

HyperMED NeuroRecovery

Most patients attending HyperMED Australia suffer complex long standing disability. Many patients and their families recognize their lack of improvement and are often referred to us as 'the last hope'. Due to the severity of their disability and their failure to improve with conventional therapies, most patients hope that the use of Hyperbaric Oxygenation together with assertive physical therapy will produce better results.

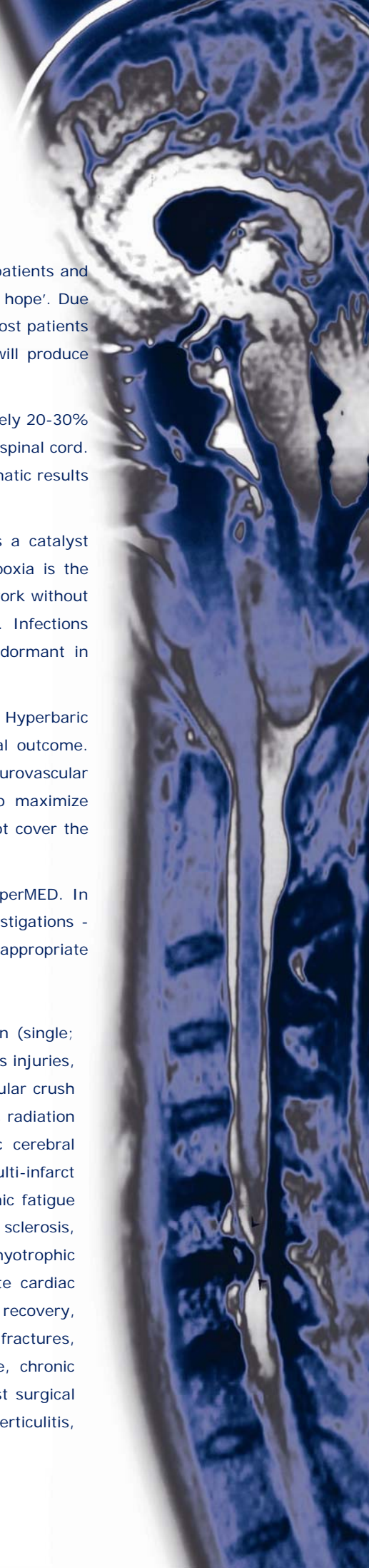
Orthopaedic and Neurological disorders are our prime focus, given the fact that approximately 20-30% of the body's consumption of Oxygen occurs within 3-5% of the body mass – the brain and spinal cord. These structures are extremely sensitive to oxygen deficiency, and can have the most dramatic results with the use of HBOT (Jain 1995).

Hyperbaric Medicine is used as an 'adjunctive therapy'. Hyperbaric Oxygenation acts as a catalyst impacting tissue structures within the body deprived of essential oxygen (hypoxia). Hypoxia is the central issue to most disease processes and neurodegenerative disorders. Drugs do NOT work without oxygen. Immune responses are suppressed and often inadequate when hypoxia exists. Infections thrive in low oxygenated environments. Nerve cells become dysfunctional and remain dormant in hypoxic environments.

Hyperbaric Oxygenation increases the delivery of oxygen directly into compromised tissue. Hyperbaric mobilize the patients own circulating stem cells providing a platform for a better clinical outcome. Hyperbaric combined with assertive combination therapies will impact the deeper neurovascular structures and create functional change! Treatment protocols are intensive in order to maximize appropriate immune responses and salvage back what has degenerated. Medicare does not cover the majority of conditions so the usual referral process is not required.

Please bring ALL associated medical reports and investigations when commencing at HyperMED. In addition email Dr Hooper direct with a detailed history of your condition and clinical investigations - this provides a quick response that enables HyperMED to process your application with appropriate recommendations.

- Complex spinal pain syndromes due to failed back surgery, spinal disc protrusion (single; multi level), degenerative spondylolisthesis, degenerative arthritis, traumatic sports injuries, vascular diseases of the spinal cord, peripheral neuropathy (sciatica), neuro-vascular crush injury, acute compressive and chronic spinal cord injury (paraplegia; quadriplegia), radiation myelitis, crush-compartment syndrome, closed head injury, acute and chronic cerebral edema, cerebral palsy, autism, delayed development syndrome, epilepsy; multi-infarct dementia, vascular migraine, brain abscess, stroke victims, chronic illness, chronic fatigue syndrome and immunosuppressive illness, opportunistic infection, multiple sclerosis, Parkinson's disease, Alzheimer's disease, degenerative motor neuron disorders, amyotrophic lateral sclerosis, vegetative coma, asphyxiation - drowning, near hanging, acute cardiac shock and insufficiency, myocardial ischemia, all stages of cardiac surgery and recovery, blood loss anaemia; complex fractures including delayed and non-union fractures, osteomyelitis, bone grafts, osteoporosis, prosthesis, peripheral vascular disease, chronic delayed wound healing, gangrene, ischemic leg pain, frost bite, amputation, post surgical compromise, flap repair, gastro-intestinal disorders - ulcers, bleeding, diverticulitis,



enhancement of radiosensitivity in cancer, post radiation and chemo recovery, cancer immuno-support and recovery ...

All patients are thoroughly investigated prior to commencing our programs and may include MRI (Magnetic Resonance Imaging) brain and full spine; SPECT (Single Photon Emission Computed Tomography), PET CT Scan (Positron Emission Tomography with CT Image); and blood tests using PCR-DNA (Polymerase Chain Reaction) investigation for underlying 'opportunistic infections' identified as potential 'triggers' associated with the degenerative cycle.

Opportunistic infections identified with chronic illness and degenerative neurovascular disorders including chronic pain syndromes due to failed back surgery include: Chlamydia profile, Mycoplasma profile, Epstein Barr virus, Cytomegalovirus, Herpes profile, Rickettsia profile, Toxoplasmosis profile etc - blood is drawn at a research lab for clinical examination and reporting. In addition; full immune and integrative related molecular factors are tested including T Lymphocytes profile, Natural Killer Cells, Cancer markers; and Heavy Metal toxicology investigating hair, blood and urine.

Chronic bacterial and or viral based infections can be actively involved in virtually all disease processes ranging from heart, diabetic and stroke related conditions to patients suffering complex neurological disease including multiple sclerosis, motor neuron disease, and even individuals with a simple bad back!

Numerous clinical studies have identified the involvement of chronic infections. In order for bacterial and viral based activity to survive they must take residence in tissue structures of the body that has 'low oxygen efficiency' known as an 'anaerobic' site. This is a process that occurs over time as a direct consequence of blood supply to the specific tissue structure being compromised. Tissue structures that are deficient in the normal supportive blood flow, resulting in less than normal vital oxygen efficiency is known as 'hypoxia'. MRI and other specific investigations can correctly identify the potential of hypoxic sites, which in turn; fosters a 'host' site for potential bacterial and viral replication.

An example of this is Multiple Sclerosis. Needle biopsy of the 'active' lesions identified on MRI investigations using PCR-DNA methods have correctly identified both bacterial and viral involvement including Chlamydia pneumonia, Epstein Barr virus, Cytomegalovirus and even Herpes related viral strains. Clinical studies have identified the fact that many bacterial and viral based infections are extremely opportunistic and referred to as: 'opportunistic DNA infections'. This means that they actually invade into the weakened cell and replicate in the DNA of the host cell accelerating the destructive cycle of the disease and or degenerative process. In the case of MS and numerous neurovascular disorders – 'bad bugs' are actively involved in the disease process weakening the nerve and blood vessel wall.

Tissue biopsy and PCR-DNA analysis of MRI identified back problems; again have identified the relationship of various bacteria including Mycoplasma infection as well as a number of other bacterial and viral based infections.

MRI is essential to establish the exact nature of the joint and integrity of spinal cord and or the brain structures concerned. Investigations including PCR-DNA blood tests for underlying infection will enable us to correctly identify the bacterial and viral 'load' within the patient and enable us to appropriately medicate and monitor the progress of each individual patient whilst undergoing treatment. When the 'triggers' are identified and correctly dealt with, the potential for long-term success and stability is dramatically increased and easily maintained. Unless dealt with the underlying triggers continue their cycle of destruction and ultimately the individual emerges with an established disease profile, as they get older!

Hyperbaric Oxygenation

Hyperbaric Medicine (also known as Hyperbaric Oxygen Therapy or HBOT) is a method of safely delivering high doses of 100% Oxygen to the body while inside a pressurized chamber. Most treatments to enhance immune responses, athletic

performances and the effective treatment of chronic degenerative neurological conditions are safely performed between 1.75-2.0 ATA.

Hyperbaric works by increasing the saturative effect of dissolved oxygen into the blood and surrounding tissue structures that have been deprived of vital oxygen (hypoxic tissue). The pressure inside the chamber causes the Oxygen breathed to be dissolved at greater levels in the blood. Recent studies have reported that HBOT results in about a 15-20 fold increase in oxygen saturation. This is about a 2,000% increase of dissolved oxygen into the brain and spinal cord structures!

Approximately 20-30% of the body's consumption of Oxygen occurs within 3-5% of the body mass - the brain and spinal cord. These structures are extremely sensitive to Oxygen deficiency, and can have the most dramatic results with the use of HBOT. This increased tissue Oxygenation significantly accelerates the rate of healing, stabilization and repair.

- HBOT is non-invasive. It is not a surgical procedure
- HBOT is safe
- HBOT works extremely well with other forms of physical therapies and or requisite medications. It enhances the effectiveness of both traditional and complimentary therapies

Hyperbaric Oxygen Therapy mobilizes the patients own circulating Stem Cells

[Abstract published American Journal Physiology - Heart and Circulatory Physiology (Nov 05)] reports a single 2-hour exposure to HBOT at @ 2 ATA doubles circulating CD34+ progenitor stem cells and at approximately 40-hours of HBOT; circulating CD34+ cells increases eight fold (800%)!

Hyperbaric Oxygenation provides a fertile platform for mobilizing the patients own stem cell capacity whilst preparing the body for further stem cell implantation techniques.

Hyperbaric Oxygen Therapy Benefits

- Mobilizes the patients own circulating stem cells providing a fertile neurovascular platform for further stem cell related therapies and implantation
- Elevates the amount of dissolved Oxygen into compromised and damaged tissue structures. Accelerates recovery and promotes stabilization of individuals suffering complex and progressive neurodegenerative illness and disease
- Enhances immune capabilities - increasing white blood cell (WBC) and Natural Killer Cell (NK) function; accelerating wound healing and infection control. This has a 'killing' effect which dramatically raises the potential to fight chronic infection and overcome delayed healing
- Accelerates new tissue formation (fibroblast and collagen synthesis) essential for repair – ligaments, disc, muscle and bone structures
- Increases blood flow into retarded tissue by fostering new blood vessel capillary growth into the damaged and compromised areas. This is called neovascularization
- Activates damaged and non-functional neurons (nerve cells). This is extremely important in chronic injury including spinal cord, brain injury and neurologically impaired patients. Chronic swelling and inflammation deprives vital Oxygen, which results in nerve cells becoming abnormally low in metabolic function. In fact, in many spinal cord and brain injured patients', nerve cells are not completely severed but remain intact. However, the nerve cells are 'non-functional' because of the massive swelling that ultimately results in progressive scar formation because of Oxygen deprivation. Studies have demonstrated by raising the amount of Oxygen efficiency into the damaged area scar formation is reduced, blood flow is improved and dormant, non-functional and damaged nerve cells can be reactivated. Obviously, the best outcome is to start with aggressive HBOT in the early stages of injury
- Reinstates normal lymphatic drainage creating a 'clearance' effect reducing chronic swelling which causes painful inflammation

- Many prescribed drugs, antibiotics and immune stimulating vitamins and amino acids require Oxygen and are in fact greatly enhanced with benefits of Hyperbaric tissue Oxygenation
- HBOT changes cellular metabolism by altering Oxygen deprivation towards Oxygen efficiency at a cellular level; changing the cellular substrate from an anaerobic metabolism (energy poor) into an aerobic metabolism (energy rich). This has a net clearance effect enabling the body at a cellular level to detoxify and reverse the radical accumulation of toxins that ultimately mutate into abnormal cells (including cancer cells)
- Significantly reduces the ability of chronic infections including bacterial, viral and cancer cells to replicate and proliferate. Chronic infections do not survive in a high Oxygenated environment

Treatment Protocol

Treatment varies from individual to individual. Once we have established the nature of the condition (MRI etc) and the triggers associated (bacterial and viral) a detailed treatment regime is discussed. Most complex conditions require an initial base line period of between 80-100 hours to change the dynamics of the damaged region and commence some form of worthwhile recovery. Most patients suffering complex and advanced degenerative neurovascular disorders including stroke, closed head injury, failed back surgery etc may in fact, require several hundred hours to effect clinical change and certainly a base line of between 100-150 hours is typically required. Blocks of short intensive durations are recommended for complex disorders.

Patients typically attend and receive up to 4-6 hours of HBOT on each day attending. Chambers sessions are scheduled in 2-hour blocks. In between the chamber sessions appropriate physical therapy including direct acupuncture needling with high frequency stimulation, immune stimulating injections and advanced vibration therapy are provided. Patients requiring functional re-training including Lokomat (Robotic Gait Assisted Walking) are scheduled Lokomat in between chamber sessions.

Physical therapy that accompanies HBOT generally includes direct acupuncture needling into the affected region although this will vary from patient to patient again depending on the presenting condition. Direct needling with high frequency electrical stimulation promotes increased 'neurovascular' responses into the targeted tissue. HBOT increases the dissolved oxygen into the body, mobilizes your own stem cell production and increases circulating stem cells which focus on repair and restoration. Clinical acupuncture directs the increased saturative effects of combined therapies into the target tissue.

The frequency of attendance per week is based on the complexity and urgency of the condition. All patients require an initial 'kick-start' saturation to penetrate the deeper neurovascular structures to commence some form of vascular change commencing the process of neuroplasticity (functional change). Typically most patients attend for an initial 2-3 week block receiving between 4-6 hours HBOT each day and for those patients requiring Lokomat between 1-2 hours each day of Lokomat. The intensity of therapy is individual and based on the patient's condition and specific requirements. All patients are thoroughly investigated prior to commencing at HyperMED. Again – please email Dr Hooper direct with as much detail as possible. In addition copy and fax all medical reports and investigation direct to F +61 3 9650 3150.

During the initial stages of treatment the patient will experience a range of symptomatic change. The primary objective is to stabilize the underlying instability and promote recovery. If you have very high levels of bacterial and or viral load in your blood then part of the initial treatment (2-4 months) is to reduce these levels and may require fairly aggressive antibiotic and or anti-viral medication. Patients will often experience a 'Herxheimer' reaction after about a 4-6 week period which is the term used that describes a 'killing effect of the pathogens', resulting in elevation of toxic levels in the blood. This is your immune system responding and in particular due to an elevation of your circulating stem cells!

Simply stated you may feel tired, aching, irritable, mood swings, migratory joint pains and possibly periods of changing bowel activity. It is important that if you experience this reaction, notify us immediately. Please ensure that if you are

experiencing a 'Herx' reaction – do not over exert yourself. Keep your physical activities to the minimum, drink plenty of water, get plenty of sleep, and watch your diet!

To combat these underlying issues and reactions, we also recommend very specific immune stimulating vitamins and amino acids including MSM (Methylsulphonmethane) and Rehab Plus (refer to HyperMED Oxy-Health section). Rehab Plus has been developed by this facility and is pivotal in enabling your body to respond at its best maximizing the benefits of treatment including Hyperbaric Therapy. In addition other non-drug recommendations including immune stimulating injections are recommended.

Stage 1 - Initial Saturation Phase

Initial saturation requires an absolute base line of between 40-60 hours and this is confirmed by the fact that in healthy individual circulating adult stem cells are increased 8-fold (800%) between 40-60 hours of Hyperbaric Oxygenation! Typically most patients have positive testimonial between 40-60 hours which obviously reflects that we are beginning to head in the right direction. However this does NOT mean that you have stabilized the problem!

Complex degenerative neurological conditions and patients suffering chronic pain syndromes due to failed back surgery or other complex disorders require an initial base line of between 100-150 hours to commence some form of worthwhile stabilisation – your specific requirements will be discussed in detail prior to commencing at HyperMED.

Footballers, Rugby players and other top athletes typically commence with an initial base line of between 20-40 hours to gain the initial saturative benefits with Hyperbaric Oxygenation. Continuing HBOT is based on individual requirements associated with training intensity, competition and the invariable 'injury list' that often grows throughout the season!

Stage 2 - Stabilization and Reconstructive Phase

Every patient responds at different rates. The issue with NeuroRecovery is not whether the approach will work but how many hours are in fact required to promote functional changes! The initial saturation provides a 'kick-start' into the compromised area – the issue is to keep this process a neurovascular salvage going!

Typically most patients receive between 4-6 hours of HBOT and 1-2 hours Lokomat each attending day. Patients typically attend 2-days 'back to back' to maximise the impact of oxygen saturation and benefits of Lokomat functional changes. The recurring interval of the 2-days 'back to back' will be based on your condition and individual requirements - this may be several weeks to several months?!

Booster

Patients with complex disorders require short blocks of intensive treatment with the specific purpose to impact the deeper structures increasing the salvage effects of the Hyperbaric Oxygenation whilst promoting functional retraining with Lokomat and associated therapies. Booster sessions are typically a 1- week block and are scheduled at intervals every several months or as required.