Conclusions

Corrective strategies suggested by the anonymous reporting of diving incidents pilot study conducted at Mana Island in 1988:-

1 Carry a gear check list in your dive bag
2 Ensure regular, at least annual, gear maintenance
3 Practice regularly with one's own gear in the pool. Buoyancy control takes in-water practice. Consider the use of safety straps on extra gear (e.g. camera)
4. Routine with a new buddy:-
   4.1 Discuss and agree upon underwater signals and lost contact drill to be used.
   4.2 Inspect and test your buddy's gear, especially inflation, releases, and safety items.
   4.3 "Plan your dive, and dive your plan".

It is also suggested that the adoption of an on-going Diving Incident Monitoring Study (DIMS) may be a fruitful approach to the improvement of the inadequate existing safety standards among recreational divers.

Acknowledgements

It is a pleasure to thank our colleagues from the SPUMS 1988 ASM diving group, who submitted the incident reports which made the small pilot study possible. In particular, we acknowledge the informed input of Professor Bill Runciman of Adelaide, Dr Bob Thomas of Brisbane and Dr Elizabeth Clark of Sydney, in the design of our "Mark 1" questionnaire (Figure 4)

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Dr Chris Acott's address is Department of Anaesthesia and IntensiveCare, Rockhampton Base Hospital, Queensland 4700, Australia.

Dr Allan Sutherland's address is Diving Medicine and Assessment Centre, Milford, Auckland 10, New Zealand.

*Dr John Williamson's address is Department of Anaesthesia , Intensive Care and Marine Medicine, Townsville General Hospital, Queensland4810, Australi*a.

DIVEDATA DATABANK INTERNATIONAL UPDATE

Douglas Walker

The proposal to set up a databank to service reports concerning all types and severities of diving-related problems has been raised for discussion in these pages previously.[1] There are two major questions which must be answered in connection with any project such as this. The first is, is the objective worth achieving? The second is, is the plan practical ? There is clear evidence for answering "Yes" to both questions.

To justify the need for such a project requires no more than to refer to the history of diving medicine, which developed slowly as reports were published about the problems affecting caisson workers and divers. None of the problems had been predicted. Though the information came from caisson workers, divers, employers, engineers and physicians it was the analysis of the information by physiologists and physicians which pointed out the probable causes and the necessary actions to reduce risks. Nowadays it is so difficult to obtain information concerning military or commercial diving accidents that it is obvious that self-regulation by interested parties does not work for the general benefit of the diving community. Of course medical opin-

ions are not always initially correct[2] but the publishing of opinions and the free discussion of matters is the method most likely to reach the truth about any problem. In these days of litigation it will be impossible to reach the degree for freedom of correspondence enjoyed in the last century by Paul Bert,[3] though even he was careful to retain confidentiality where this was appropriate.

Computer programs can store, and allow analysis of, vast amounts of data far more simply than can any card index system. They also allow data to be updated and corrected with ease. Thanks to the number of persons and hyperbaric units which now record their information using computers the sharing of information, and in particular the ease of accessing material, has improved immensely over recent years. There are, of course, problems with accessing computer stored data. The data is usually only accessible to the user of another computer if that computer has exactly the same program as was used to enter the data. On occasions a later version of a program will not read what was entered with the earlier version ! Such are the trials of the user of a computer. Such problems need not provide a bar to the efficient working of the Divedata Databank. The simplest way to make a data bank accessible to all potential users is for all users to have the same program. However the rapid spread of the Apple Macintosh has meant that there are now two "industry standard" personal computers which until recently were unable to communicate except by laboriously entering the contents of a printout from one system into the other. It is now possible to transfer information between IBM compatible computers and Macintosh computers, but at a price. Additional processing units have to be used to transform the original data into ASCII format which can then be read by the other computer's programs. If only a limited number of data storage programs is used by correspondents who choose not to interact on paper documents the problems can be contained. It is much cheaper to post a few floppy discs than a bulky package of documents. Safeguarding confidentiality is no problem as critically identifying particulars can be omitted from the exchanged data.

A divedata databank is now close to becoming a reality. The intention is to obtain reports from as wide and diverse a range of sources as possible. This will both increase the chances of becoming aware of rarely occurring events and make the creation of anonymity concerning the incidents easier to obtain and maintain.

That the time has arrived for a scheme to exchange information is shown by the willingness of other workers, who already collect data on diving problems and hyperbaric treatments, to join. The National Safety Council of Australia (Victorian Division) has offered the facilities of its mainframe computer to store the information. The data will be available to anyone who has a research need for it. As the data has been supplied through the filter of a medical person it will be free from confidential identifying details. It is the possibly unique feature of this project that it will be in medical hands, quite independent of government, diver organisations or diver employers. It will be open to all to supply confidential information, with no risk of it being traced back to source and used in legal action against them. The objective is to be non-judgemental and non-punitive.

The initial management of all reports will be entirely under medical control in order to maintain, at all times, the anonymity of all those involved in the incidents reported and to make the promise credible. A similar proposal for a medical filter has been made by Acott, Sutherland and Williamson[4] in their paper recording non-fatal diving incidents during the SPUMS meeting at Mana Island in 1988. Information, after the removal of identifying details, will be stored in two formats, as coded data using an agreed data key and as a descriptive summary. This method of double recording has been thoroughly tested and found to be highly effective during the management of data on fatalities in Australia and New Zealand (Project Stickybeak).

It is proposed to have separate datafiles for specific areas of study, such as input from hyperbaric units, ENT surgeons, diving medical technicians etc., in addition to a general file for all dive related problems. Should some problem requires special study, such as equipment problems, it will be easy to identify such cases from the general file and write them into a special interest file. Expressions of interest in becoming involved in the project have been received from the USA (Divers' Alert Network (DAN) and the Cave Diving Association) and the UK. Australian and New Zealand hyperbaric units are involved in this project already, as are some ENT surgeons in New Zealand.

Only if there is an input of reports concerning the multitude of minor problems experienced by divers, which are generally adequately managed so that they never progress to the stage of causing a major problem, will the full potential benefits be achieved. The aim is to create a scheme which will not only monitor diving problems and so lead to the early recognition of danger areas before a serious incident occurs but will also provide a database for the retrospective investigation of problems not at present under investigation. Merely to investigate diving fatalities and serious decompression sickness, while useful, is to omit to learn from the far more common lesser problems.

It is requested that anyone with suggestions to offer or information to submit will accept this invitation to contribute to the project. The Divedata Databank project is dedicated to improving both safety and knowledge concerning diving and hyperbaric matters and is not restricted to a self selected group of doctors or divers. Everyone is invited to become involved. Safety, like liberty, demands eternal vigilance.

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Undersea and Hyperbaric Medical Society,
9650 Rockville Pike,
Bethesda,
Maryland 20814, USA,
for $ US 50.00 including postage.

For Further information about the Divedata Databank project write to
Dr D.G.Walker,
P.O.Box 120,
Narrabeen,
New South Wales 2101,
Australia.

TABLE ONE

DIVING DEATH RATES

USA

PADI Australia uses an NUADC estimate of 2.6-2.8 diving deaths per 100,000 "active" divers.

AUSTRALIA

PADI Australia reports 2.4 deaths per 10,000 PADI Australia certifications, which equals a rate of 24 deaths per 100,000 PADI Australia certifications.

JAPAN

PADI Australia reports 20 diving deaths per 100,000 "active" Japanese divers.

Source: PADI Australia's *Diving Accident Management in Australia* pp. 53, 76, 99.

AUSTRALIAN DIVING DEATH RATES
COMPARISONS WITH USA AND JAPAN

Robert Monaghan

Is the diving death rate in Australia really ten times higher than in the US? A recent PADI Australia publication titled "Diving Accident Management In Australia" suggests that the answer is yes. My models, republished in the "SPUMS Journal"[1], suggests otherwise.

Table one shows PADI Australia's reported statistics[2]. By comparison, my article calculated 16.7 diving deaths per 100,000 divers was a minimal estimate for the death rate among US divers. If the NUADC estimate is correct, then the diving death rate reported by PADI Australia is really ten times that of the US! If my models are correct, then the Australian diving death rate is roughly comparable to the US figures.

We should start by converting the PADI Australia reported death rate, which is expressed as 2.4 deaths per 10,000 PADI Australia certifications, into a directly comparable death rate per 100,000 divers. Clearly, there are more certifications than there are divers, since one diver can hold several PADI certifications. I have held over 30 leadership level PADI ratings and certifications myself! "Skin Diver" magazine reported that out of circa 250,000 PADI certifications, some 50,000+ or 20% were issued at advanced diver and leadership levels. This statistic implies that 100,000 PADI certifications represents 80% entry level divers and 20% upper level diver ratings. In other words, we expect 100,000 PADI Australia certifications to represent 80,000 divers who also hold 20,000 upper level diver certifications. A death rate of 24 deaths per 100,000 PADI Australia certifications therefore represents 24 deaths per 80,000 divers. This rate is mathematically equivalent to 30 Australian diving deaths per 100,000 divers based on PADI Australia's figures.

I believe this figure can be applied to the overall Australian situation simply because PADI Australia dominates 65% of the Australian diving instruction market[3]. Further, we can calculate the number of deaths among PADI Australia certified divers. We know the rate (2.4 deaths per 10,000 PADI Australia certifications) and the number of certifications (33,000 certifications annually)[3]. We can easily calculate that roughly 8 diving deaths occurred among PADI Australia certified divers. As expected, this represents the major fraction of the reported Australian diving deaths.

Does it make sense that PADI Australia should have a tenfold greater rate of diving deaths than the US? I believe this conclusion is absurd. After all, we use similar or identical equipment and techniques. The same PADI program dominates both markets, representing at least 72% in the US[4] and 65% in Australia. Finally, the same instructor training and store programs, using the same materials and philosophies, are employed in both countries. Why then should there be such a huge difference in diving death rates between Australia and the US?

My models suggest that it is not that Australian death rates are too high, but rather that the claimed US death rates are much too low. Naturally, this has raised a storm of controversy in the US, particularly amongst those who prefer to remain complacent about diving safety based on the low claimed death rates. My calculations suggest there is no room for complacency and instead I make a call for action on improving diving safety now.

My article found that the National Underwater Accident Data Center (NUADC) figures utilized an excessive number of "active" divers. I argued that there were fewer