UHMS Guidelines

For

Multiplace Inside Attendants

Medical Fitness to Work

2nd Edition

Report of the Hyperbaric Oxygen Safety committee

of the

Undersea and Hyperbaric Medical Society

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Preface

The Board of Directors of the Undersea and Hyperbaric Medical Society (UHMS) acknowledges the work of the authors and the safety committee. We hope that this publication will prove helpful to practitioners in the field of hyperbaric medicine. The subject matter in this guide concerns the medical fitness of inside attendants (IAs) to work in a compressed-gas environment.

This publication does not replace or supersede any local, state, or institutional code or standard. It is a guideline put together by experts in the field, to be used as a reference for evaluating the health and fitness-to-work of multiplace IAs. Medical directors and/or institutions may choose to accept or reject any or all of the content of this document for their purposes.

Users of this publication are invited to visit the UHMS website (http://membership.uhms.org/) for more information and are invited to email comments or questions to us at uhms@uhms.org.

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Contents

Section 1: Administration

1.1 Introduction:

There has been a request from industry stakeholders and the UHMS Board of Directors to create medical fitness guidelines for the inside attendant (IA) working in clinical multiplace hyperbaric chambers. Existing standards are available for compressed air workers in tunneling and commercial diving operations. The Australian, Canadian, and European communities have existing standards for IA medical fitness to work in clinical hyperbaric chambers.

Although most multiplace facilities have procedures and policies in place for IA fitness for duty, these practices are not standardized nationally, and no formal guidelines currently exist for IA medical clearance. The only available guidance comes from the National Board of Diving and Hyperbaric Medical Technology, which has issued a position statement recommending that all IAs undergo a fitness-to-dive exam (http://www.nbdhmt.org/).

The goal of this guideline is to establish comprehensive baseline standards for medical clearance and training of personnel working inside a multiplace chamber. By defining consistent expectations, this document aims to reduce variability in practice across U.S. facilities and promote a standardized approach to IA medical fitness.

1.2 Scope:

The purpose of this guideline is to provide a template for the hyperbaric practitioner to use in evaluating the medical fitness of a candidate working in a clinical multiplace hyperbaric chamber. This document does not replace or supersede any local, national, or institutional standard. Rather, it is designed to complement existing standards by specifically addressing medical fitness for duty in a hyperbaric environment typical of multiplace clinical hyperbaric chambers. This guideline is not intended to address the general duties that are required of a hyperbaric IA otherwise pursuant to their employment.

This document is not intended to evaluate or define the full range of job responsibilities of an IA. It should not substitute a formal position description or occupational health assessment, which details all requirements (physical and functional) for the role (e.g., patient lifting or other non-hyperbaric duties).

1.3 Application:

The fitness-for-duty physical can be completed by a physician (MD, DO, MBBS) or an advanced practice provider (PA, NP). A hyperbaric specialist need not perform the physical, but in all cases, a hyperbaric specialist must be involved in determining fitness for duty.

The hyperbaric specialist should be familiar with this guideline, as well as dive medicine and physiology. Ideally, this person should be Board Certified in Undersea & Hyperbaric Medicine, but at a minimum should have completed a UHMS-approved course in the medical examination of divers. The hyperbaric specialist is usually the Medical Director of the hyperbaric department, but may be another hyperbaric medicine physician designated by the Hyperbaric Medical Director.

The licensed practitioner and the hyperbaric specialist (if not the same individual) should not have any real or potential conflicts of interest with the examinee. There are concerns in facilities where the licensed practitioner or hyperbaric specialist is also the examinee's supervisor. There are also conflicts of interest when the licensed practitioner or hyperbaric specialist has a financial interest in the facility's operation. In these cases, if at all possible, it is recommended that an independent physician review the examination.

Section 2: Medical Requirements

2.1 General:

The following medical requirements are intended for use with the UHMS Medical History/Physical Examination forms. The specific aspects of a candidate’s ability to work in a compressed gas environment are addressed by item number and are minimum guidelines. The judgment of a qualified examiner will be necessary in determining fitness for duty to work in a multiplace chamber. When there is doubt about the subject's medical fitness, advice from an appropriate specialist may be required. Particular attention must be given to the past medical history and any history of diving or exposure to hyperbaric and/or hypobaric conditions. In general, a higher standard of physical and mental health is required of an IA than that of medical personnel. Therefore, in addition to excluding conditions, careful attention should be given to chronic or temporary physical or mental illness.

2.2 Periodicity:

For individuals working as IAs in clinical hyperbaric chambers or others who may be exposed to hyperbaric conditions, the following medical examinations are recommended:

1. An initial comprehensive physical examination
2. Periodic physical examinations are recommended at least every five years.
3. The UHMS Medical History form (self-reporting) may be used for this purpose.
4. A re-examination after a hyperbaric-related injury or illness, such as a known decompression sickness, arterial gas embolism, audio-vestibular illness, or central

nervous system dysfunction, when there is a change on the annual self-report, or as needed to determine fitness to work in hyperbaric conditions.

5. Any significant injury or illness should prompt a UHMS medical history form to be completed and reviewed before return to hyperbaric exposure.
6. A person should not be allowed to return to work after any significant injury or illness in hyperbaric conditions until released by the hyperbaric specialist to do so.

2.3 Physical examination

1. For persons working in a hyperbaric environment, the following are recommended:

- Medical history (recorded on the **UHMS Medical History** form)
- Work history (recorded on the **UHMS Work History** form)
- Physical examination (recorded on the **UHMS Physical Exam** form)
- Tests recommended in Table 1 as appropriate
- Any tests deemed necessary to clarify the severity of conditions listed in exclusions
- Any additional tests deemed necessary to prepare the worker for employment in hyperbaric conditions

2.4 Re-examination after injury or illness

1. It is recommended that any person employed to work in a clinical multiplace hyperbaric chamber or otherwise exposed to hyperbaric conditions completes a medical examination following a known pressure-related injury or illness.
2. A person should not return to work as an IA or be subject to hyperbaric conditions until medically cleared by the hyperbaric specialist.
3. The licensed practitioner and/or the hyperbaric specialist shall determine the scope of the re-examination based on the nature of the injury/illness.

2.5 Table 1 – Medical tests for IA fitness to work in clinical hyperbaric chambers

Test	Initial	Periodic	Comments
Medical History	Yes	Annually or accompanying any significant change in the medical history.	Include predisposition to loss of consciousness, vomiting, cardiac history, low O2 saturation, CO2 retention, serious blood loss, or anything that in the opinion of the licensed practitioner, would interfere with work in hyperbaric conditions
Physical Examination	Yes	Every 5 years and as deemed necessary	Include predisposition to loss of consciousness, vomiting, cardiac history, low O2

			saturation, CO2 retention, serious blood loss, or anything that in the opinion of the licensed practitioner, would interfere with work in hyperbaric conditions
Pulmonary Function	Yes	As medically indicated. Recommended with each exam for smokers or a history of significant respiratory illness.	To include FEV1, FVC, PEF, and FEF25-75.
Audiogram	Yes	As per OSHA or institutional policy, or as medically indicated	Pure tone audiology
Routine Urinalysis	Yes	As medically indicated	
Hematocrit, Hemoglobin, White Blood Count	Yes	As medically indicated	
Chest X-ray	Yes	As medically indicated	PA and LAT
EKG: Standard (12 lead)	Yes	As medically indicated	Required initially to establish a baseline
EEG	As medically indicated	As medically indicated	
Visual Acuity	Yes	As medically indicated	Vision, near & distant, uncorrected, and corrected, to include color
Toxicology Screen	According to institutional policy	According to institutional policy	
Pregnancy Test	Yes	As medically indicated	Pregnancy is a disqualifying condition

2.6 Medical fitness for duty written report

The licensed practitioner shall provide a written fitness for duty report outlining the IAs medical condition and fitness to work in a compressed air environment or other hyperbaric activities. This report shall be completed anytime a physical examination is completed. The written UHMS medical history and UHMS physical exam form should accompany the written report.

2.7 Restriction/disqualification from hyperbaric exposure

The history and physical examination shall determine whether the IA's health would be impaired by continued work in hyperbaric conditions. The licensed practitioner should indicate any restrictions that would apply to the IAs work activity in the written report.

2.8 Medical recordkeeping

1. A medical record for each person shall be established and maintained. The record should include the UHMS Medical History and Physical Examination forms or equivalent, and the licensed practitioner's written report and the results of any testing performed.
2. The medical record shall be kept for a period of 5 years from the date of the last hyperbaric exposure or as indicated by law or local policy.

2.9 Disqualifying conditions

An IA having any of the following conditions should be disqualified from engaging in work in the clinical hyperbaric chamber.

- History of seizure disorder, other than early childhood febrile seizures
- Bullous, cystic or cavitary lung disease, significant obstructive or restrictive lung disease, recurrent pneumothorax
- History of spontaneous pneumothorax
- The requirement for supplemental home oxygen
- Significant central or peripheral nervous system disease or impairment
- Alcoholism, drug abuse and / or history of psychosis
- Hemoglobinopathies associated with comorbidities
- Grossly impaired hearing or requiring hearing-assisted devices
- Significant osteonecrosis
- Chronic conditions require control by medication. Note: not all such conditions are absolute exclusions. These should be considered on an individual basis
- Pregnancy

- Chronic inability to equalize sinus or middle ear pressure. Note: this is not an absolute exclusion and should be considered on an individual basis

Section 3: Systems-Based Disqualifying Conditions and Recommendations

3.1 Ears

1. Hearing
    a. Hearing loss of greater than an average of 30 dB or greater in the better ear in the speech frequencies (500, 1000, and 2000 Hz) should be considered disqualifying. The IA must be able to hear and understand speech through communication devices in the setting of considerable external noise.
    b. The necessity of hearing amplification devices is disqualifying.
2. External Ears
    a. Deformity of the external ear that interferes with the ability to use communication devices is disqualifying.
    b. Severe exostoses of the external canal may be disqualifying if they cause obstruction to the external ear canal.
    c. Otitis externa may be temporarily disqualifying if it causes obstruction to the external ear canal.
    d.
3. Middle Ears
    a. Chronic middle ear effusions, or any condition that will interfere with the ability to rapidly equalize the middle ear space, are disqualifying.
    b. Inability to adequately equalize the middle ear space is disqualifying.
    c. Stapedectomy or other surgeries on the ossicles, with or without the use of a prosthesis, are disqualifying.
    d. Radical mastoidectomy, for any reason, is disqualifying.
    e. Acute tympanic membrane perforations are temporarily disqualifying until completely healed.
    f. Chronic perforations of the tympanic membrane, provided auditory acuity is preserved as above, are acceptable.
4. Inner Ears
    a. Any history of inner ear surgery is disqualifying.
    b. Meniere's disease is disqualifying.
    c. Previous history of inner ear decompression sickness with persistent labyrinthine damage is disqualifying.
    d. Chronic vertigo of any cause is disqualifying.

3.2 Neck, Head and Scalp

1. Craniofacial abnormalities which prevent the IA from obtaining an adequate seal with the chamber breathing equipment is disqualifying.
2. Facial hair may be disqualifying if it interferes with the correct use of breathing equipment.
3. Chronic draining fistulas of the head, face, and neck are disqualifying.
4. Chronic spastic contraction of the neck muscles is disqualifying.
5. Sinuses
    a. Chronic sinusitis which interferes with the ability to adequately equalize pressures in all sinuses is disqualifying.
    b. Sinus surgery is temporarily disqualifying. Before returning an IA to full duty (after they have been released by their surgeon) they should undergo a pressure test to ensure that their ability to equalize has not been altered.
6. Dental
    a. Active dental disease, such as abscess or symptomatic caries, are disqualifying until treatment is completed.
    b. Dentures and dental implants are not disqualifying unless so poorly fitting as to interfere with correct use of breathing equipment.

3.3 Eyes

1. Vision
    a. The IA should have corrected distance vision of at least 20/40 in the better eye. Near vision should be correctable to at least 20/40 in the better eye.
    b. The use of corrective lenses or contact lenses is acceptable.
    c. The IA must be able to identify basic colors. If the candidate fails a standard color vision screening test (e.g. pseudoisochromatic plates) an alternate functional test may be used.
    d. Conditions which significantly interfere with night vision to the point where the IA cannot function in low light conditions are disqualifying.
2. Disease of the Eye
    a. Retinal diseases are disqualifying only when they have progressed to the point where the candidate can no longer pass the visual standards.
    b. Retinal detachment is disqualifying until repaired and the treating ophthalmologist has declared the patient's retinal condition stable and discharged them from care.

c. All eye surgery is temporarily disqualifying until any retained gas is resorbed from the eye.
d. Cataract removal with intraocular lens implantation is not disqualifying once the patient has completely healed, as above.

3. Corneal refractive surgery is not disqualifying once the patient has stabilized their vision and has healed their cornea completely.

3.4 Cardiovascular

1. **General.** The examiner should be alert for conditions which may cause sudden incapacitation, as well as conditions where modest changes in preload and afterload could cause decompensation in preexisting chronic conditions. In all cases, the IA with significant cardiovascular disease must have continued care from their treating physician(s). The examiner may need statements from the treating physician(s) as to the diagnosis, treatment provided and/or planned, and prognosis. The examiner should also review relevant diagnostic studies (e.g. echocardiogram results, perfusion studies) prior to a decision regarding fitness for IA duty.
2. **Hypertension**
    a. The IA may be qualified with NHLBI Stage 1 hypertension (systolic BP less than 160, diastolic less than 100). Ideally, the IA with hypertension will have treatment resulting in BP of less than 140/90.
    b. Persistent blood pressure of greater than 160/100 (NHLBI Stage 2) should be considered disqualifying. An examiner may temporarily qualify an IA pending full evaluation and treatment. Time limited qualifications should be restricted to asymptomatic hypertensive IAs only.
3. **Coronary Artery Disease**
    a. IAs with active, unstable symptoms should not be qualified until completely evaluated and treated. Stable coronary artery disease is acceptable, provided the AI is well compensated and has sufficient cardiac reserves to complete essential job functions; and is at low risk for unexpected incapacitation (e.g. due to arrhythmia or MI).
    b. IAs whom have had a myocardial infarction should refrain from IA duties until released for work by their treating physician and evaluated by their supervising physician.
    c. IAs who have undergone endovascular revascularization procedures should refrain from IA duties until released by their treating physician.
    d. Revascularization via coronary artery bypass grafting (CABG) will require a longer period of waiting before resuming IA duties. Traditional CABG surgery involves

violating both pleural spaces and the mediastinum. Prior to resuming duties, the examining physician should ensure that the sternotomy has healed and that there are no significant complications as a result of the surgery.

e. In the case of both percutaneous cardiac intervention and CABG, the IA is at risk for both new occlusions and re-occlusion of the reopened vessels or grafts, thus a higher risk of sudden incapacitation. The patient will need continued monitoring for the present but asymptomatic disease. The exact timing and type of testing should be determined in conjunction with the patient and their treating physician(s). The IA should have sufficient exercise tolerance to perform 8 METs without symptoms.

4. **Valvular Heart Disease**.

   Valvular heart disease should be considered on an individual basis after evaluation by the treating cardiologist and supervising physician.

5. **Heart Failure**
   a. The IA should be able to perform at least 8 METS of exercise without eliciting symptoms of heart failure.
   b. Left-sided heart failure with an ejection fraction below 40% should only be qualified after consultation with the treating cardiologist.
   c. Left-sided heart failure with an ejection fraction below 30% is disqualifying.
   d. If the IA has a significant exacerbation of their condition, they should refrain from IA duties until the exacerbation has resolved and their treating physician and hyperbaric specialist has re-evaluated them.

6. Disorders of Heart Rhythm
   a. Symptomatic atrial tachyarrhythmias, such as supraventricular tachycardia and uncontrolled atrial fibrillation, are disqualifying. Of significant concern are the paroxysmal variants of these conditions.
   b. Ventricular arrhythmias, including ventricular fibrillation (VF) and ventricular tachycardia (VT) with arrest, are disqualifying. Multifocal or symptomatic premature ventricular contractions should be investigated further, and any underlying condition completely characterized prior to qualification.
   c. If an IA requires the use of an implanted pacemaker or automatic implantable cardioverter-defibrillator (AICD), the concern should be about the condition requiring the use of the device. Any implanted pacemaker or AICD should be certified by the manufacturer to at least the maximum pressure used at the facility. The treating cardiologist or electrophysiologist should be consulted.
   d. Ventricular conduction disorders

i. Prolonged QT syndrome should be evaluated individually and qualified after appropriate workup and consultation.
ii. Bundle branch block may be qualified after consultation with a cardiologist and appropriate risk stratification.
iii. Ventricular pre-excitation syndromes
    1. Asymptomatic ventricular pre-excitation syndromes may be qualified after consultation with a cardiologist.
    2. Ventricular pre-excitation syndromes which have resulted in symptomatic tachyarrhythmias are disqualifying.
    3. A waiting period of 1 month is recommended following ablation of re-entrant pathways after certification that the procedure has been successful.

7. Myocardial Disease

a. IAs with acute, active myocarditis (of any type) should be temporarily disqualified until resolution of the episode.
b. Hypertrophic cardiomyopathy is disqualifying.

8. **Cardiac Syncope**

a. A single episode of cardiac syncope is temporarily disqualifying. The IA should not be reinstated until the cardiac evaluation is complete.
b. Multiple uncorrectable or untreated syncopal episodes should be disqualifying.

2.10 Pulmonary

1. **Pneumothorax**

a. Prior history of spontaneous pneumothorax is disqualifying.
b. Traumatic pneumothorax is temporarily disqualifying. The IA may return to duty provided:
    i. 3 months period of time has elapsed since successful completion of treatment
    ii. There are no residual pulmonary symptoms
    iii. Evaluation shows no residual anatomic or functional defects. Investigation may include
        1. Imaging, including CT scanning
        2. Full pulmonary function testing
        3. Evaluation by a specialist physician

2. **Pulmonary Overinflation Syndromes**

a. A single episode of pulmonary overinflation syndrome is temporarily disqualifying for a minimum of three months.
b. To return to duty, individuals with history of pulmonary overinflation syndromes associated with decompression in a hyperbaric chamber may be at risk for

recurrence and possibly arterial gas embolism. Such instances should be thoroughly investigated to determine the possible presence of undiagnosed anatomic or significant physiologic abnormalities. Even in the absence of demonstrable abnormalities, return to work in a hyperbaric environment may be risky. Investigation may include:

i. Imaging of the chest (x-ray, CT scan of chest, MRI)
ii. Pulmonary function testing including lung volumes and including measurement of total lung capacity and residual volume.
iii. Assessment by a specialist physician
iv. A second episode of pulmonary overinflation is disqualifying.

3. **Asthma/Reactive Airway Disease**

The current approach to reactive airways disease and hyperbaric exposure has evolved significantly in the past several decades. The concern is that air trapping during chamber decompression may trigger pulmonary barotrauma (arterial gas embolism, pneumomediastinum, pneumothorax). The increased gas density during hyperbaric exposure may worsen pre-existing airway obstruction due to asthma or COPD.

a. Intermittent Symptoms: Generally, intermittent disease (FEV1 > 0.8 or FEV1/FVC ≥ 0.85) may be considered for duties as a IA.
b. Active Asthma: Persistent disease (mild to moderate), with good control and good exercise tolerance is acceptable. Annual evaluation should be performed.
c. Disease Stability: The examiner should consider the stability of the disease. Frequent or severe exacerbations should be considered for exclusion from IA duties, as should other considerations, including:
    i. Treatment requirements
    ii. Previous hospitalization(s)
    iii. The severity of attacks
d. Factors such as the use of steroid medications, steroid dependence, multiple hospitalizations, history of intubations, and frequent severe attacks requiring stabilization and treatment in an emergency department, should all be considered as factors arguing against the suitability for duties as an IA.
e. Disqualification: Persistent severe disease is disqualifying.
f. Restriction from Duties: Any acute exacerbations should be restricted from duty until returned to baseline.

4. Fixed Obstructive Pulmonary Disease (Chronic Obstructive Pulmonary Disease and/or Emphysema)

a. The suitability for duty will depend upon several factors. All cases should be considered individually. Annual evaluation should be performed.

b. Exercise tolerance and the ability to perform essential job functions, especially with slightly increased work of breathing at treatment pressure, should be considered by the examiner.

5. **Restrictive Lung Disease**
    a. The degree to which restrictive lung disease is compatible with duty as an IA will depend upon etiology, disease progression, and prognosis. Individuals with restrictive lung disease should be evaluated on an annual basis.
    b. A full evaluation includes
        i. complete pulmonary function testing (to include DLCO), imaging, and an evaluation by a pulmonary medicine specialist.
    c. Any restrictive disease with significant symptoms is disqualifying.
    d. The presence of cor pulmonale is disqualifying.
6. **Pulmonary Tuberculosis**
    a. The enclosed nature of the hyperbaric environment and close contact between the IA and patients creates an environment where transmission of active pulmonary tuberculosis is a serious concern.
    b. Active pulmonary tuberculosis is disqualifying until the IA is non-infectious and the IA has been evaluated by a pulmonologist, and has had no sequelae (chronic effusion, heavy scarring).
    c. A positive test for tuberculosis (PPD or IGRA) is temporarily disqualifying until the patient has been certified free of disease. If the IA is disease free and has been recommended for treatment of latent tuberculosis infection (LTBI), the use of these medications is not disqualifying.
    d. A previous history of LTBI treatment, positive PPD, or exposure to tuberculosis is not disqualifying unless there are structural or cavitary lesions. The IA should disclose this fact, and the IA should have periodic (annual) follow up to ensure the disease has not become active.

3.6 Gynecological/Breast

1. Pregnancy
    a. Pregnancy is a temporary disqualification. IAs who are pregnant or actively attempting to conceive should refrain from IA duties. (Patients who receive hyperbaric oxygen have a different risk/benefit profile from an IA.)
2. Lactation
    a. There are no known contraindications to IA duties and lactation.
3. Breast Implants

a. Post-surgery there are no specific contraindications to IA duties with breast implants as they relate to the health of the IA.
b. The IA should be informedthat repetitive exposure to the hyperbaric environment may alter or deform the implant and may shorten its effective life.

3.7 Neurologic Disorders

1. Seizure Disorders

   The concern is that a tender who experiences a seizure during a hyperbaric treatment could become incapacitated and be unable to offer appropriate patient care. It is also possible that some seizures might be precipitated by breathing oxygen under pressure, which in many facilities is routinely required for ITs prior to decompression after standard hyperbaric treatments and is mandatory for US Navy treatment table 6.

   a. Active seizure disorder, with or without the current use of antiepileptic medication, is disqualifying.
   b. If an individual with a history of seizure disorder has been seizure-free while off medications for a period of 10 years, they may then be reconsidered for IA duties.
   c. A history of simple febrile seizure before age 5 is not disqualifying.
   d. A single seizure in an adult is temporarily disqualifying but may not result in permanent disqualification. After a one-year observation period and a complete neurologic evaluation, the individual may be returned to IA duties.
   e. Withdrawal seizures from medication or alcohol is disqualifying until the condition is stable and there is no risk from repeat seizures.

2. Progressive Neurologic Diseases
   a. Chronic neurological disorders need regular reassessment. Progressive neurological diseases such as multiple sclerosis, anterior horn cell diseases (e.g., amyotrophic lateral sclerosis), Huntington's Disease, or Parkinson’s Disease are disqualifying once the condition impairs the ability to perform the job
   b. In addition, there has been a historical relationship between hyperbaric oxygen exposure and recurrent/exacerbation of optic neuritis associated with multiple sclerosis.

3. Closed Head Injury
   a. Definitions
      i. Mild closed head injury is defined as: a period of loss of consciousness or altered awareness, or post-traumatic amnesia of less than one hour, with no known intracranial bleeding.
      ii. Moderate: Loss of consciousness, altered awareness, or post-traumatic amnesia of greater than one hour, but less than 24.

iii. Severe: Loss of consciousness or post-traumatic amnesia of greater than 24 hours, and/or the presence of post-traumatic seizures.

b. Mild closed head injury is not disqualifying. IAs should be restricted from duties until evaluation is complete and a sufficient period of time has lapsed to determine that early sequelae have not occurred.

c. Moderate or severe closed head injury should be considered disqualifying.

4. Cerebrovascular Disease

a. Cerebrovascular Accident (CVA). There is a significant increase in the incidence of seizure disorder in individuals who have a completed CVA, extending from between 2 to 10 years (depending upon the type and location of the insult) following the initial event. represent foci of increased irritability, which may result in significantly increased susceptibility to CNS oxygen toxicity. It is also expected that these individuals will have a significant residual neurologic impairment. It is recommended that these individuals not resume or continue duties as an IA.

b. Transient Ischemic Attack (TIA). Reversible neurologic defects should be considered disqualifying until a thorough evaluation and treatment have been completed. If a treatable cause has been identified and corrected, an IA may be returned to duties after a suitable waiting period has elapsed. The period between correction and return to duty should be sufficient to ensure that early complications (re-occlusion of opened vessels) have not occurred.

5. Peripheral neuropraxias (including carpal tunnel syndrome) may be acceptable, providing the deficit is fixed and unchanging, and any residual weakness does not interfere with job requirements.

3.8 Gastrointestinal Disorders

1. Inguinal Hernias

a. A loop of bowel in the inguinal canal may create a loop of gas, which could expand upon depressurization and create bowel strangulation.

b. The presence of inguinal hernias should be carefully evaluated to determine the degree of reducibility and possibility of strangulation.

c. The examiner should also consider if the IA is unable to lift or has a specific lifting restriction.

a. Colostomy: The presence of a colostomy is not a disqualification for IA duties. The IA should be aware of the need to ensure the colostomy bag is properly vented before chamber decompression.

3.9 Musculoskeletal Disorders

1. Musculoskeletal disorders encompass a wide range of problems, ranging from acute self-limited injuries to major abnormalities that create significant concerns for working in this environment. Any acute musculoskeletal disorder should not interfere with the ability to work and move within the facility's specific environment. As such, different facilities may have different requirements. An individual with a chronic back disorder may be able to work in a newer facility with higher ceilings and more space, but may not be able to work in an older, smaller facility that requires frequent stooping and bending at the waist.
2. Spinal Disorders**.** IAs with spinal disorders should be disqualified if any of the following are present:
    a. Transient and/or unpredictable appearance of neurologic deficits. This includes areas of altered sensation (such as paresthesia) and muscle weakness.
    b. The use of medications that result in significantly altered attention or judgment.
    c. Significant restrictions in movement and capability resulting in either the inability or questionable ability to perform essential job functions, either at atmospheric or at treatment pressure.
3. Joint replacement is acceptable if the IA has sufficient function (range of motion and strength) to perform essential job functions.
4. Amputations/prosthesis. IAs with amputations will require individual evaluation. The specific facility and the limitations (if any) of the IA must be considered. Consultation with the IAs individual treating provider(s) (including physiatrist and prosthetist) will be necessary. If an IA with a prosthesis is to be qualified, the prosthesis must be made of materials that will not be adversely affected by pressure changes.

3.10 Integument

1. Active transmissible skin infections or lesions should be considered temporarily disqualifying until lesions are healed.

3.11 Endocrine

1. Thyroid diseases:
    a. Controlled thyroid diseases are not disqualifying.
    b. IA who are undergoing radioactive ablation should not engage in patient care activities until approved to do so by their treating physician.
2. Disorders of the adrenal cortex (Cushing’s disease, hypoaldosteronism) must be considered individually. Evaluations of IAs with these conditions should consider the stability of the condition and medications required.
3. Pituitary disorders must be controlled.
4. Diabetes Mellitus

a. Diabetes mellitus represents one of the most common medical disorders that could impact the ability of an IA to perform their duties safely and effectively. In order to make a complete assessment, the examining physician will, in addition to interviewing and examining the attendant, obtain information from the treating providers and examine records/logs recording glucose control.
b. Recurrent symptomatic hypoglycemic events are concerning and should be disqualifying until the diabetes is under better control. Any hypoglycemic event that requires the intervention of another person and/or causes a change in the level of consciousness or cognitive ability is particularly concerning. Additionally, hypoglycemic events with no IA awareness should be disqualifying.
c. Regardless of type, diabetes should be reasonably well controlled. Examination of recent glycosylated hemoglobin levels as well as examination of blood glucose logs will aid the examiner in assessing the degree of control.
d. Diabetes mellitus with the presence of end-organ damage, including proliferative retinopathy, nephropathy (beyond microalbuminuria), peripheral neuropathy, or autonomic neuropathy must be considered when assessing an IA for fitness for duty. Any end-organ damage that may interfere with the ability of an IA to perform duties should be disqualifying.

3.2 Psychiatric

Careful appraisal of a person's emotional and temperamental fitness should be completed. **Personality disorders such as psychosis, instability, and antisocial tendencies** may be disqualifying. Any psychiatric illness could be a cause for disqualification unless the examining licensed practitioner is confident that it is minor and unlikely to affect the safety of patients or staff on the hyperbaric chamber. Attention should be given to chronic drug and alcohol use and abnormalities noted on the UHMS Physical Examination form.

Section 4: Other

Inside attendants should be able to return to the hyperbaric facility within a reasonable timeframe (30 to 60 minutes) following a hyperbaric exposure, in anticipation of possible symptoms of decompression sickness. Any symptoms occurring after hyperbaric exposure should be reported as soon as possible to the manager and medical director or physician on call.

Section 5: Referenced Publications

1. ADCI International Consensus Standards for Commercial Diving and Underwater Operations – 6.2 Edition, www.adc-int.org.
2. NOAA Diving Manual 6th Edition
3. US Navy Diving Manual Revision 7
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Section 6: Forms

5.1 UHMS Medical History Form

5.2 UHMS Physical Examination Form

5.3 UHMS Work History Form

5.4 UHMS Fitness for Duty Report