



Regulation 28 report to HEIDI J CONNOR, Senior Coroner for the coroner area of Berkshire

Respondents: Training Agencies:

- **BSAC** (British Sub-Aqua Club)
- **IANTD** (International Association of Nitrox and Technical Divers)
- **PADI** (Professional Association of Diving Instructors)
- **SAA** (Sub Aqua Association)
- **ScotSAC** (Scottish Sub-Aqua Club)
- **SSI** (Scuba Schools International)
- **TDI/SDI** (Technical Diving International/Scuba Diving International)

What is the BDSG?

The Royal National Lifeboat Institution (RNLI) was instrumental in founding the British Diving Safety Group (BDSG) in 2007 to promote and improve safety for amateur sub-aqua divers in the UK and when diving abroad. The BDSG is made up of representatives from organisations involved in training, regulatory, governance, diving medicine and support of amateur sub-aqua diving.

For the supplied information by training agency please see Appendix 1

As an introduction I would like to add there are 3 types of medicals a diver could take

- 1) Self-certification - e.g. as published by the Diver medical screening committee and in the UK published on the [UKDMC website](#) or the [RSTC form](#) e.g. as used by PADI
- 2) If one of the questions on the self- cert requires a medics input, then the diver would need to see a doctor who is a qualified medical referee for additional sign off.
- 3) A HSE medical can only be performed by an AMED (Approved Medical Examiner of Divers) details can be found [here](#)

The Matter of Concern #1:

The Coroner is concerned about the level of training and awareness nationally – specifically of the medical requirements for volunteers involved in projects like Kevin was.

To directly address the Coroner's concern regarding national training, awareness, and medical requirements for volunteers please review the summary of the responses below.

While individual agencies enforce strict training prerequisites, there is some confusion in some of the centres of when the UK Diving at Work Regulations (DWR) apply to volunteers.

The DWR states anyone "at work" needs a Health and Safety Executive (HSE) medical, but a strict reading of the ACOP implies unpaid volunteers might not be considered "at work."

Under the current regulatory framework, volunteer instructors operating outside commercial settings may fall outside the scope of the DWR, whereas volunteers at commercial dive centres are governed by it. This distinction could be difficult for individuals to discern. Further investigation would be needed to ascertain if understanding or compliance is a wider issue.

The ACOP implies that if a project utilizes a volunteer instructor rather than an employed one, the entire project may fall outside the scope of the DWR, meaning the medical oversight that would otherwise be required is not legally mandated — despite the physiological risks remaining identical. The evidence gathered in this case, and from a further comparable case, indicates that the primary concern may not be one of insufficient training or lack of awareness of medical requirements, but rather the disregard of known medical conditions by those responsible for volunteer safety decisions. In both instances, relevant medical information was available but was not acted upon — suggesting that the critical failure occurred at the point of decision-making, not at the point of knowledge.

The response to volunteer medical oversight varies by organisation, ranging from strict institutional mandates to project-by-project subjectivity:

Organization	Volunteer Protocols & Project Awareness	Medical Screening & Enforcement Standards
IANTD	No separate standards exist for project volunteers. Duty of care and qualification requirements are left entirely to the subjective inclinations of individual project organizers.	Dependent on localized project risk assessments and task loading. All professional members must upload HSE medicals annually.
SSI	Advises UK commercial facilities that <i>all</i> team members should have HSE medicals, as it is highly unlikely a commercial business can legally escape the DWR.	All professionals must upload a doctor-signed medical clearance annually. SSI is implementing a UK-specific addendum to explicitly train instructors on UK DWR laws and ACOPs.
PADI	Provides summaries of HSE rules upon instructor qualification. Considering the Coroner's report, PADI is actively revising its resources to heavily stress and enforce awareness of these specific DWR medical requirements.	Requires all Divemasters and Instructors to be examined and declared fit to dive by a physician prior to qualifying.
SAA	Warns members that any element of reward/payment triggers DWR and voids SAA insurance. Acknowledges that commercial volunteer projects are too complex for their expertise, advising contractors to seek formal legal advice.	Utilizes the UKDMC self-cert recreational screening system (requiring medical declarations for conditions like immersion-induced pulmonary oedema).

Organization	Volunteer Protocols & Project Awareness	Medical Screening & Enforcement Standards
ScotSAC	Operates entirely on a club/voluntary basis outside of commercial DWR mandates.	Utilises the UKDMC recreational screening system (i.e. self-declared medical questionnaire) If any health condition is declared, referral is required to a UKDMC medical referee for further assessment.

As multiple agencies noted, physiology, medical conditions, and fitness to dive do not change whether a diver is paid or volunteering. However, the current national framework allows commercial projects to navigate a complex legal landscape where the required medical safety standard for volunteers remains highly inconsistent.

It should also be noted that there is no legal requirement for recreational divers in the UK to have a medical. Only those divers who are active members of the dive organisations are required to have a medical by their organisation. Once qualified anyone can just go diving.

The Matter of Concern #2:

The Coroner is concerned about the level of training and awareness around the risks of immersion pulmonary oedema ('IPO') for divers with high blood pressure. Whilst the more common risks of hypertension will be better understood (such as heart attack and stroke), awareness of IPO appears to be less well understood.

Initially, I would like you to refer to a BDSG response on a Regulation 28 report in response to a Regulation 28 report issued by HM Senior Coroner for Gloucestershire, Ms Katy Skerrett, dated 5 January 2022, which is found in Appendix 2, as is referred to in some of the training agencies responses.

I would also like to refer you to the following information in the public domain,

<https://www.ukdmc.org/medical-conditions/immersion-pulmonary-oedema/>
<https://www.bsac.com/news-and-blog/immersion-pulmonary-oedema-the-lungs/?&&type=rfst&set=true#cookie-widget>
<https://dan.org/safety-prevention/diver-safety/case-summaries/immersion-pulmonary-edema-ipe/>
<https://www.ddrc.org/diving/fitness-to-dive/ipo/>
<https://pros-blog.padi.com/immersion-pulmonary-edema-what-you-need-to-know-2/>

BSAC (British Sub-Aqua Club) has been aware of IPO since the 1980s via Dr. Peter Wilmshurst (consultant cardiologist and UK DMC referee, now retired). They have spearheaded national awareness through several channels:

- Identifying and updating suspected IPO cases retroactively in the *Annual Diving Incident Report*.
- Presenting annual incident data to the British Diving Safety Group (BDSG) and taking the lead on drowning prevention by presenting at the 2025 National Water

Safety conference (hosted by RoSPA) to highlight that IPO affects *all* water-immersion sports (swimming, triathlons), not just diving.

- Continually promoting the risks via *Scuba* magazine, social media, and dedicated online webinars made publicly available for catch-up.

Agencies are actively embedding IPO recognition, prevention, and initial treatment into their core curriculum and professional development programs:

Agency	Training & Educational Integration	Media & Continuous Professional Development
BSAC	Integrating explicit IPO guidance into all training programs as they are updated (the final course, <i>Advanced Diver</i> , is currently in development).	Actively warning members about the severe risk of IPO recurrence, even after mild episodes, noting that divers must not re-enter the water without specialized medical clearance.
ScotSAC	Includes IPO overview, symptoms, and emergency first aid treatment into core diver training.	Periodic updates relevant to training material content. Otherwise, specific medical advice regarding high blood pressure and/or returning to diving following an IPO event is strictly deferred to qualified medical professionals.
SAA	Incorporates the identification and treatment of IPO into initial and second-level diver training, as well as specialized <i>Oxygen Administration</i> and <i>Emergency Diver First Aid</i> courses.	Regularly features IPO awareness pieces in newsletters sent directly to all members.
PADI	Requires professionals to read provided articles regarding IPO.	Published multiple specific articles for professional members; planning another publication later this year alongside a dedicated July 2026 webinar to be archived as a permanent resource.
SSI	Has added IPO/IPE information to its <i>Science of Diving</i> program (a prerequisite for professional membership) and its <i>XR (Extended Range)</i> programs.	Covering IPO in the upcoming re-writes of <i>Open Water</i> and <i>Diver Stress and Rescue</i> course materials.
IANTD	Adopted a historic BDSG best-practice working document covering IPO background and first aid, which was disseminated to instructors.	Instructors are instructed to include IPO risks in standard dive briefings, with a specific emphasis on Closed Circuit Rebreather (CCR) programmes.

Despite increased education, some agencies note a distinct challenge or potential loophole, the standard DMSC medical self-certification form includes IPO as a supplementary note to Question 1. However, because Question 1 is highly open-ended, if a diver with high blood

pressure does not actively feel "affected" or has never sought formal medical advice for mild symptoms, they can easily slip through the self-certification process without triggering the mandatory medical page.

That being said, BSAC's 2024 Incident Report highlighted two major positive trends resulting from increased awareness:

1. Growing evidence shows that divers are successfully recognizing early symptoms of IPO in themselves or buddies, leading to timely, safe exits from the water.
2. There is measurable growth in awareness and understanding of IPO within the wider medical profession, resulting in more accurate post-incident diagnoses and targeted treatments.

The Matter of Concern #3:

The Coroner is concerned about whether there is sufficient guidance regarding what the role of shore support /surface cover entails. Specifically, should that include having eyes on the water?

The evidence shows all agencies mandate surface cover the explicit requirement to maintain continuous visual surveillance varies however between organisations.

For those covered by the HSE ACOP, i.e. paid instructor training legally requires surface support to be capable of summoning help and physically able to assist. However, agencies note that because secondary skills like administering oxygen and first aid are not explicitly stipulated by law, some operations use shore support who are not qualified in these critical skills.

IANTD UK explicitly mandates "having eyes on the water at all times" within its supplementary instructor advice and shore support briefings.

The SAA utilizes a Dive Marshal system to monitor divers but acknowledges their current guidance *does not* explicitly state the phrase "having eyes on the water." They have committed to reviewing their standards to address the Coroner's specific concern.

Agency	Role Definition & Guidance Structure	Current Action / Status
IANTD UK	Utilizes a historical code of conduct for instructors to bridge the gap between training standards and UK law. Demands a strict localized risk assessment for every operation.	Mandates that the surface brief must include explicit "eyes on the water" protocols, kit management, emergency plans, and verbal IPO awareness briefings.
ScotSAC	Mandates appropriate shore cover for all training activities, grounding the surface team's responsibilities directly in the dive's risk assessment.	The exact text detailing the specific roles and responsibilities of Shore Cover is currently undergoing a comprehensive rewrite.
SAA	Uses a Dive Marshal framework, assigning this individual complete responsibility for the dive team and the monitoring of divers for the day.	Reviewing guidance to formally integrate the Coroner's "eyes on the water" language.

Agency	Role Definition & Guidance Structure	Current Action / Status
PADI	Emphasizes the logistical value and setup of surface support across multiple professional training modules (such as site management, briefings, and technical dive supervision).	Directs members to strictly follow HSE surface support requirements whenever a project falls under the Diving at Work Regulations.

While all agencies rely heavily on localized risk assessments to dictate what shore support does, explicit language across all recreational frameworks allows for varying levels of surface vigilance. As it stands, keeping continuous "eyes on the water" is a strict mandate for some agencies, but an implied or unwritten duty for others.

HSE response

As the HSE is also part of the BDSG I asked for a summary of their response, I am aware that they have also responded separately.

The Diving at Work Regulations 1997 (DWR) apply whenever a person is “at work” while diving, placing clear responsibilities on all individuals involved in a diving project. If no one is working during a dive, DWR does not apply; however, general health and safety obligations under the Health & Safety at Work still stand. Act 1974 may still be relevant if the dive forms part of an undertaking. Under DWR, a “diving project” includes all dives where work is undertaken, and all participants must comply with the regulations.

The diving contractor holds primary responsibility for ensuring the safety of everyone involved, regardless of whether they are working. Employers and self-employed individuals must understand how DWR applies to all affected persons, including volunteers, students, and the public. The Recreational Diving Approved Code of Practice (ACoP) applies only to dives covered by DWR, not purely leisure activities. It distinguishes between mandatory guidance (ACoP) and advisory content.

HSE expects duty holders to be familiar with these requirements. A key requirement is that all “divers” must hold a valid medical certificate of fitness to dive (MA2). Although this technically applies only to working divers, HSE guidance clarifies that volunteers critical to a dive team should also be treated as “at work.” Therefore, such volunteers must be competent and medically certified, particularly in roles like safety divers. To reinforce this, HSE has issued specific volunteer guidance, (Appendix 3) worked with organisations such as PADI to promote compliance, and engaged with industry groups to raise awareness about medical fitness requirements.

Medical assessments, conducted by approved examiners, must follow HSE guidance (MA1), considering physical and psychological fitness for diving. Any restrictions or unfitness must be explained clearly, including risks such as hypertension or immersion pulmonary oedema. HSE continues to review and improve its guidance to ensure clarity and safety across the diving sector.

Summary

At the core of the issue is a perceived regulatory grey area within the UK Diving at Work Regulations (DWR) and its Approved Code of Practice (ACOP). Due to the confusion in defining whether an unpaid volunteer, e.g. at a commercial dive centre, counts as being "at work," a confusing divide has emerged: volunteer instructors at recreational clubs are generally exempt from strict Health and Safety Executive (HSE) medicals, while those volunteering for commercial dive centres are covered. This allows some projects to inadvertently bypass mandatory professional medical oversight by utilising volunteer teams, creating a false sense of legal security despite the reality that human physiology and duty of care do not change.

This systemic gap extends directly into medical screening and surface safety protocols. While organisations like BSAC have successfully spearheaded national campaigns to raise awareness of IPO, proving that better education saves lives through early symptom recognition the standard medical self-certification process remains heavily reliant on open-ended questions. Consequently, an at-risk diver with high blood pressure who has only experienced mild, unrecognised symptoms can easily slip through the paperwork undetected, unless they have undergone a full diver medical. As a group we will discuss ways to improve divers individual understanding that high blood pressure can mean an increased potential for IPO and remind them about the guidance.

Similarly, when it comes to managing these emergencies from the surface, there is no uniform standard for what shore support actually entails. The legal minimums defined by the HSE focus broadly on the ability to summon help, which allows some operations to use surface who have not been trained in life saving skills like basic life support. Furthermore, maintaining continuous visual surveillance, or keeping "eyes on the water" also ranges from a strict, explicit mandate enforced by agencies like IANTD UK, to an unwritten, implied duty that other major agencies are now revising their training to formally include.

As BDSG we will put together a working group to define a set of recommendations of qualifications and good practices for all shore cover

Currently, while individual agencies are actively updating their training and adding educational addendums, the current framework places the burden of navigating requirements entirely onto local risk assessments and the subjective inclinations of individual project organizers.

To close this section, I would also like to refer you to an article published 6 years ago, bringing awareness to the fact that Divers are sometimes economical with the truth regarding their health or symptoms to medical personnel and dive professionals / supervisors. There have also been instances of individuals falsifying diving medical documentation, including HSE diving medical certificates. Such practices undermine the integrity of medical screening processes and increase the risk of undetected conditions adversely affecting diving safety.

[Be Honest with Your Diving Doctor, it Could Save Your Life.](#)

Appendix 1

The Matter of Concern #1:

The Coroner is concerned about the level of training and awareness nationally, specifically of the medical requirements for volunteers involved in projects like Kevin was.

Report #1:

Agency	Response
BSAC	Volunteer Protocols & Project Awareness The Club/Regions operate on a volunteer basis outside of DWR. Clubs/Regions are required to centrally submit risk assessments to BSAC for projects outside of the normal scope of diving and training activity and would be advised accordingly if the scope of work could come under a project within DWR. Club/Regional volunteers are advised that they can claim 'out of pocket expenses' only, within the BSAC Expense Guidelines and any form of reward or payment beyond out-of-pocket expenses for any pf the team could subject the individual/s to DWR. BSAC Centres operate commercially and are advised all Team members should have HSE medicals. Centre Instructor membership renewal requires valid HSE medical on the BSAC CMS. Medical Screening & Enforcement Standards The BSAC use the UKDMC Self Declaration Medical Questionnaire. Volunteers require an HSE medical in addition to the self-declaration if volunteering with a BSAC Centre.
IANTD	IANTD does not have separate standards for project volunteers. How duty of care is implemented depends on the risk assessment for each project and / or subjective inclinations of the organiser towards qualifications / experience / task loading. IANTD require all professionals involved in a project falling under the Diving at Work Regulations to have been examined by a doctor and declared fit to dive prior to qualifying.

TDI/SDI	There is undoubtedly a grey area in the ACOP when it comes to volunteer safety divers and instructors. The diving at work regulations clearly state that any diver (a person at work that dives) involved in a diving at work project needs an HSE medical. Most dive centres operate on the basis that if a diving project is "at work" all divers involved in the diving project are treated as "at work". A strict reading of the ACOP could be interpreted as meaning that divers are not "at work" if they are not being paid, even if the project is an "at work" project. Furthermore, the ACOP says that "recreational diving will generally only fall within these Regulations when an instructor is being employed to dive in order to teach students". This implies that if a volunteer instructor is used, the whole project does not fall under the DAW regulations. Physiology, medical conditions, and fitness to dive do not change if an instructor is being "employed" or volunteering. This is further complicated by the precedent in the UK: volunteer instructors who volunteer for dive clubs are not governed by the DAW regulations but volunteer instructors who volunteer for a dive centre are governed by the regulations. It can be very difficult for someone to tell the difference between a dive club and a dive centre in some cases. An instructor's duty of care for the safety and well-being of their students does not change if they are volunteering or being paid. To fulfil that duty of care and ensure the well-being of their students, an instructor must meet the requirements of the ACOP.
ScotSAC	All diving activities that fall under ScotSAC rules are conducted on a voluntary basis and as part of being a diving member of ScotSAC, a self-declared medical questionnaire must be completed (i.e the recreational medical screening system managed by the UKDMC - United Kingdom Diving Medical Committee). This system involves a medical declaration and "immersion induced pulmonary oedema" is specifically referenced at question 16. If members declare a health condition, further assessment is required by a UKDMC medical referee.

SAA	Members of the SAA utilise the recreational medical screening system managed by the UKDMC (United Kingdom Diving Medical Committee). This system involves a medical declaration and “immersion induced pulmonary oedema” is specifically referenced at question 16. SAA members are advised that any diving activity which involves any element of payment or reward would come under the rules governing diving at work and they would require a HSE medical, they are also advised that such activities are not covered by SAA insurance. The relationship between the deceased and the commercial diving project he had volunteered to assist is not the type of event that the SAA have the expertise to advise on. Based on HSE guidance for “Using volunteers in diving at work projects” this is a complex area, and their advice is that the diving contractor should consider seek legal advice.
PADI	PADI provides information about the Diving at Work Regulations to new instructors the day they pass their Instructor Examination. In the past, we have also provided our professional members with a summary of the relevant HSE advice concerning the DWR requirements including HSE medical requirements which is attached here. In the light of the Coroner’s report, we are now revising these resources to ensure these areas are properly stressed. Even if it is not expected that a new Divemaster or Instructor will be involved in a project falling under the Diving at Work Regulations, we require them all to have been examined by a doctor and declared fit to dive prior to qualifying.

SSI	All SSI professionals must be affiliated and teach through an authorised training facility, our facilities are usually for-profit organisations and therefore our advice to them is that they must comply with the Diving at Work regulations as required by our standards to comply with local laws. All professionals are required to upload a medical sign off into the SSI system prior to having their professional rating issued by SSI. All professionals globally are required to have a doctors signature verifying their fitness to dive, this must be signed and dated within the previous 12 months, (self-certification is not allowed for SSI professional programs) once the document is uploaded into the system any SSI centre employing their services can access and verify the validity prior to them taking part in a diving operation. SSI standards require the SSI professional to notify SSI if their medical condition changes. In the UK local law takes precedent, our advice to centres is that all members of a dive (teaching) team should have HSE medicals in place as it is unlikely that there would be any diving operation conducted by a dive business where the regulations would not apply. We are currently implementing a UK addendum for all SSI professional trainers covering the UK Diving at work regulations and ACOPS to be used when delivering professional level courses to UK based candidates.
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The Matter of Concern #2:

The Coroner is concerned about the level of training and awareness around the risks of immersion pulmonary oedema(‘IPO’) for divers with high blood pressure. Whilst the more common risks of hypertension will be better understood (such as heart attack and stroke), awareness of IPO appears to be less well understood.

Agency	Response
BSAC	BSAC has been aware of IPO since it was first described in the 1980s by Dr Peter Wilmshurst. More recently Dr Wilmshurst raised awareness further, including giving presentations at two (2014 & 2017) BSAC Diving Conferences, where he highlighted that although previously believed to be rare the condition may be implicated in many diving incidents, including fatalities. Dr Wilmshurst is a consultant cardiologist and also a UK DMC Medical referee, and consequently he has ensured that all UK DMC referees are well educated in the implications of a diver suffering from IPO.

	Since that time BSAC has increasingly promoted greater awareness of the condition through all possible avenues including but not limited to: • Identifying incidents within the Annual Diving Incident Report. (these are not always evident at the time of publication, but where such causes are subsequently identified at inquest, or Fatal Accident Inquiry in Scotland, the database is updated accordingly). • Raising the issue with other organisations within British Diving Safety Group (BDSG) including within a presentation of the annual diving incident report, on a yearly basis. • Promotion, on a continuing basis, in the BSAC magazine 'Scuba'. • Promotion frequently and regularly on BSAC website and social media channels. • Raising awareness of the condition with the National Water Safety Forum (NWSF) – IPO is found in any water immersion environment (swimming, triathlon etc.) not just diving (BSAC most recently presented on the subject during the 2025 National Water Safety conference hosted by RoSPA). • Advising the NWSF to invite Dr Wilmshurst to speak on the subject of IPO at their drowning prevention conference in Durham in 2018. • Producing guidance for both Divers and Instructors on the risks, awareness, prevention and resolution of IPO. • Integrating the guidance into our training programmes as training is revised and updated. (Currently only one course remains, Advanced Diver, and is presently in development.) • Running a number of online seminars either directly on the subject of IPO or as part of a wider related subject – and making the recordings available from the BSAC website https://www.bsac.com/training/online-learning/catch-up-on-webinars/ • Continuing to monitor and review diving incidents to identify evidence of further instances of IPO BSAC continue to work with Dr Wilmshurst to understand the _ Extent of the risk and to promote awareness of all aspects including avoidance, recognition and resolution. The recently published annual diving incident report 2024 again reported in finding in relation to IPO and highlighted the following key points. 1 There is growing evidence within the report that awareness of the condition has resulted in lives being saved because of the recognition of the condition leading to a timely and safe exit from the water 2 There appears to be evident of a growing awareness and subsequent treatment of the condition amongst the medical profession, resulting we believe in a more accurate diagnosis and subsequent treatment
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	3. We have also seen more evidence of divers continuing to dive after an episode of IPO and so we are amending our messaging to include: Current guidance recommends that anyone experiencing symptoms of IPO during any of these activities should avoid re-entering the water until medical advice has been obtained. It is now well understood that even mild symptoms significantly increase the likelihood of recurrence upon subsequent immersion. A likely instance of such a recurrence can be seen in the BSAC incident report (24/111)
IANTD	There was a working document from BDSG some years ago about best practice for IPO, which was adopted by all UK agencies, including IANTD UK. The background and first aid content were sent to instructors at the time - so we do have some instructor advice. The Diver Medical Screen Committee (DMSC) system forms in which replaced the RSTC form in 2020, is used by us includes IPO as a supplementary answer to question 1 on the medical self-certificate. However, Q1 is extremely open ended and might not trigger reading the follow up on page 2, as if the diver does not feel 'affected' then they won't confess to having had an IPO if no additional medical advice was sought. It is possible for diver can slip through the process. Instructors are asked to include IPO in their dive brief, especially for CCR programs.

ScotSAC	IPO education materials are included in our core diver training which provides an overview on the condition, symptoms and treatment from an emergency perspective. Specific medical guidance/ information for any members with high blood pressure would only be provided by someone with the relevant medical qualification. All diving ScotSAC members require an annual medical certificate – the validity of this is based on the information declared by members.
SAA	The SAA have incorporated the identification and treatment of IPO in their initial and second level diver training and their Oxygen Administration and Emergency Diver First Aid course. As each SAA course is reviewed the inclusion of IPO is considered. The subject of IPO has been covered in the SAA newsletter sent to all its members. I believe that our members have and continue to be made aware of IPO.
PADI	We have provided specific articles on immersion pulmonary oedema in the publications distributed to all our professional members and two examples are attached with this document. We plan to publish another article on this subject later this year and are compiling a webinar on the subject of IPO to be broadcast in July that will be recorded and kept online as a resource for our professional members.
SSI	Information about IPO/IPE has already been added to our Science of Diving program, this programs completion is a prerequisite for professional membership. Our XR programs already include information about IPO. IPO will also be covered in the upcoming re-writes of the Open Water and Diver Stress and Rescue course materials when released.

The Matter of Concern #3:

The Coroner is concerned about whether there is sufficient guidance regarding what the role of shore support /surface cover entails. Specifically, should that include having eyes on the water?

Report #3:

Agency	Response
BSAC	Role Definition & Guidance Structure Uses 'BSAC Safe Diving Practices' code of conduct which includes having an appropriate dynamic risk assessment and a suitable Dive Management. Dive Management is integral to the BSAC Diver Training Programme training expanded on with each diver grade. Current Action / Status Will review Dive Management guidance materials with Coroners 'eyes on the water' concerns.

IANTD	IANTD UK used to have a code of conduct for UK instructors, which emphasised responsibilities beyond those covered by the standards, and specific advice for compliance with UK at work ACOP etc. This was used as an intro aid to all new and crossover instructors coming to IANTD UK. At the core is a need for a risk assessment and controls for each diving operation. That should include risks including those from diver medical conditions and cover with shore support. IPO awareness should be included in the dive brief, along with the dive plans and kit etc. It also brings in the actions for shore support - they are both legally required by the HSE ACOP (key points - being able to summon help and physically capable of assisting) and it's very difficult to write a risk assessment that doesn't include shore-based help for the dive team. The recreational ACOP in the UK is the only ACOP that does not mandate an equivalent diver level between dive team and shore support. That is partly because in the commercial diving ACOP, the legally responsible dive supervisor is at the surface with comms to the team. In the recreational ACOP, the supervisor and standby diver are in the dive team, with just a 'surface personnel' to monitor the diving and EMS activation. Having eyes on the water at all times is an essential part of the shore support brief and has been included by IANTD UK in its supplementary advice to instructors. Other items from risk assessment that would relate to the surface personnel are the ability to admin both surface O2 and first aid – although these are not stipulated, they are of course, very important. The lack of specific stipulation does allow some to evade this and use lower grade surface support.
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ScotSAC	All ScotSAC training activities require appropriate shore cover to be in place, and guidance is provided on the roles and responsibilities that that entails. The guidance that we provide is very much centred around the risk assessment conducted on training dives. The detail sitting behind the roles and responsibilities of Shore Cover is in the (lengthy) process of rewriting
SAA	The SAA provides guidance on the role of a Dive Marshal. A Dive Marshal assumes all responsibility for the dive team during the diving day, which includes the monitoring of divers in the water. However, the guidance does not specifically include “having eyes on the water” as identified by the coroner. The SAA will review the current guidance to ensure it addresses the specific concern raised by the coroner.
PADI	PADI does explain when shore/surface support is necessary and emphasises the value of it. For example, we were contributors to this multi-training agency article on shore diving tips which stresses such protocols. When a diving operation falls under the Diving at Work Regulations, our members are informed that they must follow the HSE requirements, and this includes the provision of proper shore/surface support. Here are some examples of how the value of surface support is explained to new PADI professionals: (you tube links please click) <u>Dive Site Setup & Management</u> <u>Dive Briefing</u> <u>Supervising and Supporting Technical Dives</u> <u>Supervision Tips</u>

SSI	Our advice to professionals is that the Surface Support should be an active participant in the dive project, in attendance at the briefing/debriefing and should not be distracted by other duties during the in-water activity. In addition, there is a real concern about the question that the coroner has addressed to the HSE about the ambiguity relating to volunteers. As long as we have the discrepancy between the requirements for professional / non-professional training in the UK diving community, there will always be individuals who choose dwell in the grey area and seek the easiest / less expensive option. We believe that this ambiguity puts the dive contractors and appointed dive supervisors at risk as they are the ones having to decide if the diver is at work or not. Our concern is that incidents like the one giving rise to this information request only harms the industries reputation in the long run. SSI would welcome clear and definitive guidance from the HSE on the use of volunteers in recreational diving projects.
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Appendix 2



Regulation 28 report - H.M. Senior Coroner for Gloucestershire - BDSG response

This document is prepared by the British Diving Safety Group ("BDSG" through its members) in response to a Regulation 28 report issued by HM Senior Coroner for Gloucestershire, Ms Katy Skerrett, dated 5 January 2022.

Members include:

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Other Diving Organisations:

- **BDSG** (*British Diving Safety Group*)
- **DDRC** (*Diving Diseases Research Centre*)
- **DDST** (*Defence Diving Standards Team*)
- **IDEST** (*Inspectorate for Diving Equipment Servicing & Testing*)
- **MCA** (*Maritime and Coastguard Agency*)
- **RNLI** (*Royal National Lifeboat Institution*)
- **SITA** (*Scuba Industries Trade Association*)
- **UKDMC** (*UK Diving Medical Committee*)

What is the BDSG?:

The BDSG was formed in 2002 to promote and improve safety for amateur sub-aqua divers in the UK and when diving abroad. The BDSG is made up of representatives from organisations involved in training, regulatory, governance, diving medicine and support of amateur sub-aqua diving.

Immersing yourself in a body of water is a hazardous activity, however, risks can be mitigated to reasonable and acceptable levels with proper training, well maintained equipment and an appropriate level of mental and physical fitness for the activity being undertaken.

In spite of a great deal of work undertaken by BDSG and others to promote an understanding of the symptoms of Immersion Pulmonary Oedema (IPO) and how it tends to manifest itself in diving incidents, the overall impression of the BDSG members is that there exists a significant disparity between recreational divers' awareness of DCI (Decompression Illness) and their awareness of IPO.

IPO:

UKDMC - What is Immersion Pulmonary Oedema (IPO)

IPO can occur whenever a person is immersed in a body of water. Some studies show that even very fit individuals such as tri-athletes, can suffer with IPO during the swim phase of their competitions. US Navy Seals have been found to suffer with IPO when they carry out long strenuous surface swims and in their cases, they often suffer the effect only in one lung because they swim “side-stroke”, and the centroid of one lung is lower in the water than the other.

When did the BDSG begin discussing the risks of IPO?:

The BDSG and its members first discussed IPO on 10th November 2016. At that meeting, the BSAC officer responsible for preparing the National Diving Incident Report presented the report which raised concerns based on the research undertaken by Dr Peter Wilmshurst (who we understand gave evidence at the inquest in which the Regulation 28 report arises), that IPO may have been a significant factor in diving fatalities. We agreed at that time that further investigation and monitoring was necessary.

Pre-testing for IPO:

There is no screening test that can definitively determine whether an individual will suffer from IPO, but there are a number of known factors which increase the likelihood of an individual being subject to IPO. Completing either the UHMS (Undersea and Hyperbaric Medical Society) or UKDMC (UK Diving Medical Committee) medical declaration form prior to any training/diving taking place helps in identifying the known risk factors.

With respect to diving medicals, assessments and the self-declaration tools, the UK diving population, who are members of a club or training organisation are divided into two groups, BSAC/ScotSAC and SAA, use the UKDMC medical self-assessment, while everyone else uses the UHMS tool.

Given that physical health is an important factor when diving, the two medical assessment forms have been updated in the past 2-3 years to include sections specifically to screen for a person’s susceptibility to IPO.

The Matter of Concern #1:

“Whether there is sufficient awareness of the risks & affects of Immersion Pulmonary Oedema (IPO) by those engaged and/or participating in the activity of diving?”

Report #1:

IPO was first discussed at the BDSG on 10th November 2016. It was agreed at that meeting, further investigation and monitoring was necessary.

Since 2016, almost every meeting has included further discussions and updates on IPO, with specific action points for members. Those members tasked with action points are then required to report on their progress at the following meeting(s).

The BDSG members believe that whilst IPO presents a significant risk to divers, fatalities can be prevented. However, it is difficult to build a convincing case to show the dangers of IPO and get people to acknowledge and take the risk seriously, without evidence to properly quantify the risk and the sheer scale of the issue.

Furthermore, the BDSG members believe IPO has been the cause of death, or the provocative factor (the trigger that leads to death), in a number of diving fatalities, but may have been misdiagnosed as drowning or barotrauma. Dr Wilmshurst certainly shares this view.

BDSG’s concern

The BDSG is concerned that the number of IPO cases has been greatly understated. A review of historic incidents is being carried out and the “IPO implicated” number shown below are cases where there is a clear indication of IPO involvement. That review is continuing, so the number where IPO was implicated is likely to increase.

From the National Diving Incident Reports compiled since 1964:-

Total incidents: 8725
Confirmed IPO (not only the fatal case): 30
IPO implicated (undiagnosed, but show the key features of IPO): 183

In order to properly quantify the risk of IPO, it is imperative that the Police, who often take primacy of diving investigations, properly preserve and collate the necessary evidence to help Pathologists and Coroners make more accurate diagnoses and conclusions. Whilst the HSE (as they have a specialist and dedicated diving team) know how to preserve evidence properly in diving cases e.g. diving equipment, the Police do not have the requisite knowledge to do this and the BDSG members fear that vital evidence is often not gathered or overlooked.

More accurate statistics will help build a convincing case that IPO is a significant and real danger – which in turn should make people take IPO much more seriously.

BDSG – Preservation of Evidence:

The BDSG has created, and is continuing to compile a pack for use at an incident to help preserve evidence:

BDSG Serious Accident Guide for Divers v1.0
BDSG - General handling equipment post-incident
General - Rebreather post-incident investigation guidelines
Ambient Pressure (AP) - post-incident inspection guidelines
RESA - Hollis Explorer SR Lockdown
RESA - Hollis Prism2 - post-incident lockdown
RESA - KISS - post-incident procedure
RESA - rEvo - post-incident investigation guidelines V1.1
RESA - Shearwater - post-incident guidelines

The pack uses instructions drafted by the equipment manufacturer to describe how to shut down specific diving equipment safely and what information to collect and preserve. Safely shutting down complex closed circuit rebreather systems and interrogating the electronic monitoring devices is beyond the scope of a normal Police Officer. The pack also describes the types of evidence from witnesses that would be relevant to a Pathologist and Coroner in their determinations.

E.g. "...incident began at depth and the casualty gave an out of gas signal...",
"...the casualty rejected their primary and alternate air supplies...",
"...casualty made a rapid ascent to the surface after an out of gas signal..",
"...we found *N* bar of gas in the system...",
"...checks showed gas was available and no equipment faults..." etc.

BDSG "lookback test":

We've used this report as an opportunity to audit and review the work undertaken by BDSG members to promote the risks of IPO. The members have made an outstanding effort to raise awareness of the risks of IPO and those members who operate internationally, have made it clear, how far ahead the UK is with reference to the rest of the world in raising awareness of the risks. This is something BDSG members are extremely proud of, although it acknowledges there is more work to be done.

Actions taken to increase the awareness of IPO:

There are too many individual items to list here so the individual responses from members can be made available, but in more general terms activities include but are not limited to:

- In 2017 at the National Diving Conference, Dr Peter Wilmshurst made the first of several presentations to raise awareness among the most influential members of the diving community.
- Every year, the Annual National Diving Incident Report mentions IPO specifically and its possible involvement in diving incidents and fatalities.
- Multiple articles appear in diving magazines and periodicals e.g. Diver, Scuba and X-Ray magazines.
- Frequent references to IPO on social media and websites.
- Engagement with the National Water Safety Forum (NWSF) to raise awareness of IPO as it is not exclusively a sub-aqua issue.

- Guidance materials produced by the BDSG members targeting divers and instructors.
- IPO has been raised in safety bulletins issued by the training agencies, trade bodies and other interested parties.
- All training agencies have either amended or appended sections of their training materials to focus on both the causes and presentation of the condition, focussing on the 'gas hungry at depth' to differentiate IPO from other forms of ascent related conditions.
- Webinars and online seminars either specifically on IPO or including IPO. Most of these are still available online for further access.
- Most training agencies have either produced their own or refer to the BDSG materials available online.
- “Return to diving - safely” material has been created and shared by the training agencies and the BDSG which includes an abundance of refresher material and references to IPO as a risk.
- The medical questionnaires have both been updated to included specific reference to IPO.
- IPO is discussed at all levels of training. More emphasis is made where dives are deeper or using either closed circuit equipment or mixed gases.

The Matter of Concern #2:

“Whether sufficient consideration has been given to the requirement for a ‘fitness to dive’ medical certificate as a prerequisite to participation in diving activities?”

Report #2:

In an “at work” environment there are regulations which govern the type and frequency for medical examinations. This response refers to amateur diving where other arrangements are in place.

Current arrangements:

All the significant training agencies and the sports’ governing body, use one of two self-guided questionnaires to screen for medical conditions which require referral to a Diving Medical Referee for consultation and advice e.g. epileptics requiring medication or diabetics with recent hypoglycaemia are advised not to dive because of the risk of unexpected loss of consciousness which could be fatal underwater.

The UKDMC explain the reasons why there was a change from periodic diving medical examinations to a self-declaration screening tool and the study which was carried out which recommended the change can be found here: [UKDMC Medical self-declaration system explanation](#)

UKDMC questionnaire:

[UKDMC Recreational diver medical declaration form](#)

BSAC/ScotSAC and SAA use the UKDMC screening tool. IPO is specifically covered at question 16.

UHMS questionnaire:

[UHMS Recreational diving medical screening system](#) (available in 27 languages).

Most of the other training organisations, use the medical screening tools listed on the UHMS site. IPO is covered in these tools, particularly in the Diver Medical Participant Questionnaire (page 2, Box A) and in the Cardiovascular Systems section of the Diving Medical Guidance.

Previous arrangements:

Prior to the introduction of self-assessment questionnaires between 2000-2002, medical examinations were carried out based on these age bands, <40, 40-50 or >50 at 1, 3 or 5 year intervals respectively. The examinations were carried out by GPs using guidance supplied by the relevant medical committee.

Why the change from periodic medicals to screening questionnaires:

A detailed study, [medical supervision of sport diving in Scotland: reassessing the need for routine medical examinations](#), was carried out on 3,000 ScotSAC members and published in the British Journal for Sports Medicine in October 2000.

The study’s conclusion:

“Diving is a safe sport requiring medical supervision, but routine clinical examination of all divers is unlikely to detect significant abnormalities relevant to their fitness to dive. A carefully designed questionnaire will allow most relevant conditions to be identified and save unnecessary expense for both divers and doctors.”

There was a 3 year follow-up study:

The follow-up study was to assess the effect of the new medical system on medical referee workload, diver exclusion rates, and diving incident frequency.

Here is the link:

[*Three year follow up of a self certification system for the assessment of fitness to dive in Scotland*](#)

The follow-up study's conclusion:

"In summary, the introduction of a self-administered questionnaire appears effective after three years of follow up, and there has been a reassuring increase in failure rates for divers, confirming the safety of the new screening system. Divers now have the benefit of direct assessment by doctors with diving medicine experience."

Other benefits of a self-certification questionnaire:

- Screening for medical abnormalities and changes is carried out much more frequently than would be the case with a periodic medical examination.
- The screening tool can be modified quickly and easily e.g. specific questions are asked about IPO and the screening tools were recently changed to check for the impact of COVID.
- UKDMC list 58 [*UKDMC Medical Referees*](#), but some only carry out HSE diving medicals and in some parts of the UK there are very few Diving Medical Examiners ("DME") so access is further limited and long distances may be involved e.g. in Scotland, the only two DMEs are both located in the extreme SE of Scotland. The questionnaire removes the need to see a DME except where an abnormality has been highlighted by the questionnaire.

There were concerns:

The questionnaire is usually completed in isolation by the diver which has raised concerns that some divers may conceal information that is relevant to their fitness to dive.

There is guidance within the questionnaires which assists the diver complete the form accurately. A diver who does not answer the questions on the questionnaires accurately, is just as likely to do the same with a DME.

It is emphasised that the questionnaires are legal declarations, and if a diver is found to have been fraudulent in its completion, then his/her insurance is not valid.

Throughout a divers' training, they are encouraged to take responsibility for their own safety and their diving partner so it is hoped they would recognise the responsibility they have and will answer the questions accurately.

Information about IPO:

UK Diver Medical Committee paper on IPO for UK divers is made available by the training agencies to pass on to their GPs and Diving Medical Examiners.

[*UKDMC - What is Immersion Pulmonary Oedema \(IPO\)*](#)

BDSG recommendations:

- The current assessment questionnaires do ask about the diver's history of IPO, but embedded in a more complex question. A recommendation might be that both medical assessment questionnaires ask a simple binary question relating to IPO only e.g. "Have you had IPO (Immersion Pulmonary Oedema) before. Y/N?" o UKDMC question 15:

"Have you ever had or suffered from: Decompression illness, immersion induced pulmonary oedema or other diver related problem?"

o UHMS current question is on page 2, Box A:

"I have/have had: a problem or an illness that involved my heart such as: angina, chest pains on exertion, heart failure, immersion pulmonary edema, heart attack or stroke OR am taking any medication for any heart condition."

- Coroners and Pathologists are furnished with Dr Peter Wilmshurst's short guide to diagnosis of IPO as a factor in diving fatalities. More detailed explanations and materials are also available.
- Chief Constables pass on guidance to Police Officers about how to preserve and gather evidence at a diving incident and which key pieces of information would assist the Pathologist and Coroner in their diagnoses and conclusions.
- There should be a clear reporting pathway between Coroners and BSAC who are the custodians of the National Diving Incident database. The objective being to improve the quality of the information regarding the cause and contributory factors relating to diving fatalities.
- BSAC, the BDSG and/or the Coroner's Service should keep the National Water Safety Forum informed as IPO can affect all water users and is not limited to scuba diving.
- Within the diving community, Dr Peter Wilmshurst is recognised as the leading authority on IPO. He has offered to assist Coroners and Pathologists if they feel they would benefit from his expertise in explaining the possible links in diving fatalities to IPO. There are other diving medical experts on the UKDMC and at the DDRC who have offered their assistance in explaining those links too.

Summary:

The awareness of IPO in the UK is significant greater in the UK compared to the rest of the world.

This, in part, is due to considerable efforts made by BDSG and its members in promoting the risk. The BDSG members would very much welcome the assistance of the Coroner's Service and others (as outlined above) to help show the true extent/scale of the problem so that divers not only fully appreciate the risks associated with IPO but take the risks seriously.

As outlined above, there is no screening test that can definitively determine whether an individual will suffer from IPO, but there are a number of known factors which increase the likelihood of an individual being subject to IPO. Completing either the UHMS or UKDMC medical declaration form prior to any training/diving taking place helps in identifying the known risk factors.

Whilst BDSG members fully appreciate the Coroner's concerns, it is not felt that a 'fitness to dive' medical certificate, as a prerequisite to participation in diving activities, is required.

A detailed study shows the value of the assessment form in the UK and other studies abroad support the same conclusion of the UHMS questionnaire.

Appendix 3

Using volunteers in diving at work projects

This advice covers the involvement of unpaid volunteers in diving projects, explains the various roles involved and provides clarification. It is applicable only to diving projects where at least one diver is at work.

It does not apply to simple leisure divers or dives where there is no person at work. For advice applicable to dives conducted as part of a business undertaking but where there is no diver at work, refer to [Volunteering: How to manage the risks - HSE](#)

What does the law say?

The Diving at Work Regulations 1997 (DWR97) regulation 2 states that:

- "diver" means a person at work who dives
- "diving project" means any activity, made up of one or more diving operations, in which at least one person takes part or will take part as a diver

To avoid confusion regarding employment status, both DWR97 and this guidance refer to a non-working diver simply as a "person".

Why the advice is being clarified

HSE's interpretation and subsequent advice to industry has to date focused on whether a person taking part in a diving project is at work or not at work.

The advice has been that a person who is receiving any kind of payment for their diving services falls into the category of being at work. The term "favour or reward" has also been used to emphasise that a person does not have to receive monetary payment to be considered at work and that other benefits, such as the provision of diving gas, the use or servicing of diving equipment, the provision of insurance cover or membership fees, free or reduced cost dives or courses etc need to be considered.

Consideration must also be given to whether any unpaid volunteer constitutes an essential staff member whose involvement is required to ensure the diving project complies with DWR97. In general terms, a person should be considered to be at work, and therefore a "diver" under DWR97 regulation 2, if **either**

1. they are being paid (or in receipt of favour or reward) **or**,
2. their involvement in a diving project is required for that project to be carried out in accordance with DWR97.

A volunteer meeting either of the above would need to be sufficiently competent, hold an approved diving qualification, and have a valid certificate of medical fitness to dive, issued by an Approved Medical Examiner of Divers (AMED).

When a diving project already has the required number of qualified divers, all of whom hold an approved diving qualification and a valid certificate of medical fitness to dive, an unpaid volunteer (such as a certified assistant) who tags along or provides extra backup is not necessarily considered to be diving at work.

Other factors you need to consider

In addition to the above, the following points need to be considered:

- Under Section 3 of the Health and Safety at Work Act, an undertaking that uses volunteers must ensure, so far as is reasonably practicable, that:
 - the volunteer is not exposed to risks to their health and safety
 - The volunteer's actions or omissions do not expose others to health and safety risks.
- Persons who "tag on" to a group remain part of the diving project. Under Regulation 13 of DWR97, they are classified as "persons engaged in a diving project" and must adhere to the following statutory duties:

Regulation 13

1. No person shall dive in a diving project:
 - a. unless they are competent to carry out safely and without risk to health, any activity he may reasonably expect to carry out while taking part in the diving project or
 - b. if they know of anything (including any illness or medical condition) which makes them unfit to dive
2. Every person engaged in a diving project shall comply with:
 - a. any directions given to them by a supervisor under regulation 11; and
 - b. where they would not conflict with those directions, any instructions applicable to them in the diving project plan.

Because these persons are guided by the supervisor, the supervisor assumes responsibility for their safety under DWR97 Regulation 10. Furthermore, since these persons interact with the working dive team and other persons diving, they must be integrated into the overall team framework. While they do not require a valid certificate of medical fitness to dive, they must be explicitly included in the risk assessment, diving project plan, and dive briefing.

The same health and safety standards should be applied to volunteers taking part in a diving project as they would to employees exposed to the same risks. If the risk assessment shows that the risks to the volunteers are different, the preventative and protective measures should reflect the different risks.

The most common question put to HSE on this issue is "Do I need an HSE medical?" If a person's involvement in a diving project is required for that project to go ahead in accordance with DWR97, then they need to hold both an approved diving qualification and a valid certificate of medical fitness to dive.

A diving contractor using volunteers during a diving at work project should consider seeking legal advice.