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Accreditation of Hyperbaric Technical Officer (HTO) training in Australia

Dale O'Halloran

Key words

Hyperbaric facilities, training, qualifications, standards, policy, general interest

Abstract

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Introduction: In 2000, the Hyperbaric Technicians and Nurses Association (HTNA) established a Training Committee of two registered nurses and two technical officers to address training and accreditation issues within the Association. For technical training the priority was to establish a career pathway and further education for Hyperbaric Technical Officers (HTOs). This process has been broken into four phases with known goals and outcomes.

Goals:

- Amend the prerequisite requirements for HTO training in the Hyperbaric Oxygen Therapy Facilities Industry Guidelines (HOTFIG) and the Draft Australian Standard (SF-46).*
- Design and accredit the framework of training for the Certificate IV and Diploma in Hyperbaric Technology to Australian National Training Authority (ANTA) standards.
- Find and assist a suitable registered training organisation (RTO) to implement the Certificate IV in Hyperbaric Technology.
- Find and assist a suitable RTO to implement the Diploma in Hyperbaric Technology.

Outcomes: HOTFIG was amended in February 2002; these changes now appear in the new Australian Standard AS 4774.2-2002. ANTA has approved the framework of training for the Certificate IV and Diploma in Hyperbaric Technology. Royal Adelaide Hospital (RAH), an RTO, commenced delivery of the Certificate IV in Hyperbaric Technology in July 2005. Once HTOs have completed the Certificate IV, RAH will commence delivery of the Diploma in Hyperbaric Technology. Future goals include guidelines for continuing education and an analysis of the training requirements for monoplace chambers.

Introduction

During the 2000 Hyperbaric Technicians and Nurses Association (HTNA) Annual General Meeting, members agreed to establish a committee to identify and develop education strategies for hyperbaric registered nurses and hyperbaric technical officers (HTOs) in Australia. The HTNA Training Committee, consisting of two nurses (Christy Pirone and Chris Mitchell) and two HTOs (David King and Dale O'Halloran), was established and its initial recommendations presented the following year. This paper will focus on these and subsequent developments for HTOs to the present time.

Goals for accredited training of HTOs

The HTNA Training Committee identified that the training for HTOs should:

- provide a career pathway
- be nationally accredited
- be affordable and
- be consistent with AS 4774.2-2002.^{1*}

This has been tackled in four phases.

- Phase 1 included the analysis of current training requirements and standards, definition of prerequisites, and identification of registered training organisations (RTOs) interested in delivering training, and was completed by May 2002.
- Phase 2 was completed in October 2002 and dealt with the design and accreditation of the framework of training.
- Phase 3 was the development of training resources and delivery of the Certificate IV of Hyperbaric Technology and was completed in July 2005.
- Phase 4 is the development of training resources and delivery of the Diploma of Hyperbaric Technology. The diploma package is likely to be delivered in 2006.

* Footnote: SF-46 is a Committee formed by Standards Australia to represent the interests of the following groups during the compilation of Australian Standard 4774.2-2002: Australian and New Zealand Hyperbaric Medicine Group (a sub-committee of the South Pacific Underwater Medicine Society); Australian and New Zealand College of Anaesthetists; Australian Industry Group; Australian Medical Association; Hyperbaric Engineering Industry Forum; Hyperbaric Technicians and Nurses Association; Institution of Engineers Australia and WorkCover New South Wales.

PHASE 1

Phase 1 involved analysis of current training requirements and standards, definition of prerequisites and identification of RTOs interested in delivering training. Following the review process, recommendations for HTO training were tabled at the 2001 HTNA Annual General Meeting held in Fremantle. These recommendations included a proposal to align prerequisite qualifications with courses accredited both in Australia and internationally, and the analysis and development of an accredited HTO course.

The analysis phase of the HTO course identified that no accredited training curriculum existed for HTOs. Existing *ad hoc* HTO training available at individual hyperbaric facilities in Australia varied immensely. The Hyperbaric Oxygen Therapy Facilities Industry Guidelines document (HOTFIG),² published by the HTNA in 1998, was of limited use as a training document, and was subject to inconsistent levels of compliance within hyperbaric facilities in Australia. Clearly, an accredited course was required as it would establish a consistent standard of training, career pathways and measurable work competencies and skills.

Overview of the analysis of skill sets

Three professional groups that operate in Australia and New Zealand were identified as having expertise in the operation of recompression chambers (RCCs) and the supervision and training of chamber operators and supervisors. These were:

- occupational divers
- commercial divers and life support technicians (LSTs)
- clearance divers (CDs).

Occupational divers

The Australian Diver Accreditation Scheme (ADAS) is the national occupational diver certification scheme. ADAS offers accreditation to divers who have been assessed by an ADAS diving training establishment as meeting the competency requirements of one of the relevant four parts of Australian Standard 2815.³⁻⁶ This accreditation is valid only whilst diving operations are being undertaken in accordance with relevant legislation and operational standards, and whilst the diver is in possession of a current AS 2299 medical certificate certifying him/her fit to dive.⁷

AS 2815.3-1992 Training and certification of occupational divers – Air diving to 50 m contains components for the training of diving supervisors, including the supervision of the operation of RCCs.⁵ There was and still is no current ADAS-accredited stand-alone RCC supervisor's course; however, ADAS do provide an RCC operator's course.

Commercial divers and life support technicians

The International Marine Contractors Association (IMCA) is the leading international body for the accreditation of training organisations that train offshore divers and support

staff. IMCA has a training scheme for divers and non-divers (e.g., nurses) to become LSTs for onshore hyperbaric facilities. The pathway to becoming an LST is to complete an Assistant Life Support Technician course (14 days), which is offered in Tasmania. On completion of this course, approximately 3800 hours operating/supervising a hyperbaric chamber under the supervision of an IMCA-endorsed LST must be completed, after which a theoretical examination is taken.

Clearance divers

During the training of advanced CDs (petty officer and above), both monoplace/monolock and multiplace/multilock chambers are utilised for omitted decompression and therapeutic recompression. Advanced CDs supervise basic CDs (able and leading seamen) who operate the RCCs during these procedures. Basic CDs' knowledge and skills are comparable to those of the IMCA ALST and ADAS chamber operators.

Due to the particular skill sets gained in obtaining one of the above qualifications, and the lack of any similar level of training available in Australia, possession of one of these qualifications was identified as a prerequisite to undertaking a Certificate IV in Hyperbaric Technology. Adopting this 'prerequisite' policy enabled a significant reduction in the Certificate IV training time, thereby significantly reducing costs. Additionally, without the prerequisite requirement, the development of a full Certificate IV training package was considered not to be financially viable or practical for training providers given the limited numbers of jobs available in this profession in Australia.

Therefore, selection criteria were adopted into AS 4774.2-2002,¹ such that the candidate shall comply with one of the following prerequisites:

- be qualified as a life support technician (LST) and certified by the IMCA
- have as a minimum an ADAS Part 3 certificate of competency for diving supervisors, or
- if from a military background, have attained the minimum rank of Petty Officer Clearance Diver.

Running concurrently with the HTNA review was an Australian National Training Authority (ANTA) initiated and funded project for Community Services and Health Training Australia Ltd (CSHTA) to provide a training package for all health technicians across Australia. A training package of this type is considered the framework for uniform national training standards, must be endorsed by industry and applies to the vocational education sector. These types of packages consist of competency standards, qualification names and levels, and assessment guidelines.

As the HTNA is the industry body for Hyperbaric Technicians and Nurses in Australia and New Zealand, the newly formed HTNA Training Committee became the principal consultant to CSHTA in developing HTO training

in Australia. The initial meeting between all parties was held in 2001 at the Wesley Centre for Hyperbaric Medicine in Brisbane, Queensland, and was attended by HTOs from the Alfred Hospital, Royal Australian Navy and the Wesley. During this meeting the syllabus structure and timelines for the project were formalised.

PHASE 2 – DESIGN AND ACCREDIT FRAMEWORK OF TRAINING

Certificate IV in Hyperbaric Technology

This qualification covers workers who maintain the safe function and operation of the hyperbaric chamber and related equipment during patient treatments and testing procedures. Common occupational titles may include Hyperbaric Technician, Hyperbaric Technical Officer, and Hyperbaric Technical Officer Grade One. The prerequisites set out in AS 4774.2–2002 were outlined above. The rules for this training package require 12 units to be completed, of which eight are compulsory (Table 1).

Diploma in Hyperbaric Technology

This qualification covers workers who manage, supervise and operate a hyperbaric therapy system and assume responsibility for the safe operation of the compression chamber. Common occupational titles may include but are not limited to Technical Facility Manager, Senior Hyperbaric Technical Officer, Hyperbaric Technical Officer Grade Two, or Hyperbaric System Maintenance Manager.

Desirable prerequisite courses are:

- The American Society of Testing Materials' Fire Hazards in Oxygen Systems and Oxygen Systems Course
- The American Society of Testing Materials' Operation and Maintenance (Oxygen) Course.
- Certificate IV in Hyperbaric Technology is a prerequisite for this qualification.

The rules for this training package require 10 units to be completed, of which six are compulsory (Table 2).

PHASE 3 – DEVELOPMENT OF TRAINING RESOURCES AND DELIVERY OF THE CERTIFICATE IV OF HYPERBARIC TECHNOLOGY

Due to the small number of hyperbaric facilities in Australia, low rates of HTO employment led to low interest from RTOs willing to deliver both the Certificate IV and Diploma in Hyperbaric Technology. The Royal Adelaide Hospital was the only RTO that has made a commitment to deliver these packages, and the Certificate IV in Hyperbaric Technology is now available from there. The majority of the course will be delivered by distance education with RCC modules delivered locally by HTOs who are accredited workplace trainers and assessors. Existing HTOs will be able to apply for credit transfers and recognised prior learning credits

against the Certificate IV course commensurate with their existing qualifications and experience.

PHASE 4 – DEVELOPMENT OF TRAINING RESOURCES AND DELIVERY OF THE DIPLOMA OF HYPERBARIC TECHNOLOGY

The Royal Adelaide Hospital has undertaken to deliver the Diploma of Hyperbaric Technology. Technical officers of the HTNA Training Committee are developing the Diploma competencies that are hyperbaric specific and expect the first course will be delivered in 2006.

Future initiatives and reviews for HTO education

CSHTA are currently reviewing the Certificate IV and Diploma in Hyperbaric Technology as part of the national review of all health technician packages. We intend to ask Standards Australia to replace Appendix E of AS 4774.2–2002 with the nationally accredited training syllabus for the Certificate IV and Diploma of Hyperbaric Technology. An industry-based continuing education system for HTOs should also be developed in 2006.

Discussion

With the introduction of the HTNA Training Committee came the first formalised approach to standardising HTO training on a national and international basis with a view to accreditation of the training package by a third party. At this point the priority was for HTO training, not chamber operator or monoplace training.

Prior to the establishment of the HTNA Training Committee, hyperbaric facilities conducted HTO training in an *ad hoc* fashion. This was due to several factors: training was required to employ new staff, it was not offered at a national level, and the experience and knowledge of the trainers in each facility was obtained from employment in either clinical, military or commercial recompression chambers. This in-house training had several flaws: it was not accredited with any professional group, trainers' accreditation varied from facility to facility, and third-party peer review of the training package was not evident.

The first step in this process was to review the training requirements of HOTFIG. This became emotive as individuals viewed the process suspiciously as to its effect on future employment, and employers were concerned about governmental employment restrictions and training delays. During this first phase it became apparent that there was a belief that existing HTOs were using this review as a 'closed shop' mechanism by increasing the skill level required for commencement of HTO training.

In HOTFIG an HTO was stated to be responsible for the safe operation of the hyperbaric chamber and the safety of all occupants. Selection criteria and prerequisites as detailed in HOTFIG were inappropriate as an HTO does not only

Table 1
Certificate IV in Hyperbaric Technology

Compulsory units

HLTHIR2A	Contribute to organisational effectiveness in the health industry
HLTIN1A	Comply with infection control policy and procedures
HLTHSE1A	Follow occupational health and safety policies, procedures and programmes
HLTHSE4A	Follow safe manual handling procedures
HLTHY1A	Prepare multiplace hyperbaric chamber
HLTHY2A	Operate multiplace hyperbaric chamber
HLTHY3A	Conduct post-compression routines
HLTHY4A	Implement emergency procedures for hyperbaric chamber

Elective units

A minimum of two units must be selected from the following:

BSBCM302A	Organise personal work priorities
BSBFLM402A	Show leadership in the workplace
BSBFLM403A	Manage effective workplace relationships
BSBCM405A	Analyse and present research information
BSBCM301A	Deliver and monitor a service to customers
BSBCM412A	Promote innovation and change
BSBMED201A	Use basic medical terminology
HLTAMBPD1A	Manage personal stressors in the work environment
HLTSTE1A	Clean reusable medical devices
PRMCL18A	Clean a unit or location to achieve a low bacterial condition
HLTHIR3A	Work effectively with culturally diverse patients, clients, customers and co-workers
HLTHIR4A	Work effectively in a cross-cultural context with Aboriginal and Torres Strait Islander colleagues, clients and organisations

Two units may also be selected from the following:

- Health training package units at the Certificate IV level
- Other national training package units available at the Certificate IV level

operate the chamber but he/she also supervises the safety processes of chamber operation.² HOTFIG prerequisites varied from operator level (no supervisory training in chamber operation) to LST who operates and supervises a saturation diving system.² To allow for a non-diver becoming an LST, non-divers would be required to complete the IMCA-accredited LST training package. In the case of military divers the pre-requisite of Chief Petty Officer (CPO) rank was not qualified by the category (job) of Clearance Diver (CD) nor was it specified that the lower rank of Petty Officer (CD) has the same supervisory training

Table 2
Diploma in Hyperbaric Technology

Compulsory units

HLTHIR2A	Contribute to organisational effectiveness in the health industry
HLTIN3A	Implement and monitor infection control policy and procedures
HLTHSE3A	Establish, maintain and elevate the organisation's occupational health and safety system
HLTHY5A	Manage the maintenance of hyperbaric systems
HLTHY6A	Identify and respond to risks associated with hyperbaric therapy
BSZ404A	Train small groups

Elective units

A minimum of three units must be selected from the following:

HLTHIR6A	Implement and monitor compliance with legal and ethical requirements
BSBFLM501A	Manage personal work priorities and professional development
BSBFLM502A	Provide leadership in the workplace
BSBFLM503A	Establish effective workplace relationships
BSBFLM504A	Facilitate work teams
BSBFLM505A	Manage operational plan
BSBFLM506A	Manage workplace information systems
BSBFLM509A	Promote continuous improvement
BSBCM405A	Analyse and present research information
BSZ401A*	Plan assessment
BSZ402A*	Conduct assessment
BSZ403A*	Review assessment
HLTHIR3A	Work effectively with culturally diverse patients, clients, customers and co-workers
HLTHIR4A	Work effectively in a cross-cultural context with Aboriginal and Torres Strait Islander colleagues, clients and organisations

*If one of these units is selected then all three must be selected

One unit may also be selected from the following:

- Health training package units available at the Certificate IV and Diploma levels
- Other national training package units available at Certificate IV and Diploma levels

in recompression chambers. For ADAS divers the current prerequisites did not recognise that the dive-site supervisor was responsible for the supervision and safe operation of the RCC.

After lengthy debate, the decision was made to change the prerequisite requirements to one of a supervisory level and have these decisions reflected in the new Australian Standard

AS 4774.2–2002, which would become the foundation for the yet-to-be-developed Certificate IV in Hyperbaric Technology. With these prerequisites in place, a suitable training course could be developed for experienced chamber supervisors in a clinical setting.

Four avenues of training were then investigated which could provide accredited training for the HTO. They were: a professional certificate from Adelaide University; ADAS certification; development of an HTNA-endorsed HTO course; or to assist ANTA to develop a health technicians training package for HTOs.

A professional certificate did not provide the introduction and intermediate levels of training, but may be considered at a later date. At the time, it was hoped that ADAS might develop and provide the HTO training but after brief discussions with ADAS, it became apparent that it did not fall under their charter of commercial/occupational diver training and ADAS had higher priorities for training demands. As for HTNA developing and providing accredited training, this was not considered feasible due to the effort required to become a registered training organisation (RTO) and deliver the training. The obvious choice became apparent when an ANTA initiative provided the funding and resources for the analysis and development of a nationally accredited training package for health technicians that included HTOs.

The initial scoping meeting for the ANTA project for HTO training was held at the Wesley Centre for Hyperbaric Medicine, Brisbane, with representation from the HTNA, the Alfred Hospital, the Royal Australian Navy and CSHTA. From this meeting two employment groups of HTOs were identified, the first group being casual/permanent employees with the sole responsibility of the supervision and operation of a hyperbaric system, and the second group being others responsible for various levels of management of a hyperbaric system.

As the majority of HTOs in the first group have limited patient contact in the workplace and come from an employment background with limited health-industry exposure, the core competencies that were deemed appropriate were medical terminology, infection control, manual handling and occupational health and safety (OH&S). For the second group managing and maintaining the OH&S system and hyperbaric system maintenance were identified as core competencies. Additionally compulsory and elective units of competency for all health-training packages would be included in the final packages. After this initial meeting, the remainder of the development was conducted by correspondence and telephone. Two levels of training were eventually endorse: the Certificate IV and Diploma in Hyperbaric Technology. Both of these courses would be delivered by distance learning, face-to-face training and chamber modules in a local hyperbaric facility.

Another hurdle was to solicit an RTO willing to deliver both training packages. Problems associated with the delivery of these packages were directly related to the low numbers expected to enrol in the course and the courses' financial viability. The projected low enrolment numbers are related to the low attrition rate of HTOs amongst the hyperbaric facilities in Australia and New Zealand. Two RTOs were approached, the Wesley Hospital and Royal Adelaide Hospital (RAH). RAH took up the challenge and have commenced delivery of the Certificate IV in Hyperbaric Technology.

To facilitate and encourage existing HTOs to complete the Certificate IV, a process was established to provide an industry competency certificate (HTNA HTO Grade 1) that could be used during the process of recognition of prior learning (RPL), with a goal of reducing the number of units of competency requiring completion. This process ('grandfathering') required HTOs to have two years' experience, completed 50 treatment cycles and a statutory declaration from their employer. At the Christchurch 2002 HTNA Conference, 75 applications were received with 42 HTOs being grandfathered. As of August 2005 only one HTO has applied to commence the Certificate IV course. This low number can be attributed to HTOs throughout Australia preparing individual RPL applications to be submitted with the initial course application.

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For this work, Dale O’Halloran was the recipient of the 2002 SPUMS Prize for the best presentation by a member of the HTNA at their Annual Scientific Meeting in Christchurch.

Dale O’Halloran is a hyperbaric technical officer at the Wesley Centre for Hyperbaric Medicine in Brisbane.

Address for correspondence:

*The Wesley Centre for Hyperbaric Medicine,
PO Box 2056, Milton, Brisbane, Queensland 4064*

Phone: +61-(0)7-3371-1566

Fax: +61-(0)7-3371-1566

E-mail: <dale.ohalloran@wesley.com.au>
