

Hyperbaric oxygen in the treatment of asphyxia in two newborn infants

Alberto Orozco-Gutierrez, Lucilina Rojas-Cerda, Rosa M Estrada and Cesar Gil-Rosales

Key words

Hyperbaric oxygen, hyperbaric oxygen therapy, neuroprotection, brain injury, children, case reports

Abstract

(Orozco-Gutierrez A, Rojas-Cerda L, Estrada RM, Gil-Rosales C. Hyperbaric oxygen in the treatment of asphyxia in two newborn infants. *Diving and Hyperbaric Medicine*. 2010;40(4):218-20.)

Hypoxic-ischaemic encephalopathy (HIE) is a common cause of brain damage in the neonatal period. Approximately 10% of births involve some degree of asphyxia, and 1% of these are severe. Current treatment has been limited to supportive measures and the recent use of hypothermia. Beneficial effects of hyperbaric oxygen treatment (HBOT) in neonatal asphyxia have been reported in the Chinese literature. We report the use of HBOT to treat two term neonates with moderate HIE according to Sarnat's classification. Clinical improvement occurred following HBOT. A 50% decrease in the total creatine phosphokinase (CPK) level and a 40% decrease in the CPK myocardial fraction were observed within 24 hours of the first treatment. The decline in CPK levels may be related to a reduction in the overall systemic inflammatory process and cannot be attributed solely to a reduction in brain damage. HBOT may have a role in HIE.

Introduction

Perinatal asphyxia occurs at disruption or cessation of gas exchange at the placenta or lung, causing progressive hypoxaemia and hypercapnia. Approximately 10% of births involve some degree of asphyxia, and 1% of these are severe.¹ Hypoxic-ischaemic encephalopathy (HIE) is a common cause of brain damage in the neonatal period and remains an important cause of neonatal morbidity and mortality.^{1,2} Current therapeutic strategies involve mainly supportive measures, e.g., adequate oxygenation and ventilation, blood pressure support, maintenance of a normoglycaemic state, and fluid management. Recently, hypothermia has been used to decrease the neurological sequelae of HIE.²

Theoretical and anecdotal evidence exists for the beneficial effects of hyperbaric oxygen therapy (HBOT) in neonatal asphyxia.³⁻⁵ Meta-analysis of 20 Chinese trials demonstrated a significant reduction in mortality in neonates with HIE treated with HBOT compared to those not receiving HBOT (odds ratio (OR) 0.26, 95% confidence interval (CI) 0.14, 0.46). Neurological damage was also reduced in infants treated with HBOT (OR 0.41, 95% CI 0.27, 0.61).⁶ However, these studies were not performed in a blinded fashion, and the results should be interpreted with caution.

Based on these data, HBOT was used for two newborns with HIE. Permission to report these cases was obtained from the parents. Clinical evaluation, using the Sarnat Scale,⁷ and measurements of creatine phosphokinase (CPK) and lactate dehydrogenase (LDH) levels were used to assess patient progress. Breathing 100% oxygen, each patient was compressed to 203 kPa for 30 minutes, followed by decompression over five minutes, followed by a further 30 minutes of oxygen breathing at room pressure. Both

patients received standard care, including body temperature control, early nutritional support and glucose monitoring. Anticonvulsants and diuretics were not used.

Case 1

Following a traumatic vaginal delivery with a prolonged second stage of labour, Kristeller manoeuvres were performed for a cord round the neck. The child, weighing 4.2 kg, was diagnosed with perinatal asphyxia, ultrasound-documented subarachnoid hemorrhage and diffuse left renal injury. At 36 hours of age, the patient became lethargic, and the sucking reflex slowed. Examination revealed an incomplete Moro reflex, caput succedaneum, and a right parietal cephalohaematoma (Sarnat scale II); the head circumference was 37.5 cm. Total creatine phosphokinase (CPK), creatine kinase-myocardial fraction (CK-MB) and lactate dehydrogenase (LDH) values are shown in Table 1.

After obtaining informed consent from the family, three HBOT sessions were initiated, commencing at 42 hours of age. At 48 hours, after the first HBOT, clinical improvement had occurred and head circumference had decreased by 0.5 cm. A second HBOT was given at 68 hours of age and a third at 96 hours. Neurologic examination had normalised, and a significant decrease in the size of the cephalohaematoma was noted. CPK, CPK-MB, and LDH levels improved (Table 1). The patient was discharged without further complications. Auditory evoked potentials, cerebral ultrasound, and an electroencephalogram were normal.

Case 2

A newborn, weighing 2.9 kg, experienced moderate asphyxia secondary to uterine rupture and Caesarean delivery. Apgar

scores were 3, 4, 5, and 8 at 1, 5, 10, and 15 minutes, respectively. On admission to the neonatal intensive care unit, the newborn demonstrated a slow sucking reflex, increased muscle tone, decreased reflexes, and an incomplete Moro reflex (Sarnat scale II). Initial CPK, CPK MB and LDH are shown in Table 1.

After parental permission, two HBOT sessions were given, commencing at 12 hours of age. After the first, decreased irritability and improved reflexes were observed. After the second, completed by 36 hours of age, the newborn continued to demonstrate clinical improvement. Changes in CPK, CPK-MB, and CPK-BB levels are shown in Table 1. The patient was discharged without complications.

In both cases, ophthalmologic studies were performed subsequently to detect retrolental fibroplasia, and no evidence of retinal damage was found. Clinical and radiological studies also showed no lung damage as a consequence of HBOT. At six months of age, psychometric development in both babies was assessed by external evaluators and declared normal. Neither patient experienced seizure activity nor evidence of residual neurological damage.

Discussion

HBOT involves the administration of 100% oxygen at greater than atmospheric pressure to increase dissolved oxygen and improve overall oxygenation within tissues. HBOT can reverse local hypoxia by inhibiting post-ischaemic vasoconstriction, thereby decreasing reperfusion injury.⁸ Neutrophils have been implicated as the primary culprit in reperfusion injury. Adhering to ischaemic vessel walls, they release proteases and produce free radicals, leading to pathologic vasoconstriction and extensive tissue destruction.^{3,4} HBOT not only inhibits neutrophil adherence and post-ischaemic vasoconstriction, but also promotes collagen matrix formation, which is essential for angiogenesis and restoration of blood flow to injured tissue. HBOT will also reduce cerebral oedema.^{3,8}

Typically, patients with HIE exhibit a progressive clinical deterioration. However in these two neonates, we identified an unexpected clinical course, with clinical improvement

immediately after the first HBOT session, as measured by the Sarnat scale, and their enzyme levels decreased markedly. Normal serum CPK levels in the healthy newborn range from 10–200 U L⁻¹. Levels usually rise within the first six hours after ischaemic injury. If hypoxia is not sustained, CPK levels peak 18 hours after injury and return to normal within two to three days. A serum CK-MB level >92.6 U L⁻¹ at eight hours, or >60 U L⁻¹ at 24 hours is considered abnormal. Newborns with elevated serum CPK levels within the first six hours of birth should be closely monitored for the development of HIE.⁹ The increased levels of enzymes in these two cases decreased more rapidly than expected. This drop in enzyme levels may actually reflect a decrease in a systemic inflammatory process rather than being a specific indication of neurological improvement.

Retinopathy of prematurity is similar to an ischaemic/reperfusion injury. HBOT has been used to manage and prevent ischaemic/reperfusion injury, and short exposures to oxygen pressures of 203 kPa for 45 minutes once or twice a day are unlikely to cause harm. Acute central nervous system oxygen toxicity is rare at 203 kPa or lower, and pulmonary oxygen toxicity is generally not seen with HBOT. The HBOT management scheme used in these two cases, combining both hyperbaric and normobaric oxygen was intended to minimise any risk of toxic side effects. This strategy has been used successfully in newborns with a history of hyaline membrane disease and/or bronchopulmonary dysplasia.⁹ No evidence of lung damage or eye damage was identified in these two newborns following HBOT.

Promising clinical evidence of benefit exists for treatment of HIE using mild to moderate hypothermia (33–34°C) using total body or selective head cooling applied within six hours of birth.^{2,10} There are no studies reported comparing controlled hypothermia with HBOT or reports of their combined use.

Conclusion

Two neonates with HIE improved with HBOT consistent with previous reports of its potential benefit. HBOT may represent a viable alternative to, or be combined with controlled hypothermia.

Table 1
Enzyme levels in two neonates suffering from neonatal asphyxia before, during and after a short course of hyperbaric oxygen therapy (HBOT)

		Pre-HBOT	Post-HBOT 1	Post-HBOT 2	Post-HBOT 3
Case 1	CPK total (units)	3069	795	342	493
	CK-MB (units)	58	35	29	41
	LDH (units)	1036	730	645	657
Case 2	CPK total (units)	2156	1230	539	
	CK-MB (units)	77	43	30	

References

- 1 Lenclen R, Mazraani M, Jugie M, Boyler D. Introduction and early resuscitation. In: Kattwinkel J, editor. *Textbook of neonatal resuscitation*, 5th ed. Birmingham, Alabama: American Academy of Pediatrics; 2006. p. 1-2.
- 2 Gluckman PD, Wyatt JS, Azzopardi D. Selective head cooling with mild systemic hypothermia after neonatal encephalopathy: multicentre randomized trial. *Lancet*. 2005;365:663-70.
- 3 Calvert J, Zhou C, Nanda A, and Zhang J. Effect of hyperbaric oxygen on apoptosis in neonatal hypoxia-ischemia rat model. *J Appl Physiol*. 2003;95:2072-80.
- 4 Huang Z, Kang Z, Guo-Jun Gu, Guang-Neng P, Liu Yun, et al. Therapeutic effects of hyperbaric oxygen in a rat model of endothelin-1-induced focal cerebral ischemia. *Brain Research*. 2007;1153:204-13.
- 5 Calvert JW, Yin W, Patel M, Badr A, Mychaskiw G, Parent AD, Zhang JH. Hyperbaric oxygenation prevented brain injury induced by hypoxia-ischemia in a neonatal rat model. *Brain Res*. 2002;951:1-8.
- 6 Liu Z, Xiong T, Meads C. Clinical effectiveness of treatment with hyperbaric oxygen for neonatal hypoxic-ischaemic encephalopathy: systematic review of Chinese literature. *BMJ*. 2006;333:374.
- 7 Sarnat HB, Sarnat MS. Neonatal encephalopathy following fetal distress. A clinical and electroencephalographic study. *Arch Neurol*. 1976;33:696-705.
- 8 Mathieu D, editor. *Handbook of hyperbaric medicine*. Dordrecht, the Netherlands: Springer; 2006.
- 9 Naeye R, Peters E, Bartholomew M, Landis JR. Clinical aspects. In: Volpe J, editor. *Neurology of the newborn*. 4th edition. Philadelphia: Saunders; 2000. p. 331-94.
- 10 Sanchez EC, Monte's G, Oroz G, Garcia L. *Management of intestinal ischaemia, necrotizing enterocolitis and anoxic encephalopathies of neonates with hyperbaric oxygen therapy*. Hyperbaric Oxygen Clinic of Sacramento. <http://www.hbot.info/~hbot1/hyperbaric_treatment_neonates.html> (last accessed 19 August 2010).
- 11 Gunn AJ, Gunn TR, de Haan HH, Williams CE, Gluckman PD. Dramatic neuronal rescue with prolonged selective head cooling after ischemia in fetal lambs. *J Clin Invest*. 1997;99:248-56.

Submitted: 09 March 2010

Accepted: 26 June 2010

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Continuing professional development

CME ACTIVITY 2010/4

HBOT AND MALIGNANT OTITIS EXTERNA

Michael Bennett

Accreditation statement

To complete a course successfully, 80% of questions in each quiz must be answered correctly. Activities published in association with *Diving and Hyperbaric Medicine* are accredited by the Australia and New Zealand College of Anaesthetists Continuing Professional Development Programme for members of the ANZCA Diving and Hyperbaric Medicine Special Interest Group under Learning Projects: Category 2 / Level 2: 2 Credits per hour.

Intended audience

The intended audience consists of anaesthetists and other specialists who are members of the ANZCA SIG in Diving and Hyperbaric Medicine. However, all subscribers to DHM may apply to their respective CPD programme coordinator or specialty college for approval of participation.

Objectives

The questions are designed to affirm the takers' knowledge of the topics covered, and participants should be able to evaluate the appropriateness of the clinical information as it applies to the provision of patient care.

Faculty disclosure

Authors of these activities are required to disclose activities and relationships that, if known to others, might be viewed as a conflict of interest. Any such author disclosures will be published with each relevant CPD activity.

Do I have to pay?

All activities are free to subscribers.

Background reading

Practitioners are referred to the article in this journal dealing with the POWH experience with malignant otitis externa (Saxby A et al. Malignant otitis externa: experience with hyperbaric oxygen therapy. *Diving and Hyperbaric Medicine*. 2010;4:195-200) and the relevant chapter in Harrison's online (Rubin MA, Gonzales R, Sande MA, "Chapter 31. Pharyngitis, Sinusitis, Otitis, and Other Upper Respiratory Tract Infections" (Chapter). Fauci AS, Braunwald E, Kasper DL, Hauser SL, Longo DL, Jameson JL, Loscalzo J, editors. *Harrison's principles of internal medicine*, 17e: <<http://accessmedicine.net/content.aspx?aID=2883531&searchStr=otitis+externa#2883531>>. This link may not be free to readers outside of Australia.

How to answer the questions

Please answer all responses (A to E) as true or false.

Answers should be posted by e-mail to the nominated CPD coordinator (for members of both SPUMS and the ANZCA Diving and Hyperbaric Medicine Special Interest Group, this will be Assoc. Prof. Mike Bennett, <M.Bennett@unsw.edu.au>). On submission of your answers, you will receive a set of correct answers with a brief explanation of why each response is correct or incorrect. Successful undertaking of the activity will require a correct response rate of 80% or more. Each task will expire within 24 months of its publication to ensure that additional, more recent data has not superceded the activity.

Question 1: Which of the following statements are true in relation to the diagnosis of malignant otitis externa (MOE)?

- A. MOE may arise from a chronic infection of the respiratory sinuses.
- B. The diagnosis of MOE always implies inadequate treatment of an initial infection in or near the external auditory canal.
- C. The onset of MOE is often characterised by a sudden deterioration in general wellbeing and severe otalgia with hearing loss.
- D. As implied in the name, MOE is always associated with an underlying malignancy.
- E. MOE is often associated with pre-existing conditions that might affect immune function and healing capacity of the tissue.

Question 2: Concerning the organisms associated with MOE...

- A. As with other necrotising infections, Clostridial species are commonly isolated in tissue samples.
- B. Multiple organisms are quite commonly cultured from tissue samples and wound swabs, and it may be unclear what the primary pathogen is.
- C. MOE is readily distinguished from invasive fungal infections because fungal species are never isolated in MOE.
- D. In the absence of positive cultures, a reasonable choice of antibiotics would be IV penicillin combined with an oral antifungal agent.
- E. The most commonly isolated organism is *Pseudomonas aeruginosa*.

Question 3: Hyperbaric oxygen therapy for MOE...

- A. Remains the only treatment modality for which we have randomised evidence of effectiveness.
- B. Was first described in a single case report by John Mader in 1952.
- C. Has now been reported in more than 50 human cases, although no formal comparative studies have been published.
- D. Needs to be given in maximal doses (typically 284 kPa for two hours each session) because the infection is in bone and there is poor delivery of oxygen to the affected area.
- E. Is an adjunctive therapy and not a substitute for appropriate antibiotics and surgical debridement as indicated.

Question 4: Concerning the assessment and treatment of MOE...

- A. Surgical debridement should be performed at regular intervals to reduce the bacterial load in the tissues.
- B. The routine use of timentin and ciprofloxacin in combination has been shown to improve the case fatality rate in pseudo-randomised trials (sequential assignment to therapy).
- C. The extent of disease may be assessed by using gallium and technetium-99 scintigraphy studies.
- D. The characteristic finding on examination is granulation tissue in the posteroinferior wall of the external canal, near the junction of bone and cartilage.
- E. Cranial nerve involvement is sometimes seen, with the sixth nerve most often involved because of the close anatomical relationship between the course of this nerve and the external auditory canal.

Question 5: With regard to the complications and outcome of therapy...

- A. Thrombosis of the sigmoid sinus had never been described before it was noted in one case of the POWH series.
- B. Complications due to hyperbaric therapy are very uncommon in this patient group.
- C. Around two thirds of patients were symptom free at final follow-up in the POWH series, and this clearly indicates that the addition of HBOT is of major benefit.
- D. The development of lower (ninth to twelfth) cranial nerve lesions during appropriate antibiotic therapy may be a grave sign.
- E. Seizures during HBOT for this group of patients are unlikely to be due to hypoglycaemia because many are diabetics and will have high blood sugars.

Key words

MOPS (maintenance of professional standards), malignant otitis externa

Breathe easy

John Parker

My name is Carbon Dioxide
I'm a molecule of fame.
I can keep you healthy or kill you at will
So you'd best not forget my name.
Some say I am heartless
For I can cause terror,
But really I'm a blameless, gameless pawn
For it is usually your error.
I am the one who reminds you to breathe.
Not to do so is dire.
If you doubt it and are bold to hold your breath
I will make you inspire.
When you are really stupid and hyperventilate
My blood levels plummet.
When you free dive your oxygen can drop till you drown
Before I can overcome it.
Diving to great depth does not make sense.
It never seems enough
And at depth your air and commonsense are dense
And breathing is tough.
For I cannot escape and you cannot get enough air
No matter how hard you try.
Your airways collapse, consciousness lapses
And you die.
So treat me with great respect.
Don't hyperventilate or get wheezy,
And don't dive deep on air. Take care
To keep breathing free and easy.



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EUBS 37th ANNUAL SCIENTIFIC MEETING 2011

24–27 August 2011

Gdansk, Poland

First Announcement

Hosts: The National Centre for Hyperbaric Medicine, Gdynia

Venue: The Medical University of Gdansk

Zdzislaw Sicko, Chairman of the Organising Committee

Jacek Kot, General Secretary of the Organising Committee

Main topics:

Diving physiology and medicine, non-dysbaric disorders

Research in deep diving and dysbaric diving disorders

Basic research and clinical hyperbaric medicine

Hyperbaric safety, technology and organisation

There are also plans to have several satellite meetings including:

ECHM Workshop on “HBO in Emergency Medicine”

EBAss meeting

EDTCmed meeting

DAN Divers’ Day

Contact the organising Committee at:

EUBS2011, National Centre for Hyperbaric Medicine

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Minutes of EUBS Executive Committee Meeting, 17 September 2010, Point Hotel, Istanbul

Opened: 1100 h

Present: C Balestra, A Brubakk, P Bryson, P Germonpré, P Knessl, A Möllerløkken, P Müller, J Schmutz, P Wooding

Invited: M Cimsit, J Kot, M Sedlar, M Zaric

1 Minutes of previous meeting

Accepted without comments

2 Status of current and future EUBS meetings

2.1 Secretary General of EUBS2010: M Cimsit

2.1.1 The meeting is considered a success, with 262 registrants including accompanying persons, from 32 countries, four continents.

2.1.2 The congress budget is even. The cost of invited speakers and printing is sponsored by a grant from the Office of Naval Research (ONR), USA. Reimbursement to Secretary General will be delayed till October, pending funding availability within ONR. Formal reimbursement request from M Cimsit needs to be obtained for our own book-keeping.

2.2 Presentation of EUBS2011: J Kot

2.2.1 J Kot informs ExCom that the Meeting will be held from 24–27 August 2011 in the University Aula of Gdansk, meaning that organisational costs

will be kept low.

2.2.2 ExCom stresses the importance of accessibility to as many participants as possible, meaning keeping registration, banquet and hotel fees as low as possible; J Kot agrees.

2.2.3 There will be three satellite meetings: DAN Divers Day, EBAss and an ECHM workshop: "HBO in Emergency Medicine".

2.2.4 J Kot agrees that ExCom participates in the organisation of the sessions, with the aim to improve interaction; two members of ExCom will be members of the (international) Scientific Committee. Exchange with these members can be done via the Procom debate communication system, J Kot will send details.

2.2.5 For now, one Keynote lecturer has been confirmed: David Elliott

2.2.6 The 1st announcement has been handed out at this meeting. The Congress Website <www.eubs2011.org> is on line. J Kot will give a five-minute presentation at the GA.

2.3 Presentation of EUBS 2012: M Sedlar, M Zaric

2.3.1 M Zaric (Belgrade) gives ExCom his full assurance that the congress will be well organised; the Hyperbaric Centre in Belgrade, as local organisers, will strive to have as many attendees as possible, with a good scientific as well as social programme.

2.3.2 ECHM will have a Consensus Conference in direct conjunction with the EUBS Annual Meeting. Care will be taken to ensure there will be no conflict between these two meetings. Chronologically ECHM will hold its meeting first and then EUBS.

2.3.3 It is accepted that ExCom plays a greater role in the scientific organization and planning of the congress in order to improve quality. Invited Speakers will be suggested by ExCom, and the local organisers will submit to ExCom their own proposals for invited speakers.

2.3.4 Congress fees will be kept low (350 Euro for early, 400 Euro for late registration). Organisers are ready to assume losses in order to increase participation. A Brubakk stresses the importance of participants' discussion and interaction during the meeting. First announcement to be published in March 2011.

3 Travel grant

3.1 One application for travel grant was received, which was accepted: P Buzzacott (Australia); P. Wooding to action.

3.2 After a discussion on a possible maximum amount to be allocated, ExCom proposes to limit the Travel Grant in the future to a maximum of three grants each year, each for a maximum amount of 800 Euro. It will also be specified that the Travel Grant is to be used for economy airfare (or other transportation), and accommodation only, not other costs (such as poster printing, etc).

4 Zetterström Award 2010

4.1 Committee Members: J Schmutz (EUBS ExCom), Samil Aktas, Günalp Uzun (local scientific committee)

4.2 Only two posters agreed to participate in the Zetterström Award competition.

4.3 P. Germonpre proposes that as a 'statement' and expression of our concern, both posters should be selected. Accepted by ExCom.

4.4 Registration fee will be waived by local organising committee at the next meeting, who should make a formal reimbursement request to EUBS ExCom, for transparency.

4.5 Posters can compete only if they have not been published or submitted previously elsewhere. The winner must have his final paper submitted within 12 months to DHM for consideration of publication. This should be clearly stated in the contest rules. In order to avoid confusion (there was a small tick box on the Abstract Submission form, to be ticked if authors wanted to compete), the Abstract Submission Form will be modified so that everybody competes for the Zetterström award, unless they tick a box if they do not wish to compete. A clear footnote will be placed on the abstract form to explain this procedure. Accepted by ExCom.

5 EUBS ballot

5.1 The internet-based voting system was generally very well accepted as easy and quick, in spite of this, only 91 members responded (35%). The reasons for this are not entirely clear, possibly some members did not receive the ballot form because of their e-mail spam filters. A query will be made during the GA.

5.2 Election Member at Large 2010: one candidate – Jean-Michel Pontier, elected.

Proposal: P. Wooding: check by mail/telephone why people did not vote.

6 Diving and Hyperbaric Medicine Journal

6.1 As from this year on, only abstracts will be published in the EUBS Proceedings Book. This had been proposed by ExCom in 2008, but now applied for the first time. This fulfills the requirements of DHM Editors in order to avoid 'duplication of publication' issues.

6.2 DHM has an Impact Factor (ISI) of 0.49, which is only slightly below that of the UHMS journal (which has been listed for a much longer time). P Mueller will make a separate point of that during his presentation at the GA.

6.3 There was a debate as to the costs of producing the DHM Journal, with annual print runs lower than a few years back, reflecting a slowly declining membership base.

6.4 Actions:

6.4.1 Inform membership of high cost of DHM Journal, as well as ecological concerns (printing and sending paper around the world).

6.4.2 Consider an electronic version only – there could be unexpected complications involved in

this method of publication. We need to consider carefully the pros and cons.

6.5 ICHM: a letter was received from Mike Bennett (ICHM secretary) requesting the possibility of free advertisement in DHM for the next ICHM meeting in Cape Town, South Africa, in March 2011. Accepted by ExCom.

7 Website

7.1 Not many changes to the website at this time.

7.2 The financial report will be published on the Members-only pages for a limited time.

7.3 The full e-version of *Diving and Hyperbaric Medicine* is also posted on the members-only pages, only the cover and content pages are 'public'.

8 Membership

8.1 EUBS: overall membership is stable; as of today, 91 members have not paid their membership dues. P Bryson proposes that the Membership Secretary contact the non-renewers in order to increase the number of members renewing in time. P Germonpré will ensure Patricia Wooding receives all the automatic renewal messages so she knows when to expect members paying.

8.2 Some members have asked for a discount of EUBS Membership because they would like to keep the 'double' membership of EUBS and SPUMS but want to only receive the Journal once. Although this is a justified concern, there is as yet no real solution, because EUBS does not have a membership category 'without Journal'. It is proposed that EUBS ExCom will discuss this matter with SPUMS Committee to find a common solution.

8.3 Retired members: the Membership Secretary will approach retiring members to inform them that the EUBS is willing to offer them free membership as a retiring member. They should, however, apply again each year for renewal in order to avoid costs due to 'automatically continued invalid memberships' (e.g., death of the retired member).

9 EUBS finances

9.1 The financial report is presented by P Wooding. Auditing of the books has been done by Ms Anna Stillman from DDRC, and has been accepted. ExCom will express its gratitude to Ms Stillman at the GA.

9.2 The financial report reflects the fact that a substantial portion of the EUBS membership fee serves to produce the DHM Journal, a fact that is known and has been addressed above.

9.3 The full financial statements will not be published in DHM but will be available for a limited time on the EUBS website (Members-only section).

10 Miscellaneous

10.1 It is proposed that an official display banner be produced, to be used by the Membership Secretary when present at EUBS Meetings, so she is readily recognisable as such, rather than displaying printed-out A4 pages with

the EUBS logo. Such a banner does not represent a major cost and could be designed internally.

Action: A Möllerlökken to examine production possibilities, P Knessl to propose graphic layout to ExCom.

10.2 Proposals to enhance and improve the efficiency and activities of the Society were discussed:

10.2.1 To increase the size of the Society by incorporating new categories of members would need a change in the ByLaws

10.2.2 It is proposed to give more specific tasks to Members at Large:

Member at Large year 3 – responsible for scientific committee and scientific programme of the next EUBS Meeting

Member at Large year 2 – responsible for the discussion forum of the website

Member at Large year 1 – observation.

10.2.3 Create specific Subcommittees: this possibility is explicitly present under the ByLaws of the Society. P Germonpré proposes the creation of a 'Liaison Committee' to be chaired by Member at Large 2007 (P Bryson) for the term of at least one year, with the specific task of interconnecting between organisations and individuals in order to advance scientific work in the fields of diving and hyperbaric medicine. The continuation and possible expansion of this Liaison Committee will be evaluated at the 2011 ExCom meeting.

10.3 The US Office of Naval Research (ONR) sponsoring: ONR granted sponsoring for this year's EUBS meeting but there are considerable delays in payment. P Germonpré will ask for the grant earlier so that it can be received before the meeting actually takes place. EUBS should try to have continuing sponsorship from ONR for future meetings.

11 Proposals to (local meeting) Secretary General:

11.1 Scientific programme, including timing and distribution of posters/oral presentations to be approved by ExCom beforehand

11.2 Choice of invited speakers to be approved by ExCom

11.3 Condition for invited speakers to submit their presentation(s) for publication in DHM

11.4 Work needs to be done to try and ensure ExCom 'assists' those present at meetings to publish their data in an appropriate format. A debate was had as to whether one of the specific invited speakers at the annual meetings could be an 'educational person' to explain the differences between different levels of evidence and how to do work and publish at each level. Not everyone can do RCTs' but there is a lot of information out there which could and should be assessed appropriately and published. This could possibly be done in conjunction with the Journal team.

Closed: 1355 h

Minutes of EUBS General Assembly 2010 Istanbul, 18 September 2010

Opened: 1400 h

1 Welcome

1.1 The President, Peter Germonpré (PG), welcomes all the participants with a promise of a short session, as there are not many controversial issues on the agenda.

1.2 The minutes from the General Assembly 2009 are accepted.

2 Status of the 2010 Annual Scientific Meeting.

2.1 PG thanks the organisers for a well-conducted meeting with excellent, professional technical staff.

2.2 Professor Maide Cimsit, Secretary General of the Annual Meeting, gives her report: there were attendants from four continents, 32 countries, 262 registrants – 92 EUBS members, 62 non-members, 35 nurses and technicians, 19 commercial registrants, 19 accompanying persons and 35 free registrations. There were 70 oral presentations. Of 69 posters submitted, 65 were presented. Prof. Cimsit thanks all her staff for their hard work. PG hands over beautiful flowers to Prof. Cimsit and the rest of the staff.

3 Awards and grants

3.1 Zetterström Award:

There were only two posters submitted for the Zetterström Award competition, which rewards the best poster. The Zetterström Committee (J Schmutz, member EUBS ExCom, Samil Aktas and Günap Uzun, members of the local scientific committee) rewarded both competing posters:

3.1.1 Serkan Ergozen, Senol Yildiz, Hakan Ay and Recai Ogor. *The effects of hyperbaric oxygen treatment on hypoxia inducible factor-1alpha, inducible nitric oxide synthetase and vascular endothelial growth factor levels with diabetic foot.*

3.1.2 Umut Akgun, Maide Cimsit, Baris Kocaoglu, Onur Basci, Selva Zeren, Yesim Saglican, Gulcin Basdemir. *Effect of hyperbaric oxygen therapy (HBOT) combined with microfracture technique on healing of full thickness cartilage lesions.*

3.1.3 The Award (free registration for next EUBS meeting) is basically a research stimulus and represents the possibility to submit to *Diving and Hyperbaric Medicine* (DHM) for peer review.

3.1.4 There are remarks from the audience. People were surprised that not all posters had the chance to compete. The reason is that, because the prize involves submission to DHM, the poster cannot have been submitted to another journal. Two years ago, the Zetterström prize winner was unable to accept his prize because he had submitted it to another journal than DHM. This is the reason why it was explicitly stated on the abstract submission form,

and only posters indicating they were willing to compete for the prize were part of the competition. The format of the abstract submission form may have caused some confusion; however, the rules were very clear. Next year, the abstract form will be modified and will allow the authors very clearly to state whether they want to compete or not.

3.2 Travel Grants:

3.2.1 There was one application for the travel grant:

Peter Lee Buzzacott from Australia: *Risk factors for running low on gas in Western Australia*

3.2.2 PG informs the GA that ExCom has proposed that the number of travel grants will be limited to a maximum of three, with a limitation to a maximum of 800 Euros per grant, to be used for economy air fare and lodging only. Applicants will have to submit their presentation to DHM in order to receive the grant. There is no geographical limitation as to the country of origin of applicants.

4 EUBS publications (Journal and Website).

4.1 Peter Müller (PM), European editor of DHM, informs the GA that our Journal has received an Institute of Scientific Information (ISI) Impact Factor of 0.49. As a comparison, the UHMS journal (UHM) has an Impact Factor of 1.04. This is very encouraging. The application for indexing in PubMed has been missed only by a narrow margin this year. Our Journal has been asked to apply again this year. All EUBS members are, therefore, even more vigorously encouraged to submit their research to DHM.

4.2 The DHM journal has its own website (<www.dhmjournal.com>) which is still in a primary phase. It will be expanded soon.

4.3 The EUBS website has not encountered big changes. The full text issue of DHM is available as PDF in the members section, whereas only the cover and contents pages are 'public'.

4.4 Ongoing or recruiting RCTs, with the address of the responsible person, will be accessible in the 'research, courses and events' section of the website. Investigators are encouraged to 'advertise' their ongoing research in this section, by simple e-mail to the webmaster <webmaster@eubs.org>.

5 Financial report

5.1 The financial report was prepared by our membership secretary, Patricia Wooding (PW) and projected to the GA. The audit was done by Anna Stillman from DDRC in Plymouth, who is thanked by ExCom for her generous efforts. The report will be accessible for a limited period of time on the society's website (members-only section)

5.2 The financial report is accepted by the General Assembly.

5.3 As a comment to the report, PG states that the biggest part of the Society's budget goes to the journal.

He informs the GA of the discussion in ExCom on the option to produce only an electronic 'e-journal' and to suppress the paper copy. From the floor, Alf Brubakk explains that in his view, almost 80% of the Society's income is used to "produce paper and to send it around the world". He would prefer to use this money to support young scientists, to give them free access to the meetings and to invite high level speakers to help better understand our field. He asks the General Assembly to support the 'e-version only' option. Phil Bryson notes that the Society spends approximately £16,000 per year only for printing and shipping costs and that this also has a negative ecological impact. E-books are now widely accessible, although, as remarked from the floor, not everybody has an e-book reader at hand, and some prefer still to read paper versions rather than PDFs. Alf Brubakk replies that anyone wishing a paper version could very well print out his PDF himself. Jacek Kot asks if members could not choose if they want to have a hard copy instead of the e-journal. Peter Mueller answers that the price of producing only a few copies would be barely affordable. A remark is made that having only an e-version may have an influence on the process of indexing in PubMed, because one of the criteria is the "quality of print".

5.4 PG proposes to organise an electronic ballot on the matter and informs the GA that EUBS ExCom will approach the SPUMS Committee, co-owner of the DHM Journal, with these concerns.

The General Assembly supports this motion.

5.5 As a comment from the floor, it is asked why EUBS still has its accounts in UK pounds sterling, and not in Euro as was announced last year. PG answers that changing the main account to Euros was not possible since EUBS is a UK-based charity; the Euro account is and will still be used, however, and transaction and exchange costs are minimal with the PayPal system.

6 Votes and elections

6.1 The results of the voting ballot were as follows: Member-at-Large 2010, one candidate: Jean-Michel Pontier, elected.

6.2 This year, the voting process was done electronically; this resulted in only a slight increase in returned ballots. 258 ballots were sent out, only 35% were returned. It seems that only a few of the members present did not receive the ballot. In general, the electronic voting process was appreciated.

6.3 Leaving the Committee as Member-at-Large is Phil Bryson. The President expresses many thanks for services rendered with applause from the floor.

7 Future meetings

7.1 Jacek Kot presents the 37th EUBS Meeting 2011 in Gdansk, Poland (PL) and the National Hyperbaric Centre in Gdynia. The Meeting will take place from 24–27 August 2011. There will be three satellite meetings: DAN Europe Divers Day, European Committee

for Hyperbaric Medicine (ECHM) and European Baromedical Association for Nurses, Operators and Technicians (EBAss) will be held. The website is already available at <www.eubs2011.org>.

7.2 The 2012 meeting venue in Belgrade, Serbia, has been presented by the local organising committee to ExCom. They left a very good impression.

7.3 The 2013 meeting will be held in La Réunion, it will be aimed at being a joint meeting with SPUMS. ExCom is still awaiting an official reply from the SPUMS President, who expressed his enthusiasm for such a joint meeting previously.

8 Miscellaneous

8.1 PG informs that the ExCom wishes to participate more actively in the preparation of the annual scientific meetings.

8.2 There is a need for the Society to better communicate with the outside. Several scopes of action are proposed: increase the possibilities to join existing multicentric research, increase the world awareness of EUBS, stimulate networking and interaction outside of the meetings. ExCom proposes the creation of a Liaison Committee; Phil Bryson, having finished his term as Member-at-Large is appointed as a liaison officer to ExCom and will be responsible for this new development. His term will be one year, renewable. This proposal is accepted by the General Assembly.

8.3 Questions from the floor:

8.3.1 Eric Janssen asks if it would not be good for the Society to have meetings with other specialties, for instance radiotherapy. PG answers that this was previously done by ECHM, not EUBS, during a consensus conference organised on purpose.

8.3.2 Why are the EUBS Proceedings shrinking over the years? More and more papers are published only as abstracts, not as "mini-papers" anymore. PG answers that having a full-length paper published in a proceedings book can hinder its subsequent publication in a peer-reviewed journal. Therefore, it was decided two years ago that the proceedings book would be transformed to an abstract and posters book only.

Closed: 1456 h

SPUMS notices and news

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Requirements for candidates (updated October 2008)

In order for the Diploma of Diving and Hyperbaric Medicine to be awarded by the Society, the candidate must comply with the following conditions:

- 1 The candidate must be medically qualified, and be a current financial member of the Society.
- 2 The candidate must supply evidence of satisfactory completion of an examined two-week full-time course in Diving and Hyperbaric Medicine at an approved facility. The list of approved facilities providing two-week courses may be found on the SPUMS website.
- 3 The candidate must have completed the equivalent (as determined by the Education Officer) of at least six months' full-time clinical training in an approved Hyperbaric Medicine Unit.
- 4 The candidate must submit a written proposal for research in a relevant area of underwater or hyperbaric medicine, in a standard format, for approval *before* commencing their research project.
- 5 The candidate must produce, to the satisfaction of the Academic Board, a written report on the approved research project, in the form of a scientific paper suitable for publication. Accompanying this written report should be a request to be considered for the SPUMS Diploma and supporting documentation for 1–4 above.
- 6 In the absence of documentation otherwise, it will be assumed that the paper is submitted for publication in *Diving and Hyperbaric Medicine*. As such, the structure of the paper needs to broadly comply with the 'Instructions to Authors' – full version, published in *Diving and Hyperbaric Medicine* 2010; 40(2):110-2.
- 7 The paper may be submitted to journals other than *Diving and Hyperbaric Medicine*; however, even if published in another journal, the completed paper must be submitted to the Education Officer for assessment as a diploma paper. If the paper has been accepted for publication or published in another journal, then evidence of this should be provided.
- 8 The diploma paper will be assessed, and changes may be requested, before it is regarded to be of the standard required for award of the Diploma. Once completed to the reviewers' satisfaction, papers not already submitted to, or accepted by other journals should be forwarded to the Editor of *Diving and Hyperbaric Medicine* for consideration. At this point the Diploma will be awarded, provided all other requirements are satisfied. Diploma projects submitted to *Diving and Hyperbaric Medicine* for consideration of publication will be subject to the Journal's own peer review process.

Additional information – prospective approval of projects is required

The candidate must contact the Education Officer in writing (e-mail is acceptable) to advise of their intended candidacy, and to discuss the proposed subject matter of their research. A written research proposal must be submitted before commencing the research project.

All research reports must clearly test a hypothesis. Original basic or clinical research is acceptable. Case series reports may be acceptable if thoroughly documented, subject to quantitative analysis, and the subject is extensively researched and discussed in detail. Reports of a single case are insufficient. Review articles may be acceptable if the world literature is thoroughly analysed and discussed, and the subject has not recently been similarly reviewed. Previously published material will not be considered.

It is expected that all research will be conducted in accordance with the joint NHMRC/AVCC statement and guidelines on research practice (available at <<http://www.health.gov.au/nhmrc/research/general/nhmrcavc.htm>>) or the equivalent requirement of the country in which the research is conducted. All research involving humans or animals must be accompanied by documented evidence of approval by an appropriate research ethics committee. It is expected that the research project and the written report will be primarily the work of the candidate, and that the candidate is the first author, where there are more than one.

The SPUMS Diploma will not be awarded until all requirements are completed. The individual components do not necessarily need to be completed in the order outlined above. However, it is mandatory that the research project is approved prior to commencing research.

The Academic Board reserves the right to modify any of these requirements from time to time. As of October 2008, the SPUMS Academic Board consists of:
Associate Professor David Smart, Education Officer
Associate Professor Simon Mitchell
Associate Professor (ret'd) Mike Davis.

All enquiries and applications should be sent to the Education Officer:

Associate Professor David Smart
GPO Box 463, Hobart, Tasmania 7001
E-mail: <david.smart@dhhs.tas.gov.au>

Key words

Qualifications, underwater medicine, hyperbaric oxygen, research, medical society

Minutes of the SPUMS Executive Committee Meeting, 23 May 2010 at Berjaya Resort, Redang Island, Malaysia

Opened: 1435 h

Present: M Bennett, S Lockley, G Hawkins, M Davis and D Smart

Apologies: J Lehm, S Squires, C Acott and V Haller

1 Minutes of previous meeting:

Minutes accepted for Executive Committee Meeting, held 21 November 2009. Proposed M Bennett, seconded G Hawkins, carried.

2 Matters arising from previous minutes:

Reviewed action list.

3 Annual Scientific Meetings:

3.1 ASM 2010

3.1.1 Registrant numbers - 93 SPUMS, 59 full registrants, 115 total registrants (Including AHDMA), meeting total 80. To date, AUD9,800 profit. Resort has offered free lunch for conference attendees. G Hawkins thanked Committee for support to amend the Hyperbaric Update component from Thursday to Friday.

3.2 ASM 2011

3.2.1 S Lockley to convene ASM 2011. Quotations discussed. Decision to make hotel booking arrangements independent of travel agent after cost analysis and quote comparison. Venue currently planned is Palau Pacific Resort with Pacific Flier as major carrier. Expected costs were outlined, including airline quote, accommodation quotes and dive operator quotes. Compared with travel agent quotes. Decision supported by the committee for the convenor to make arrangements directly with providers. Website, organised through Cvent and already paid for, will allow delegates to register and pay and book flights and accommodation on line.

3.3 ASM 2012

3.3.1 Discussed possible locations for ASM 2012. Suggestions included Marshall Islands and Palau Tioman. As yet no convenor identified.

Action: Committee members to continue to seek expressions of interest from SPUMS members for convenor.

3.4 ASM 2013

3.4.1 Combined meeting with EUBS is planned, possible locations discussed.

4 Journal matters:

4.1 NLM Technical Committee Report - DHM Editor suggests letter be sent from the Presidents of EUBS and SPUMS expressing concerns about report and addressing specific issues.

Action: M Davis to draft letter for feedback from both ExComs.

4.2 Addition to the Editor's contract.

Action: M Davis to forward wording for approval.

4.3 DHM Journal web site now operating.

4.4 Mail-out problem with March issue. Partial mail out sent again in April 2010. Discussed seeking alternative distribution method. Proposed: M Davis, seconded M Bennett, carried.

Action: M Davis to explore option of sending out electronic journal to SNAP in Europe, for mail out from Europe.

4.5 Advertising in the Journal dependent on setting up secure payment options for advertisers - best method of depositing advertiser's payments into SPUMS account needs to be determined.

Action: M Davis to discuss with Treasurer who is to advise best method.

4.6 Problems with June issue content - more papers required.

4.7 Policy re: ASM papers and difficulties with 2009 ASM presenters submitting - four still have not been submitted. Professor Bruce Spiess has provided three high-quality papers.

5 Website update

5.1 Costs have been reduced from AUD500 per fortnight to AUD100 per month. Journal will not be added to DHM website at this stage as DHM website does not check membership.

5.2 DHM website - pdf articles, core contents and how to subscribe were discussed.

6 President's report

6.1 Discussed formation of International Society of Baromedicine. Item is now closed.

6.2 Diabetic diving courses discussed.

Action: M Bennett to draft policy statement re diabetic diving courses.

6.3 Discussed Australian Standards for diving medicals and recent meeting attended by D Smart. As a result of ISO Standards coming in, and lack of objection from training organisations within Australia and New Zealand, concern expressed by D Smart that the introduced ISO standards, which have lower quality may over-ride current ANZ Standards. Three options were proposed as a way forward:

i) Sponsor our own standard through Australian Standards; however, submission would cost AUD13,000 and minimal dive industry support expected;

ii) Develop a separate medical standard for the recreational dive medical; and

iii) Forward our medical to relevant government OHS departments stating this is the new SPUMS Dive Medical and we recommend legislation reflects this. The medical could then be placed on our website and into the DHM Journal.

Action: D Smart to continue exploring options and possible solutions.

6.4 Diving Doctors List — Current concerns include that the list is not being up-dated. Suggested that the requirement that members must update details before renewing registration be introduced. In addition, a disclaimer should be placed on the list stating that SPUMS is not responsible for quality control of the doctors listed.

6.5 Mailing list has been updated and is now correct.

6.6 AUHMA - no further correspondence received at this stage to further develop the relationship between the SPUMS and SAUHMA.

6.7 Discussed invitation to SPUMS to have a promotion booth at ODEX, at no charge. A link to their website through the SPUMS website has been requested. Proposed: M Bennett, seconded G Hawkins, carried. It was agreed not to link to commercial providers of equipment/travel, etc.

6.8 Discussed separating membership dues from ASM registrations. With new Cvent website, this will not be an issue, as secure pay link is provided.

6.9 Discussed weekly hours for SPUMS Administrator, currently average of 2.5 days per week.

Action: Letter to Administrator requesting outline of costs for EUBS and SPUMS contribution calculations.

6.10 Managing specific complaints about a SPUMS diving doctor. Correspondence sent to a concerned patient with advice provided on mechanism of contacting Medical Complaints Commission in relevant state.

6.11 Discussed possibility of developing reciprocal website links with commercial enterprises - minimal benefit to our society.

6.12 Donation to Rubicon of AUD1,000 to be made. Proposed M Bennett, seconded G Hawkins, carried

6.13 Epilepsy position paper - currently being drafted.

Action: M Bennett

6.14 ICHM request to contribute to DHM Journal. Possibly room for a one-page newsletter.

Action: M Bennett and M Davis

6.15 Declining membership numbers - discussed multiple concerns including loss of EUBS members of SPUMS.

6.16 Web conferencing <<http://www.umeeting.com/>> - to trial as a meeting tool when enough committee members are available.

7 Education officer's report

7.1 EUBS and SPUMS Diving Doctors list — discussed above.

7.2 Australian Standards for Dive Medicals — discussed above.

7.3 Report re Medline and Australasian College for Emergency Medicine – registrar papers in *Diving and Hyperbaric Medicine* will be recognised by the College for training purposes without Medline citation.

8 Treasurer's report

8.1 In absence of Treasurer, discussed concern with discrepancy between income generated by subscriptions, and expected income based on member numbers provided by SPUMS Administrator. A special meeting was held to discuss this and the SPUMS Administrator was invited in to further explore the discrepancy. Subsequently, the President requested a full investigation of the current membership for this year and the preceding years, through accessing information from the previous website provider and from Secure Pay, as well as SPUMS Membership databases.

Action: M Bennett to liaise with S Goble, G Hawkins and J Lehm to locate the relevant information and undertake an investigation. A report on this matter will be generated and provided to the SPUMS membership in the DHM Journal.

8.2 Recommendation that DHM Journal costs be fully ascertained and members charged appropriately for the actual costs of the production of the Journal. Treasurer has expressed concern that currently SPUMS is not covering the costs of *Diving and Hyperbaric Medicine* fully with subscription charges.

9 Secretary's report

9.1 Contact details for the committee members are currently correct.

10 Other business

Nil

11 Correspondence

Nil

12 Next meeting

To be scheduled around RAN MOUM Course, November 2010

Closed: 1936 h



South Pacific Underwater Medicine Society 40th Annual Scientific Meeting

22–27 May 2011

Venue: Hilton Resort and Spa, Tumon Bay, Guam

Call for Abstracts, Conference Information and Registration Forms

Themes:

**Medical aspects of military, occupational and recreational technical diving
Head injury and diving workshop – review of clinical cases and guidelines
Management of acute diving injuries**

The Head Injury and Diving Workshop will include medical risk assessment for diving reviewed. Management of acute diving injuries will also be covered in the workshop forum.

Keynote speakers:

David Doolette, PhD, US Navy Experimental Diving Unit, Panama City, USA
Simon Mitchell, PhD, FANZCA, The University of Auckland
Andrew Fock, FANZCA, The Alfred Hospital, Melbourne

Abstracts:

Abstracts for presentations should be submitted before 31 March 2011

Intending speakers are reminded that it is SPUMS policy that, wherever possible, their presentation should be submitted for consideration of publication in *Diving and Hyperbaric Medicine*.
The Editor will contact speakers prior to the meeting.

Papers should preferably reflect the themes of the conference. However, all free papers relevant to diving and hyperbaric medicine will be considered.

If you wish to present a paper please contact:

SPUMS ASM 2011 Convenor:
Dr Sarah Lockley
E-mail: <spumssecretary@gmail.com> or <secretary@spums.org.au>
Mobile: +61-(0)4-3114-4817

Register via the SPUMS website <www.spums.org.au>
or contact the Convenor for a Registration Brochure
Registrations not done via the website will incur a handling fee

Eligible candidates are invited to present for the examination for the Certificate in Diving and Hyperbaric Medicine of the Australian and New Zealand College of Anaesthetists.

Eligible candidates are invited to present for the examination for the Certificate in Diving and Hyperbaric Medicine of the Australian and New Zealand College of Anaesthetists.

Eligibility criteria are:

- 1 Fellowship of a Specialist College in Australia or New Zealand. This includes all specialties, and the Royal Australian College of General Practitioners.
- 2 Completion of training courses in Diving Medicine and in Hyperbaric Medicine of at least 4 weeks' total duration. For example, one of:
 - a ANZHMG course at Prince of Wales Hospital Sydney, **and** Royal Adelaide Hospital or HMAS Penguin diving medical officers course **OR**
 - b Auckland University Diploma in Diving and Hyperbaric Medicine.
- 3 **EITHER:**
 - a Completion of the Diploma of the South Pacific Underwater Medicine Society, including 6 months' full-time equivalent experience in a hyperbaric unit and successful completion of a thesis or research project approved by the Assessor, SPUMS
 - b **and** Completion of a further 12 months' full-time equivalent clinical experience in a hospital-based hyperbaric unit which is approved for training in Diving and Hyperbaric Medicine by the ANZCA.

OR:

- c Completion of 18 months' full-time equivalent experience in a hospital-based hyperbaric unit which is approved for training in Diving and Hyperbaric Medicine by the ANZCA
- d **and** Completion of a formal project in accordance with ANZCA Professional Document TE11 "Formal Project Guidelines". The formal project must be constructed around a topic which is relevant to the practice of Diving and Hyperbaric Medicine, and must be approved by the ANZCA Assessor prior to commencement.
- 4 Completion of a workbook documenting the details of clinical exposure attained during the training period.
- 5 Candidates who do not hold an Australian or New Zealand specialist qualification in Anaesthesia, Intensive Care or Emergency Medicine are required to demonstrate airway skills competency as specified by ANZCA in the document "Airway skills requirement for training in Diving and Hyperbaric Medicine".

All details are available on the ANZCA website at:
<www.anzca.edu.au/edutaining/DHM/index.htm>

*Dr Margaret Walker, FANZCA
Chair, ANZCA/ASA Special Interest Group in Diving and Hyperbaric Medicine*

Important notice: New Continuing Professional Development Coordinator needed for 2011

Associate Professor Michael Bennett has recently been appointed as the Chief Examiner for the ANZCA Certificate in Diving and Hyperbaric Medicine. He is advised by the College that he will not be able to continue to produce the CPD exercises in future issues of *Diving and Hyperbaric Medicine* due to a potential conflict of interest.

Therefore, we are seeking a volunteer to continue these CPD exercises. Those interested should contact the Editor.

ANZCA SIG members: Time to front up and support your College, this Journal and your colleagues!

Michael Davis

E-mail: <Editor@dhmjournal.com>



website is at

www.spums.org.au

Members are encouraged to log in

The
Diving and Hyperbaric Medicine

website is at

www.dhmjournal.com

Readers are encouraged to log in

International Congress on Hyperbaric Medicine

President: *Dr Frans Cronje*

Executive Director: *Dr Alessandro Marroni*

Secretary: *Associate Professor Michael Bennett*

The ICHM is a world-wide organisation, with minimal formal structure, entirely dedicated to hosting an international scientific congress every three years with the purpose of improving understanding among the international hyperbaric community. The *First International Congress on Hyperbaric Medicine* was held in Amsterdam in 1963, under the auspices of the Founding President, Professor Boerema. Since then, the Congress has been held all over the world and the 17th Congress in 2011 will be our first visit to Africa.

Communication among members is through the publication of a newsletter *Oxygen* and a website at <www.ICHM.net>.

With the endorsement of SPUMS and EUBS, a regular page of news and information about the ICHM, of which this is the first, will appear in *Diving and Hyperbaric Medicine* (DHM). We welcome comments from readers, whether or not they are members of the ICHM.

Also under negotiation is the possibility of publishing the Proceedings of each Congress under the *Diving and Hyperbaric Medicine* banner – watch this space. Members of the ICHM who wish to publish scholarly articles are encouraged to consider submission to DHM. All submissions will be subject to the Journal's peer review process.

For all enquiries contact Mike Bennett:

E-mail: <m.bennett@unsw.edu.au>

The 17th International Congress on Hyperbaric Medicine Cape Town, South Africa 16–19 March 2011

On behalf of the Organising Committee of the 17th International Congress of Hyperbaric Medicine, we would like to invite you to attend the congress in Cape Town, South Africa

We believe we have crafted an exciting and dynamic programme which will include:

- Critical reviews on and identification of shortcomings of the current evidence base for the practice of hyperbaric medicine
- Update on the absolute and relative contra-indications to hyperbaric oxygen therapy
- Overview of essential occupational medical principles and practice
- Diving medical examinations
- Hyperbaric staff and patient issues in hyperbaric centres
- Update on saturation diving, including a review of current occupational medical evidence
- Hyperbaric centre medical director's safety responsibilities
- Practical issues surrounding wound care
- Acrylics - the facts and fallacies about viewports and windows
- Chamber safety and risk management for hyperbaric facilities

Exhibitors: Sponsorship opportunities and exhibition packages are still available

Welcome to Cape Town: Cape Town ranks as one of the world's most beautiful cities, and on our doorstep are a wide array of attractions. We believe that a truly unique and wonderful experience awaits you and your partner. A wide variety of accompanying persons tours and sightseeing tours will be available to showcase the city and surrounding attractions.

Airfares: Specially rebated airfares have been negotiated for the conference

Accommodation: The organisers have arranged a range of discounted accommodation, with many hotels just a short walk from the conference venue.

For all enquiries and registration, visit the Conference website:

www.acitravel.co.za/ichm2011/

Frans Cronje, Convenor

<info@ichm.co.za>

Inter-university Diploma in Diving and Hyperbaric Medicine, France

University course (1-year duration) in diving and hyperbaric medicine, organised concurrently by 13 French universities (Angers, Antilles-Guyane, Besançon, Bordeaux II, Lille II, Lyon II, La Réunion, Marseille, Nancy, Nice, Paris XIII, Strasbourg, Toulouse).

For further information go to:

<<http://www.medsubhyp.org>> or
<<http://medecine.univ-lille2.fr/format/diu/hyperbar.htm>>

Oxygen and Infection; European Committee for Hyperbaric Medicine (ECHM) Conference Proceedings

Free video lectures from the May 2009 Stockholm meeting are available for your iPhone or computer
<www.hyperbaricoxygen.se>

5th Karolinska Postgraduate Course in Clinical Hyperbaric Oxygen Therapy

14 lectures on fundamental concepts and front-line knowledge in the clinical use of HBO.

ECHM Conference 'Oxygen and Infection'

22 lectures and three panel discussions are available on topics such as necrotizing fasciitis and the diabetic foot.

For further information contact:

Folke Lind, MD PhD,
E-mail: <folke.lind@karolinska.se>
Website: Editor <www.hyperbaricoxygen.se>

The Hyperbaric Research Prize

The Hyperbaric Research Prize encourages the scientific advancement of hyperbaric medicine and is awarded annually whenever a suitable nominee is identified. It will recognise a scholarly published work or body of work(s) either as original research or as a significant advancement in the understanding of earlier published science. The scope of this work includes doctoral and post-doctoral dissertations. The Hyperbaric Research Prize is international in scope. However, the research must be available in English. The Hyperbaric Research Prize takes the form of commissioned art piece and US\$10,000 honorarium.

For detailed information please contact:

Baromedical Research Foundation
5 Medical Park, Columbia, SC 29203, USA
Phone: +1-803-434-7101
Fax: +1-803-434-4354
E-mail: <samir.desai@palmettohealth.org>

The Australia and New Zealand Hyperbaric Medicine Group Introductory Course in Diving and Hyperbaric Medicine

Dates: 21 February – 4 March 2011

Venue: Prince of Wales Hospital, Sydney, Australia

Course content includes:

- History of hyperbaric oxygen
- Physics and physiology of compression
- Accepted indications of hyperbaric oxygen (including necrotising infections, acute CO poisoning, osteoradionecrosis and problem wound healing)
- Wound assessment including transcutaneous oximetry
- Visit to HMAS Penguin
- Marine envenomation
- Practical sessions including assessment of fitness to dive

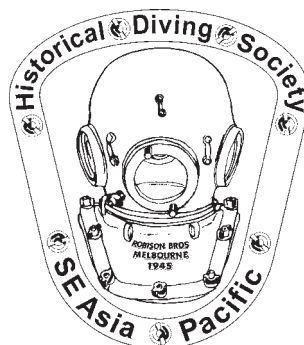
This course is approved as a CPD Learning Project by ANZCA – Cat 2, Level 2 – 2 credits per hour (Approval No. 1191)

For more information contact:

Ms Gabrielle Janik, Course Administrator
Phone: +61 (0)2-9382-3880
Fax: +61 (0)2-9382-3882
E-mail: <Gabrielle.Janik@sesiahs.health.nsw.gov.au>

German Society for Diving and Hyperbaric Medicine (GTUeM)

An overview of basic and refresher courses in diving and hyperbaric medicine, accredited by the German Society for Diving and Hyperbaric Medicine (GTUeM) according to EDTC/ECHM curricula, can be found on the website:
<http://www.gtuem.org/212/Kurse/_/Termine/Kurse.html>



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