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network

Oxygen Therapy Reference Manual

Neuro Therapy Network
www.neurotherapynetwork.org.uk

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Foreword

In the UK, charity-run therapy centres have been providing access to oxygen therapy since 1982. The centres were initially established to provide support to individuals living with multiple sclerosis (MS). The first MS therapy centre began operations in Scotland in 1982 under the umbrella of a small charity called Action for Research into Multiple Sclerosis (ARMS). There are now over 60 centres in the UK and the Republic of Ireland operating chambers, and oxygen therapy is well-established in many communities. Since the centres' inception, millions of sessions have been undertaken without serious incident.

Awareness of oxygen therapy has grown, leading to most centres now working with many neurological and other conditions beyond MS, including fibromyalgia, post-stroke, cancers, sports injuries, long-covid, fatigue and lesions/wounds.

Oxygen therapy is administered by trained operators, and the aim of this manual is to provide therapy centres with the latest information needed to operate. It must be recognised that, despite government acceptance, UK medical and paramedical professionals are not trained in the use of oxygen therapy. They may therefore not understand that oxygen - in the air we breathe - is constantly involved in treating the micro injuries of daily wear and replacing cells from skin to the brain.

Initially regulated, the centres were deregulated by an Act of Parliament in 2008, which enabled them to operate without being under the jurisdiction of the Care Quality Commission (CQC). This deregulation came about as a result of the stellar safety record of the centres, as well as the limited pressures used. Chambers used in centres are Type 3 and limited to a maximum of 2 Atmospheres Absolute (2ATA).

On occasion, centres may be approached to become involved in medical research. Neuro Therapy Network (NTN) is not an organisation which is involved in research, as this is one of the primary objectives of the MS Society and the MS Trust. Nonetheless, the decision to participate in research projects is one for individual therapy centres, however as this may have implications for all therapy centres, NTN should be informed. Centres are advised to ensure that the relevant approvals from a Research Ethics Committee have been obtained.



Introduction

This manual provides background information and guidance to support chamber operation and should be used in conjunction with the Code of Construction and Working Practice for Low Pressure Barochambers published by the Wolfson Hyperbaric Medicine Unit, University of Dundee, June 2003.

Within the manual, the following symbols are used to draw attention to important points:



Any points shown in pink **MUST** be followed



Yellow denotes points that **SHOULD** be followed



Green highlights important or interesting points



The blue 'C' references relevant sections in the Code of Construction and Working Practice for Low Pressure Chambers, which should be kept alongside this manual

Chapter 1

Oxygen Therapy

Recommended Terminology

As our member centres do not work in the diving world, the term 'session' is used in place of 'dive'.

To describe the pressures used, the recommended units are Atmospheres Absolute (ATA) as this is an absolute measurement and has no room for error. Absolute measurements allow for there being one atmosphere of pressure around us already, and so a gauge in ATA would start at 1. However, many chamber gauges are in Feet, Metres or Bar, making it useful to be aware of the equivalent pressures. such gauges read '0' at ambient pressure.

Additionally, when talking to new users, Feet and Metres can be a useful device to explain concepts of pressure.

Atmospheres Absolute (ATA)	Feet of Sea Water (fsw)	Metres of Sea Water (msw)	Bar
1.00	Sea Level	Sea Level	0
1.25	8ft	2.5m	0.25
1.50	16.5ft	5m	0.5
1.75	24ft	7.5m	0.75
2.00	33ft	10m	1

Centres are not medical facilities, and as such, it is generally agreed that the provision of oxygen should be referred to as Oxygen Therapy, not as Oxygen Treatment. Oxygen, nevertheless, is constantly used by the body in the treatment of wear and tear, injury and illness.

Chambers operating above Atmospheric Pressure (1 ATA) are generally referred to as Hyperbaric Chambers, however some centres may also refer to these as barochambers in a bid to ensure they are recognised as being different from those offshore or medical facilities. Chambers within member centres are restricted to operating at a maximum of 2ATA, in order to comply with statutory deregulation.

What is Oxygen Therapy?

Oxygen is a colourless, odourless gas that makes up about 21% of the Earth's atmosphere. It is one of the body's basic building blocks. All the major components of the body (water, protein, carbohydrate, and fat) contain oxygen.

Oxygen drives chemical reactions within the body that involve the production of life-sustaining energy. A body deprived of oxygen cannot be revived after a matter of minutes.

When one breathes near 100% oxygen through an oxygen mask, about five times the normal amount of oxygen will reach the body's tissues. In a pressurised type 3 hyperbaric chamber, operating at 2 ATA, approximately 10 times the normal amount of oxygen, dissolved in blood, reaches the body's tissues. Red blood cells fill with oxygen, and additionally, the blood plasma is saturated with oxygen. This extra oxygen stimulates healing.

One mechanism of action is to help overcome diseases and to remedy conditions that involve a lack of oxygen in the tissues, as normal atmospheric pressure isn't powerful enough to force oxygen into the tissues. Pathological states involving hypoxia, such as circulatory problems and strokes, can be reversed and rapid healing can take place.

Oxygen Therapy at up to 2 ATA utilises the principles of gases and their physiological effects. Normally, oxygen is delivered to tissues and cells by attaching to the haemoglobin in red blood cells. Usually, the haemoglobin is near to 100% saturated with oxygen in the lungs when we breathe.

In Oxygen Therapy, oxygen molecules are up to ten times more abundant than they are in the air. The blood plasma dissolves oxygen when under pressure and the plasma then delivers oxygen quite easily.

An oxygen-deficient cell may not be in contact with a capillary but is within range, whereas with Oxygen Therapy the oxygen can diffuse from the capillary to the cell and relieve hypoxia.

These fluids carry the extra oxygen to areas where circulation is deficient and/or blocked by diffusing into the cells and tissues. The oxygenation stimulates the healing process, by enhancing the white blood cells' ability to fight infection.

Oxygen Therapy can also encourage the development of new capillaries that deliver oxygen under normal atmospheric pressure. In conclusion, it helps the body renew its tissues and thus promotes healing.

How Does Breathing More Oxygen Help?

Healing cannot take place without sufficient oxygen levels in our tissues. In many circumstances, such as circulatory problems, non-healing wounds and strokes, adequate oxygen cannot reach the damaged area, and the body's natural healing ability is unable to function properly.

Oxygen Therapy provides this extra oxygen, with the following intent;

- Increases oxygen delivery to injured tissues
- Minimises further tissue damage
- Prevents and/or reduces infection
- Improves immune system response
- Promotes wound healing
- Reduces swelling
- Improves blood vessel formation
- Increases bone recovery
- Improves peripheral nerve regeneration
- Reduces effects from toxic substances
- Increases muscular force and reduces fatigue
- Reduces muscle spasm
- Eliminates toxic substances
- Increases the effect of some antibiotics
- Formation of scar tissue is reduced
- Increases the production of stem cells - two hours after Oxygen Therapy circulating stem cells are doubled, and after twenty sessions they increase eight times



The Importance of Oxygen and Pressure

Oxygen Therapy enhances the body's natural healing process by inhalation of approximately 100% pure oxygen in a chamber, where atmospheric air pressure is increased and controlled.

Oxygen is carried in both the plasma and as a compound attached to haemoglobin. With Oxygen Therapy, oxygen is dissolved into all of the body's fluids; the plasma, central nervous system fluids, lymphs and bones, and can be carried to areas where circulation is diminished or blocked.

In this way, additional oxygen can reach all of the damaged tissues, and the body can support its own healing process. The increased oxygen greatly enhances the ability of white blood cells to kill bacteria, reduces swelling and allows new blood vessels to grow more rapidly into the affected areas.



Red blood cells carry oxygen around the body, whilst white blood cells are part of the immune system that fights infections and other diseases.

WHEN BREATHING AIR



Normal Atmospheric pressure (1 ATA)



0.3 % ml



In the chamber (2 ATA)



0.6 % ml

WHEN BREATHING 100% OXYGEN



Normal Atmospheric pressure (1 ATA)



2.1 % ml



In the chamber (2 ATA)



4.5 % ml

Chapter 2

The Session

What is Involved in a Session?

Oxygen Therapy allows individuals to breathe near 100% oxygen under pressure such that they are able to absorb more oxygen into their bloodstream. The chamber has view ports so that the users can see out and the operators can see them. Some chambers have video cameras and other means of communication. There are two types of chambers:

Monoplace chambers: these have provision for one person at a time, laid horizontally. Only a few of our centres have these.

Multiplace chambers: these can accommodate more than one person at a time, and are the type found in most of our centres. Some can seat up to 12 people at a time. These chambers are quite large.

Prior to the start of the session, checks should be made with all users that they do not have any items on the prohibited items list on their person or in a bag going into the chamber with them.

Operators should recommend to all users that they use the W.C. before entering the chamber.

Compression phase

When the users are inside the chamber, the inward opening door is closed. Air is then slowly pumped into the chamber to increase the pressure. The users will hear a hissing sound as the air is piped into the chamber. As a result of this increase in pressure the atmosphere within the chamber will feel warmer. Once the chamber has some pressure in it the door locks must be released for safety reasons; however, the increased chamber pressure keeps the door closed and sealed.



If the door locks are not removed whilst the chamber is pressurised, it may be very difficult or impossible to remove them when the chamber is depressurised. This is because when the chamber pressurises, the additional pressure against the door tightens the seal, which also allows the locks to tighten.

When the chamber is depressurised, the pressure is released from the back of the door, reducing the tightness of the seal, but making no change to the locks. As a result, there is potential for the locks to now be too tight to be easily removed without intervention.

Should this happen, it will be necessary to slightly pressurise the chamber, and then the locks will be removable.

As the pressure increases, users will need to clear their ears, and this should start as the pressure begins to increase. The chamber operators may need to explain or show users how to do this and should check that all are able to do so.

It may be beneficial to ask users to demonstrate their ability to perform ear clearing techniques prior to starting their first session. See Chapter 4.

Clearing the ears helps to balance the pressure within them and prevent pain in the eardrum. It is a similar feeling to when taking off or descending in a commercial aeroplane or travelling on a train through a tunnel.

Therapy phase

When the pressure reaches the correct level, if masks have not already been fitted from the start of the session, the operator will ask each user to put their mask on, or a clear hood. The mask must be fitted to cover the nose and mouth effectively. Two flexible tubes are attached to each mask: one to deliver oxygen and the other to take exhaled breath away. The exhaust pipe will normally have a one-way valve integrated to avoid old air being breathed back in through the mask.

If a hood is being used, it is best that the operator fits and inflates this prior to starting the session. Hoods will require a constant flow of oxygen to allow them to inflate - this may require some means of creating 'free flow' like a screw that overrides the demand valve. It may be necessary to educate another chamber user on the hood use as in some chambers the pressurisation leads to changes in the level of inflation in the hood.

During the therapy session the users will be able to read, listen to music or watch TV (if the chamber has one). They can see and communicate with the operators during the session.

Decompression phase

Near the end of the therapy session, the pressure in the chamber is slowly decreased by releasing the chamber air. Users may feel their ears popping and may need to clear their ears. As the chamber decompresses, as a result of the lowering of the pressure back to normal atmospheric pressure, it will start to feel cooler.

Once normal atmospheric pressure is reached the door seal may ease as the door becomes free. After the decompression phase the users can disconnect the pipes/hoses to and from the masks, remove their mask and leave the chamber.

Some chambers have the ability to switch from oxygen to air when decompressing.

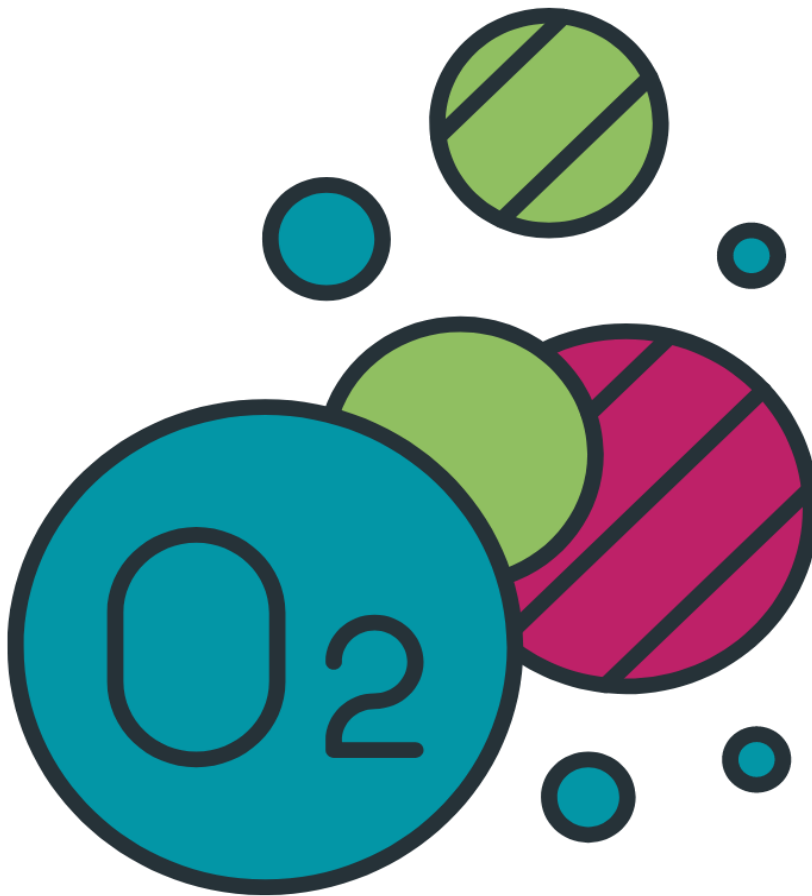
Flushing

Sometimes during a session, it is necessary to perform a 'flush' to change over the air in the chamber. This may need to be done because the oxygen levels have risen, the chamber is too warm, or because of an odour in the chamber. For more details on flushing, please see Chapter 5.



Free-flow oxygen refers to the demand valve for oxygen being overridden by turning a screw attached to the valve. This keeps the valve open, allowing a constant flow of oxygen to the mask or hood, rather than oxygen only flowing when a user inhales, which opens the demand valve.

If free-flow has been used, it is important to make sure that the valve has been closed again at the end of the session to avoid oxygen venting into the chamber, creating a fire risk.



Safe Operation of Chambers

During the operation of any chamber, two operators must be present, one at the control panel and the other within earshot. If the chamber can be operated from inside an operator can be an attendant.

As far as may be reasonable, all operators, attendants and volunteers should have received basic first aid training.

We recommend that centres create a daily checklist that operators take responsibility for undertaking and signing. We also recommend weekly and monthly checks to demonstrate that you are upholding the safety and efficiency of your operations through regular inspection, maintenance and cleaning of equipment.

Preparing, running and completing an Oxygen Therapy session

Checklist before commencing each day:

- Ensure fire suppression systems are all ready for use. If this is a deluge system ensure this is charged (water and air) if extinguishers are used ensure these are accessible, visible and in date
- Turn on the chamber lights
- Check that there is a spare mask in the chamber
- If a fire blanket is supplied, ensure it is in the chamber and is in sight.
- Check that the chamber panel exhaust valves are closed
- Switch on the oxygen analyser and check the settings
- Switch on the intercom and ensure that it is working
- If emergency lighting is fitted, check that it is working
- If an airlock internal valve is fitted, close it
- If a CCTV monitor is fitted, turn it on

Operators and users should arrive at least 15 minutes before the scheduled 'start time' so that the session can begin on time. The actual 'start time' to a session begins when the chamber door is closed.

Refer to the register of users and complete the log sheet with the number, date, time, pressure, and the names of users and both operators in attendance.

Users should be welcomed and, if needed, helped into the chamber. Where operators are required to help users into and out of the chamber, it may be advisable to have had Manual Handling training.

Note: Manual Handling theory training is available through the LMS. Please speak to your Centre Manager to arrange access.

Check that all users' masks and straps are correctly adjusted. Ensure masks are properly fitted to the hoses and that breathing system valves are open.

Where a user is using a hood, ensure that the hood is correctly fitted with hoses attached, ensuring sufficient oxygen is flowing and being expelled correctly and that the user/assistant knows how to adjust the flow.

Check that no one is carrying matches, lighters or other prohibited items.

Ask the user seated opposite the operator's observation view port to watch others for signs of discomfort and ensure that the specified hand signals are known. See Chapter 4.



See Section 2.7 of the Code of Construction See Chapter 4 of this manual

Confirm that the users can communicate via the intercom and importantly that they can hear instructions.

Close the door and secure the door.

Starting the Session

Log the time and inform the users that the session is starting. Open the air inlet and pressurise slowly (0.1ATA/3ft per minute), listen to the intercom and constantly observe users either through the chamber view port or on the CCTV monitor. Once the door is sealed by pressure, release any clamping latches, catches or bar(s).

Stop the pressurisation at once if any user gives an indication of distress. If a user is unable to clear their ears, reduce the pressure until they are comfortable and ask them to breathe oxygen for a short time. Encourage them to use one of the ear clearing techniques to try to clear their ears. It may also be beneficial for them to take a few breaths of oxygen via the mask to help. Then, when they are ready, slowly continue to pressurise. If their ears do not clear, stop the session and remove the user affected.

When the required pressure is reached, ask the users to put their masks on (unless centre policies supersede this, eg: putting masks on earlier in the session). Log the time and oxygen analyser readings.

Record the oxygen analyser reading a minimum of every 30 minutes (the analyser should, however, be continually monitored by the operator throughout the session).

The chamber should be flushed before reaching 25% oxygen and the procedure in Chapter 5 should be followed. The most likely cause for an increase in oxygen will be a leaking mask. Ask the users to check their masks are not leaking and to tighten their masks if necessary.

It may offer reassurance, particularly for new users, to check in with them regularly using either hand signals or the intercom to check they are okay.



For more information, see Section 8.2 of the Code of Construction

Concluding the Session

At the end of the session, record the time and inform the occupants that you are going to depressurise. During depressurisation observe users for any signs of discomfort. It is good practice for depressurisation to take 8 to 10 minutes from 1.5 ATA and proportionately longer from higher pressures. Discomfort during depressurisation is rare but, if it does occur, in some circumstances you may find it beneficial to slightly increase the pressure until the user is comfortable. Depressurisation can then be resumed more slowly.

Care must obviously be taken opening the chamber door and when necessary, users should be assisted if required to remove masks and be helped out of the chamber.

Ensure masks are cleaned with a suitable disinfectant and are dried thoroughly.

Check that the chamber is tidy and remove any debris. Close appropriate oxygen and exhaust valves for the end of the session.

Complete the records and checklists and ensure that an operator signs the sheet.

Notes:

- If an operator feels unwell, the other operator should take over.
- Operators with colds, flu or other communicable or infectious illness should not attend for duty.

Session Record

The session record contains all of the important information about the oxygen session.

The record should contain (as a minimum):

- Date
- Pressure being used
- Operators (clarifying the 1st Operator and the 2nd Operator)
- Session attendees/users
- Time session started pressurising
- Time pressure reached
- Time session ended
- Time door opened
- Oxygen analyser readings - record the percentage of oxygen in the chamber air at a minimum of 10-minute intervals
- Notes - record any issues that occurred during the session, including whether a user had trouble clearing their ears

Additional information that might be recorded:

- Client checks - confirming clients have been asked to remove any prohibited items
- Flush record including the reason the flush was conducted, e.g.; heat, high oxygen level or odours
- If the centre has more than one chamber, the chamber used must also be noted



These records should be kept in line with the centre's GDPR policy.



Duration of retention will be based upon the policy of each centre. Generally, records are kept for 7 years.

Chapter 3

Using Oxygen

Applications of Oxygen Therapy

The human body can go weeks without food. It can manage a few days without water; however, we can only survive a matter of minutes without oxygen. And yet, we have no way to 'store' oxygen to use when we need it. We have to replenish our oxygen levels every minute of every day just to perform normal functions.

If we think of oxygen as a vitamin, for example vitamin C, we can begin to see where we can influence positive changes within the body through oxygen therapy.

If we are deficient in vitamin C there are consequences (scurvy), we can then take the Recommended Daily Allowance (RDA) which would be the minimum amount to achieve 'normal' function. If we increase this to an optimal dose, we are providing our body with the ideal amount of vitamin C. However, there may be times that we want to 'mega dose' for example to support the immune response. Too much vitamin C and we reach toxicity levels which can cause a range of symptoms.

Oxygen is very similar. Too little and we have hypoxia. The RDA will allow normal function but with limited opportunity to heal and recover. The optimal dose and mega dose would be where oxygen therapy influences recovery and repair. Too much oxygen would result in oxygen toxicity.

Using Oxygen Under Pressure

Increasing the pressure increases the amount of oxygen supplied and absorbed, and the protocol is intended to optimise the benefit.

Breathing through a mask, being supplied with close to 100% oxygen, defines the maximum blood oxygen concentration that can be achieved.

Each session is normally 60 minutes at full session pressure but may be reduced to 45 minutes for operational reasons. This does not include time to pressurise and depressurise the chamber.

Note: Oxygen Toxicity at pressures up to 2ATA/33ft is highly unlikely. Therapy protocols utilised within centres are calculated to provide a safe and effective environment to provide oxygen under pressure. No incidence of oxygen toxicity has been recorded within any centre in the over 40 years they have been in operation.



Oxygen Therapy in concentrations used in this protocol may have contraindications to some drugs used in cancer treatment. We suggest contacting a relevant qualified body such as HBOTT for further advice.

Increasing Pressure Protocol

When working with those with neurological conditions, it is strongly recommended to make use of the following Increasing Pressure Protocol (IPP), ensuring that the user's input is sought on what pressure they have felt most beneficial.

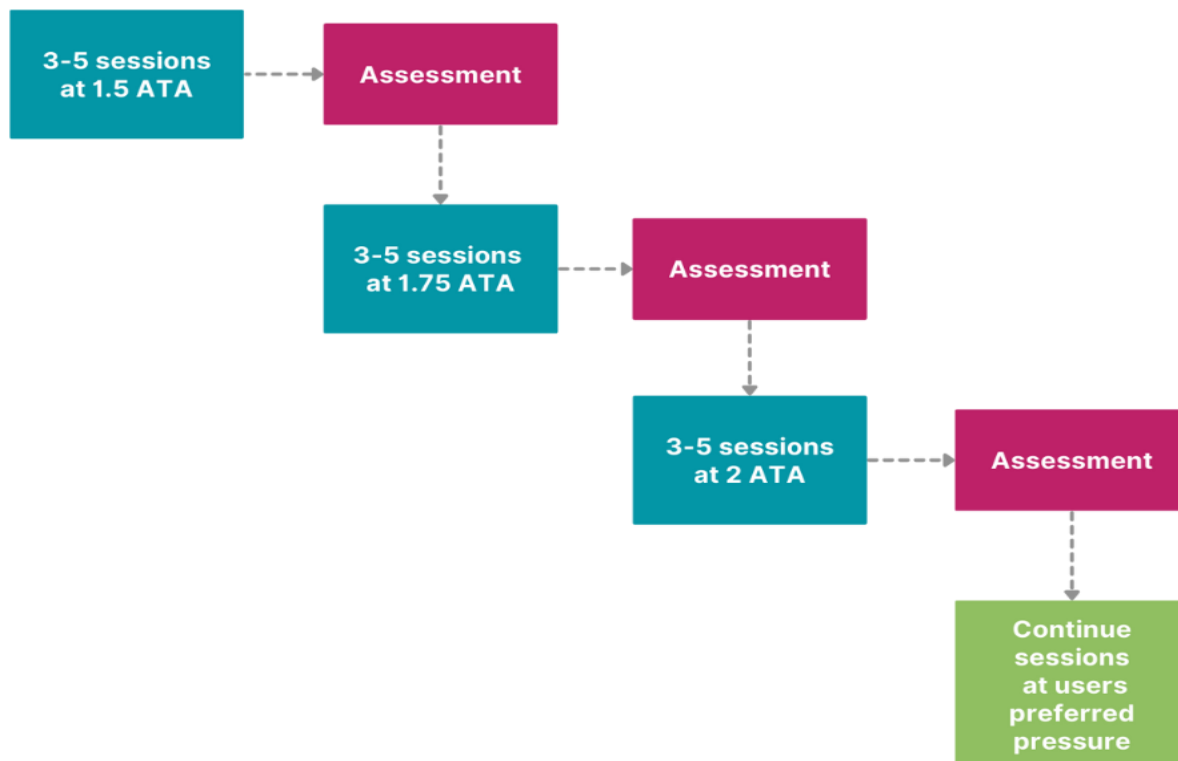
Week 1 - 1.5 ATA

Week 2 - 1.75 ATA

Week 3 - 2.00 ATA

Week 4 - continue sessions at the users preferred pressure

Ideally users should have 5 sessions per week, but this needs to be balanced with the effect of travel to the centre, the opening hours etc. Users should aim for a minimum of 3 sessions per week for each pressure should be completed. It would be good practice to encourage the user to complete an assessment form and reflect on how they are feeling to help guide their optimal pressure.



It should be noted that this IPP is one of many protocols that could be viable for people undertaking oxygen therapy and is the one that Neuro Therapy Network recommend to support people who can often be more physically 'fragile' and potentially more sensitive to the initial slight increase in oxidative stress oxygen therapy can cause.

There is a benefit to every single session of oxygen therapy to some degree, however it is often the cumulative impact over a period of time that will help in managing the symptoms of long-term health concerns and wellbeing.

Consider the following of 20 session scenarios:

- if you do these 20 sessions over the next 10 months you will see and feel almost no difference
- if you complete the same 20 sessions over the next 4-5 weeks for example, your experience will be exponentially different

It is almost impossible to measure to what degree these will be different, but it is the frequency that seems to have greater influence than the duration.

Oxygen therapy has two absolute contraindications:



- pneumothorax (collapsed lung) - must wait until resolved
- chronic inability to equalise pressure in the ears

There are circumstances to be mindful of when assessing suitability for oxygen therapy. We encourage additional advice be sought from an appropriate source when considering anyone for oxygen therapy who falls into the following categories:

- Chemotherapy
- Specific lung disease or thoracic surgery such as emphysema and COPD
- Severe congestive heart failure - oxygen therapy may exacerbate their symptoms
- Individuals taking the drug disulfiram (Antabuse)

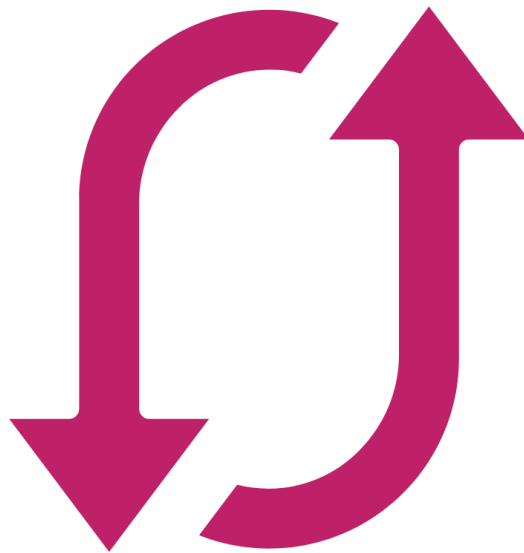
Neurological Maintenance, Top Up and Extra Sessions

Following the therapy protocol outlined earlier in this chapter, maintenance sessions should continue weekly, or at least fortnightly, at the pressure found to be appropriate. Weekly sessions are recommended, but it is recognised that this may not always be possible.

It is recommended to follow up with self-assessments every 3-6 months with users to confirm whether they are continuing to see benefit from Oxygen Therapy. If there has been a deterioration, they may wish to increase the number of sessions they access per week/month.

Users may also find benefit from having a block of five sessions as a 'top up' to therapy every twelve months or so.

The importance of continuing therapy is to reduce deterioration. Based on over 40 years of experience, and millions of sessions, thousands of people with MS and other conditions have seen improvement in their conditions and have enjoyed a better quality of life.



HBOTT IPP Update (November 2025)

In the HBOTT Newsletter of November 2025 Professor Philip James, after many years of research and discussions concluded that lower pressures often gave better results in MS patients and that they do best at 1.75 ata.

And with the increased demand on our centres many want a shorter course and simplification of the treatment pressure protocol, Professor James made the following recommendation.

There is, however, no reason for the IPP (Increasing Pressure Protocol) not to be used.

The standard course is shortened to three weeks = 15 sessions.

The alternative protocol begins with two weeks = 10 sessions of one hour Monday to Friday of one hour at 1.75 ata followed by an assessment.

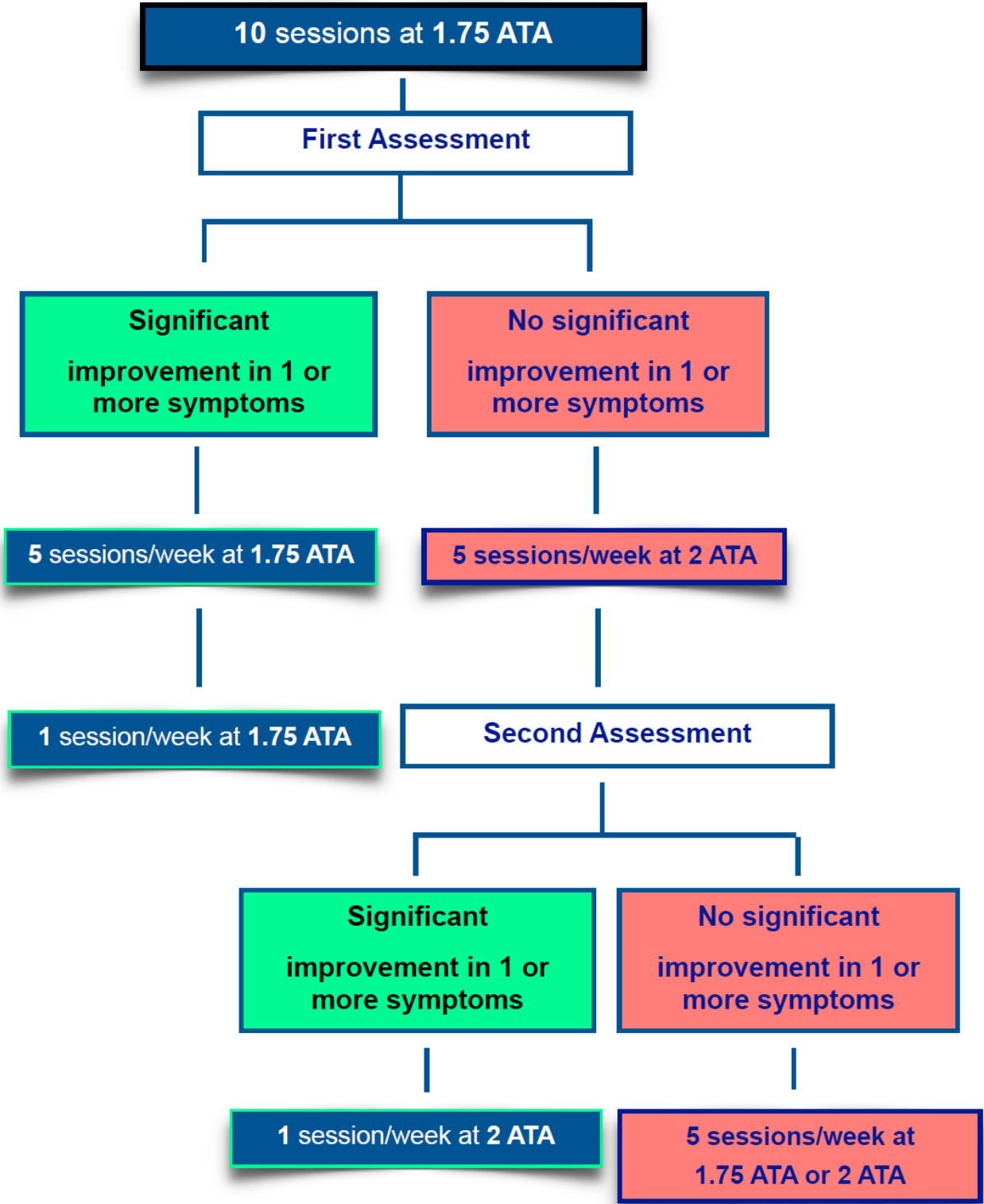
If there is benefit, then patients continue with 5 more sessions at 1.75ata followed by one session a week at 1.75 ata.

If there is no benefit after 10 sessions at 1.75 ata, then continue with 5 sessions at 2ata.

If there is benefit continue with one session per week at 2ata. If no benefit, continue with further 5 sessions either at 1.75 ata or 2 ata.

It is important to remember that some people do not perceive a stabilisation of symptoms and a lack of deterioration as a benefit.

HBOTT Increasing Pressure Protocol



Working with Other Conditions

In view of the growing public awareness of oxygen therapy, the demand made on centres to support other conditions continues to grow.

Currently many centres are providing oxygen therapy for a wide range of health conditions:

- post-stroke
- cancers (ensuring there is no conflict with chemo agents)
- sports injuries
- post-viral syndromes (including long Covid)
- fatigue
- lesions/wounds etc.

In reality, oxygen therapy is combatting symptoms associated with various health and wellbeing concerns, not necessarily a specific condition. It has the same physiological effect on individuals regardless of any specific diagnosis.

In most cases the IPP would work effectively regardless of the concerns being addressed with oxygen therapy. However, where we are not looking to manage symptoms but instead promote accelerated healing (for example a crush injury or major trauma) it would be appropriate to start at a higher pressure of 1.75ATA or even 2ATA. Judgements have to be made on other parameters, for example, the frailty of sick and/or older users, which is why we encourage the use of the IPP where feasible.



When working with other conditions, it is important to make sure an appropriate pressure protocol is in place. Contact the HBOTT Helpline or other qualified advisors for user specific protocols.

This is especially important for those users self-referring with a number of conditions as some, such as Macular Degeneration, will have limits to the pressures that can be used, irrespective of whether it is the main condition the user is attending for.

Side Effects

Oxygen at the levels used in centre chambers (deregulated for up to a maximum pressure of 2 ATA) does not have any significant side effects.

In order to be effective and safe a therapy session should be deferred if the user feels unwell or has:

- a severe cold or flu
- a chest infection
- a runny nose
- vomiting and diarrhoea
- other symptoms that might affect the therapy such as Covid

If the user is a smoker, it is recommended that they stop or reduce smoking before and during periods of therapy because smoking can reduce the level of oxygen in the body.

Users might experience ear and sinus problems. It is important to remind users, regularly regardless of how long they have been accessing oxygen therapy, about the need to report any discomfort either on compression or decompression.

To avoid issues for users, ensure that they are all taught techniques to equalise ear pressure.



Any significant problem requiring medical help must be reported via the Oxygen Support System. See Chapter 5.

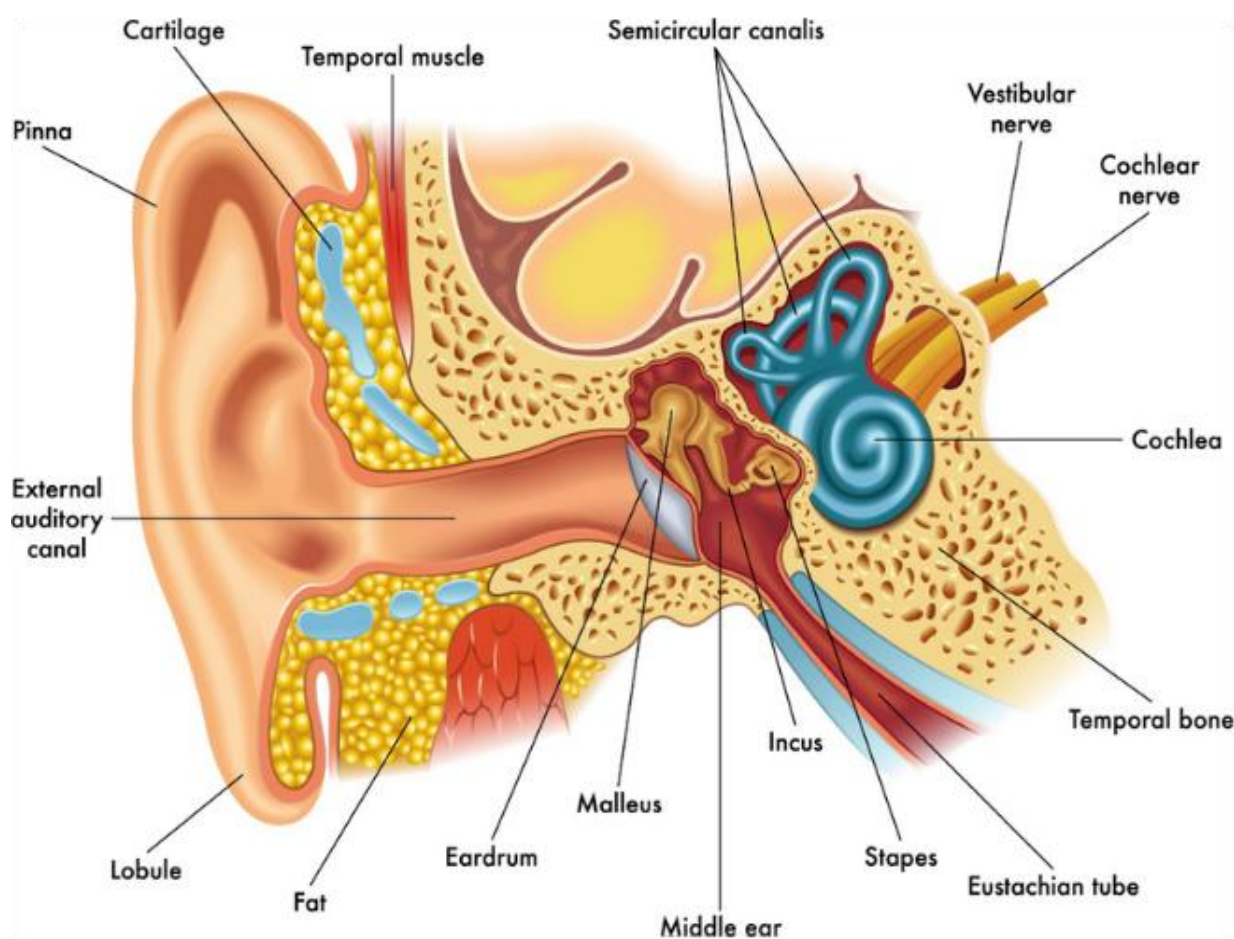


Note: if a user is new to Oxygen Therapy and hasn't had any experience of clearing their ears, or has a cold, it is potentially more likely that they might have problems. It is important therefore to teach and remind all users of the techniques that can be used.

The Effects of Pressure on the Ear

In the diagram below, the ear drum separates the outer ear from the middle ear which is connected to the throat via the Eustachian Tube. The Eustachian Tube is only slightly closed and usually opens in the healthy individual, during the act of swallowing. Its function is to allow air in or out of the middle ear to maintain an equal pressure.

When the chamber is being pressurised, there is an increasing pressure difference between the outer and middle ear as the pressure causes the ear drum to stretch inwards which causes discomfort. This discomfort is generally remedied by normal breathing which opens the Eustachian Tube, allowing air into the middle ear, and therefore equalises with the outer ear, keeping the ear drum in its normal state. If the pressure between the outer and middle ear cannot be equalised by normal breathing, then the Valsalva Manoeuvre, or other suitable technique (described in Chapter 4) should be performed. These will open the Eustachian Tube and allow air into the middle ear.



Other Protocols

Worldwide there are various protocols, pressures and session lengths applied. There is no single way to apply oxygen therapy.

Neuro Therapy Network recommends the IPP of an initial block of sessions over the first 4 weeks to achieve results. This is based on 40+ years of centres delivering this protocol with very positive feedback.

It should be noted that physiological benefits of oxygen therapy can be seen within the first few sessions:

Antioxidant and protective properties is almost immediate and can be seen within 1 session

Anti-inflammatory response seen within 4-5 sessions

Pain-relieving properties evident within 10 sessions

Promotion of new blood vessels (angiogenesis) can occur within 10-20 sessions

You can see that there is no one size fits all with oxygen therapy. We believe that the IPP is the safest application of oxygen therapy, particularly for supporting those with neurological, long-term health conditions or where frailty is a concern. However, there are several different factors that will influence the way in which oxygen therapy will be used worldwide.



Accompanying Attendants

There might be occasions where an individual may have to be accompanied in the chamber. For example, if they are a child or if they have a history of seizures where (should a seizure occur) it could cause distress to others in the chamber.

When accompanying someone for oxygen therapy an attendant may only be in the chamber for two sessions in any 24-hour period. There should be a minimum of a two-hour rest in between the two sessions.

If 2ATA is used, the attendant should breathe oxygen for the last 10 minutes during the decompression from the second session.

The reason for this is because breathing compressed air for extended periods provides the potential for decompression sickness. Whilst it is highly unlikely given the session duration and pressures used, breathing oxygen as recommended will remove any possibility of this happening.



Note: if a user has a history of seizures, it is recommended that they have an attendant who is aware of the user's seizure management and has the ability to move the user should they block the door.

Chapter 4

For The User

Ear Clearing

There are a range of different techniques that can be used to help users clear their ears. The most common is the Valsalva manoeuvre, however it is beneficial to be aware of others and know how to advise users if necessary, should they struggle to clear their ears.



Voluntary Tubal Opening
Yawn or wiggle jaw



Valsalva Manoeuvre
Pinch nostrils and gently blow through nose



Toynbee Manoeuvre
Pinch nostrils and swallow



Frenzel Manoeuvre
Pinch nostrils while contracting throat muscles, and make the sound of the letter "k"



Lowry Technique
Pinch nostrils and gently try to blow air out nose whilst swallowing



Edmonds Technique
Push jaw forward and employ Valsalva or Frenzel

NOTE: If a user encounters persistent problems and pain, please report this through the Oxygen Support System for support.

Hand Signals

Pressurising the chamber can be very noisy, and communication may not be easy.



These basic hand signals are for use by all users and operators.

Thumbs Up - OK



Hand Out Flat - STOP



Thumbs Down - PROBLEM



If the intercom fails, it is possible to attract attention and communicate by tapping on the chamber wall. It is important to reassure occupants before each session that they can be heard and seen by the operators.

Chamber Prohibited Items

The following items must not be taken into a chamber:



Aerosols

Many aerosols are flammable but are also stored within pressurised containers. Under pressure they may discharge within the chamber.

Alcohol

Alcohol is flammable, and under pressure the body metabolises alcohol faster, which can lead to a much more rapid and potentially stronger reaction to the alcohol consumed.

Chemical Cleaners

Most of these tend to be flammable and can act as an accelerant. They can also easily get into the air lines in the chamber and cause contamination and fumes.

Chemical Hand and Body Warmers

These warmers have been known to cause fires in chambers in the past and so must not be allowed in a chamber. Additionally, the effect of the pressure within the chamber will increase the temperature of the warmer, which runs the risk of causing burns to the user.

Cigarettes and other smoking materials

Not directly threatening, however if they are in a bag or pocket, there is an increased likelihood a user may have a lighter or matches alongside

Electrical Equipment Lighters and matches

Source of ignition

Explosive Devices

No form of explosive may be taken into a chamber.

Electrical Devices

Centres have varying rules about taking electrical equipment into chambers. There is some potential for the batteries in electronics to overheat and cause fires.

Additionally, if the seal on a device is damaged, the added pressure may cause damage and potentially stop them working. This has been noted several times in centres and seems to be more likely to occur in modern devices.

If the centre chooses to allow electrical items into the chamber, we recommend that users sign a waiver that they take their device in at their own risk and the centre accepts no liability for damage incurred.

If in doubt, keep it out.

Fine Powders (e.g. talc)

Fine Powders are another accelerant. Powders can also get into filters and pose issues.

Flight Pressure Relief Plugs

There is some debate as to whether Flight Pressure Relief Plugs actually work.

When a chamber is pressurised to 33 feet the internal pressure is 29.4 psi ata.

When an aeroplane ascends to 30,000 feet the ambient pressure is approximately 4.3 psi. So, to ensure safety and comfort the pressure inside the cabin is increased to approximately 10.5 psi which results in an actual decrease in pressure of about 4 psi. So, this dynamic is a totally contrary action to being pressurised in a chamber.

Incident reports confirm that the use of FPRPs in a chamber has resulted in a perforated tympanic membrane (eardrum).

FPRPs should not be used in a chamber.

Food/Sweets

Due to the risk of choking, food and sweets are not allowed in the chamber. If a client were to be choking, it could take several minutes (depending on the chamber) to get the chamber open to get to them to help, which could easily be too long.

The only exception to this is glucose tablets for diabetics as the risk from a hypoglycaemic attack is greater than the risk of choking.

Glass Bottles

Glass bottles cannot be taken into the chamber, but a glass is safe. The issue with glass bottles occurs if it is sealed. There is always an area of gas within a bottle, and this gas is subject to gas pressure laws. When pressurising the chamber, the area of the gas will decrease, and it will expand on depressurisation. There is a risk of the bottle imploding or exploding with this change in pressure, especially if the bottle is open when pressurising, and closed during depressurisation.

For best practice, plastic cups are recommended for use in chambers as broken or shattered glass can cause hazards if dropped and broken within the chamber. Chemicals and Cleaners - could act as an accelerant

Inhalers

Any inhaler in a pressurised container must not be taken into a chamber. This is because under pressure, the contents of the inhaler may be discharged.

Lighters and Matches

No source of flame or spark may be taken into a chamber.

Microwave Heated Grain Bags

These must not be taken into the chamber for similar reasons to chemical body warmers - they can heat up significantly in the chamber, and risk causing burns to clients.

Oil/Petroleum

Oil/Petroleum can act as an accelerant in the case of a fire. There is less concern over cosmetic and body products containing petroleum or oils due to air-filled chambers being used. Some oils can degrade mask materials.

Pens

Fountain, gel or drawing pens may leak due to increased pressure. Encourage clients to use a pencil to avoid any issues with ink and additional cleaning.

Nb Pens with detachable tops. Incident reports have described how during decompression when the surrounding pressure on a pen with a detachable top has decreased, the trapped pressure within the top is suddenly released and the top has 'shot off' with the potential to cause significant injury.

Petroleum Based Greases and Fluids

Anything petroleum based can be a significant fire hazard in the chamber, and so cannot be taken in.

Power Banks

These contain lithium ion cells that pack massive amounts of energy into a compact space. When a fault occurs these power banks can experience a volatile reaction known as thermal runaway leading to overheating, toxic fumes, explosions and fire.

Sealed Bottle

If it is a plastic bottle, due to pressure laws, it is possible for the bottle to spray its contents into the chamber. This can be avoided by allowing the pressure in the bottle to equalise by leaving the lid loose, if it is a soft plastic bottle. A sealed bottle isn't necessarily a significant risk but can be unpleasant for the user and time consuming for an operator having to clean up afterwards.

Smoking Materials

A fire risk to the chamber.

Solvents

All solvents are flammable, and they can also chemically damage the integrity of door seals and other areas of the chamber.

Sugar, Fine Powders and Flammable Foods

These can be flammable but also can allow fine powders into the various mechanisms in the chamber, causing damage.

Thermos Flask

A thermos is a double walled container sealed with a screw cap. It has a vacuum within this double wall, which might react to the pressure by decreasing and increasing in volume, but in a finite space. This may cause the thermos to become damaged or break during the session, hence they are not allowed in the chamber.

Vapes

Vapes will not tend to pose a major issue, however they do have a battery within them that could pose a mild threat of leaking.



For more information, see Section 8.3 and Appendix A1 of the Code of Construction

Items to be Considered with Caution

The following items should be reviewed by each individual centre and subject to risk assessment:

For a number of centres, there may be differences in what items are considered prohibited. Where users are taking costly items into the chamber such as phones, tablets, watches etc, it is advisable that the centre has an indemnity form in place as part of a user's initial paperwork in order to remove liability for damage that may occur to these devices/items under pressure.

Drinks

Taking water into the chamber in most cases is to be encouraged. Consideration should be given to whether this would be better in a plastic/non-breakable vessel. Hot drinks could cause scalds if spilled so should also be considered with caution.

Hot water bottles

Can be used if required. Care should be taken to expel as much air as possible before sealing the bottle. Temperature can also rise as a result of pressure change. Consider using a blanket or additional layers instead.

Perfume/Aftershave

Could be an accelerant in a fire. However, also issues with odours which may irritate other users if there is any leaking.

Personal mobile devices

There are mixed views on whether mobile devices should be allowed in chambers. Where these are permitted, users should be reminded that these are taken into the chamber at their own risk and should be advised to put any items that begin to overheat onto the chamber floor and alert the operator.

Note: if a device has been damaged prior to entering the chamber, there is a chance that the pressure change could increase the damage.

Sealed glass bottles

Bottles must be open to avoid any pressure differential on the inside of the bottle. However, using glass in the chamber could pose other health and safety issues should it be dropped.

If a glass bottle is left sealed, especially throughout depressurisation, there is a chance that the bottle could break.



Note: contact lenses can be worn at the user's own risk. In the chamber, lenses can dry out and become uncomfortable, so users may prefer to take out lenses, especially if they are long use (ie: 30-day wear) prior to the session.

Chapter 5

Safety

Oxygen Support System

The Oxygen Support System, previously the Cascade System, is a simple system of delegated authority and identifies the person to contact should there be an issue with oxygen operations within a centre. For example, a 1st Operator should first speak with their Senior Operator about a problem, but if they are not available, the Centre Manager should next be contacted.

If an incident occurs within a centre, it should be reported to the Neuro Therapy Network.

All unusual incidents should be reported through the form below, or to:

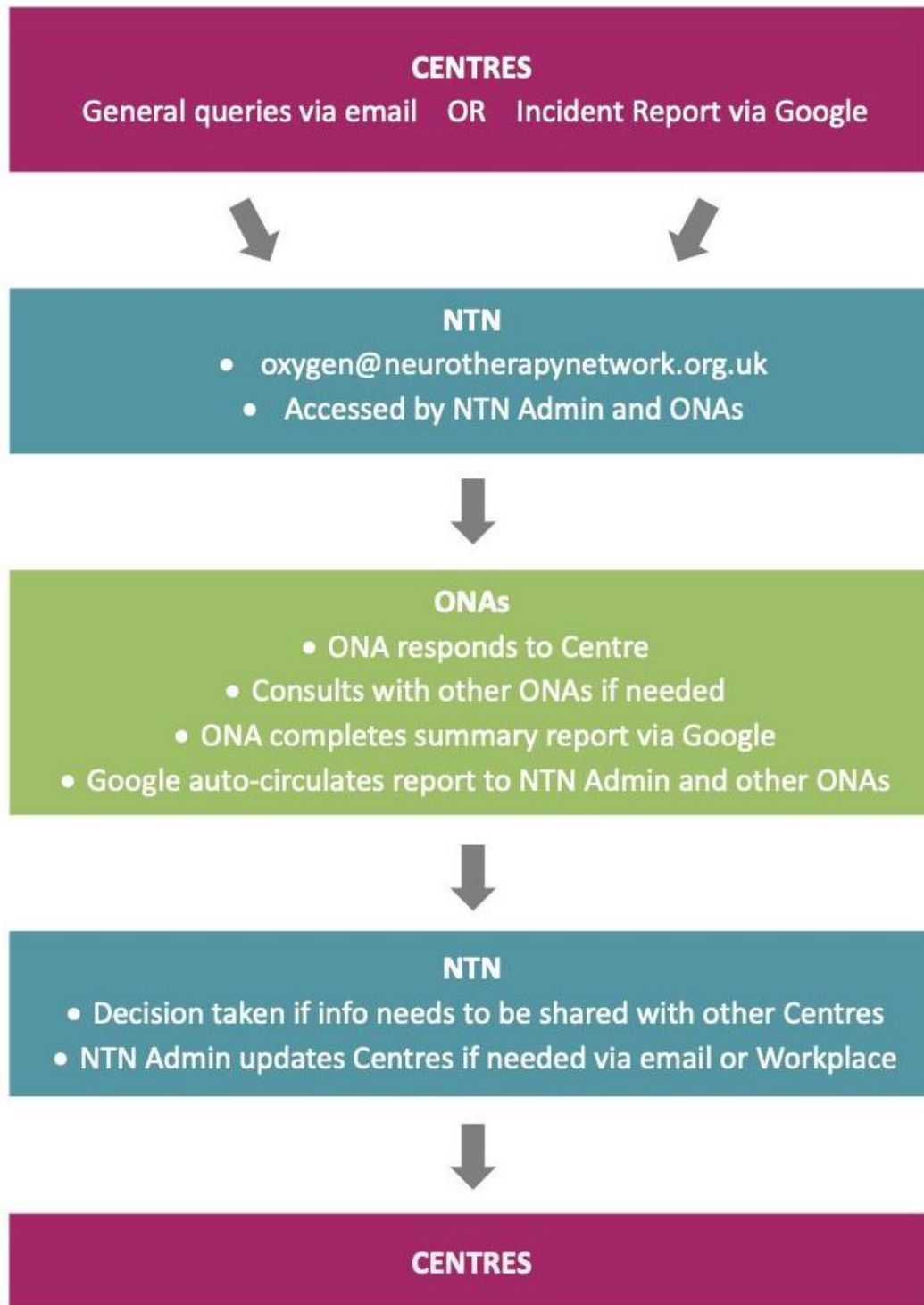
oxygen@neurotherapynetwork.org.uk

Note: it is not necessary to report users having difficulty clearing their ears, simply follow the procedures in Chapter 4 to address this.

The Oxygen Support System also helps Neuro Therapy Network to log unusual incidents across all centres, ensure accurate technical advice is given where needed, and facilitate learning outcomes that can be shared among centres.

https://docs.google.com/forms/d/e/1FAIpQLSc22iOkrOnD_Fovikz7xbFhtpvmu38Ind7rNsEdEEpQXVPTgg/viewform?fbzx=-3851737171135040792

Oxygen Support System Flowchart



Safety for Operators

Operators:

There must be two operators present and responsible for every session.

During a session, one operator must be at the control panel and the other within earshot

Operators shall not set, vary or modify the course of therapy without reference to the Centre Manager or Responsible Person

Rate of Pressurising/Depressurising

Except in an emergency, the normal rate of pressurising/ depressurising should not exceed 0.1 ATA per minute (3 feet per minute)



See Section 3.1 of the Code of Construction

Disabled Users:

Severely disabled users (those with significant mobility issues, additional needs or challenges fitting their own mask) shall be accompanied in the chamber by an attendant



For more information see Section 5.3 of the Code of Construction

Users at risk of seizures:

There is no evidence to suggest the oxygen therapy would cause a seizure. In fact, seizure frequency and severity have been shown to reduce with oxygen therapy. However, if someone has a history of seizures, particularly where there have been recent seizures, it may be worth asking them to be accompanied. This is to ensure that there is support for that individual should a seizure occur, without other users attending for their own health needs being expected to assist.

It is important to consider the risk of a user falling to the floor or blocking the door should they have a seizure.

Note: first aid for seizures posters can be obtained from Epilepsy Action.

Accompanying Attendants:

Attendants should receive the same guidance and support on undergoing oxygen therapy as all other users. If the chamber can be operated from inside, a qualified operator can be an attendant. Prospective attendants should experience pressurisation before assisting a user.



Emergency Decompression

Inform

Inform everyone in the chamber that you will start to undertake an emergency decompression to allow you to gain access as soon as you possibly can.

Warn

Let people inside and outside of the chamber know that this could be noisier than normal and not to be alarmed.

Decompress

Chambers are normally fitted with several exhaust valves. One located on the control panel and others that will be located elsewhere on the chamber. You should familiarise yourself with the location of all exhaust valves and ensure these are appropriately labelled.

You should open all available exhaust valves. This will allow air to escape the chamber as quickly as possible.

While this might be uncomfortable for those inside the chamber, it should not pose any long-term issues/injury. The more pressing matter is to gain access to the chamber to provide help.

Call

Raise the alarm within the team to ensure that support is on hand should it be required.

Someone should also be delegated to call the emergency services should that be deemed as necessary for the individual requiring assistance.

It is advisable to keep a sheet of key details such as address, post code and information about oxygen storage next to the phone.

Calm

Whenever there has been an incident in a centre (whether in the chamber or not) be aware of the impact on yourself, your team and everyone involved. Take time to check in with each other.

Being in the chamber whilst someone is unwell or requires assistance, and where an emergency decompression has taken place thankfully does not happen often. Take time with all involved to offer reassurance and comfort. Remember - it is unlikely that events that happen in the chamber have been caused by being in that environment. In our experience, most incidents would have happened whether they were in the chamber or not. Review your emergency procedures regularly, carry out practice drills and keep records of the efforts you have taken to keep members of the public and your team safe.

Record, report and review

Ensure you record as many details about the incident as possible, as soon as is practicable. Ensure that records are factual based on what happened and was witnessed, speculation and judgements are not constructive.

Report this via the Oxygen Support System to allow any learning and additional support from Neuro Therapy Network to be provided.

Review what happened and implement any learnings or opportunities to avoid similar instances in the future.

Emergency Procedures

Emergency Procedures for the following situations can be found on the following pages:

- Fire in the Main Building / Compressor Room Page 58
- Fire in the Oxygen Room Page 59
- Fire in The Chamber Page 60
- Suspected Seizure In The Chamber Page 61
- Suspected Stroke in the Chamber Page 62
- Suspected Heart Attack In The Chamber Page 63

Fire Safety

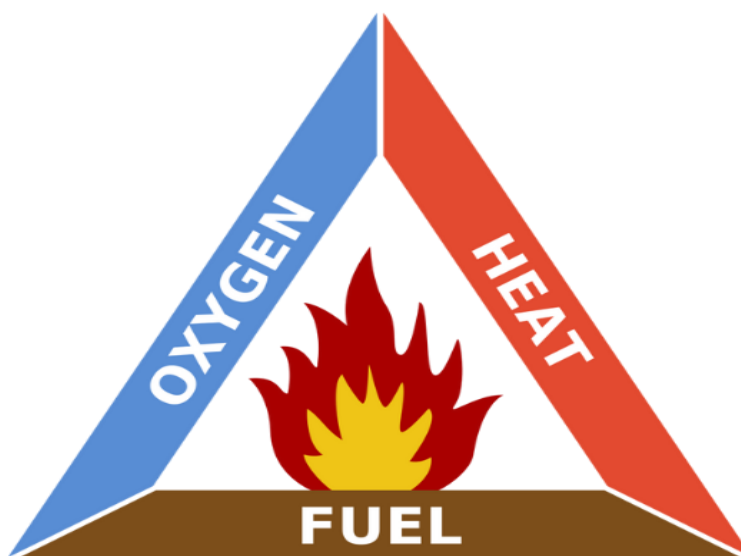
It is important to know that oxygen itself is not flammable, though it will accelerate a burning fire. Oxygen forms one side of the fire triangle, alongside fuel and a source of ignition. Without these three elements together a fire cannot start.

A pressurised environment can accelerate a burning fire.

Oxygen analysers are predominantly used to ensure oxygen levels in the chamber do not rise to levels that would support or accelerate a fire burning.

Note: whilst chambers are outfitted with fire proof fixtures, a user's clothing remains flammable.

One of the ways to reduce the risk of a fire in the chamber is to ensure thoroughly checking with users that they do not have any items on the prohibited items list on their person or in their bags when going into the chamber - if there is no source of ignition taken in, a fire cannot start.



All operators should be aware of the policies and procedures in place should a fire occur within the centre. The policy should be kept with this manual

Fire in the Centre

Prior to 2005 (2006 in Scotland), your local Fire Service would prepare a Fire Certificate under the Fire Precautions Act 1971. This duty was changed significantly by The Regulatory Reform (Fire Safety) Order 2005 (England and Wales) and the Fire (Scotland) Act 2005, Fire Safety (Scotland) Regulations 2006, which imposed the legal liability for assessing fire related risks on the person(s) responsible for the premises. Your centre must therefore have a Fire Risk Assessment completed by a competent person complying with the relevant guidance document, regularly reviewed and updated each time the use or risk related circumstances change. This must be a live document.

Your Fire Risk Assessment has to include an emergency evacuation plan for all people likely to be in the premises, including disabled people, and how that plan will be implemented. Such an evacuation plan should not rely upon the intervention of the Fire and Rescue Service to make it work. (Fire Safety Supplement guide, Means of escape for disabled people).

Furthermore, your assessment must assume the principle of fire safety, which is “worst fire: at the worst time: in the worst place”. The location of the Fire Station and notional response times may be irrelevant to your risk assessment. Staff should be made aware of the relevant findings and outcomes of the assessment and a copy must be kept on the premises and be available for inspection.

As each centre is different in construction, size, layout, equipment, etc., this Manual cannot be prescriptive as to what might be set out in your Fire Risk Assessment. There are also different types of evacuation plan, such as simultaneous evacuation, phased evacuation or staff alarm evacuation (silent alarm).

It is best practice to have your risk assessment produced by a competent and qualified Fire Risk Assessor with examinations and training within the British Fire Service, on a register of suitably qualified people, and who has been checked.

There is unlikely to be the need for this assessment to be professionally reviewed annually, unless significant changes have been instigated; it is likely that such interim reviews could be carried out by your own responsible person. It is important to note that these changes in legislation were introduced a few years after publication of the 2003 Code of Construction and therefore some of the terminology in that document no longer applies. In particular, whilst most chambers will be of non-combustible metal construction, they cannot be accepted as a ‘place of safety’ as the Regulatory Reform (Fire Safety) Order 2005, which is the relevant legislation in England, Section 2 defines: ‘a place of safety in relation to premises, means a safe place beyond the premises’.

Consequently it is unlikely that leaving everyone in the chamber and waiting for the Fire Service to evacuate them will be an acceptable evacuation plan. There must be a procedure in place to evacuate the chamber without the need of Fire Service intervention.

The evacuation plan in your Fire Risk Assessment should be carefully considered and perhaps with an option to either follow a standard depressurisation and evacuation, or in extreme circumstances an emergency rapid depressurisation and evacuation. Furthermore, the plan to evacuate the chamber may be started but not completed due to safety consideration for the operators, or may need to assume that the Fire Service might take over this evacuation at some point and would need to be briefed.

For more information:

Scotland: Visit www.gov.scot and search 'Fire and Rescue'

England and Wales: Visit www.gov.uk and search 'Fire Safety Law and Guidance Documents for Business'.



See section 8.3 and Appendix A2 of the Code of Construction for further information, but note that the subsequent legislation, the changes in responsibilities and some of the terminology have superseded some parts of that text

Fire in the Chamber

- Activate the water deluge, and air control if fitted
- Remain at the controls and ensure the 2nd Operator immediately phones for Emergency Services assistance (Fire and Ambulance services)
- Only activate the Oxygen Supply isolator when air is available on the breathing system
- When the fire is extinguished, turn off the deluge (remain alert for re-ignition of the fire)
- Keep the users calm, emphasise they should keep their mask/hood on
- Start depressurisation. Where possible, use the top valve of the chamber to clear smoke
- When Emergency Services arrive, give a brief factual report without opinion, then assist where possible, noting that the Emergency Services are now in charge
- Follow centre Policy and Procedures



Although the responsibility for the Fire Risk Assessment rests with the responsible person(s), we recommend that each centre contacts their local Fire Service to ensure that they understand the procedures in respect of your premises and the chamber. They may wish to gather operational information which can then be available on their appliances.

Having a printed list of instructions explaining how to depressurise the chamber in an emergency is also recommended.

Oxygen Levels

The initial oxygen level in the chamber will be around 21% - the same as in the air you are breathing now.

Poor calibration of oxygen analysers can result in readings being incorrect (often lower than the reality). We encourage all operators to follow the manufacturer's instructions to calibrate correctly, however in most cases:

- calibration of analysers can only be carried out with clean air (not contaminated by oxygen from the previous session)
- the best means of calibration is to remove the sensor unit from the holder and move it about in the room to create air flow over the sensor itself

The oxygen analyser should be monitored throughout the session and flushing can commence before reaching 25%. The analyser should be programmed so that an alarm sounds when the oxygen level drops to 19% or rises to 25%.



Flushing the Chamber

It may sometimes be necessary to change the air in the chamber in order to:

- Reduce the oxygen level (if it reaches 25%, or a lower % depending on centre preferences)
- Reduce the temperature
- Remove odours



If the oxygen levels increase and the analyser alarm is triggered, the flush will be initiated by the operator. This flush must be completed, it is a safety risk if the oxygen levels are left too high.



Flushes for other reasons can be requested by the users of the chamber at any point in the session, and as many times in the session as required.

The oxygen levels can rise for a number of reasons such as a poorly fitting mask leaking, a damaged hose, or a faulty oxygen valve.

The temperature in the chamber will naturally increase with pressurisation (see Gas Laws in Chapter 6). Additionally, if it is a warm day, or the chamber is quite full, this will also heat the chamber, making it uncomfortable and may prompt the users to request a flush.



Before flushing the chamber, inform users, and let them know it will be noisy, then open the outlet valve and balance the pressure by opening the air inlet valve. The exhaust valve should be open as much as possible during a flush to let as much air out of the chamber as possible. Throughout the flush the amount the inlet valve is open may need to change, so it must be supervised for the full duration.



Most flushes take approximately 10-15 minutes. Where a fan is fitted, this will help flushing.



Although the upper oxygen limit is 25%, it is good practice to ensure that the oxygen analyser is not reading more than 24% before decompression. If the analyser reading has been increasing throughout the session or there has been continuous flushing, then readings over 24% will very more than likely increase to 25+ during decompression.

Routine Inspections

Daily:

- Check calibration of oxygen analysers before first session starts - expect 20.9/21.0% (note some analysers may need oxygen flowing over the sensor allow to calibration)
- Check the hose connections in the chamber
- Check the communications systems functioning
- Check the electronics in chamber in operation
- Check that the oxygen and compressed air supplies to the chamber are turned on and that the gauges at the chamber show an adequate supply of both
- Check that the chamber seating is clean and sound

After each session:

- Re-check the hose connections
- Clean the masks with warm, soapy water and leave to dry
- Ensure that the chamber is clean, including interior panels and other surfaces

Weekly:

- Wash and clean all of the user contact equipment
- Check the view ports for cracking or discolouration
- Check the door seals
- Check the fire suppression system for integrity
- Check for any damage to the chamber, chamber area or control panel
- Check the hoses for damage
- Check that the emergency air inlet shut off and chamber depressurisation valves can be operated easily from within the chamber



See Section 6 of the Code of Construction for more details on weekly, monthly and annual inspections.

Chapter 6

Emergency Procedures

Emergency Procedures

The following sample Emergency Procedures have been written in a similar style used by many various industries around the world. They provide clear steps to follow during an emergency, which can minimize confusion, reduce panic and guide people to safety.

They are written succinctly and their brevity has one caveat in that all operators and personnel must be familiar with their equipment and their modus operandi.

Emergencies occur when you are least expecting them to, it's important to maintain continuous training to be prepared for any eventuality. With this in mind, it's advisable that all operators take part in practical emergency drills every 6 months.

As mentioned these are sample procedures and act as an initial framework for centres to create their own Emergency Procedures.

For any further information regarding Emergency Procedures please contact:-

oxygen@neurotherapynetwork.org.uk

FIRE IN THE MAIN BUILDING / COMPRESSOR ROOM

EMERGENCY PROCEDURE

FIRE IN THE MAIN BUILDING / COMPRESSOR ROOM

In the event of fire in the main building or compressor room, the **immediate** response is initiated by Chamber Operator 1 (CO1) who will assume the role of Fire Marshall and will be supported by Chamber Operator 2 (CO2) and the Fire Warden (FW)

When the Fire Alarm is sounded, the immediate response is:-

- | | | |
|----|-----------------|---|
| 1 | CO1 | Advise the chamber occupants and instruct to keep masks on and prepare for Decompression |
| 2 | CO1 | Change over oxygen supply to air |
| 3 | CO2 | Close both oxygen valves |
| 4 | CO2 | Press red compressor shut – off valve |
| 5 | CO1 | Ensure all door-catches are in the open position |
| 6 | CO1, CO2 | Open all exhaust valves. Constantly monitor chamber occupants |
| 7 | CO1 | Put on masks and high viz jackets |
| 8 | FW, CO1 | Advise which fire exit to use |
| 9 | CO1, CO2 | When the chamber has decompressed, open the door and assist all users out of the chamber and building |
| 10 | CO1, CO2 | Use the 'Appointment Sheet' to account for all members and operators |

FIRE IN THE OXYGEN ROOM

EMERGENCY PROCEDURE

Fire in the Oxygen Room

In the event of fire in the Oxygen Room, the **immediate** response is initiated by Chamber Operator 1 (CO1) who will assume the role of Fire Marshall and will be supported by Chamber Operator 2 (CO2).

When a fire is first noticed, the immediate response is:-

- | | | |
|----|-----------------|--|
| 1 | CO1 | Press emergency alarm. |
| 2 | CO2 | Attempt to extinguish fire. |
| 3 | CO1 | Advise chamber occupants and instruct to keep masks on and prepare for decompression. |
| 4 | CO1 | Change over oxygen supply to air. |
| 5 | CO2 | Close oxygen supply. |
| 6 | CO2 | Press compressor emergency shut-off valve. |
| 7 | CO1 | Ensure all door catches are in the open position. |
| 8 | CO1, CO2 | Put on safety masks and high viz jackets |
| 9 | CO1, CO2 | When the chamber has decompressed, open the door and assist all occupants out of the chamber and building. |
| 10 | CO1, CO2 | Use the 'Appointment Sheet' to account for all occupants and operators. |

FIRE IN THE CHAMBER EMERGENCY PROCEDURE

Fire in the Oxygen Chamber

In the event of a fire in the chamber, the **immediate** response is initiated by Chamber Operator 1 (CO1) who assumes the role of Fire Marshall. and is carried out with Chamber Operator 2 (CO2) and the Designated Person In Charge (DPIC). Should smoke, flames, excessive heat, or any other indication of fire in the chamber be noticed or reported, the following emergency procedure must be carried out **immediately**: -

- 1 **CO1** Look into the chamber to confirm reports of fire, smouldering, excessive heat or flames
- 2 **CO1** Press Emergency Alarm button.
- 3 **CO1** Change over oxygen supply to air
- 4 **CO2** Close both oxygen valves
- 5 **CO2** Press red compressor emergency shut off valve
- 6 **CO1** If there is a small fire or smoke, instruct the chamber occupants to smother with the chamber fire blanket
- 7 **CO1** If there is a large fire in the chamber, pull -down the red **Water Deluge** lever **immediately**
- 8 **CO1** Inform the chamber occupants to keep their masks on and prepare for decompression
- 9 **CO1** Ensure all door catches are in the open position
- 10 **CO1** Open all exhaust valves. Constantly monitor chamber occupants
- 11 **DPIC** Muster Fire Team, call Emergency Services
- 12 **CO1, CO2** Put on safety masks and high viz jackets
- 13 **CO1** When the chamber has decompressed, open the door, and assist all occupants out of the chamber and building
- 14 **CO2, CO1** Use the 'Appointments Sheet' to account for all members and **DPIC** operators

SUSPECTED SEIZURE IN THE CHAMBER

EMERGENCY PROCEDURE

In the event of a member having a suspected seizure (shaking, rigidity, rapid movements, eye rolling) in the chamber, the emergency procedure is carried out by Chamber Operator One (**CO1**), Chamber Operator Two (**CO2**) and the Designated Person In Charge (DPIC). When the suspected seizure is first reported, the following actions must be taken immediately.

- 1 **CO1** Instruct all chamber occupants to stay clear of the casualty until all seizures have stopped
- 2 **CO2** Press alarm button to **DPIC**.
- 3 **CO1** Once seizures have stopped, instruct occupants to make the comfortable, loosen clothing around the neck.
- 4 **CO1** Decompress at normal rate, monitor casualty continuously.
- 5 **DPIC** Muster on-duty First Aider and helping hand.
- 6 **CO2** Open the chamber door and instruct all members to evacuate the chamber.
- 7 **CO1/CO2** If unconscious, lay the casualty on the chamber floor in the recovery position.
- 8 **CO1/CO2** Monitor until medical help arrives.

SUSPECTED STROKE IN THE CHAMBER EMERGENCY PROCEDURE

In the event of a member having a suspected stroke in the chamber (casualty in distress, face drop, overall weakness), the emergency procedure is carried out by Chamber Operator One (CO1), Chamber Operator Two (CO2) and the Designated Person In Charge (DPIC). When the suspected stroke is first reported, the following actions must be taken immediately.

- 1 **CO1** Instruct able bodies occupants to make the casualty comfortable, loosen clothing, ensure airway open, reassure clothing, ensure airway open, reassure.
- 2 **CO2** Press alarm button to **DPIC**.
- 3 **CO1** Decompress at normal rate, monitor casualty continuously.
- 4 **DPIC** Muster on-duty First Aider, call Emergency Services
- 4 **CO1** If the casualty stops breathing, open all exhaust valves and continue to monitor continuously.
- 5 **CO2** Open the chamber door and instruct all members to evacuate the chamber.
- 6 **CO1/CO2** If unconscious, assist the casualty out of the chamber, lie them down comfortably on the slide mat in the recovery position **or** remain in seat breathing oxygen.
- 7 **CO1/CO2** Monitor until medical help arrives.

SUSPECTED HEART ATTACK IN THE CHAMBER EMERGENCY PROCEDURE

In the event of a suspected heart attack in the chamber (pains in chest and arm, struggling to breathe, pale and distressed facial expression), the emergency procedure is carried out by Chamber Operator 1 (CO1), Chamber Operator 2 (CO2) and the Designated Person In Charge (DPIC).

When the suspected heart attack is first reported, the following actions must be taken immediately.

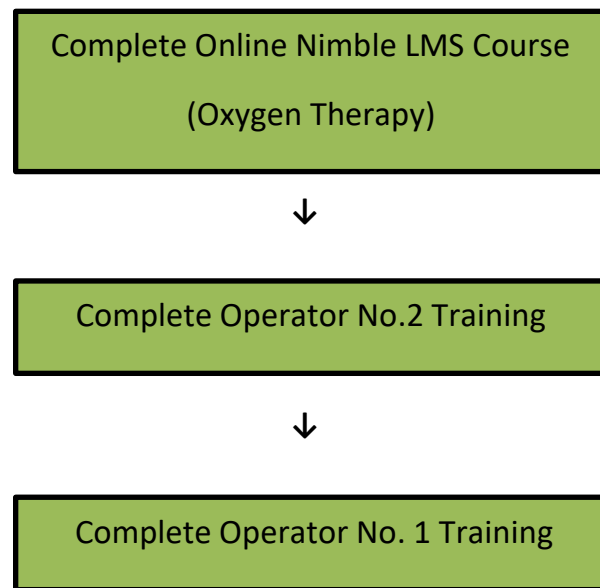
- | | | |
|---|-----------------|---|
| 1 | CO1 | Instruct chamber occupants to make the casualty comfortable, loosen clothing, knees up if possible. |
| 2 | CO2 | Press alarm button to DPIC. |
| 3 | CO1 | Decompress as fast as possible, observing all occupants continuously. |
| 4 | DPIC | Muster First Aider, call Emergency Services. |
| 5 | CO2 | Open the chamber door and instruct all members to evacuate the chamber. |
| 6 | CO1, CO2 | Leave the casualty in their seat, increase oxygen flow to mask. |
| 7 | CO1, CO2 | Monitor until medical help arrives. |

Chapter 7

Operator Training

Operator Training

The preferred route for operators to become qualified is by the following route:-



Completing the online LMS course in Oxygen Therapy will give the prospective operator a basic understanding of Oxygen Therapy before they continue their practical training to become an Operator No.2 and then Operator No.1.

The **Operator Training Record** on page 68 is an example of the training they should receive and have recorded and which can be edited to suit individual centres.

For any further information you may need regarding Operator Training, please contact:-

oxygen@neurotherapynetwork.org.uk

Operator Training Record

Name of Trainee _____

Name of Instructor 1 _____

Name of Instructor 2 _____

Part 1 - Operator No. 2

Control Panel Familiarisation	Date	Initial
Identify and understand the control of :		
Air inlet / exhaust valves and the rate of pressurisation and decompression		
Oxygen inlet valve		
Oxygen inlet gauge and regulator		
Oxygen analyser		
Main air and oxygen inlet gauges		
Oxygen / Air crossover valve		
How to use the intercom		
Deluge Control		
Chamber Familiarisation		
Identify and understand the control of :-		
Air inlet valve and exhaust manifold		
Oxygen ring-main including supply and demand valves		
Emergency exhaust		
Deluge system		
Fire blanket location		
Pressure relief valve (PRV)		
Explain why door catches need engaging		

Required Abilities and Knowledge	Date	Initial
Emergency Procedures		
Understand the emergency procedures for fire in the chamber and building		
How to secure oxygen in the case of an emergency		
Power cuts (Emergency lights and flashcards)		
How to summon help		
Required Abilities and Knowledge		
To be able to assist the No. 1 operator throughout the running of a session.		
To assist Centre users before and after their session.		
Correct mask selection, function and fitment		
To know how to operate a session safely and in accordance with the regulations and recommendations of the NTN (pressurisation and decompression rates and oxygen levels)		
Fill-in member's record cards		
Assist members when needed		
Make / change and cancel appointments on the computer database		
To clean masks and hoses as per the centre's regime		

Trainee Signature _____ Date _____

Senior / No.1 Op' Signature _____ Date _____

Part 2 – Operator No.1

Required Abilities and Knowledge	Date	Initial
Preparation for a session (Theory)		
Understanding of the Oxygen Generation system.		
Explain which switches are turned on and which valves are opened at the start of the day? (Plant room)		
Understanding of the O2 analyser and when to calibrate		
Understanding what items are prohibited into the chamber		
Understanding the effect of pressure on the ear		
Understanding why, when and how to flush the chamber		
Understanding why door latches have to be released		
How to manage members being treated outside the chamber		
Induction briefing for new members		
Use of hand signals and flashcards		
Train assistant operators (No.2)		
Know centre procedures around transfers		
Know what to do if a chamber won't or is slow to pressurise?		
What to check if the chamber O2% level rises sharply and the action to take.		
Preparation for a Session (Practical)		
Turn on the Oxygen supply and check all OK		
Turn on the compressor and check all OK		
Check deluge tank water level and pressure		
Check chamber comms		
Check Chamber emergency lighting		
Check flash cards are present		
Calibrate the analyser and explain why		
Check all inlet / exhaust valves are closed		

Required Abilities and Knowledge	Date	Initial
Running a Session		
Once all members are in the chamber, engage the door latches and explain why they are engaged.		
Start the timer and open the inlet valve to pressurise the chamber at 0.1 ata (3ft) / min or slower		
Explain how to monitor the rate of pressurisation / depressurisation		
Release door latches		
Observe members during compression and observe for any signs of discomfort		
Communicate with members during the session to confirm what stage of the session you are at and if they are well		
Record O2 level every 10 minutes and observe members		
Complete record sheet		
Complete member's record card		
Flush the chamber if necessary and explain why you do this		
Open the exhaust valve to decompress at 0.1 ata (3ft) / min or slower and observe members for discomfort		
Open the door and check members are well as they exit the chamber. Assist members if necessary		
Change the internal hoses and sterilise the chamber as required		
Explain why the chamber door is opened carefully		
End of the Day		
Turn off all equipment and secure gas lines		

Emergency Procedures		
Understanding and sign-off of the centre's fire procedures		
Actions to take in the event of fire in the chamber		
Actions to take in the event of illness in the chamber		
Action to take in the event of loss of oxygen		
Know how and when to abort a session		
Action to take in the event of a loss of power		
Use of hand signals and flashcards		

Operator No. 2 Signature _____ Date _____

Senior / No.1 Op' Signature _____ Date _____

Acknowledgement:

Neuro Therapy Network would like to express its sincere gratitude to the Brightwell Centre and to the Wessex MS Therapy Centre for their contribution to this manual.

The fire emergency procedures and operator training record forms contained within Chapters 6 and 7 have been worked on and shared by these Centres, drawing on their operational experience and commitment to best practice. By making these materials available to all centres, a valuable contribution has been made to the safe and consistent operation of oxygen therapy across the network.

This spirit of collaboration, sharing knowledge and practical resources for the benefit of every centre and the people they serve, is at the heart of what the Neuro Therapy Network represents.

Chapter 8

Additional Information

Roles and Responsibilities

Neuro Therapy Network Trustees

The Chair and trustees of the Neuro Therapy Network Board. Elected by member centres, these unpaid volunteers are tasked with ensuring that proper financial, ethical and operational governance is exercised within Neuro Therapy Network.

Whilst governance is their primary and legal duty under the Charity Commission rules, the Board is also responsible for supporting and assisting the member centres.

The Board holds the copyright of this manual and owns the Learning Management System, which provides online training for centre staff in a range of skills, together with testing and certification of operators in respect of the operation and delivery of Oxygen Therapy.

Practical support for Oxygen Chamber Operators is provided by Oxygen Network Advisers (ONA's), appointed by the Board.

Technical queries in respect of Oxygen Therapy should be raised using the hierarchy sequence set out in the Oxygen Support System in Chapter 5.

Member Centre Trustees

Each member centre runs as an independent charity, with governance and oversight in accordance with the Charity Commission's rules carried out by a Board of trustees.

It is this Board of trustees that is legally liable for ensuring that the Charitable Aims are properly carried out. The Board retains ultimate responsibility for the therapies and services provided by its centre.

Most Boards will have appointed a Centre Manager, see overleaf.

HBOTT, The Oxygen Helpline

The Hyperbaric Oxygen Treatment Trust (HBOTT), is a charity that includes The Oxygen Helpline, which is used by many NTN member centres and those who are not members of NTN. It maintains a database of over 7000 reference and clinical papers relating to the use of oxygen in therapy. It is run by Dr. Petra Kliempt who was manager of the NHS Wolfson Hyperbaric Unit in Ninewells University Hospital Dundee, run by Professor Philip James who started the first MSTC charity in that city in 1982. She is retained as Hon. NHS Trainer for Hyperbaric Medicine in the hospital.

Centre Manager

Depending upon the size and complexity of the individual member centre, its constitution and the scope of the role, this person may have another title, such as Chief Operating Officer (COO), Chief Executive Officer (CEO), Director, or similar.

They report into and are directly responsible to the member centre's Charity Board.

This person is tasked with the day to day safe and efficient running of their member centre and is likely to be the Responsible Person for the delivery of Oxygen Therapy. Alternatively, they may have appointed a Responsible Person for the Oxygen Therapy service.

Responsible Person

A person representing the interests of the users of the member centre, with experience and the skills to oversee the provision of Oxygen Therapy. This may be the Centre Manager, a Trustee, or Manager responsible for Oxygen Therapy. One of the duties of the Responsible Person is to ensure that all operators are encouraged and supported in their use of the Neuro Therapy Network's Learning Management System for training, testing and annual certification of competence.

The Responsible Person should also ensure that the following data/documents are available on site and relevant to the specific Member Centre;

- Access to the current version of this Oxygen Therapy Reference Manual
- A thorough checklist of session, daily and periodic maintenance items specific to the HDOT equipment.



Refer to Section 6 of the Code of Construction.

- Service and maintenance record for the Oxygen Therapy equipment, produced by a competent contractor
- Fault record
- Current chamber and other equipment test certificates and reports by insurers
- Access to the Learning Management System record of Certification of Competence and the training and testing progress data for all operators.
- Confirmation that all operators are DBS checked
- Sessions record
- A displayed copy of the Certificate of Employer's Liability
- Access to either a digital or hard copy of the Code of Construction and Working Practice for Low Pressure Barochambers.

Oxygen Network Advisor (ONA)

An experienced Oxygen Operator appointed by the Neuro Therapy Network's Board as an unpaid volunteer to provide practical expertise, advice and support to Centre Managers, Responsible Individuals and all Oxygen Operators at member centres. These ONA's are available to respond to technical queries, to discuss and assist training.

Member Centre

A registered charity and a subscribing member of Neuro Therapy Network. These offer support and therapies, usually including Oxygen Therapy, to those users with MS. Many member centres, at their choice, also provide support and therapies for those with other conditions.

User

A person who has self-referred to a member centre for therapy and is recorded as a user of the services.

It is to be noted that all member centres are deregulated for the provision of Oxygen Therapy and therefore users self-refer; they cannot be referred by an NHS medical practitioner.

Whilst there is no requirement for any medical doctor's written consent to therapy, many member centres may wish to ensure that their users inform their own GP or specialist that they have self-referred. This open communication may assist the Responsible Person in assessing the therapy needs of the user.

Senior Operator

Depending upon the size and scope of a member centre, they may appoint one or more Senior Operators. These are experienced Oxygen Operators, appointed by and reporting to the Centre Manager or Responsible Person to provide onsite support and management of a Member Centre's Oxygen Therapy service.

1st (or No.1) Operator

Personally responsible for the operation, management and control of a session or sequential sessions of Oxygen Therapy. Reporting to the Senior Operator or Responsible Person.

Manages the 2nd (No.2) Operator and any Trainee Operators. The duties and responsibilities of this person are;

- Undergo training as required and hold a current (annual) Certificate of Competence, registered on the Learning Management System

- Know and understand the function and control of the mechanical components of the chamber
- Know, understand and observe the rules for safe chamber operation and for the care and wellbeing of members
- Be sufficiently agile, fit and healthy enough to carry out all the role and duties
- Be able to see, read and comprehend the gauges and controls, speak clearly and hear/communicate verbally, and be competent to write and maintain records
- Arrive in sufficient time to carry out all pre-session checks, cleaning, preparation and operating sequences
- Brief the users before each session on timings, safety and procedure, or delegate this task to the 2nd Operator
- Observe the users periodically throughout the session and react to any user issues. Report any issues on the session record
- During the session be at the control desk/panel and monitor all of the gauges, or ensure that the 2nd Operator takes control. Record the start, pressurisation, at pressure and depressurisation timings
- Remain within the Chamber Area and with audible contact with the 2nd Operator
- Flush the chamber as and when necessary
- Complete the session record
- Assist users in and out of the chamber and with the connection/disconnection of their mask if required
- Recheck and clean all equipment prior to the next session
- With the supervision of the Senior Operator or qualified Centre Manager, assist with the practical instruction of trainee operators
- Operate the deluge system if there is a fire and contact the Emergency Services

2nd (or No.2) Operator

- Work with and assist the 1st Operator as directed before, during and after each session of Oxygen Therapy
- Be available to end any session during which the 1st Operator becomes indisposed or incapable of operating; in effect being the co-pilot to a pilot in an emergency.
- The duties and responsibilities (and the training, testing and certification) of the 2nd Operator are identical to those for the 1st Operator: see the list above.

Trainee Operator

A person who has embarked upon Oxygen Operator training and testing through the Learning Management System, and with the practical support of the Chamber Operators and Senior Operator, but not yet achieved a Certificate of Competence.

All Trainee Operators will be required to observe and practically assist at least 10 complete Oxygen Therapy sessions under the direct supervision of the 1st Operator before undertaking the annual certification test.

Basics of Gas Laws

Boyle's Law

Where the temperature remains constant, as pressure increases, the gas in a flexible container such as the lungs, or a balloon will decrease in volume. Conversely, when pressure is reduced the gas in a flexible container will increase.

This is what can cause a pneumothorax in higher pressure chambers operating above 2ATA, and is the reason glass bottles and thermos containers are not permitted in the chamber.

Charles' Law

Where the volume remains constant, as the pressure increases in the chamber, so does the temperature. Taking the chamber from 1 ATA (room pressure) to 2 ATA doubles the pressure, and has the potential to double the temperature too. As chambers are not insulated, heat can escape, explaining why the occupants do not experience a complete doubling in temperature.

As the pressure is decreased the temperature drops the same way, which is why the chamber gets cold on depressurisation.

Dalton's Law (also called Dalton's Law of Partial Pressures)

The total pressure of a non-reacting mixture of gases is equal to the sum of the partial pressures of the individual gases.

In layman's terms, oxygen which is 21% of air exerts a pressure of 0.21 ATA at normal atmosphere. When a user is in the chamber at 33ft / 10m they are breathing oxygen at 2 ATA which helps to explain why oxygen is approximately 10 times more abundant at this depth.

Henry's Law

At a constant temperature, the amount of dissolved gas in a liquid is directly proportional to the partial pressure of that gas above the liquid. In simple terms: higher pressure forces more gas to dissolve into that liquid and supports and explains the core mechanism of Hyperbaric Oxygen Therapy.

Gay-Lussac's Law

The pressure of a given mass of gas is directly proportional to its absolute temperature, providing that the volume remains constant. In essence, this means that when a chamber warms up, the pressure in the chamber can be seen to increase. This is one of the reasons an increase in pressure can be seen on the chamber's pressure gauge and that pressure needs to be exhausted to lower it again

Chambers vs Concentrators

Some centres have oxygen concentrators - freestanding oxygen generating units - providing about 95% oxygen at atmospheric pressure, and others can provide 100% additional oxygen via masks connected to their chamber system. The difference between the use of oxygen at atmospheric pressure to a pressurised chamber session is how much oxygen can be absorbed.

In a chamber, at 2 ATA, the amount of oxygen absorbed is roughly doubled.

If using a concentrator, it is recommended to use a mask with a rebreather bag which allows the user to inhale the maximum amount of oxygen per breath possible for the best result.

Oxygen Therapy provided in our deregulated centres can only be delivered between 1 ATA and 2 ATA.

Should oxygen concentrators be loaned out to users, it is recommended that the centre fully consider risk of liability should the machine be used against manufacturer guidelines.



FAQ's

Why does mist sometimes form in chambers?

The mist is precipitation of water droplets. Pressurised air can carry more gaseous water than unpressurised air. As the pressure falls, and the temperature falls during decompression, the water can no longer be dissolved in the air and you are able to see the water droplets, much like fog.

Chemotherapy agents and Oxygen Therapy

Oxygen therapy has been shown to reduce the side effects for those undergoing chemotherapy such as nausea and fatigue. However, Oxygen Therapy is not recommended in combination with certain cancer drugs (usually with names ending in cristine or mycin eg Adriamycin, Bleomycin and Vincristine), though these have mostly been replaced by more modern cancer drugs.

Can fast pressurisation/depressurisation cause a pneumothorax (collapsed lung)?

As long as the recommended pressurisation/depressurisation rates of around 0.1 ATA per minute are followed, a pneumothorax will not occur.

GP Forms

It is not necessary to request the approval of a GP to provide Oxygen Therapy to a user. This is a self-referral service and as such, users are making their own decision to undergo therapy. A user may notify their GP if they wish, or the centre may wish to inform the GP. However, there is no benefit in seeking GP approval as this will not only incur a cost, but could result in a GP's refusal since NICE (National Institute for Health and Care Excellence) has made no recommendation in support of Oxygen Therapy.

Can users with inserted pacemakers and defibrillators use the chamber?

It is safe for users with these devices to make use of chambers that do not go to pressures above 2 ATA.

Abbreviations and Acronyms

Term	Meaning
ATA	Atmospheres Absolute
BIBS	Built In Breathing System
DBS	Disclosure and Barring Service
DMDs	Disease Modifying Drugs
FSW	Feet of Sea Water
HBOTT	Hyperbaric Oxygen Treatment Trust
HDOT	High Dose Oxygen Therapy
HP	High Pressure
HSE	Health and Safety Executive
IPP	Increasing Pressure Protocol
LP	Low Pressure
M&AA	Memorandum & Articles of Association
MS	Multiple Sclerosis
MSW	Metres of Seawater
NTN	Neuro Therapy Network
ONA	Oxygen Network Advisor
PGR	Pressure Gauge Reading
RP	Responsible Person
SO	Senior Operator

Definitions and Descriptions

Atmospheric Pressure

The pressure of air around us at a given time is determined by the height of the location above sea level, and the weather. The 'standard' (normal atmospheric) pressure around us is called one atmosphere absolute, or 1 ATA.

Barochamber

A term used by some institutions for a hyperbaric chamber operating at no greater pressure than 2 ATA.

All chambers that operate at a pressure greater than baric/atmospheric (i.e. more than 1 ATA) are by definition 'hyperbaric'.

Chambers in member centres are deregulated and described in UK legislation as 'Type 3'.

Chamber

An enclosure capable of being pressurised to a working pressure of 2 ATA.

Certificate of Competence

All who operate, supervise or inspect a chamber must have a Certificate of Competence. This will be issued through the NTN's Learning Management System after training and online testing is complete. These Certificates will be retested and renewed annually.

Although Senior Operators and 1st Operators would be expected to have a significant amount of time-served practical experience, it is important that all operators are competent to operate and to take over if required. Therefore all operators are trained and tested to the same standard.

Chamber Area

An area or room dedicated to housing the chamber.

Code of Construction

Foundation document to be read alongside this reference manual.

Competent Contractor

A contractor approved and engaged by a member centre to carry out annual and routine maintenance of the chamber and its ancillary parts.

Control Panel

A panel or console for operating a chamber. Provision must be made for the 1st Operator to be seated at the control panel, able to write records, see and hear and speak clearly to users of the chamber, and be able to speak directly to the 2nd Operator, who must remain within earshot.

Both Operators should also have access to a telephone in order to contact the Emergency Services, should the need arise.

Hypoxia

Inadequate oxygenation of body cells. It usually results in or is associated with inflammation or scarring as it is in MS.

Increasing Pressure Protocol (IPP) Assessor

The Manager of the Centre or an appointed Responsible Person.

Member Centre

A centre with current membership of Neuro Therapy Network.

No.1/1st Operator

A person responsible for the operation of a chamber, appointed by the Senior Operator, and who holds a Certificate of Competence.

No.2/2nd Operator

A person with a Certificate of Competence, appointed by the Senior Operator, to assist the No. 1/1st Operator during a session of Oxygen Therapy.

Normobaric Oxygen

Oxygen provided at normal atmospheric pressure (1 ATA), either on an oxygen concentrator, or via a hyperbaric chamber with the door open and no pressure applied.

Oxygen Network Adviser

An experienced Senior Operator, able to provide practical advice and assist all operators online, over the phone or face to face. Oxygen Network Advisers also provide additional training for Senior Operators and Centre Managers.

Oxygen Support System, previously Cascade System

The Oxygen Support System is the hierarchical system of requesting and reporting technical queries in respect of Oxygen Therapy at our member centres. It is fully described in Chapter 5.

Plasma

Plasma is the yellowish, liquid component of blood that makes up about 55% of it's total volume. It acts as a transportation system, carrying water, red and white blood cells, platelets, nutrients hormones and proteins throughout the body

Pressure Gauge Reading

The reading on the gauge which indicates the pressure in the chamber. Whilst the gauge often starts at '0', remember that there is already 1 ATA of pressure around us. If the chamber is then pressurised to 1 Bar by the pressure gauge, the pressure in the chamber is actually 2 ATA.

Responsible Person

A person representing the interests of the users of the member centre, with experience and the skills to oversee the provision of oxygen therapy. In some smaller centres this may be the Centre Manager or a trustee, whilst larger centres often appoint an Oxygen Therapy Manager (or similar title) to the role (for a more detailed description, see Roles and Responsibilities).

Self-Assessment Record

An assessment that should be completed by a user undergoing oxygen therapy after each five session block within their initial course of sessions. It should continue to be used on a weekly basis and may be retained by the user or, should they wish, by the centre. Note this is NOT a medical record.

Senior Operator

An experienced No.1/1st Operator with an extended knowledge of the Reference Manual and Code of Construction, who is appointed by the Centre Manager (or other responsible person).

The Senior Operator will oversee the online and practical training of operators. They will allocate trainees to accompany operators who have good training skills as well as a Certificate of Competence. The Senior Operator will carry out routine observations of the delivery of oxygen therapy by different members of the team and advise on any additional training needs. The Senior Operator will, with the Centre Manager, be the main link between the centre and the Regional Training Adviser.

Session

The total time that a user is in the chamber - approx. 1.25 hours, made up of pressurisation, a minimum of 45 minutes at pressure, and depressurisation.

Session Record

The written record of essential data for every session completed by an operator.

Trainee Operator

A person undergoing training in the operation of oxygen therapy. In cases where a trainee operator is present, there must also be two operators with Certificates of Competence in attendance.

User

An oxygen therapy user who is on the list of registered users/members of a member centre.

User's O2T Record

A document retained at the centre where a user's sessions are recorded in chronological order, showing the maximum pressure used, the timing of the pressurisation, and the time breathing oxygen via mask or hood.

Note: this is **NOT** a medical record.