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ASMA-UHMS DCS WORKSHOP THOROUGH AND WELL ATTENDED

R W (Bill) Hamilton

As an example of inter-society collaboration on a topic of mutual interest, treatment of decompression illnesses, and in terms of gathering probably the best collection of experts on this subject that have ever been assembled, the Workshop was an outstanding success. In terms of achieving consensus of the experts on some key issues, success was somewhat more elusive. Since this workshop's configuration and auspices were laid out in the lead article *Pressure* [24(3), May 1995] we will not repeat them here. Its official goals, what was wanted in the way of consensus, were perhaps not so well laid out (as opposed to objectives, the mechanism for reaching those goals). Organizers and chairmen were Paul Sheffield and Richard Moon.

Basically it was hoped that uniform treatment procedures could be agreed upon that would permit defining the requirements of treatment, hence its cost. This is important to DAN, who has to pay for treatments. It is reasonable to try to set limits to how many post-treatment recompressions might be needed, for example, but by all appearances this group was not ready to sign on for this.

Lest this imply that the meeting was anything but outstanding, please note that these participants had 2 days (including an evening session) of concentrated and well-prepared presentations by the world leaders in decompression and decompression illnesses. This included

everything from reviews of NASA's and DAN's experience and experience of various navies, all the way to the devastating decompression sickness not being treated at all well on the Miskuito coast of Central America. The program included most of the heavy-weights, but sitting there on the front rows were many others not on the program but with plenty of experience to share. Being with this group for a couple of days was a real treat professionally.

To begin with we got a neurological and neuropathological orientation that started us off well. Drew Dutka's chart of DCI made a lot of sense out of this slightly troublesome terminology. John Hardman's pathology states that irreversible damage begins within 10 minutes. Next the "aerospace" portion that included altitude DCS and the effects of oxygen pre-breathing as well as some provocative possibilities (by Mike Powell) to explain why astronauts are so "resistant" to DCS. Pat Kimbrell presented a crisp and well thought out table for treatment of altitude DCS. Differences showed up on treatment with Table 5 after altitude DCS; USAF uses it with few recurrences, Canadian experience says it causes too many. In fact, it seems Table 5 split the group down the middle; it will be interesting to see how the balloting went on this one. Ed Thalmann reviewed the history of treatment table development, noting that the need for decompression following treatment was not immediately recognized. Table 5 works if the rules are followed. He sees no specific benefit from helium except in the ensuing decompression. Embolism as an entity was covered, a refreshing view since the advent of "DCI" has tended to subvert the use of that term, unfortunately. The advice from Des Gorman is to treat the mechanical effects (the bubble), then the damaging effects of bubbles. A lot of embolism cases resolve spontaneously, some never do.

If this Workshop made one decision, it was that early treatment is beneficial. This was a prevailing theme throughout, and no one had any arguments against it, even if the only chamber available is a monoplace chamber, a distinctly new consensus over some older viewpoints. Yehuda Melamed reviewed the successful Israeli experience with transportable chambers in the early 1970s. Gary Beyerstein mentioned that the more enlightened commercial companies no longer have penalties for being treated, a tactic that gets divers who need it in the chamber quicker; others can learn from this success. David Elliott acknowledged that commercial diving is boring these days, since there are so few hits. Once again, the concept of recompressing first and asking questions later is endorsed.

Another feeling that seemed present was that the treatment levels that have been used are at a marginally toxic level of oxygen. The treatment with 100% oxygen at 2.8 atm is a compromise to get the maximum compression at an oxygen level that can be tolerated; it works, but the O₂ level is higher than desirable and 2.5 atm may be better.

One opinion on the oxygen toxicity front is that one might have to defend not using methyl prednisolone; a free radical scavenger. The viewpoint on use of helium was not crisp in either direction; Des Gorman is seeing the need for fewer follow-up treatments. It is hard to do a blinded study since the voice gives it away. (If it's my spine I'll take it. Ed. *Pressure*) Likewise the room seemed a bit divided on the value of the "Hawaiian spike", a fast and deep recompression to start a treatment as described by Bob Overlock. Some see merit in it, but by no means all; the case against any deep treatment, say 6 atm, did not come out strongly, however. Still another uncertainty is the benefit of lidocaine, promising to some but neurologist David Warner and others are skeptical, but say to keep studies going. Philip James hypothesized that one of the reasons fluids seem to be beneficial is that they are unsaturated and they allow a redistribution of gas. Saturation "treatments" with a nitrogen-based atmosphere are not gaining ground, in part because the nature of the disruption to an active clinical HBO facility; here the tendency is to go with something like Comex 30. Counterdiffusion is not a problem with a switch to heliox if compression is done simultaneously. Dave Youngblood, who has as much experience as anyone in the room, strongly advises against "unwarranted" saturation.

Considering that several controversial situations have developed over the use of high-tech imaging techniques, mainly due to big decisions based on preliminary data, this session moved comfortably through this. The benefit of psychological testing is not universally accepted, but techniques may be getting better developed. Sometimes imaging is used to track "tailing" techniques of giving daily treatments for days to weeks and basing the benefit on scans as well as symptoms. The suggested notion that this might work on "punch-drunk" divers is intriguing. Keith Van Meter's chamber does an average of 13 tailing treatments, but they stop immediately when it is no longer effective; Paul Harch admitted that "tincture of time" might play a role. This caused less obvious controversy than one might have expected. Dick Vann's comprehensive review of DAN data concluded that additional treatments help, but none had complete relief after 15 treatments.

Like the monoplace, in-water oxygen treatment drew less flak than it would have a couple of years ago, possibly because by now this group is firmly indoctrinated on the benefits of prompt treatment. Carl Edmonds laid out his current procedures, which are similar to those in the first two editions of his book but now require a 2-hour linear ascent from the 9-msw treatment depth. This is likely to make this approach unacceptable where the sea is rough. Among the contraindications is reluctance on the part of the diver (or team), a good point since thermal protection has to be better than that for most dives. Surface oxygen is acknowledged to be beneficial, but there were warnings that it can be abused and used to avoid proper treatment. It can be helpful after a treatment.

In an interesting coincidence, the Great Lakes UHMS chapter has planned a mini-symposium on "Different treatments for different people". This was not planned as a follow-on to this workshop, but it asks a quite cogent set of questions. And speaking of chapters, kudos to the Gulf Coast chapter for a major contribution to this Workshop, there are few better ways to put your chapter's earnings to good use.

The facilities at the Colony's conference centre were excellent, with good projection and light control (never too dark), handy coffee, and bearable chairs. This Workshop was nicely done and undoubtedly very rewarding for all those who attended. Kudos to Jane Dunne particularly for doing the intensive organising that made it happen.

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The full proceedings of this meeting will be available for sale at the 1996 UHMS meeting in Anchorage, Alaska.

BS-AC GIVES THE OK TO NITROX

Chris Allen

At DOC 94, BS-AC NDO Tony Hoile announced that a Working Group had been set up to review the BSAC's position on nitrox. Here, Chris Allen, Chairman of the Working Group, describes how the review was conducted and explains the BSAC's decision to sanction the use of nitrox in Club activities and to launch its own nitrox training program.

The possible use of nitrox (oxygen-enriched air) for sport diving was first examined by a BS-AC working group set up at the end of 1991. Having examined the advantages and disadvantages in some detail, the group concluded that the use of nitrox mixes was a legitimate technique which could be carried out safely, given proper training and sensible precautions in gas mixing and testing. However,