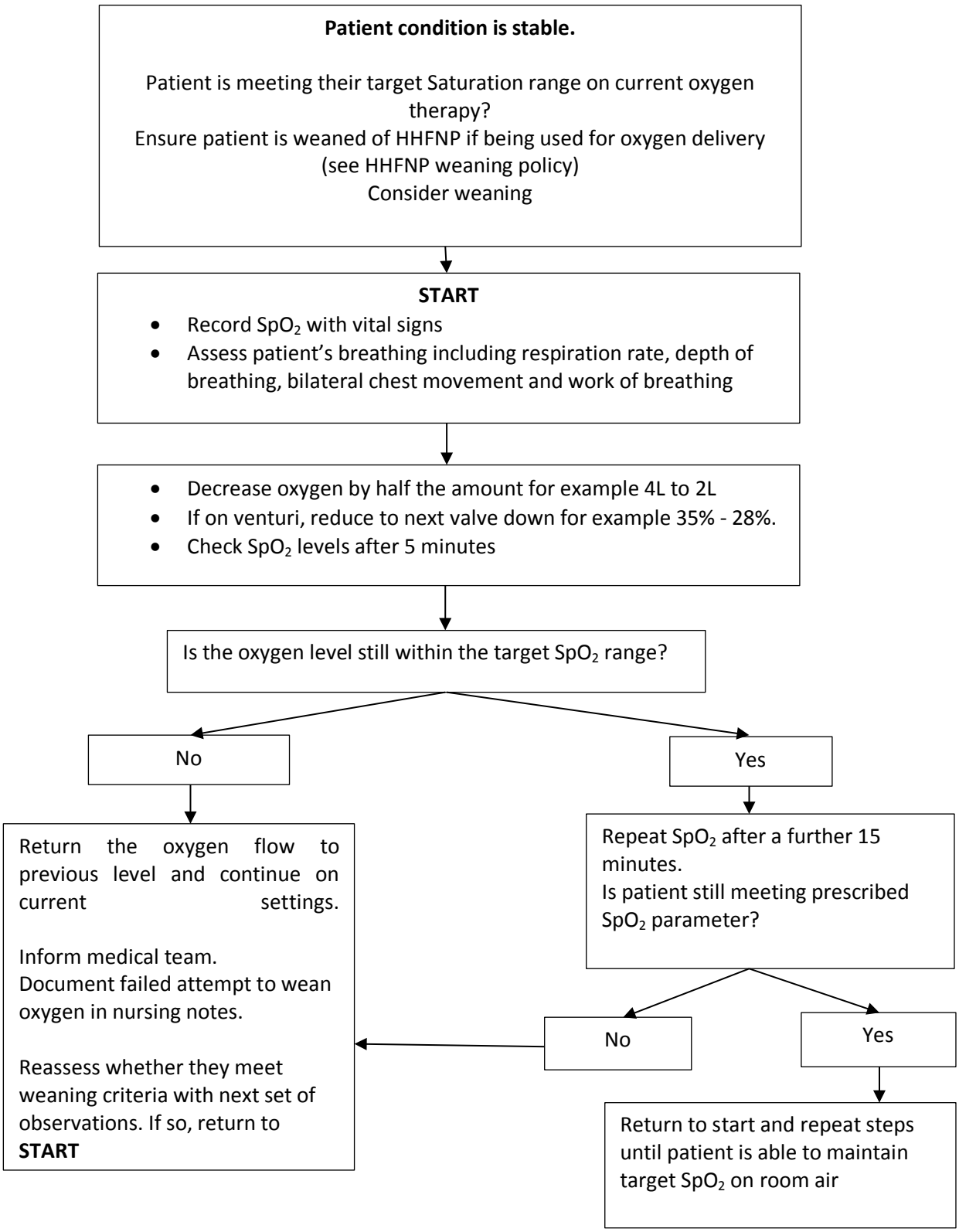
- In stable patients, if the oxygen saturations exceeds the desired target range, active weaning is appropriate.
- With low levels of supplemental oxygen (1L/min nasal prongs or 24% by venturi mask), stop oxygen and re-check saturations after the patient has been breathing room air for 5 minutes then again after 15 minutes. If saturation remains in the target range on air, the health professional can discontinue oxygen therapy. Should oxygen saturations subsequently fall below the target range, oxygen may be re-started.

When oxygen therapy is no longer required, the prescription should be discontinued on MedChart or crossed off the drug chart, signed and dated. The oxygen must be switched off after use.

If there are difficulties weaning the patient to room air and home oxygen is being considered please contact the hospital Respiratory team on Extension 42756 for advice or refer to the section STOT in this policy.

Oxygen Therapy – Inpatient & STOT Ordering

8.1 Oxygen weaning flowchart

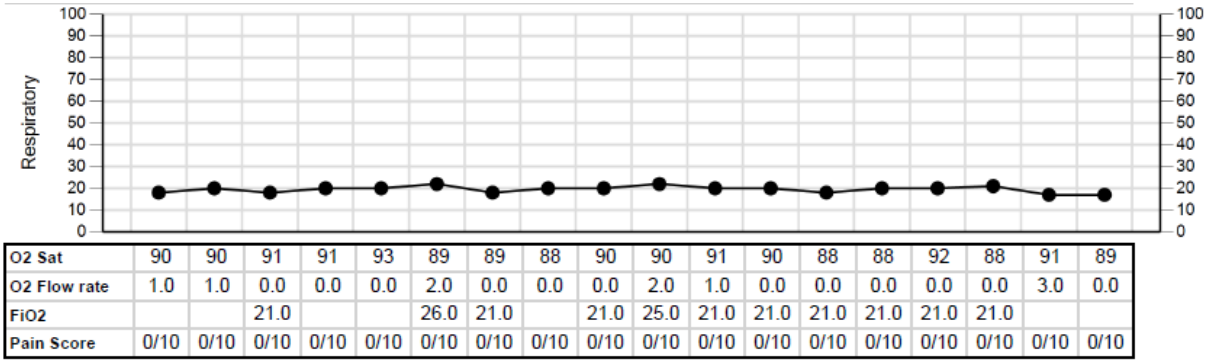


Oxygen Therapy – Inpatient & STOT Ordering

9. Documentation

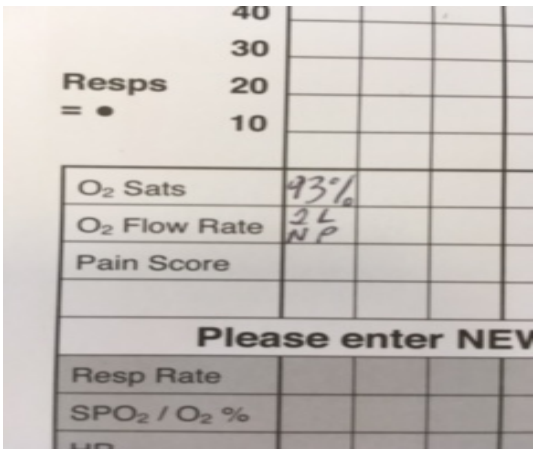
- When recording patient observations, SpO_2 and the amount of oxygen should be recorded in the boxes as shown in the picture below.
- For approximate concentration devices (nasal prongs, Hudson mask, Reservoir mask, Ambu-bag) state the litres of flow/min on the flow meter.
- For fixed concentration devices (Venturi and HHFNP) the fraction of inspired oxygen (FiO_2) should be documented as well as the litres of flow for HHFNP (see section 7 – equipment for more details)

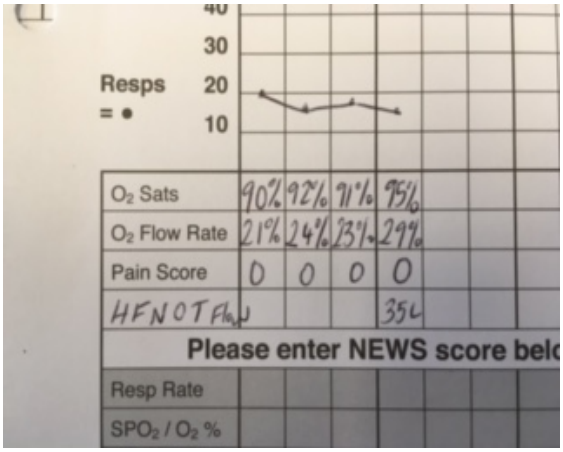
On e-vitals



O2 Sat	90	90	91	91	93	89	89	88	90	90	91	90	88	88	92	88	91	89
O2 Flow rate	1.0	1.0	0.0	0.0	0.0	2.0	0.0	0.0	0.0	2.0	1.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0
FiO2			21.0			26.0	21.0		21.0	25.0	21.0	21.0	21.0	21.0	21.0	21.0		
Pain Score	0/10	0/10	0/10	0/10	0/10	0/10	0/10	0/10	0/10	0/10	0/10	0/10	0/10	0/10	0/10	0/10	0/10	0/10

On the paper chart





When the patient has successfully been weaned off oxygen, it should be documented in the patient's notes.

Oxygen Therapy – Inpatient & STOT Ordering

10. Short Term Oxygen Therapy (STOT) ordering for domiciliary use

10.1 Conditions of supply

Eligibility

STOT can be supplied to assist with achieving a successful discharge from hospital for patients with an exacerbation of their lung disease (usually COPD), who remain hypoxic with a PaO_2 of <7.3kPa. Or up to 8kPa with right-sided heart failure, pulmonary hypertension or secondary polycythaemia.

Patients should understand that this supply is temporary.

- They will receive an outpatient appointment approximately 6 weeks post discharge to determine their suitability for ongoing long term oxygen therapy (LTOT).

WDHB engages Air Liquide to supply, deliver and educate patients with STOT.

If Oxygen is required the flow rate needs to be adjusted to achieve SpO_2 of 92%.

- Extreme care should be taken in patients with $PaCO_2$ >6.5kPa
- A second arterial blood gas (ABG) on oxygen should be taken in this group of patients to assess the risk of hypercapnic failure. They should be reviewed by a respiratory physician.

10.2 Consideration Prior to Supply

- Before a decision on supplying STOT therapy is made, inpatients should have lung function optimized by use of inhaled bronchodilators.
- Anxiolytics may be considered for relief of dyspnoea.
- Patients must have stopped smoking two months prior to supply of home oxygen. Smokers or vapers will **NOT BE** supplied with Oxygen.
- Oxygen is a drug and can only be supplied on prescription from medical staff following an ABG with carboxyhaemoglobin.

10.3 Inpatient Assessment

1. If an attempt at weaning off oxygen 24 hours prior to discharge has failed, proceed to record the patient's SpO_2 on air after 20 – 30 minutes off oxygen and at rest
2. Perform an ABG and carboxyhaemoglobin (positive between 2% and 9%).
3. **To qualify for STOT, the patient must have a PaO_2 of <7.3kpa or <8kpa if the patient has evidence of end organ damage (Cor pulmonale on ECG, PCV greater than 0.55, pulmonary hypertension or evidence of right heart failure on ECHO)**
4. If oxygen is required, the flow rate needs to be adjusted to achieve SpO_2 of 92%
   - Extreme care must be taken with patients with $PaCO_2$ > 6.5kPa.
   - A second ABG on oxygen must be taken to assess for the risk of hypercapnic failure

10.4 Patient education and information

Provide information, education and counselling to the patient and their family about:

- Their condition
- Symptom management, especially breathing control strategies for dyspnoea.

Treatment for anxiety (when necessary) and referral to pulmonary rehabilitation (if appropriate).

The oxygen concentrator should be used for a minimum of 16 hours per 24 hours. Air Liquide will provide education on how to use the equipment when it is delivered.

- That they will receive an OPC appointment to see a respiratory physician in

(approximately) six weeks to assess their ongoing requirement for oxygen at home.

- Reinforce the importance of attending the follow-up outpatient clinic appointment as failure to attend may result in discontinuation of STOT and the collection of the equipment.

10.5 Equipment

Patients prescribed with STOT will be supplied with 1 standard concentrator and one 50 foot tubing with separate nasal prongs.
Low flow can be requested if required for hypercapnic patients.

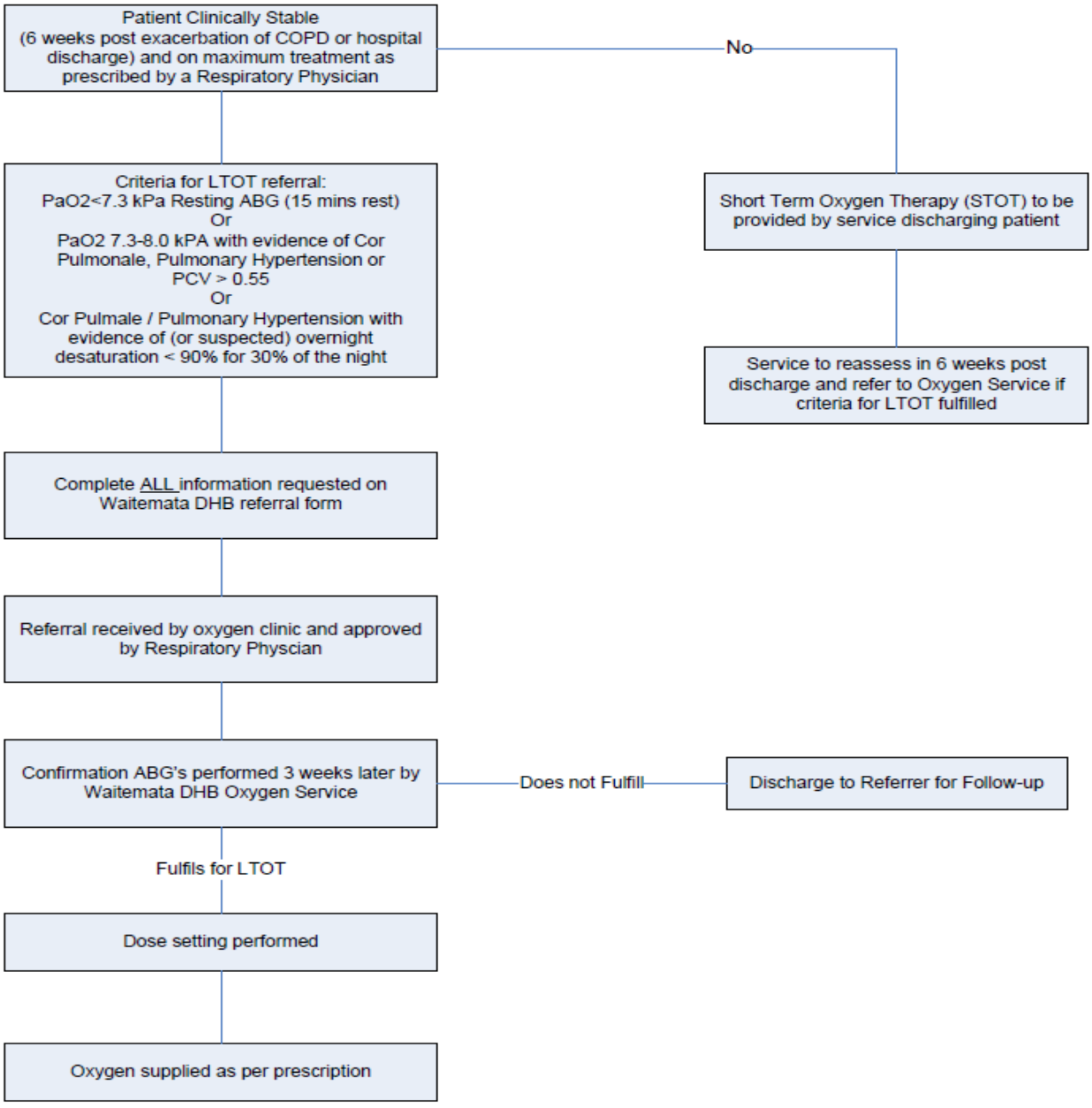
11. Prescription and ordering by prescribing doctor

1. Referring medial team to complete "Home Oxygen Referral for short term oxygen therapy (STOT)" - see appendix 1 (2 pages)
2. Fax to Respiratory Clinical Nurse Specialist
3. Respiratory CNS will review order, provide patient information and order oxygen from Invacare.

Oxygen will usually be delivered to the patient's home the following day. Someone needs to be at the home to receive education regarding the equipment.

Oxygen Therapy – Inpatient & STOT Ordering

11.1 Home Oxygen Administration Flow Chart



12. Audit/Monitoring

Adherence to this guideline will be assessed by the respiratory team via clinical audit.

13. Key Contacts

For further information, please contact a member of the respiratory team on extension 42756.

14. References and Associated documents

Waitemata DHB Policy

- Clinical Documentation

Oxygen Therapy – Inpatient & STOT Ordering

- Observations – Vital signs including NEWS
- High Flow Nasal Oxygen Therapy policy
- Transit Care and Transfer between services
- Referral Criteria for Palliative Oxygen
- PCA/PCEA prescription chart/policy

Reference Table

1	Beasley, R., Chien, J., Douglas, J., Eastlake, L., Farah, C., King, G., Moore, R., Pilcher, J., Richards, M, Smith, S and Walters, H.(2015). Thoracic Society of Australia and New Zealand oxygen guidelines for acute oxygen use in adults: 'Swimming between the flags'. *Respirology*.20:1182-1191
2	Hardinge, M., Annandale, J., Bourne, S., Cooper, B., Evans, A., Freeman, D., Green, A., Hippolyte, S., Knowles, V., MacNee, W., McDonnell, L., Pye., K., Sunthharalingam, J., Vora, V and Wilkinson, T. (2015) British Thoracic Society Guidelines for Home Oxygen Use in Adults. *Thorax*.70 (1):1-48.
3	Haynes, J.(2007).The Ear as an Alternative Site for a Pulse Oximter Finger Clip Sensor. *Respiratory Care*. 52(6):727-729
4	Karcz, M. and Papadakkos, P. (2013). Respiratory complications in the postanaesthetic care unit: A review of pathophysiological mechanisms. Canadian Journal of Respiratory Therapists. 49(4): 21-29
5	Pilcher, J. and Beasley, R. (2015). Acute use of oxygen therapy. *Australian Prescriber.*38(3): 98-100
6	O'Driscoll, B., Howard, L., Davison, A. (2008). Guidelines for emergency oxygen use in adult patients. *Thorax.*63, supplement VI.

Oxygen Therapy – Inpatient & STOT Ordering

Appendix: Home Oxygen Referral (STOT)

Waitemata District Health Board
Best Care for Everyone

Respiratory

[PLACE PATIENT LABEL HERE]
First Name: _____ Gender: _____
Surname: _____
Address: _____
Date of Birth: _____ NHI#: _____
Ward/Clinic: _____ Consultant: _____

Home Oxygen Referral - For short term oxygen therapy (STOT)

Send to: Respiratory Nurse Specialists - Fax this form to: 45740		
Primary Diagnosis in Relation to Hypoxia:		
Secondary Issues:		
Smoking Hx (Years):		Current Smoker? Yes ☐ No ☐ Quit date: Check carboxyhaemoglobin on ABG
End Organ Damage		
ECG (P. Pulmonale)		
Polycythaemia (PCV >0.55)		
ABG on air (at least 30 min unless severely desaturated)		
pH		Date:
pCO_2		CRITERIA FOR OXYGEN SUPPLY: – Non-smoker for at least 8 weeks – PaO_2 <7.3 kpa or <8.0 kpa if evidence of end organ failure. – Must be referred to Respiratory ORC for 6/52 post discharge
pO_2		
Bicarbonate		
SaO_2 at rest		

Definition of Short Term Oxygen Therapy (STOT): Administration of oxygen for >16 hours a day usually started at hospital discharge and for 6-8 weeks before decision about whether to continue.
Patients are issued with a concentrator only.

- Only exceptionally provided to patients' hypoxic at hospital discharge (i.e. O_2 saturation <90%).
- Long Term Oxygen Therapy (LTOT) decision can only be made when patient clinically stable; usually 6-8 weeks post discharge.
- Oxygen therapy does not relieve breathlessness in majority of patients and does not prevent need for readmission or mortality in the short term (only in the long term).
- The greatest benefit of oxygen therapy is its long term benefits and which are only realised after approximately 6 months of treatment in those who are hypoxemic when stable.
- STOT presents difficulties :
  1. Patients become distressed if found not to conform to LTOT criteria (70% discharged on STOT found not to comply with criteria for LTOT when stable)
  2. A psychological dependency on oxygen can develop if patients are not informed that this is a short term supply, when the patient's status improves and they do not subsequently meet the LTOT criteria
  3. Ambulatory oxygen/oxygen cylinders. Patient will be provided with an oxygen concentrator that runs on power. Given that oxygen is required only for 16 hrs a day given overnight, ambulatory cylinders are not required for travel.

Recommendations:

- In exceptional circumstances LTOT can be considered, please contact Respiratory Services to discuss (e.g. evidence of long standing secondary polycythaemia, cor pulmonale in months prior to acute admission).
- Stop oxygen 24 hours prior to discharge and accept O_2 saturations >86% at rest in patients where full recovery not complete.

Home Oxygen Referral (STOT)

Date Issued: March 2019 Page 1 of 2 7.11.015

Oxygen Therapy – Inpatient & STOT Ordering

Waitemata District Health Board
Best Care for Everyone

[PLACE PATIENT LABEL HERE]

First Name: _____ Gender: _____
Surname: _____
Address: _____
Date of Birth: _____ NHI#: _____
Ward/Clinic: _____ Consultant: _____

Respiratory

Home Oxygen Referral - For short term oxygen therapy (STOT)

Date:

Please supply the following equipment:

- X 1 Oxygen Concentrator
- X 1 Nasal Cannula 50ft

Prescribed Oxygen flow rate:	Signature:
_____(L/min) for 16 hours/day	

Consultant Name: _____

Prescribing Doctor: _____

Prescriber registration number: _____

Locator/Phone: _____

Ward: _____

Date of Referral: _____

Date of Discharge: _____

Purchase Order #: _____

Patient's NOK and contact number: _____

Please fill all areas to avoid delay, and allow 24 hours' notice to process prior to discharge.
See overleaf for criteria.

References:

1. Clinical Practice Guideline, Adult Domiciliary Oxygen Therapy, the Thoracic Society of Australia & New Zealand, 2014.
2. Short Burst Oxygen Therapy in Chronic Obstructive Pulmonary Disease. Brenda O'Neil, Joe MacMahan, Judy Bradley, Respiratory Medicine, 2006.
3. An Evaluation of Short Term Oxygen Therapy: The prescription of oxygen to patients with chronic lung disease hypoxic at discharge from hospital. TE Eaton, C Grey and JE Garrett, Respiratory Medicine, 2001
4. The prescription of domiciliary long term oxygen therapy in Auckland .P Sivakumar, JE Garrett, New Zealand Medical Journal ,1996

Home Oxygen Referral (STOT)

Date Issued: March 2019

7.11.015