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European Journal of Underwater and Hyperbaric Medicine

EUBS European Underwater and Baromedical Society

Official NEWSLETTER

CONTENTS

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EUBS EXECUTIVE COMMITTEE

EDITOR'S COLUMN

Dear Readers!

Those of you living in parts of Europe with a fast and reliable mail service will have noticed that the March issue arrived a little later than usual, as will this issue. With enough problems getting all the parts that have to go into an issue onto my desk in time, and with the financial restrictions I have for the journal, I've been encountering more and more problems to get it printed and mailed in time. A change of printer did not help much, as I ended up re-editing the last issue several times until it could be printed. Even with modern electronics compatibility is not warranted, and the professional producers therefore all work with Apple computers, while I am still working with my old PC which is used for everything I do, including my hyperbaric clinic. My PC has now reached it's limits for extending the hard- and software I had to add to be compatible with the professionals, and I would like to apologise for not being able to deliver the journal to all of you in time.

Despite the congratulations I have received for the Journal, the budgetary constraints of the EUBS and my personal financial restrictions from fighting to get reimbursed for every single case I treat in the chamber, have brought me to the point where I have consider to quit the task of being the Editor of this Journal. I can no longer support the EUBS so much with my time spend on the Journal and abusing my staff for it. Anyone who has more time, secretarial or professional background for the editing and the publishing of a scientific journal, please step forward and identify themselves. As the President says in his address, the Society needs your support, and here would be a great opportunity to do so.

The EUBS will also have to find better ways to ensure payment of membership dues or other fees like publication of an advertisement in the Journal. It is impossible to expect from every member to come to the Annual Scientific Meeting and pay their dues on site. It is also unfair to expect me to do the task of the Membership Secretary, besides what I'm doing for the Society already.

Some of you have asked me what happened to the International Federation of Diving and Hyperbaric Medical Societies which had been discussed in the March 2002 issue of this journal. Just having talked to both SPUMS and UHMS Executive Committee Members I can now inform you that no progress has been made in the meantime. All medical societies, not only the international ones, but also the national societies, seem to go thru a difficult phase, with loss of membership and income. As we have experienced in the EUBS too, the struggle to survive and to create a safe future for a medical society, takes so much time and effort that we all tend to forget tasks we had initiated to prevent further endangering of our system. However, this is contra-productive, as we can only stay alive if we stand together. I therefore urge all those who had initiated the talks towards an International Federation, and the ones of you who may have gained interest in the meantime, to continue and get the international societies together and form a powerful association of baromedical societies.

With the Annual Scientific Meeting of the EUBS in Copenhagen soon coming up, may I remind you that the EUBS gives the famous Zetterstrøm Award every year, which recognises scientific merit and presentation of a poster at the meeting. This includes the publication of a full paper of this presentation in the European Journal of Underwater and Hyperbaric Medicine, which seems to be not widely known to presenters applying for the Zetterstrøm Award by submitting their abstract for a poster presentation. Some of you may have noticed that we have not published the Zetterstrøm Award winners of the last two years. This is due to the fact, that these posters had already been submitted to medical journals, which have not been published yet. So we have to hang in until that has been accomplished and the editor of the other journal allows for a reprint in the EJUHM. I would be very grateful if this could be avoided in the future and we could have the winning posters published in a timely fashion after the meetings.

A wonderful evolution is, that the Swiss Society of Hyperbaric and Underwater Medicine will have a regular insert in the EJUHM. This will increase our distribution and aid to the recognition of the Journal. Welcome aboard!

All the best,

Peter

PRESIDENT'S NOTE

Dear Friends

We will be meeting very soon in Copenhagen, that is those of us who plan to attend the 29th Annual Meeting of this Society which will be held in Denmark between the 27th and 31st of August.

I hope many of you will come to the meeting. The Secretary General of this meeting, our friend Dr Ole Hyldegaard has prepared a good program for us with pre and post conference satellite meetings as well as a pre- congress diving trip!

This year we must elect a new member at large to replace the outgoing member at large, Dr Martin Hamilton Farrell, who we thank for his valid contributions both in and outside the Executive Committee. We must also elect a new Vice-President to replace Dr Noemi Bitterman who will take over the role of EUBS president from me this year.

It is a pity that some members who were nominated to stand for the two posts felt that they are unable to accept the nomination. I have no doubt that they had very valid reasons for this and felt that unless they were certain that they could dedicate the time they should not make a commitment.

However unless there are such individuals who do come forward and offer a little of their time to this Society it will rapidly deteriorate. I would like to thank those individuals who have accepted to be nominated and ask all of you to show your support by sending in the ballot vote at your earliest convenience.

Our Membership Secretary and Treasurer, Mrs Angela Randell has decided, because of personal reasons, not to continue in her post. While I and my Committee thank Angela for her many years of service to the Society, her leaving creates an important gap which needs to be filled and I will take this opportunity to ask that individuals who feel up to taking on this task to write to me at my e-mail address.

See you in Copenhagen

Ramiro Cali-Corleo,
President

EXECUTIVE COMMITTEE NOMINATIONS for Member-at-Large in 2003

Dr Costantino Balestra

Born 13th February 1964 in Udine, Italy.
Married with 3 children.
Primary education in Milan, Italy.
Secondary education in Casteau, Belgium.
1986 - Graduated Masters in Sports Sciences at the Free University of Brussels with a Thesis on "understanding the Neurophysiology of Fatigue in Humans"
1986 - Appointed coach of the National University Gymnastics team, assistant in neurophysiology and researcher in neurophysiology.
1991 - Launched a disabled divers club "Wet Wheels" in Brussels.
1992 - Appointed Professor of Physiology in the Pole Europeen de Bruxelles Wallonie (Haute Ecole Paul Henri Spaak.
1994 – Started DAN Europe Benelux
1995 – Finished PhD in Neurophysiology with a thesis "long loop mechanisms and neurophysiology of fatigue"
1996 – Presented first scientific paper at the EUBS (and has presented works regularly ever since)
1996 – Appointed DAN Europe Vice President for research and education.
2000 – Nominated as full time professor as well as head of the physiology department at the Haure Ecole Paul Henri Spaak in the University Pole.
2001 – started an environmental and Occupational Laboratory at the H.E.P.H.S.
2002 – Co-Organised with Dr Peter Germonpre the 28th Annual meeting of the EUBS
2002 – Won the DAN Europe Award for 2002
2003 – Submitted secondary thesis "Is patency of the cardiac Foramen Ovale a risk factor for circulating bubble related pathologies? Experimental Data and safety suggestions".

MEETINGS

FASCINATION APNOEA-DIVING

Physiology, Pathophysiology, Safety and Training

UNIVERSITY OF ULM/DONAU, GERMANY
08-09 NOVEMBER, 2003

A joint Workshop of the

- **German Society for Diving and Hyperbaric Medicine (GTÜM e.V.)**
- **University of Ulm, Germany**
- **Apnoea-Division of the VDST e.V.**
- **AIDA**

For information contact:
Dr. Claus-Martin Muth
CMMmuth@aol.com

An advanced course for medical practitioners on the

CLINICAL MANAGEMENT OF DIVING ACCIDENTS

And an International Workshop on the

TRIAGE AND MANAGEMENT OF DIVING ACCIDENTS

PATONG, THAILAND: 10-14 NOVEMBER, 2003

The advanced course focuses on the medical aspects of diving emergencies. It is recommended for those who treat decompression accidents and for any doctors who are divers *and has been approved for 20 hours CPD (continuing professional development) in the UK and 20 hours CME (continuing medical education) in the USA.* The course is directed by David Elliott, OBE, DPhil, FRCP and meets the continuing study requirements for medical examiners of divers who are recognised by the *Health & Safety Executive* in the UK and by *IMCA* internationally. It also follows the recommendations of *European Diving Technology Committee* and *European Committee of Hyperbaric Medicine* as continuing medical education for diving medical physicians (EDTC category IIa). The course will be 4 hours on each of five days, 10-14 November.

The international workshop will be held daily after each day's sessions of the advanced course. The meeting will provide diving doctors with an opportunity to present their experience, opinions and concerns relating to the many practical problems that they find in unusual and difficult cases when there are limited resources. Among those who have joined the Panel so far are Chris Acott (Australia), Alessandro Marroni (Italy), Alf Brubakk (Norway), Francois Burman (South Africa), Frans Cronje (South Africa), Donya Hemmadhun (Thailand), Maurice Cross (UK), David Elliott (UK), Klaus Torp (USA and Germany) and Lorre Henderson (USA). The workshop opens on Monday with two Public lectures, one on recreational diving safety and one on regional diving fishermen, and then continues with this 4-day agenda.

Details are available from David Elliott,
40 Petworth Road, Haslemere,
Surrey GU27 2HX.
Fax (44)1428 658678 *or* e-mail
<davidelliott001@aol.com>

2nd INTERNATIONAL MEETING OF EMERGENCY MEDICINE IN THE PACIFIC REGION

TAHITI
23-25 FEBRUARY, 2004

Topics:

- Diving accidents: initial care.
- Diving accidents: indications and methods of hyperbaric oxygen treatment.
- Indications and use of hyperbaric oxygen hyperbaric treatment in conditions other than diving accidents.
- Decompression accidents: indications of hyperbaric oxygen treatment.
- Indications and method of the hyperbaric oxygen treatment in emergency medicine, which evidence, which methods?
- Burns: an indication of the hyperbaric oxygen treatment?
- Abrupt Deafness from medical or barotraumatic origin; emergency diagnosis and treatment.
- Gangrene and necrotising cellulites: need for an integrated care.
- Leisure diving Accidents in 2003; did symptomatology evolve?
- Wounds with difficult cicatrisation.
- Air evacuation of a diving accident.
- Presentation of the consensus recommendations, October 2003.

You will find all last information useful on our Internet site in English on **www.emergency-tahiti.com**. It will be possible to subscribe on our newsletter to regularly receive last information on the organization of the congress and propose free papers until Nov. 23 2003, only by Internet. Program is at **http://www.emergency-tahiti.com/download/preprogrammang.JPG**. Finally you can directly reserve your voyage on line.

Dr Yann TURGEON
Président de l'association A.P.A.M.U.
info@urgences-polynesie.pf

Le SPUMS

NOUMEA, NOUVELLE-CALEDONIE 01-05 June, 2004

SPUMS 2004 Annual Scientific Meeting will follow UHMS Meeting in Sydney 25-28 May, 2004

The **Theme** for 2004 will be "Marine Stingers" and the Guest Speaker will be Dr Peter Fenner.

A Sub-Theme will be "Diving" with Guest Speaker.

SPUMS ASM format will be to hold five days of meetings, preceded by a Welcome Cocktail Party, followed by the Scientific Meeting which will run from 3pm until 7pm each day.

- Diving Program will run each day before the daily meeting sessions.
- On the last day, the Annual General Meeting of SPUMS will be held.
- Conference Dinner will be on the Fifth Evening.

Venue – Le Meridien Noumea

Provisional Costings

- Return Airfares Sydney/Noumea/Sydney or Brisbane/Noumea/Brisbane
- Seven nights Le Meridien Deluxe Room
- 7 buffet breakfasts and 5 Dinners
- (inclusive of Conference Dinner)
- Cost per diver (10 Dives) AUD$3660.00
- Cost per Non Diver AUD$2800.00
- Taxes AUD$150.00

Conference Convener
Dr Guy Williams
Past President SPUMS
PO Box 190
Red Hill South, Victoria 3937, AUSTRALIA
guyw@surf.net.au
Telephone +61 3 59811555
Facsimile +61 3 59812213

Conference Travel Agent
Allways Dive Expeditions
168 High Street
Ashburton, Victoria 3147, AUSTRALIA
Telephone +61 3 98858863
Facsimile +61 3 98851164
Toll Free 1800338239
Allwaysdive@bigpond.com.au

BOOK REVIEWS

DR JOHN PARKER: The Sports Diving Medical: a guide to medical conditions relevant to scuba diving 2nd Edition, September 2002

J. L. Publications
PO Box 387
Ashburton, Victoria 3167
AUSTRALIA
172 pages
ISBN: 0-9587118-6-0
Recommended Retail Price: US$ 40.00 incl. shipping
Available from: www.danseap.org

While some believe, that medical aspects of sports diving should be regulated by some central entity, some believe that medical conditions could be ignored and the decision to whether any individual could dive should lie solely within the decision of the diving instructor. Probably between this two extremes as usual the solution lies.

However, to be able to identify the health problems encountered from diving one first needs to know about the environmental changes to which the diver is exposed, and second needs to be able to identify all the conditions, medications and processes that may impose on a sports diver's safety. Then the question as to which examinations should be performed arises and at the end, the diver needs counselling for her or his condition.

John Parker's book covers all of the above and he therefore has to be congratulated for this book, which now has become a standard in the field. It is comprehensive, while having all the advantages of single authorship. It will prove an essential reference for every physician having to give medical advise to divers.

Dr. Peter HJ Mueller
Editor, European Journal of Underwater and Hyperbaric Medicine

EUBS European Underwater and Baromedical Society

BALLOT Sheet for EUBS

Executive Committee Elections 2003

Nominations for Vice-President

Alf O. Brubakk	**O**
Martin Robert Hamilton-Farrell	**O**

Nominations for Member at Large

Costantino Balestra	**O**

Please select one candidate from each position and indicate in the appropriate box.

Return the ballot sheet to the EUBS President by 18th August 2003 at:

Dr Ramiro Cali-Corleo
Enfin, Marmora Str, St. Julians SGN10
Malta

Thank you!

Dr Ramiro Cali-Corleo
Enfin
Marmora Street
St. Julians SGN10
Malta

OxyHeal Health Group ®

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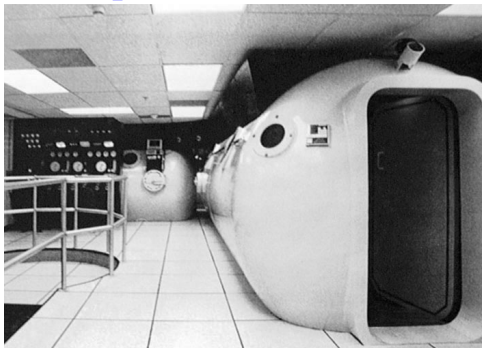
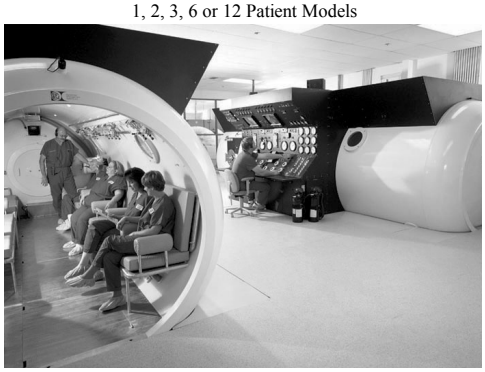


18 Patient, Triple Chamber
Trauma and Clinical Locks



Dual 12 Patient Double Lock Chambers
Burn Patient and Wound Treatment Configurations

UCLA Medical Center, Los Angeles
Gonda Center for Wound Healing & Hyperbaric Medicine

The OxyHeal Health Group was formed to market the consolidated assets and capabilities of three corporations: Hyperbaric Oxygen Therapy Systems, Inc. ("HOTS"), Hyperbaric Technologies, Inc. ("HTI"), and Hyperbaric Management Systems, Inc. ("HMS"). The combined companies have over 30 years of corporate experience in the Diving and Hyperbaric industry beginning in 1970.

Hyperbaric Technologies, Inc. creates, designs, engineers and manufactures all types and styles of multipatient hyperbaric and diving medical systems and all their associated support systems. HTI maintains architects and engineers to produce drawings and plans to construct all aspects of wound and hyperbaric medical equipment in Hospitals and Health Care Centers. HTI maintains project managers, construction teams and contract managers to undertake the actual construction of the Wound Healing and Hyperbaric Medicine Facilities for Hospital and Health Care Facilities. ***Hyperbaric Management Systems, Inc.*** Provides full service management, operation and medical team staffing of Wound Healing and Hyperbaric Medicine Centers at Medical Centers and Physician Practice Group Settings anywhere in the United States including certain locations worldwide.

HMS contracts under a variety of responsibilities and profit sharing arrangements including full capitalization of Hyperbaric facilities at risk reimbursement scenarios under long term exclusive full service partnerships and joint ventures. All agreements include definitive marketing and advertising service plus financial management of each medical department and operation

Hyperbaric Oxygen Therapy Systems, Inc. Maintains teams of Wound Healing and Hyperbaric Medicine physicians, nurses, and certified Hyperbaric technician specialists that offer wound and Hyperbaric customized training and education leading to appropriate certifications and continued medical education credits. HOTS additionally conducts medical education seminars and outreach campaigns to further the understanding of Wound Healing and Hyperbaric Medicine. HOTS also invests its assets and staff to conduct Hyperbaric clinical research, including cellular, animal and human trials.

"OxyHeal Seeking Opportunities In Europe"

Contact OxyHeal at 3224 Hoover Avenue, National City, CA. 91950
or PO Box 1987, La Jolla, Ca, USA, 92038
Go to www.oxyheal.com to see our full range of services or call
1 (619) 336-2022, 1 (619) 336-2017 FAX.
or email us at help@oxyheal.com.

Deliberately blank !

EXECUTIVE COMMITTEE NOMINATIONS for Vice-President in 2003

Dr Alf O. Brubakk

Born: 24.01.1941

Adress: Norwegian University of Science and Technology, Department of Physiology and Biomedical Engineering, Medical Technology Center, 7005 Trondheim, Norway

Education: Medical School, Justus Liebig Universitet, Giessen, Germany. 1961-67. Dr. med., Universitetet i Trondheim 1978.

Clinical training: Community physician 1968-70. Dept. of Cardiology, Trondheim Univ. Hospital 1970-75. Head, Dept. of medical computing, Trondheim computer center 1975-78. Department of Anesthesiology, Trondheim Univ. Hospital 1978-81.

Qualifications: Norwegian authorization to perform medical investigations of commercial divers since 1979. Norwegian authorization as diving medical advisor since 1984. British authorization as diving medical advisor since 1992.

Positions: Assistant professor in clinical physiology, Medical Faculty, Univ. of Trondheim 1979-81. Senior researcher, Norw. Underwater Inst. 1981-84. Head Clinical Physiology Unit, Dept. of Biomedical Engineering, Univ. of Trondheim 1984-92. Prof. of Environmental Physiology, Norw. Univ. of Science & Technology 1992-present. Visiting Prof. in Baromedicine, Univ. of Belgrade, Jugoslavia 1998. Visiting Prof. in Baromedicine, Univ. of Split, Croatia 2000-01.

Activities: Diving medical advisor Stolt Offshore (the world's largest diving company) since 1985. Diving medical advisor Shell Norway 1994-95. Head, Committee for selection of Norwegian astronauts, Norwegian Space Center 1989-90. Member, Columbus Medical Board, ESA 1988-90. Member, Policy Board, Diving Medical Advisory Committee 1985-. Member, Hyperbaric Science Panel, Medical Research Council 1989-present. Consultant, SINTEF UNIMED (Section for extreme work environments) 1987–2000. Member, Space board, NTNU 1995-present. Vice President Undersea & Hyperbaric Medical Society 1997-98. Senior Editor, The Physiology and Medicine of Diving, 5.ed, Saunders, 1998-2002. Chairman, Diving Medical Advisory Committee 1998-present. Referee: J Appl Physiol, Europ J Appl Physiol, Aviat Space Environ Med, Undersea Hyperbaric Med.

Prizes: Behnke Award by the Undersea & Hyperbaric Medical Society 1995. Statoil Award for Scientific Achievement, Statoil Norway 2001.

Research interests: Physiological responses to extreme environments and biomedical instrumentation. Main activities during last 10 years related to decompression from dives or to altitude / space includes both experimental and clinical work.

Dr Martin Robert Hamilton-Farrell

Martin Hamilton-Farrell is a Consultant in Anaesthesia and Hyperbaric Medicine at Whipps Cross University Hospital in London. He works whole-time for the National Health Service, and he is seconded to London Hyperbaric Medicine Ltd., as its Medical Director, as part of his hospital appointment.

He has been committed to Hyperbaric Medicine since 1988: with two monoplace chambers, he was responsible for the busiest service in the UK in the mid-1990's. The advent of London Hyperbaric Medicine Ltd, with a large investment in personnel, training and equipment, has realised the service's full potential.

He was Chairman of the British Hyperbaric Association from 1992-1994; and he was responsible for initiating the national gazetteer of hyperbaric facilities, the BHA Core Curriculum for hyperbaric personnel, and the Code of Good Working Practice in Hyperbaric Medicine published by the Royal College of Physicians.

He was appointed to the Board of Executives of the European Committee for Hyperbaric Medicine in 1999; appointed UK representative in COST Action B14 in 1999; and elected to the Executive Committee of EUBS in 2000.

He is committed to education and training in Hyperbaric Medicine, and is helping to develop a Diploma course for medical personnel in the UK. He facilitates regular courses at Whipps Cross University Hospital. He strongly supports the European Journal of Underwater and Hyperbaric Medicine, as an expression of excellence in our specialty.

Reprints from other journals

GERMAN GUIDELINE FOR THE TREATMENT OF DIVING ACCIDENTS – A SUMMARY

GTÜM e.V.
German Society for Diving and Hyperbaric Medicine.

Guideline, diving accident, decompression illness, emergency treatment, recompression therapy

DEFINITION

A diving accident is also called „decompression accident" or „decompression illness" (DCI). It is caused by a rapid reduction of the ambient pressure and is characterized by the formation of gas bubbles in the diver's blood and tissues. Dependent on the formation process, two diagnoses can be separated, „Decompression Sickness" (DCS) and „Arterial Gas Embolism" (AGE). In many cases the clinical picture does not allow a clear differentiation between DCS and AGE. Differential diagnoses may be e.g. barotrauma of the inner ear (rupture of the round window membrane), cerebral insult due to embolus or bleeding, vertebral disc herniation, myocardial infarction, hypoglycaemia, or epilepsy.

INITIAL TREATMENT

First Aid by Medical Laypersons

Usually, first aid is provided by dive buddies. The effectiveness of the first aid and of the further treatment depends on the appropriate education of those dive buddies, on an emergency kit adapted to the needs of the planned dive, and on fail-safe means of communication (e.g. mobile phone & emergency numbers).

In case of mild symptoms (unusual fatigue, skin bends)

- Administer 100% oxygen
- Administer fluid orally (0.5-1.0 litres, no hypertonic fluids, no alcohol, no caffeine)
- In case of hypothermia: protect against further heat loss (blankets, vapour shield)
- Orientating neurological examination
- No in-water recompression
- Complete relief of the symptoms within 30 minutes: contact a diving physician, keep in observation for 24 hours
- If symptoms persist longer than 30 minutes: treat as in case of serious symptoms

In case of symptoms in water or other symptoms like:

- Skin bends
- Pain
- Tingling
- Unusual weakness
- Numbness
- Paralysis
- Breathing troubles
- Visual, hearing and speech troubles
- Vertigo
- Nausea
- Impaired consciousness
- Unconsciousness

follow the instructions below:

Specific First Aid

- Put diver in a supine position, if diver lost consciousness: put diver in the recovery position.
- Administer 100% oxygen (start as soon as possible),
  a) if breathing sufficiently: via face mask with demand valve or closed circuit oxygen re-breathing system with CO_2-scrubber, if not available: with constant flow (15-25 ltr./min, non re-breathing mask with oxygen reservoir),
  b) if not breathing sufficiently perform artificial respiration: Ambu/Laerdal bag with 100% constant O_2 flow (15-25 ltr./min) or Ambu/Laerdal bag with demand valve or closed circuit oxygen re-breathing system with CO_2-scrubber.
  Administer oxygen without breaks until arrival at the treatment chamber, give highest possible oxygen concentration even if oxygen supply is limited (no air-mix or constant flow below 15 ltr./min).
- Fluids
  a) if victim is conscious with stable neurology and intact swallowing reflex: administer fluids orally in small sips (0.5-1.0 ltr./h, no hypertonic fluids, no alcohol, no caffeine)
  b) if the casualty's consciousness or swallowing reflex is affected, do not administer fluids orally.

Further treatment

- Perform an orientating neurological examination
- In case of hypothermia: protect against further heat loss, no active rewarming
- Contact a diving emergency hotline, e.g. DAN-Hotline in Germany: +49-431-54090 or international DAN-Hotline: +39-0396057858 (mention the keyword „diving accident / Tauchunfall"), for other hotlines look at www.gtuem.org
- Organization of transportation
  a) Call emergency services
  b) Transport fast and gently (no preference for a specific transportation, no restrictions for helicopter transportation, if possible max. 1000ft/300m altitude above ground).
  c) Transport to the nearest emergency admission, preferably with a hyperbaric chamber close by
- Secure the diving instruments, e.g. dive computer
- Documentation of diving data, occurrence of symptoms and treatment
- No in-water recompression

First Aid by Medical Personnel

Specific First Aid:

- Put diver in a supine position (see above)
- If breathing sufficiently: administer 100% oxygen (see above)
- If not breathing sufficiently: perform artificial respiration with 100% oxygen, if necessary via endotracheal tube. Administer oxygen without breaks until the arrival at the treatment chamber, give highest possible oxygen concentration even if oxygen supply is limited (no air-mix, no constant flow below 15 ltr./min).
- Fluids: administer 0.5-1.0 ltr./h i.v., preferably ringer lactate, no 5% dextrose in water
- Medication (reserved for physicians): generally according to the standards of emergency medicine. Up to now there are no drugs available with a proven specific effect in the treatment of diving accidents.

Further treatment

- Perform an orientating neurological follow up examinations
- Urine catheter if indicated
- Pleural drainage if indicated
- In case of hypothermia: protect against further heat loss. Active rewarming only if ICU-like interventional capabilities are available.
- Contact a diving emergency hotline (see above)
- Monitoring and documentation patient and put down: documentation by the emergency doctor and of the diving data made by laymen, occurrence of symptoms and treatment, instruments taken along (e.g. decompression computer)

TRANSPORT TO THE NEAREST HYPERBARIC TREATMENT CHAMBER

Transport by car, boat, helicopter (if possible < 1000 ft/300 m above ground) or plane (cabin pressure close to 1.0 bar). Transport gently and without reduction of the ambient pressure. Carry on the treatment, administer oxygen continuously until reaching the hyperbaric chamber.

INITIAL HYPERBARIC TREATMENT

Hyperbaric treatment chamber

Hyperbaric chamber has to be equipped for treatment of diving accidents (working pressure min. 280 kPa/2.8 bar abs./18 msw, emergency medicine equipment according to DIN 13232, building and equipment of chamber according to DIN 13256).

Actions before treatment

- Perform neurological examination (documentation!)
- Perform chest x-ray (p.a./lateral) or chest CT scan, if possible without time delay or if pulmonary barotrauma is suspected
- Pleural drainage in case of pneumothorax
- Urinary catheter if indicated
- Perform myringotomy if indicated
- When the patient is intubated: check the cuff pressure continuously or fill the cuff with aqua dest.
- Contact the diving emergency hotline if necessary (see above)

Treatment tables

- Standard treatment table is US Navy Treatment Table 6 or modifications of this table with initial oxygen breathing at 280 kPa/2.8 bar abs./18 msw for all diving accidents independent on the used breathing gas.
- For omitted decompression without symptoms shorter tables may be used with initial oxygen breathing at 280 kPa/2.8 bar abs./18msw or 240 kPa/2.4 bar abs./14 msw, e.g. US Navy Treatment Table 5.

Care during the treatment

- Repeated neurological examinations (documentation!)
- Repeated auscultation of the lungs, always before the respective decompression
- Control regularly all gas-filled confinements (e.g. cuff of endotracheal tube, drip chamber of infusion, blood pressure cuff), always before the decompression

Adjuvant treatment

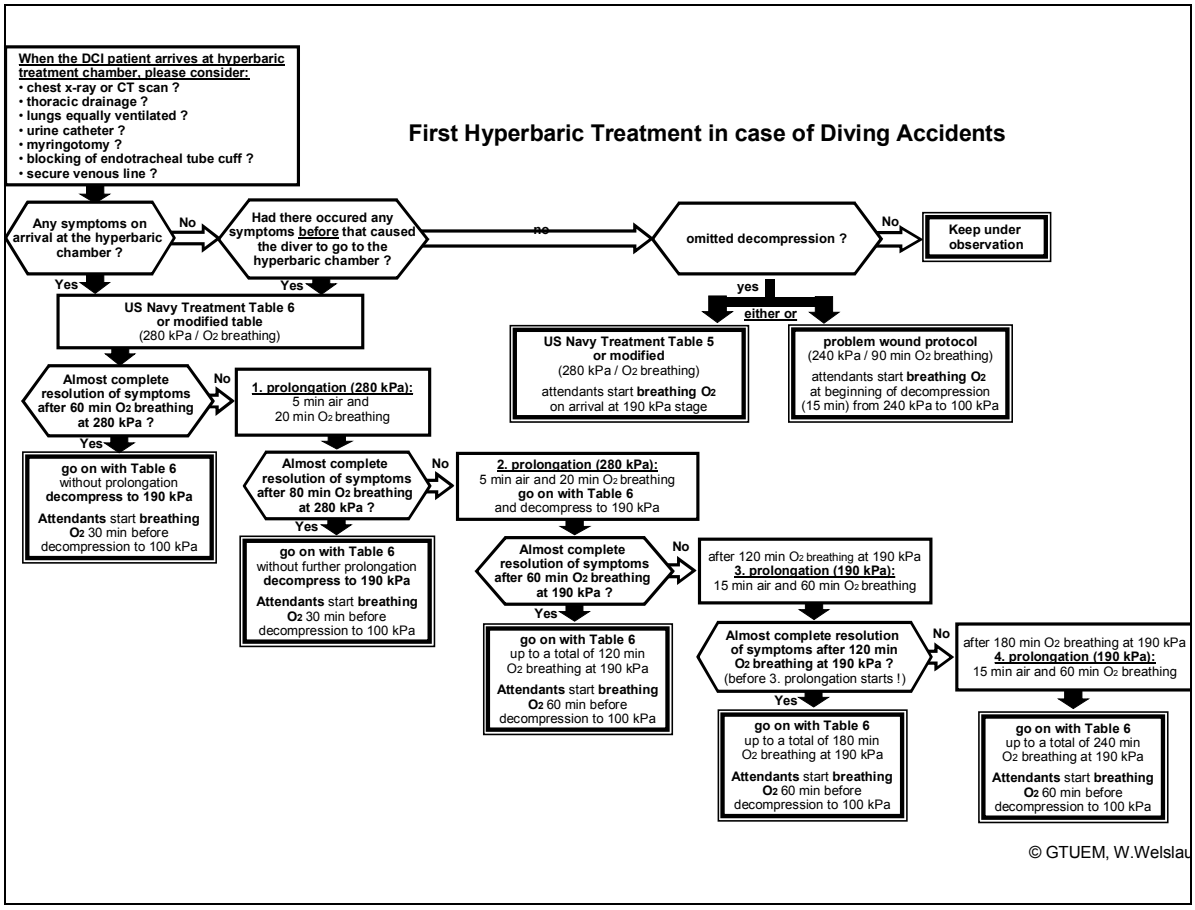
- Generally according to standards in emergency medicine and intensive care medicine
- Conscious patients may need psychological support!
- Balance fluids if indicated, dependent on the symptoms
- Medication: so far there are no drugs available with a proven specific effect for the treatment of diving accidents
- Documentation of the performed treatment for the consecutive physicians

TRANSPORT TO THE HYPERBARIC TREATMENT CENTRE

If the symptoms persist after the first hyperbaric treatment, one or more further treatments are necessary within 24 hours. If inpatient care cannot be provided at the hyperbaric chamber, organize the transport to a hyperbaric treatment centre with this capability. Flight transport with a regular cabin pressure (e.g. 0.8 bar abs.) is generally possible after at least one hyperbaric treatment and at least 24 hours after the accident (in-flight oxygen breathing may be necessary). Decisions on the transport have to be taken together with experienced diving physicians, in accordance with the history and the continual existence of symptoms in that specific case.

Care during the transport:

- According to the standards of emergency medicine and intensive care medicine
- Continue the implemented treatment
- Administer oxygen according to the clinical situation
- Fluids: take care of hydration especially during flight (i.v./orally)
- Perform orientating neurological follow up-examinations
- Documentation (e.g. by the emergency physician)
- Medication: according to the standards of emergency medicine and intensive care medicine



FURTHER HYPERBARIC TREATMENTS

- If necessary treat a second time according to the standard recompression treatment table or start immediately with the hyperbaric treatment (e.g. „problem wound treatment protocol“ with 90 min. oxygen breathing at 240 kPa/2.4 bar abs./14 msw), max. 2 treatments within 24 hours, max. interval between treatments 24 hours.
- Diagnostics: depending on clinical symptoms (e.g. MRT, CT, repeated examinations by neurologist, repeated lung function testing)
- Physiotherapy: depending on clinical symptoms (between hyperbaric treatments, begin at least 3 days after the diving accident). Physiotherapy during the hyperbaric treatment is possible, but it has not been proven that this will have an advantage over physiotherapy between the hyperbaric treatments.
- Medication and other treatments respective to the clinical symptoms and following the recommendations of special medical fields.
- Decision on the termination of the hyperbaric treatments: after the complete and lasting disappearance of symptoms the hyperbaric treatment can be terminated. If there is a standstill in the reduction of symptoms over 3 to 5 days during the ongoing hyperbaric treatments after an initial reduction of symptoms, the hyperbaric treatments should be terminated and the rehabilitation of neurological symptoms should be continued.
- Documentation
- Rehabilitation: In case of persisting neurologic deficiency after the termination of the hyperbaric treatment, the rehabilitation has to follow what is useful in case of the specific neurologic symptom.

RETURN TO DIVING AFTER DIVING ACCIDENTS

As a matter of principle, assessments should follow the recommendations of the „Manual Tauchtauglichkeit” (Manual for the suitability to dive, issued by GTÜM, SUHMS and OEGTH).

Before the assessment of the fitness to dive, the treatment has to be terminated and a stable treatment result has to be achieved.

Assessment of the fitness to dive should be reserved to experienced diving physicians with a minimum qualification comparable to "Diving Medicine Physician, EDTC" and with practical experience in the treatment of diving accidents.

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Editors commentary: The full version of this guideline in German language can be downloaded from the website of the GTÜM at http://www.gtuem.org

INSTRUCTIONS TO AUTHORS

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Contributions should be sent to

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The **EJUHM** is composed on a PC using Word processing. Documents are acceptable on disc or by e-mail. Illustrations and tables should **NOT** be embedded in the Word document, only their position indicated. All tables are to be separate documents. Illustrations should be separate documents in Word or TIFF, clearly marked with the format used. References should be in the correct format, shown in the next column. Submissions must be accompanied by two printed copies of all text, tables and illustrations.

The printed copies should be double-spaced, using both upper and lower case, on one side of the paper only, on A4 paper. Headings should conform to the format in the Journal. All pages should be numbered. No part of the text should be underlined. These requirements also apply to the abstract, references, and legends to figures. Measurements are to be in SI units (mm Hg are acceptable for blood pressure measurements) and normal ranges should be included. All tables should be double spaced on separate sheets of paper. No vertical or horizontal rules are to be used.

Photographs should be glossy black-and-white and slides should be converted to photographs before being sent. Colour reproduction is not available. Legends should be less than 40 words, and indicate magnification.

Abbreviations do not mean the same to all readers. To avoid confusion they should only be used after they have appeared in brackets after the complete expression, e.g. decompression illness (DCI) can thereafter be referred to as DCI.

The preferred length for original articles is 2,500 words or less. Inclusion of more than 5 authors requires justification. Original articles should include a title page, given the title of the paper and the first names and surnames of the authors, an abstract of no more than 200 words and except in unusual situations be subdivided into Introduction, Methods, Results, Discussion and References. After the references the authors should provide their initials and surnames, their qualifications, and the positions held when doing the work being reported. One author should be identified as Correspondent for the Editor and for readers of the Journal. The full current postal address of each author, with the Telephone, facsimile numbers and e-mail address of the corresponding author, should be supplied with the contribution. No more than 40 references per major article will be accepted. Accuracy of the references is the responsibility of authors. Acknowledgments should be brief.

Abstracts are also required for all case reports and reviews. Letters to the Editor should not exceed 400 words (including references which should be limited to 5 per letter).

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1. Thorsen E, Risberg J, Segadal K, Hope A. Effects of venous gas microemboli on pulmonary gas transfer function. Undersea Hyperbaric Med 1995; 22:347-353.
2. Hempleman HV. History of decompression procedures. In: Bennett PB, Elliott EH, eds. The physiology and medicine of diving. London: WB Saunders, 1993:324-375.
3. Kindwall EP, Goldmann RW. Hyperbaric medicine procedures. Milwaukee, WI: St. Luke's Medical Center, 1970.

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ANNOUNCEMENT

CEO/President

Divers Alert Network (DAN) America

Divers Alert Network (DAN) America seeks a world-class expert in dive safety to assume the position of President of this non-profit 200,000-member association of recreational divers.

The mission of DAN is to give expert medical information and advice for the diving public, to provide emergency medical advice and assistance for medical diving injuries, and to work to prevent injuries and promote diving safety. (See www.diversalertnetwork.org for extensive organizational information.)

The CEO/President in this Duke position, is responsible for: the organization's effective management including all headquarters operations located in Durham, North Carolina and a staff of 80; in conjunction with the Board and CFO, oversees the management of two for-profit subsidiaries wholly owned by DAN America; and is also responsible for effectively maintaining DAN's close association with Duke University Health Systems and other diving organizations worldwide. Duke University is an Equal Opportunity/Affirmative Action Employer.

Qualifications include: Reputation as a world-class expert in diving safety; a minimum degree of Ph.D. or M.D.; demonstrated leadership experience in complex non-profit and/or membership organizations, including sound fiscal management; a strong background in managing, motivating and developing programs and funding sources for research and educational purposes; excellent communication skills in writing and in addressing public and professional audiences; and, DAN seeks an individual who possesses energy, initiative, excellent people skills and the capacity to think strategically.

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