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DEALING WITH DENIAL

Getting Bends Out Of The Closet

Implausible though it may seem, DCS denial lives on in our ranks, even in the face of serious injury or death. So what does it take to change a bad attitude?

Text by Bret Gilliam

Decompression sickness (DCS) or 'bends' is a statistical inevitability in diving. It has no conscience and rarely abides by set rules. Although we can identify certain predisposing factors in the general dive population, it remains a challenge to explain the exact mechanisms of physiology that allow one diver to become bent while his partner escapes unscathed. It is best that divers, particularly those in the technical community, accept that DCS hits will occur – eventually – and take steps to deal with treatment responsibly.

Of concern to many of us in the business of treating divers is the prevalence in our sport of an unfortunate mindset that consistently denies the possibility of DCS. Indeed, a certain stigma has become attached to reporting symptoms. It's a trend that flies squarely in the face of common sense and logic. Why would any thinking person ignore symptoms knowing that DCS manifestations are progressive in nature... they get worse with time. Further, delays in reporting symptoms and seeking treatment only contribute to a poorer prognosis for recovery.

Historically, a denial of symptoms with its attendant delay in treatment has proven to be the rule rather than the exception in sport diving DCS injuries. Hopefully, the enlightened diver of the 21st century will be pivotal in reversing this 'head in the sand' mentality. We have to remove the stigma of 'blame' so improperly associated with DCS reporting. Typically, a bends hit is not someone's fault. A diver can play everything in his dive plan precisely by the book and still get hit. Likewise, a deliberately high-risk dive profile may not produce symptoms. The point here is that diving leaders must stop pointing fingers and using antiquated analogies ("he screwed up and he got bent, the idiot!"), or this continued reluctance to report symptoms will prevail.

Almost all of us know individuals who have surfaced after a dive and variously exhibited DCS symptoms but steadfastly refused further evaluation or even basic first aid such as surface oxygen by demand valve/mask. There's nothing macho in an attempt to 'tough-out' shoulder pain or progressive numbness: that's just plain stupid.

In the working and commercial diver ranks an entirely different attitude prevails. Divers are trained to report symptoms as soon as possible and the attitude of diving supervisors is one of accident 'containment', not of the accident 'crisis' evident in many sport diving situations. Bends is regarded as an occupational hazard that will occasionally take place and commercial operators and the more progressive sport diving facilities regard DCS as a manageable scenario. For the best outcome, divers and chamber supervisors work in a partnership of honest reporting of even slight symptoms with prompt evaluation and treatment.

With few operational recompression chambers at remote resort sites until the late 1990s, divers in need of DCS treatment were faced with expensive medivac transportation and significant delays, even in the best of circumstances. Possibly as a result of this, many so-called 'experts' were prone to overly broad condemnations of sport divers who got bent; this attitude only contributed to diver denial. Negative peer pressure and professional loss of face effectively influenced divers to ignore DCS symptoms and to hope – mistakenly – that they would somehow get better without treatment. Rarely did this happen.

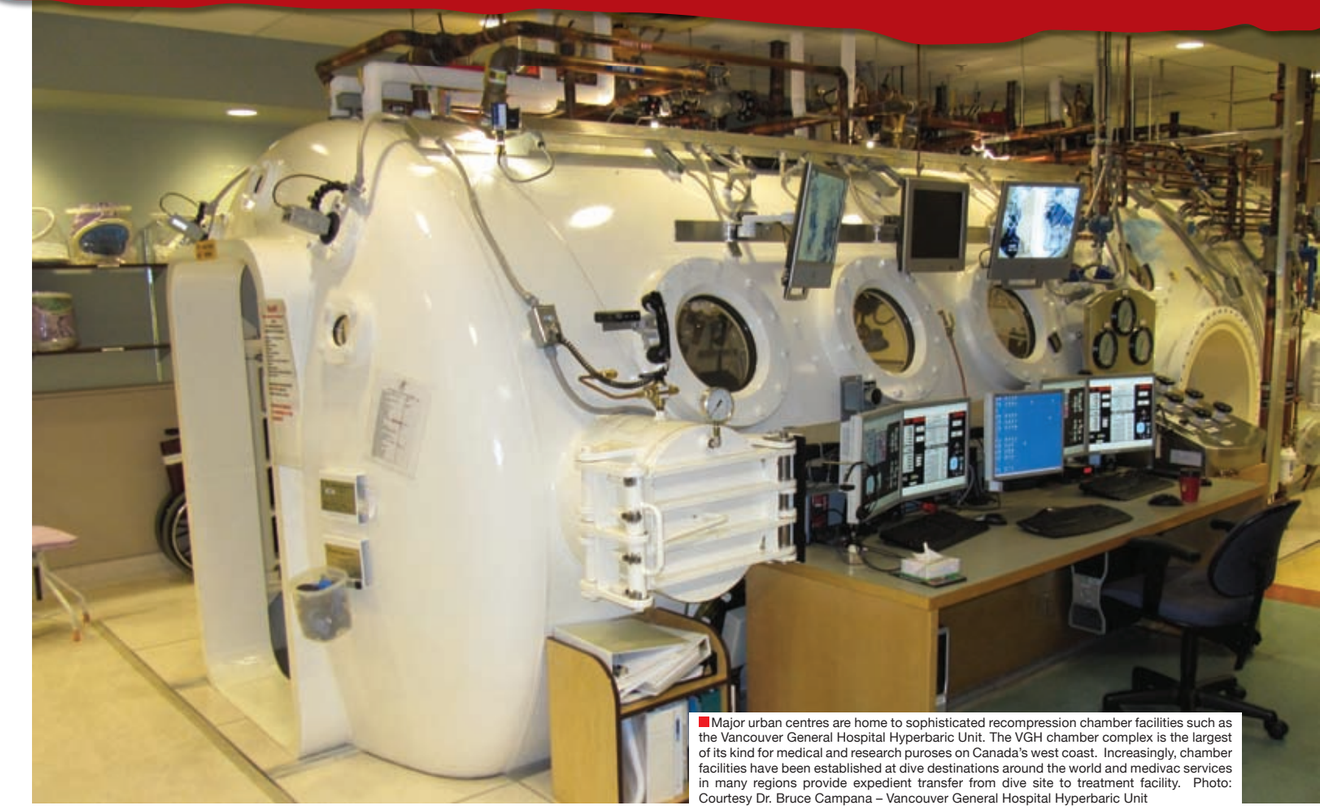
Most chamber supervisors that I have known in my career feel that if DCS is promptly reported and evaluated with ensuing on-site treatment, then the prognosis for complete resolution is excellent. The view of many commercial diver medics and chamber operators can be summed up this way: "No matter what the problem, if reported and treated quickly, we can clean the diver up". Type I DCS (mild symptoms, pain only) affords less risk than Type II DCS (serious symptoms, central nervous system involvement), but in either presentation aggressive oxygen therapy and prompt recompression has produced close to a 98 percent success record. Many academicians find fault with the commercial operators' confidence in resolution of symptoms but their track record is enviable.

Changes In Attitudes

In March of 1991, I was an invited speaker at the joint DAN/AAUS/NOAA Multi-day Repetitive Diving Workshop held at Duke University. For the first time, this conference included representatives from the sport, commercial, scientific, and technical diving communities, assembled to compare notes on actual DCS incidence rates in the field. Some interesting statistical patterns emerged. The overall incidence of DCS for commercial divers was (approximately) one in 1,000 dives, for sport divers it was one in 10,000 dives and the scientific diving community rated an extreme low of one in 100,000 dives. (Sampling from the then-emerging technical segment was so low it was inconsequential and not worth tallying.)

With this rather startling multiplier of 10 between groups, it would be tempting to draw the too obvious conclusion that the scientific diving group is 100 times safer than the commercial diving group. Actually, the incidence rates are interesting for discussion purposes but do not reflect much data to produce true comparisons of relative dive safety vis-à-vis DCS risk. Rather, a clearer pattern of diving 'attitude' was defined. Discussion of acceptable rates of DCS provided the best indication of how varied schools of thought can approach a complex problem from entirely different angles.

Most scientific diving projects are planned from inception to eliminate as much risk as possible from all phases of the diving operation. This is accomplished through strict training and supervision of divers, and a markedly conservative discipline in dive profiling. In short, every possible precaution is taken to reduce the possibility of a DCS occurrence. At the other end of the spectrum, the commercial diving community must deal with a job performance/task completion goal motivated by economics. Therefore, the concept of 'acceptable risk' comes into play for both groups… each dealing with risk differently.



Major urban centres are home to sophisticated recompression chamber facilities such as the Vancouver General Hospital Hyperbaric Unit. The VGH chamber complex is the largest of its kind for medical and research puroses on Canada's west coast. Increasingly, chamber facilities have been established at dive destinations around the world and medivac services in many regions provide expedient transfer from dive site to treatment facility. Photo: Courtesy Dr. Bruce Campana – Vancouver General Hospital Hyperbaric Unit

By extremes of discipline, supervision, and training the scientific community hopes to prevent DCS incidence. With the use of highly trained supervisors, diver medical technicians and on-site recompression facilities, the commercial companies aim to effectively manage any accidents that may occur. It is difficult to quantifiably gauge the 'end user' effectiveness of either group since DCS still occurs in scientific and commercial divers; the distinction being that if a commercial diver gets hit he benefits by immediate and state-of-the-art medical treatment that may not be available to a science diver in a remote locale. Per capita DCS rates may or may not reflect the effectiveness of either approach to accident management, but the commercial operators are steadfast in their opinion that immediate evaluation and/or on site treatment are an acceptable alternative to a lesser statistical incidence rate.

Deserved, Undeserved

We'd all agree that no bends hit is good. One commercial diving medical professional made this point at the conference: "While most sport and scientific dive operations would like to reach a goal of zero per cent DCS incidence, in commercial diving this is simply unrealistic. Ideally, we would like to reach a zero rate on Type II hits, but we still feel that our protocols allow us to treat DCS effectively enough that Type I hits are essentially manageable."

A good analogy, he said, is that we accept a worker using a hammer will eventually hit his thumb and when he does we'll treat it. If we put a diver in the water to work, eventually he will get bent and we'll treat that as well. That's the reality. The conference delegate added, "We have the technology to handle such hits and we feel that this is a more responsible approach than the elusive belief that we can eliminate DCS. It's going to happen; we all know that. Let's be prepared to treat it." Importantly, he noted, "our divers feel that our system works and it's their butts on the firing line."

Further distinctions are sometimes made between 'deserved' and 'undeserved' DCS hits. Simply, hits from dive profiles that carry a higher risk of DCS exposure are deemed 'deserved'. These might include Table or dive computer limits violations, deep repetitive or extreme reverse profile dives. Hits following dives within accepted limits are considered 'undeserved'. This is not to say that as chamber supervisors we sit back and blithely pass judgment on patients. Categorizing DCS hits in this manner merely allows a perspective on reasons for the presentation.

Aggressive 02

First and foremost, we have to encourage reporting of symptoms at the earliest observation. Second, the importance of surface oxygen by demand valve/mask cannot be overemphasized. Dr. Jefferson Davis was one of the earliest advocates of aggressive 100 percent 02 delivery in the field and his pioneering work has resulted in the now accepted practice of oxygen therapy as a first line of treatment en route to the chamber. A significant percentage of symptomatic DCS patients will relieve following a 30-45 minute oxygen-breathing period if delivered by demand valve/mask. During a year long period as President of Diving Operations for Ocean Quest International, I observed nearly a dozen cases of symptomatic DCS clear completely following delivery of demand system 02 during patient transit to our chamber on the ship. Free-flow systems are far less effective and are wasteful of the gas.

I ran the Ocean Quest diving program along similar guidelines to a large commercial operation: expect the worst and be prepared to deal with it. We were very successful in encouraging divers to report any symptoms and had a 100 percent resolution rate on every one of the DCS cases we treated. Our overall incidence rate came out to be approximately one case in 12,000 dives; this is significant since our diving program was unlimited with respect to depth and repetitive dives allowed each day. In the space of one year we conducted almost 80,000 dives! Ocean Quest remains the largest diving operation in history. We averaged as many as 1,200-1,400 dives per day sometimes as a matter of routine.

Thankfully, we are seeing more and more fully operable field chambers coming into use. Grand Cayman, Cozumel, Roatan, Palau, Ambergris Cay, the Galapagos, the Red Sea's Sinai, and even some live-aboard expedition vessels all feature state-of-the-art treatment facilities that would have been unthinkable only a decade ago. But remember, the chamber is an effective tool only if used – hopefully as soon as the individual suspects a problem. It's incumbent on all divers to take personal responsibility to report any abnormality that could be even remotely linked to DCS. Using 100 percent 02 at once and seeking professional evaluation and a test of pressure is key if the possibility of DCS is suspected.

DCS Contingency

All divers should have a complete and detailed contingency plan for DCS management. For higher risk dive profiles and remote expedition projects, more attention to detail will be required and should include the provision for on-site recompression either in a properly staffed and set-up field chamber or through use of an evacuation chamber. In-water recompression protocols also present options that are viable for experienced personnel who understand the protocols.

The advent of affordable medical insurance through an organization such as DAN, removes the financial deterrent to seek help if/when DCS is suspected. There is nothing macho or cool about denial of DSC symptoms that could very well result in lasting injury such as paralysis or worse. It's time divers woke up to the fact that bends is an injury for which common sense demands treatment. Finally, encouraging prompt reporting without any peer or professional blame, will vastly improve the safety of a sport infamous for symptom denial.

The author, Captain Bret Gilliam, pictured in 1989 operating the recompression chamber aboard *Ocean Spirit*, Ocean Quest International's 550-foot (168m) dive cruise ship. Photo: Courtesy Bret Gilliam

Bret Gilliam is a 40-year veteran of the professional diving industry and operated recompression chambers for over 20 years. He is credentialed as a Recompression Chamber Supervisor, Diver Medical Technician, and developed the most widely used remote in-water treatment protocols currently in use when evacuation is not an option. He is widely published on the subject of diver treatments, physiology, and emergency procedures.