

The Diving Medical Advisory Committee

DMAC, Third Floor, 5 Lower Belgrave Street, London SW1W 0NR, UK
Tel: +44 (0) 20 7824 5520 · Fax: +44 (0) 20 7824 5521

www.dmac-diving.org
info@dmac-diving.org

Approval of Diving Medicine Courses

DMAC 29 Rev. I – December 2006

Supersedes DMAC 29 which is withdrawn

1 Objective

This guidance is for those who seek international approval for the recognition of courses in diving medicine for physicians. At present this recognition is available for only two specific courses that have been selected as needed now in relation to medical support for working divers. Except that 'working divers' include some recreational instructors and guides, the needs of doctors who are associated only with recreational diving have not been specifically addressed by this committee. Some course organisers may wish to add extra lectures and/or practical sessions on recreational diving at their discretion. However, such modifications must not affect the integrity of the approved course and would not be assessed by DMAC/EDTCmed.

This note has been reissued in June 2006 to include a revised curriculum checklist (see Appendix A). The remainder of the document remains as previously issued.

2 Background

Legal regulations and industrial standards concerning training of doctors involved in examination and treatment of working divers and the medical consultants to diving contractors vary throughout the world. Many professional divers work in different nations as a part of their employment and, even though the guidance on medical standards for fitness to dive is reasonably well established internationally, the training of doctors to conduct those examinations and to provide competent support for diving emergencies is patchy.

Accreditation or approval of courses in diving medicine would probably best be achieved if multi-national agencies (such as bodies within WHO, ILO or EU) or well-reputed academic institutions with international connections would accept such a responsibility. However, in spite of agreement for many years on the need for approval, little or nothing has happened.

In 2004 the European Diving Technology Committee (EDTC) produced its guidance on the "*Medical Assessment of Working Divers*". This has been published by the International Marine Contractors Association (IMCA) and will shortly be available on the EDTC website.

Previously, a joint committee of the European Committee for Hyperbaric Medicine (ECHM) and EDTC developed "*Training Standards for Diving and Hyperbaric Medicine*". At present, this remains the best recognised international standard for such training. However, no organisation has accepted responsibility for administering an approval procedure for these basic courses. Until another recognised body takes on this responsibility, DMAC has accepted the obligation to assess selected courses in diving medicine together with a representative of the EDTC Medical Subcommittee; this alliance is to be referred to as 'DMAC/EDTCmed'.

It is emphasised that DMAC/EDTCmed will approve only the courses and not the competence of those who have attended them. DMAC is not constituted to have a procedure for assessing the training record, experience and competence of individual doctors. That needs to be done in conjunction with other aspects of professional qualifications at a national level.

2.1 Course Scope

To be considered for approval the course should be compliant with the attached DMAC revision of ECHM/EDTC “*Training Standards for Diving and Hyperbaric Medicine*”. A copy of ECHM/EDTC’s original version, which is for all health professionals in hyperbaric and diving medicine, can be downloaded from www.edtc.org. When any proposed changes to the sections concerning diving doctors have been approved by EDTC, an amended version of that section will be added to the EDTC website.

DMAC has slightly modified the “*level of competency*” in the original ECHM/EDTC “*Contents of modules*” and the application for course approval should demonstrate compliance with the attached “*Curriculum Checklist*” in Appendix A (rather than the original version currently on the EDTC website).

The application form should clearly state for which of these two categories (or both) approval is sought:

- ◆ Level I Medical assessment of divers (Medical Examiner of Divers);
- ◆ Level IIa Medical management of diving accidents and illnesses (Competence in Diving Medicine).

Currently DMAC/EDTCmed will not issue approval for revision courses at these two levels or for any other categories of courses.

2.2 Organisation and Responsibilities, Course Faculty

The application must clearly show how responsibilities are shared. As a minimum, the application must identify the administrative aspects (legal, economic, personnel) as well as professional responsibilities (faculty members). The application must identify the person(s) having overall administrative and professional responsibility of the course. The application should list how many times the course has been arranged and, unless new, the number of students who have previously attended.

2.3 Students

The course programme should clearly state the acceptance requirements (professional skills/training) for candidates.

2.4 Curriculum

The detailed curriculum should be attached to the application. The curriculum should define contact hours, main topic and training objective of each lesson (theoretical or practical) and identify the teacher or trainer responsible. A matrix demonstrating compliance with “*Contents of Modules*” should be attached. If any non-compliance is identified, the reason for this should be explained or details offered of corrective actions to be instituted.

2.5 Video Documentation

After the course is finished, the applicant is required to present video documentation of a maximum of three contact hours of training (not necessarily in the English language) to the DMAC/EDTCmed working group in PAL VHS or DVD. (Any other format should be agreed in writing between the applicant and DMAC/EDTCmed). Based on the course curriculum, DMAC/EDTCmed will decide at least seven days before the course starts which contact hours the applicant is to video. Failure to provide video documentation will normally cause withdrawal of DMAC/EDTCmed recognition. If the video demonstrates some unsatisfactory teaching standards, the course director is asked for a statement and eventually his plans to revise the programme in the future.

2.6 Examination

Students receiving a course certificate or diploma should demonstrate sufficient knowledge according to the scope of the course. The application should detail how the students will be examined and the pass/fail criteria. A written examination is mandatory. The application should detail whether and how a student failing to meet the training standard could undergo re-examination.

2.7 Course Certificate

An approved course is eligible to state in the diploma or course certificate that the course has been approved by DMAC/EDTCmed for training, as appropriate, of:

- ◆ Level I Medical assessment of divers (Medical Examiner of Divers);
- ◆ Level IIa Medical management of diving accidents and illnesses (Competence in Diving Medicine).

DMAC/EDTCmed does not approve training of other categories of personnel and any non-physicians who participate in the course must not receive certificates or diplomas that indicate DMAC/EDTCmed approval of training.

2.8 Secrecy/Confidentiality

DMAC/EDTCmed may contact any member of the applicant's faculty for further information and/or review. When the application has been approved, DMAC/EDTCmed's final conclusion concerning that course will be made available on the EDTC, DMAC and IMCA websites. However, no information concerning course content or other details will be disclosed (see para 4). DMAC/EDTCmed may later contact students completing the course to verify that the course actually complies with the guidelines. The applicant will be informed before any such student contact is established.

2.9 Attachments

These attachments should follow the application. They are all to be submitted in an electronic format:

- ◆ general information letter/invitation for participation, or text of any advertisement;
- ◆ detailed course curriculum;
- ◆ completed checklists (two: both "Administrative" and "Curriculum");
- ◆ course faculty members with CV, address, telephone/telefax numbers and e-mail addresses;
- ◆ sample diploma/certificate for physicians and non-physicians.

2.10 Cost

Application fee is to be decided by DMAC/EDTCmed. Applicants should contact the DMAC Secretary for further information concerning cost and payment.

2.11 Period of Validity

Unless course content is changed, the approval period is three years. After this, the course must be reviewed by DMAC/EDTCmed.

If any faculty members or the course curriculum are changed, the applicant is obliged to forward information on this to ensure that the course remains DMAC/EDTCmed-approved. Unless changes are significant, DMAC/EDTCmed will not request further fees for recognition of minor changes.

3 DMAC/EDTCmed Internal Procedure for Reviewing Applications of Approval

3.1 DMAC/EDTCmed

DMAC will nominate a working group consisting of two persons who shall be responsible for reviewing the applications. One of them shall be the representative of the EDTC Medical Subcommittee (or a third member could be co-opted from the EDTC). Additionally a reserve is nominated if any member of the initial group is biased or unavailable. The DMAC Chairman should not be a member of the working group. An assessment group member is considered biased if he/she is a member of the faculty seeking approval or if he/she is employed or working within the institution arranging the course. Any cases of doubt concerning bias should be referred to the DMAC Chairman for final decision. He/she may refer to the EDTC National Co-ordinator where appropriate. If a working group member is biased, he/she should be replaced by the reserve.

3.2 Administrative Remarks

The DMAC Secretary will acknowledge receipt of applications, advise the applicant if any critical documentation is obviously missing and forward an invoice. The Secretary will inform the applicant of the identity of the two persons in the working group. The applicant may dispute the composition of the working group (within seven days) if he/she finds the working group biased or otherwise inappropriate. Such complaints should be addressed in writing to the Secretary and forwarded to the DMAC Chairman for final decision.

3.3 Application Review

The working group will review the application and should reach a conclusion within three weeks unless further documentation/information is needed. The conclusion is forwarded to the DMAC Chairman for approval and issuing of a letter of approval/refusal. Recommendation of approval is based on the contents of forwarded information. In letters of refusal the major points of criticism should be outlined. If the members of the working group disagree, a final decision will be made by the DMAC Chairman.

3.4 Complaints/Appeal

If the applicant contests the decision, an appeal procedure is initiated through the DMAC Chairman. In this case the complaint is initially considered by the DMAC Chairman. He/she can reconsider the decision in co-operation with the working group. If the decision remains unchanged, a final decision should be given by DMAC in plenary with the EDTC Medical Subcommittee as appropriate.

4 DMAC Website

DMAC will update a list of approved courses with such contents:

- ◆ course organiser (name or institution);
- ◆ class of course (I or IIa);
- ◆ DMAC approval period;
- ◆ practical details (contact names, e-mail addresses, scheduled courses and similar, etc.) (*optional*).

The same information will be available on the IMCA and EDTC websites.

Practical Application Procedure

To ensure compliance with DMAC/EDTCmed requirements, two checklists for applicants have been developed. The applicant should complete these carefully and must send them in an electronic format. All the information asked for must be documented, e.g. in course curricula, lecture objectives, enclosed CVs, course information folders, etc. It is not acceptable simply to state that “this will be covered”. DMAC/EDTCmed strongly endorses development of a course manual compiling this information.

The applicant should consider focusing on three areas considered essential to receive DMAC/EDTCmed approval:

- ◆ The course should have a well reputed faculty and all teachers should demonstrate a high level of professional skill;
- ◆ Though some flexibility in timing and order of lessons may be necessary and sometimes even beneficial, the course should have a stringent and well defined structure and well defined contents of its different modules;
- ◆ A demonstration of the acquired skills (examination) should be clearly defined.

DMAC/EDTCmed requires that a student receiving a diploma or course certificate indicating that DMAC/EDTCmed has approved the course must attend the majority of course lessons and that they must have demonstrated to the course director the level of skill achieved. However, DMAC/EDTCmed accepts that a number of students may want to attend some part(s) of the course and/or not present for a final exam. The applicant may issue diplomas or course certificates to such students, but such certificates must not indicate that the course is DMAC/EDTCmed approved and these students will not be accepted for listing as having attended a DMAC/EDTCmed approved course.

Two checklists have been prepared. The first is directed mainly towards course formalities and the second identifies required course content.

Administrative Checklist

Fill in columns “Applicant’s reference and comments” and “Complies Yes/No”.

	Applicant’s reference and comments	Complies Yes/No	DMAC/EDTCmed Comments
1	Is an application letter enclosed, explaining course general background, previous courses, contents, etc.?		
2	Does the application letter state which category course is approval sought for?		
3	Is this letter signed by both the professional and the administrative personnel responsible for the course?		
4	Does the application letter list and number all attachments?		
5	Is the organisation of the course, including faculty, clearly described?		
6	Are all faculty members listed by name, address, telephone and e-mail?		
7	Are CVs for all teachers attached?		
8	Is a detailed time schedule for the course attached?		
9	Is a tabulated list of total contact hours attached, divided into classroom lectures and practical exercises?		
10	Is the course curriculum (describing the training objectives of each lesson) attached?		
11	Does the application describe in detail how the students will be tested after the finished course?		
12	Does the application describe pass/fail criteria and the possible way of re-examining failed students?		
13	Does the application describe the requirement for attendance in order to receive a diploma/course certificate at the end of the course?		
14	Does the application describe how this attendance will be monitored?		
15	Does the application describe course literature given to the student or required by the course faculty?		
16	Does the application describe, in reasonable detail, how practical exercises and training will be completed (<i>to a level assuring DMAC that sufficient equipment, space and planning will ensure success</i>)?		
17	Does the application describe the need for and availability of AV equipment?		
18	Does the application describe access to basic logistic support functions (e.g. photocopying, meals, etc.)? <i>DMAC/EDTCmed does not question details in this matter, but wants to avoid that neglect of practical issues may disturb the professional outcome of the course.</i>		
19	Has the course been recognised by any national or other international authority or organisation?		
20	Is a sample of a course diploma/course certificate enclosed?		
21	Is a sample of a course diploma/course certificate for students not passing the exam or failing the attendance requirement enclosed?		
22	Has the applicant confirmed willingness to provide video documentation of a maximum of three contact hours for post-course review?		
23	Are both checklists filled in and enclosed with the application?		
24	Are all documents in an electronic format?		

Curriculum Checklist

Fill in columns “Applicant’s reference and comments” and “Complies Yes/No”.

Topic	I	Ila	Applicant’s reference and comments	Complies Yes/No	DMAC/EDTCmed Comments
I Physiology and pathology of diving and hyperbaric exposure					
1.1 Hyperbaric physics	B	C			
1.2 Diving related physiology <ul style="list-style-type: none"> – functional anatomy – respiration – hearing and equilibrium control – thermoregulation 	B	C			
1.3 Hyperbaric pathophysiology I <ul style="list-style-type: none"> – immersion effects – blackout mechanism and apnoea – psychology – working performance/endurance under water 	B	C			
1.4 Hyperbaric pathophysiology 2 <ul style="list-style-type: none"> – decompression theories – bubble dynamics 	B	C			
1.5 Acute dysbaric disorders <ul style="list-style-type: none"> – DCI (PB & AGE, DCS, mixed pathologies and PFO) – pathophysiology 	B	C			
1.6 Chronic disorders of diving <ul style="list-style-type: none"> – long term effects: dysbaric osteonecrosis, CNS, ENT, pulmonary, etc. – all clinical aspects 	B	C			
1.7 HBO basics <ul style="list-style-type: none"> – effects of hyperbaric oxygen 	-	C			
1.8 O ₂ toxicity <ul style="list-style-type: none"> – CNS, lung, retina, etc. 	A	C			
1.9 Inert gas-effects <ul style="list-style-type: none"> – narcosis, HPNS 	A	C			
1.10 Drugs under pressure <ul style="list-style-type: none"> – therapeutic and personal 	B	C			
1.11 Non-dysbaric diving pathology <ul style="list-style-type: none"> – Hypothermia – near-drowning – marine fauna and flora effects – injuries and accidents in water – the sick diver 	A	C			
1.12 Diving fatalities <ul style="list-style-type: none"> – autopsy procedures and interpretation 	A	A			
2 Diving technology and safety					
2.1 Basic diving procedures (air or nitrox) <ul style="list-style-type: none"> – SCUBA – hose-supplied from surface – wet bell 	B	C			

Topic	I	IIa	Applicant's reference and comments	Complies Yes/No	DMAC/EDTCmed Comments
2.2 Special procedures, e.g. <ul style="list-style-type: none"> – surface decompression (any gas) – oxygen or nitrox decompression – mixed gas SCUBA – technical diving (e.g. rebreathers) – mixed gas bounce diving, hose-supplied from bell – mixed gas saturation using SDC and TUP with deck chamber – seabed habitats 	B	C			
2.3 Professional diver categories, e.g. <ul style="list-style-type: none"> – apnoeic diving – recreational instructors and guides – offshore (oil and gas) – inshore – archaeological – scientific – film and media work – police – military diving Introduction to caisson and compressed gas workers, HBO workers and aviators	B	C			
2.4 Diving equipment <ul style="list-style-type: none"> – SCUBA – surface-supplied UBA – rebreathers, mixed gas and oxygen – helmets and communications – thermal protection and supplements – in-water monitoring – working tools (welding, cutting, NDT, etc.) 	B	B			
2.5 Diving tables <ul style="list-style-type: none"> – basic theory and limitations – available table formats (air, repetitive, surd, O₂ deco, mixed gas, altitude, etc.) – use of personal computers – saturation and excursions 	A	B			
2.6 Regulations and accepted standards (EDTC, IMCA). Compare didactic prescriptive model (e.g. USA) with goal-setting assessment (e.g. in EU)	A	B			
2.7 Role of client, contractor, supervisor, diver in the safety assessment process	A	B			
3 Fitness to dive					
3.1 Principles, criteria and evaluation of contraindications <ul style="list-style-type: none"> – for working divers, compressed gas workers and HBOT personnel 	C	C			
3.2 Assessment <ul style="list-style-type: none"> – including diagnostics and need for referrals 	C	C			
3.3 Fitness to dive standards and regulations for working divers in EU (EDTC) with option of additional places	C	C			

Topic	I	IIa	Applicant's reference and comments	Complies Yes/No	DMAC/EDTCmed Comments
4 Diving accidents					
4.1 Causation, pathogenesis and categories of diving accidents, including: <ul style="list-style-type: none"> personal, physiological, equipment and environmental contributory factors near-drowning hypothermia barotraumas (compression and decompression): ears, sinuses, lungs, etc. decompression illnesses deep and saturation diving accidents trauma and coincidental illness 	A	C			
4.2 Decompression accident management <ul style="list-style-type: none"> assessment differential diagnosis immediate care, triage communications 	A	C			
4.3 Management of other diving accidents <ul style="list-style-type: none"> assessment differential diagnosis immediate care, triage communications management of coincidental illness or injury at depth 	A	C			
4.4 Recompression <ul style="list-style-type: none"> air and mixed-gas diving arising in-water, at surface or at depth (e.g. sat) algorithms, tables (and regional differences) communications 	A	C			
4.5 Rehabilitation of disabled divers	-	A			
5 Clinical HBO					
5.1 Chamber technique <ul style="list-style-type: none"> multi-place mono-place transport chambers in-water recompression 	-	B			
5.2 HBO: mandatory indications	-	A			
5.3, 5.4 HBO: recommended, experimental and anecdotal indications	-	-			
5.5 Data collection/statistics/evaluation	-	A			
5.6 General basic treatment (nursing)	-	B			
5.7 Diagnostic, monitoring and therapeutic devices in chambers	-	C			
5.8 Risk assessment, incidents monitoring and safety plan in HBO chambers	-	B			
5.9 Safety requirements	-	C			
6 Diverse topics					
6.1 Research status	-	A			
6.2 Paramedic teaching programme	-	A			
6.3 Management/organisation of hyperbaric facility	-	A			

Topic	I	IIa	Applicant's reference and comments	Complies Yes/No	DMAC/EDTCmed Comments
7 Practical training					
<i>DMAC/EDTCmed will accept NC for individual modules of practical training if the total amount of training seems balanced and valid. Purely theoretical courses would generally not be considered compliant with the DMAC/EDTCmed quality standard for such courses.</i>					
7.1					
7.1					
7.2					
7.3					
7.4					
7.5					
7.6					
7.7					
7.8					
7.9					

Levels of competence:

- A Aware of subject
- B Familiar with subject
- C Detailed understanding of subject

Requirement:

- ++ Essential
- + Recommended
- Not required

For **Level I** 7.1 and 7.7 are recommended but not essential.

For **Level IIa** 7.1 – temporary exceptions are possible if unfit to dive at the time of the course but, because future tasks will require candidates to treat divers at pressure, the certificate of attendance should be postponed until this has been completed.
7.7 – the candidate must provide this option but, though strongly recommended, candidates can complete the course without in-water participation.

ECHM-EDTC Standards for Course Organisation and Certification

Teaching Courses

The standards do not prescribe the status of the teaching institution, but it is strongly recommended that courses are university-based, are approved for such training courses by national health authorities, speciality training boards or are under the auspices of the national scientific society for diving medicine and/or hyperbaric medicine.

How a course is to be organised is not prescribed in these standards. Evenings, weekends or full weeks are possible. Distance and web-based learning can be considered. For clinical teaching, an internship or residency may be appropriate. The acknowledgement of a high teaching standard is based on a credible final test of the candidates.

Modules and Course Organisation

The actual organisation and conduct of the modules will be influenced by local factors and so it is proposed that these details can be decided on a national basis and probably left to the individual course directors. The following proposal indicates the total teaching hours considered necessary to achieve appropriate competencies in the following jobs.

I	Medical examiner of divers	25 lecture hours + 3 hours practical
Ila	Diving medicine physician	The above + 30 additional lectures + 10 hours practical

The proposal serves as a guideline and is not mandatory. When one of these teaching programmes includes topics covered elsewhere a reduction in the number of lecture hours may be justifiable.

Continuing Education

In most countries, the conditions for maintaining the active status of an individual are defined by a system of continuing medical education credits or professional development (CME or CPD). ECHM and EDTC defined the minimum requirement for this in a flexible way that provides enough freedom for other bodies to establish a more detailed system. The proposals were the following:

- Job I:** A minimal activity of ten medical assessments of divers fitness per year is needed plus attendance at one refresher course (usually two days) in two years. Reactivation after a lapse needs participation in two two-day refresher courses or a repeat of the full basic course.
- Job Ila:** Continuing experience in the field of professional diving (e.g. advising a professional diving contractor or some equivalent activity) and participation in a course or congress previously approved by the national co-ordinator. Reactivation after a lapse should be on the basis of a specifically approved course. Where this cannot be achieved, the candidate should submit an alternative training programme to the national co-ordinator for approval.

The Joint Medical Subcommittee of ECHM and EDTC

This committee operates on the basis outlined at www.edtc.org. Each country interested in educational courses should be represented by a member who has been acknowledged by the national hyperbaric medicine authority (or of all such authorities if there are more than one such authority in a country). Normally this would be either the national member of ECHM or the national medical representative on the EDTC. If not the same individual, both could attend if appropriate. The EDTC and ECHM representatives of each country should nominate a national co-ordinator of teaching programmes, who could be the joint subcommittee member himself or who could delegate for that purpose (for instance to the national health and safety authority or any representative scientific body covering all aspects of hyperbaric medicine). The national co-ordinator will have the duty to supervise the national programmes, the certification procedures and to liaise with the Chairman of DMAC when appropriate.