CUHMA ACMHS
Canadian Undersea and Hyperbaric Medical Association
Association Canadienne de Médecine Hyperbare et Subaquatique

E-NEWS

The E-News is the monthly newsletter of CUHMA, the primary outlet to share news/announcements, upcoming events, abstracts of recent publications, job postings, professional perspectives, and images of relevant professional scenes. Submission of applicable content is welcome. New issues are released on the last business day of each month. Past issues are available at https://cuhma.ca. Direct correspondence to info@cuhma.ca.

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NEWS/ANNOUNCEMENTS

Aftermath of US Hyperbaric Chamber Fires

While hyperbaric chamber operations have a strong record of safety, known hazards, including the possibility of fire, require careful and ongoing commitment to safe practice. The occurrence of two fatal hyperbaric chamber fires in the US in 2025 (Troy MI in January and Lake Havasu City, AZ in July) have reinforced the drive to craft new legislation addressing accreditation and licensing issues. Michigan currently leads the effort, which could ultimately expand.
https://nbdhmt.org/current-monthly-briefing

Invitation to Participate in a Diving Safety Research Study

Djamdoudou Abdou Rahman, MD and Neal W. Pollock, PhD are conducting a research study focused on understanding diving incidents and identifying potential contributing factors. The project aims to gather insights and experiences from divers worldwide to assess and enhance the safety and well-being of the diving community. Support can be through participation and/or sharing the following survey link with any divers who may be interested.
The survey is voluntary and anonymous. It is expected to take 5 to 20 minutes to complete, depending on personal experience. Prerequisites include age ≥15 years, diving certification of any type, and an ability to complete the survey in English or French. Thank you in advance.
https://questionnaire.simplesurvey.com/f/s/diving_incident_survey.

UPCOMING EVENTS

Canadian Underwater Conference 2026

The Diver Certification Board of Canada (DCBC) will hold the Canadian Underwater Conference & Exhibition March 24-26 at the Holiday Inn Toronto International Airport hotel. Visit: https://www.underwaterconference.ca.

UMC Introductory Diving Medicine Course

Undersea Medicine Canada will offer a Level 1 'Introductory Course in Diving Medicine - Fitness to Dive' May 11-15 in Halifax, NS. An optional half-day pre-course will be held May 10 for those wanting additional preparation for the program. Upon successful completion of the course, physicians will qualify as CSA Z275.2-15 Level 1 Diving Medical Examiners and can have their names listed with the Diver Certification Board of Canada (DCBC) to conduct commercial diver medicals in Canada. This 40-h course has been accredited for 35 MAINPRO+ CME credits by the College of Family Physicians of Canada. The registration portal will open on January 15. Contact Dr. Debbie Pestell (drdeb1@ns.sympatico.ca; 902-225-8214) or visit: https://underseamedicine.ca for more information.

RECENT PUBLICATIONS

Aditya C, Bukke SPN, Anitha K, Meeraraje P, Goruntla N, Yadesa TM, Onohuean H. A comprehensive review on diabetic foot ulcer addressing vascular insufficiency, impaired immune response, and delayed wound healing mechanisms. Front Pharmacol. 2025 Nov 12:16:1622055. doi: 10.3389/fphar.2025.1622055. eCollection 2025.

Diabetic foot ulcers (DFUs) continue to represent one of the most significant and costly complications related to diabetes mellitus, posing serious challenges to healthcare systems and resulting in considerable morbidity rates. This narrative review explores the complex pathophysiology of DFUs, focusing on the interplay between peripheral neuropathy, vascular insufficiency, and a weakened immune response, all of which contribute to delayed wound healing. Neuropathy leads to a loss of protective sensation, causing unnoticed repetitive injuries, while both microvascular and macrovascular complications reduce tissue perfusion and hinder angiogenesis. Additionally, immune dysfunction and exaggerated inflammatory responses raise the occurrence of infection and negatively

affect the healing process. The clinical manifestation, progression, and key risk factors of DFUs were discussed in this review, emphasizing the importance of early detection, careful foot care, and routine screening in individuals who are at risk. Numerous therapeutic approaches are reviewed, including wound debridement, sophisticated wound dressings, offloading techniques, glycemic control, and adjuvant therapies such as growth factor administration, hyperbaric oxygen therapy, and negative pressure wound therapy. For optimal results, a multidisciplinary team combining of vascular surgeons, podiatrists, endocrinologists, and wound care specialists was included. The analysis also points out that promising advancements in bioengineered skin substitutes, intelligent dressings, and regenerative medicine hold promise for the treatment of DFU in the future. Self-monitoring, appropriate footwear, and patient education are all important components of prevention, which remains a fundamental strategy. In the clinical management of DFUs, this narrative review incorporates the most recent research and highlights the value of proactive, customized, and multidisciplinary approaches.

Childers EJ, Baynosa RC. The effect of hyperbaric oxygen on compromised grafts and flaps. Undersea Hyperb Med. 2025 Third Quarter;52(3):381-96. PMID: 41223399.

The use of grafts and flaps serves as an integral tool in the armamentarium of the reconstructive surgeon. Proper planning and surgical judgment are critical in the ultimate success of these procedures. However, there are situations when grafts and/or flaps can become compromised and require urgent intervention for salvage. These instances can include irradiated or otherwise hypoxic wound beds, excessively large harvested grafts, random flap ischemia, venous or arterial insufficiency, and ischemia- reperfusion injury. Alternatively, compromised grafts and flaps can be inadvertently created secondary to trauma. It is in these types of cases that HBO_2 therapy can serve as a useful adjunct in the salvage of compromised flaps and grafts. This review outlines the extensive basic science and clinical evidence available in support of the use of HBO_2 therapy for compromised grafts and flaps. The literature demonstrates the benefit of adjunctive HBO_2 therapy for multiple types of grafts and flaps with various etiologies of compromise. HBO_2 therapy can enhance graft and flap survival by several methods including decreasing the hypoxic insult, enhancing fibroblast function and collagen synthesis, stimulating angiogenesis, and inhibiting ischemia-reperfusion injury. The expedient initiation of hyperbaric oxygen therapy as soon as flap or graft compromise is identified maximizes tissue viability and ultimately graft/flap salvage.

Demir N, Sumen SG, Kayhan B. Impact of a single session of hyperbaric oxygen therapy on the healthy retina. Front Ophthalmol (Lausanne). 2025 Oct 20:5:1652282. doi: 10.3389/fopht.2025.1652282. eCollection 2025.

Background: Hyperoxia induced by hyperbaric oxygen therapy (HBOT) may lead to retinal vasoconstriction and the generation of reactive oxygen species. This study aims to investigate the effects of a single session of HBOT on the healthy retina using full-field electroretinography (ffERG) and spectral-domain optical coherence tomography (SD-OCT). Methods: Twenty patients diagnosed with either sensorineural hearing loss or avascular necrosis, all of whom had an indication for HBOT, were included in the study. A comprehensive ophthalmologic examination, along with ffERG and SD-OCT assessments of the retinal layers and choroid, were performed both before and within 24 hours after the first HBOT session. Results: The mean age of the participants was 43.2±11.4 years (range, 18-66 years). A statistically significant difference was observed only in the scotopic 0.01 ERG b-wave amplitude before and after HBOT ($p=0.029$). The retinal pigment epithelium in the 3-mm nasal subfield of the Early Treatment Diabetic Retinopathy Study (ETDRS) grid demonstrated a statistically significant thickening after the first HBOT session ($p=0.023$). Conclusion: A single session of HBOT induced an acute alteration in rod-bipolar cell function, as evidenced by impaired electrophysiological responses. Additional studies are necessary to clarify the duration and potential reversibility of the observed electrophysiological impairment.

Eckert KA, Fife CE, Carter MJ. Systematic review of hyperbaric oxygen for late radiation tissue injury (bowel, bladder). Undersea Hyperb Med. 2025 Third Quarter;52(3):313-25. PMID: 41223393.

Background: This systematic review evaluated comparative studies to determine if hyperbaric oxygen therapy (HBO_2) is beneficial to late radiation tissue injury (LRTI) of the bowel/bladder. Methods: We included adequately powered, comparative studies evaluating the effect of HBO_2 on patients with LRTI (≥3 months duration and/or ≥6 months after radiation therapy) to the bowel/bladder compared to no HBO_2 or placebo/sham; complete outcomes data must have corresponded to the tools used to measure change in LRTI symptoms. Medline was searched through May 4, 2023, Embase through May 29, 2023, and Google Scholar through May 5, 2023. The Cochrane risk-of-bias tool and GRADE approach were used with a certainty of outcomes assessment. Results: Three RCTs were included with 273 subjects. Two double-blinded studies evaluated rectal symptoms; one open study evaluated cystitis. One study had a low risk of bias; two had some concerns. All had moderate certainty of outcomes. There is moderate certainty with a weak

recommendation for using HBO_2 for rectal complications or cystitis, which (in context of GRADE terminology) means the decision to treat depends on a case-by-case basis. Discussion: The highly heterogeneous design of the trials made meta-analysis impossible, but moderate certainty of the beneficial effect of HBO_2 on LRTI to the rectum and bladder was confirmed. With the weak recommendation, a discussion should take place between the patient and their physician as to whether or not the patient is likely to benefit from HBO_2.

Pasek J, Szajkowski S, Cieślar G. Comparison of the therapeutic effects in patients with venous leg ulcers treated with routine therapy supplemented by topical hyperbaric oxygen therapy or routine therapy only, basing on the measurement of selected inflammatory markers and blood coagulation parameters: a retrospective study. Postepy Dermatol Alergol. 2025 Oct 20;42(5):480-487. doi: 10.5114/ada.2025.155412. eCollection 2025.

Introduction: Venous leg ulcers (VLUs) are one of the most common civilization-related diseases which constitute a serious therapeutic and medical problem. Aim: The aim of the study was to compare treatment results in patients with chronic venous leg ulcers using comprehensive therapy including topical hyperbaric oxygen therapy (HBOT). Material and methods: The study included 57 patients: 25 (43.8%) males and 32 (56.1%) females, aged between 41 and 88 years. The patients were divided into two study groups. Group 1 (n=29) received routine pharmacological treatment, specialized medical dressings, compression therapy and topical HBOT procedures. Group 2 (n=28) received pharmacological treatment, medical dressings, and compression therapy. The ulcer surface area assessed using the planimetric method was compared, and selected inflammatory markers (serum concentration of C-reactive protein (CRP), erythrocyte sedimentation rate (ESR) and white blood cell count (WBC)), selected coagulation parameters (blood concentration of fibrinogen, serum concentration of D-dimer) were assessed. Results: After treatment, the ulcer area in patients in group 1, in which local HBOT used, was statistically significantly smaller compared to group 2 (7.12 cm^2 (4.65-8.56) vs. 8.98 cm^2 (6.48-10.18); p=0.019). Inflammatory markers showed statistically significantly (p=0.036; effect size - 0.27) lower values of CRP concentration in group 1: 5.8 mg/l (2.27-12) compared to group 2: 8.53 mg/l (6.3-20.86). Conclusions: Treatment results for patients with VLUs indicates a more effective anti-inflammatory effect of comprehensive therapy including topical HBOT, with no significant influence of this method on the parameters of blood coagulation.

Rençber M, Asfuroğlu BB, Kavak RP. A rare complication of hyperbaric oxygen therapy: air bubbles in systemic veins. J Clin Ultrasound. 2025 Nov 27. doi: 10.1002/jcu.70150. Online ahead of print.

Venous air embolism is a rare but clinically significant complication of hyperbaric oxygen therapy (HBOT), which is widely used in the treatment of conditions including carbon monoxide poisoning, decompression sickness, and wound healing. We report a case of systemic venous air embolism following HBOT in an 85-year-old woman treated for carbon monoxide poisoning. The patient had syncope, dizziness and nausea. Abdominal CT revealed multiple venous air bubbles. This case highlights a scarcely reported complication of HBOT and the importance of recognizing imaging findings and potential clinical effects after HBOT. Increased awareness may improve monitoring and safety in patients undergoing HBOT.

CUHMA-ACMHS is the Canadian voice for the advancement of hyperbaric and diving medicine throughout our country and beyond. Our activities include continuous medical education for physicians, nurses, respiratory therapists and anyone involved in the fields of hyperbaric and diving medicine. We are also promoting dissemination of clinical research, publishing position statements, liaising with related professional associations and government agencies. Our main goal is advocating on behalf of our patients. Our vision is to be the reference for the development and delivery of hyperbaric and diving medicine in Canada and beyond. Our mission is to promote excellence in hyperbaric and diving medicine through leadership in education, promotion of best practices and advocacy for our patients. Our values are excellence, leadership, collaboration, communication, and integrity.

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