

adequately taught a pre-dive check protocol or that the air supply should be monitored continuously throughout the dive).

Failure to check is a common error made by divers in recreational scuba diving.

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DIVERS ALERT NETWORK (DAN) ACCIDENT DATA

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(Presented by Chris Wachholz)

Abstract

The Divers Alert Network (DAN) was started in the USA in 1981. In February 1991, International DAN (I-DAN) was established to organise existing dive medical emergency and other membership services internationally in order to give worldwide access to information about the availability of recompression and other facilities for diving accidents. DAN USA is a non-profit, recreational diving safety organization, based at Duke University Medical Center in Durham, North Carolina, and is also the current headquarters for International DAN. DAN's primary mission is for the benefit of the diving public through information and emergency telephone hot-lines; research and education; and to act as an advocate for diving safety. The DAN USA diving emergency referral network has over 130 hyperbaric chambers and 520 referral physicians linking injured divers with qualified physicians and suitable hyperbaric facilities.

In 1992, 1,776 emergency calls were received by DAN USA and 11,511 calls were taken on the medical advice phone number line resulting in over 18,000 dive related medical questions. A detailed report on 465 diving accident cases representing 53% of the total 1992 cases

(876) was published in January 1994. The 876 total included 225 decompression sickness (DCS) Type I, 577 Type II and 76 arterial gas embolism (AGE) diving accidents. DAN has answered over 60,000 medical or safety information calls and over 12,000 emergency calls in the last decade. Since 1989, DAN also has collected and studied diving fatalities. DAN produces from its accident database an annual Report of Diving Accidents and Diving Fatalities. In 1992, a total of 96 recreational scuba fatalities were reported. Forty seven of these fatalities were certified basic or open water, 11 were advanced, 8 were dive masters, 2 were instructors, and 6 were divers who were uncertified to dive. The total number of US scuba diving deaths increased by 29 from the 1991 total. At least 90 scuba related deaths have been reported for 1993.

Only 50% of DCI affected divers called for assistance within 12 hours, due primarily to the failure to recognise symptoms or denial. While 35% of all injured divers received oxygen, only 15% received both oxygen and fluids, the two most widely recommended first aid measures. It is hoped that DAN's oxygen training program, introduced in 1991, will help improve oxygen use in the future. To date, October 1994, over 1,600 scuba instructors have been trained to teach oxygen first aid and over 25,000 lay scuba divers have been trained to provide oxygen to injured divers.

Introduction

Divers Alert Network (DAN) began operations in 1981; originally as a public medical telephone advisory service for scuba (self-contained underwater breathing apparatus) divers and as a clearinghouse for information on dive accidents. Since that time DAN has grown to include dive safety and medical education, research, insurance and the promotion of products and services that enhance diving safety for the general public.

DAN provides a significant public service that has increased in scope each year. Emergency and non-emergency medical question calls have increased from 757 calls in the first year to over 15,000 calls today. DAN's 24 hour emergency and daytime medical advisory services are the single most important public safety net for an estimated 3 million recreational divers in the United States. DAN's dive medicine and first-aid education programs have trained over 1,700 physicians, health care workers and lay persons to effectively recognise and care for injured divers. This education effort, along with DAN's organization of the majority of United States' diving medical facilities and physicians into an effective national dive medical response system, benefits the entire diving public. DAN's research efforts have produced the world's largest and most complete data base and analysis of dive accident information which is freely available to the public.

The DAN logo and phone number is widely reprinted without restriction throughout the world. The 919-684-8111 number is predominant in North America and the Caribbean while other regional International DAN numbers are promoted in Europe, Japan and Australia.

DAN insurance, which began in 1987, was created to solve the public health problem of providing for the very expensive emergency evacuation and medical treatment cost of treating injured scuba divers, which are often not covered by major medical insurance plans in the United States. Air evacuation companies generally will not fly without many thousands of dollars deposited up front. What follows is a description of DAN's programs and epidemiological data.

Medical telephone advisory services.

All DANs throughout the world operate or promote a 24 hour emergency telephone line which any diver or physician may call from anywhere in the world for free consultation and referral to appropriate medical facilities. DAN also operates a daytime, Monday to Friday, telephone service which divers and health care workers may call to ask non-emergency medical questions, e.g. how a particular health problem (such as asthma) might affect the individual's risk while scuba diving. Other topics include questions on general safety procedures and other concerns of the diving public. The medical question line is operated between 9 a.m. and 5 p.m. US Eastern Standard Time by trained diver emergency medical technicians (EMTs) and nurses, backed up by DAN's volunteer on-call physicians. Anyone may call DAN for assistance whether they are a member or not and there are no fees for the service.

Throughout the United States, Canada, and the Caribbean, DAN's North American emergency and non-emergency telephone referral service is organised into seven regional co-ordinating centres, 136 hyperbaric chamber facilities and 520 dive medicine referral physicians. All of

FIGURE 1

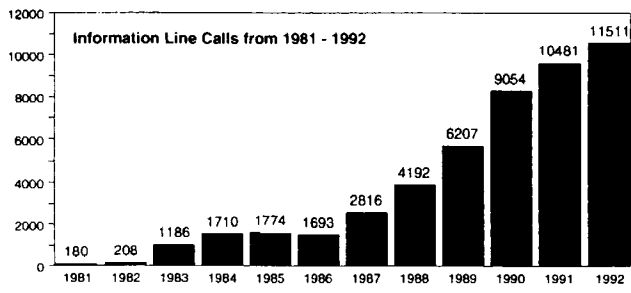
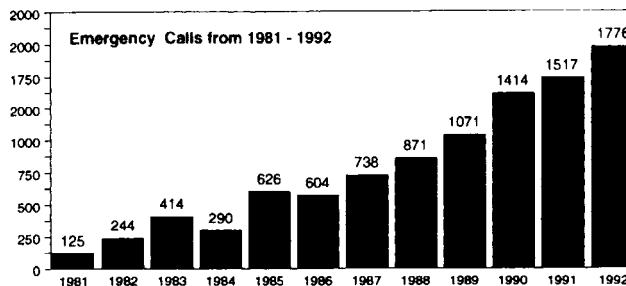


FIGURE 2



these facilities and physicians hold dive medical credentials and accept patient referrals on a voluntary basis. While they may bill the patient for services rendered, these on-call physicians and facilities receive no compensation for their participation in DAN's network, and they agree to accept DAN's referrals without regard to the patients' ability to pay.

Calls to the DAN 24 hour emergency service are generally answered within five minutes through the use of a dedicated pager system. All callers receive some assistance within five minutes of making contact with the 24 hour emergency number. During the daytime when call volume is heaviest, DAN's diver EMT staff field all calls. This often involves consulting with a resident or, if need be, an attending on-call dive physician. After hours calls are fielded by the resident on-call physicians backed up by the attending on-call medical staff. This system also provides a public service by training physicians in diving medicine, both through DAN's orientation education as well as practical service as resident on-call DAN physicians.

Upon request, DAN also provides free training and dive medicine textbooks to any physician in the Caribbean or in developing nations frequented by recreational divers. DAN's emergency care posters and first-aid manuals are distributed free of charge to hospital emergency rooms throughout the US, Canada, and the Caribbean.

DAN has aided over 62,000 divers since the non-emergency medical and emergency telephone lines were initiated in 1981. In 1992 DAN serviced 1,776 emergency calls and 11,511 non-emergency medical question calls. DAN periodically surveys callers to determine what percentage are supporting members and what percentage is the general public. Periodic surveys indicate the use of DAN's advisory telephone services by non-members averages as much as 75 percent.

Decompression illness injuries

The Divers Alert Network has been publishing a yearly report on recreational scuba diving accidents since 1987. DAN collects its accident reports through the DAN network of hyperbaric treatment centres located throughout the United States, US Territories and popular dive sites frequented by American divers. DAN also utilises its emergency telephone service and information hot-line in acquiring reports of diving injuries and fatalities. DAN USA does not follow reports on non-US citizens. At present DAN only collects and follows recreational scuba injuries and recompression chamber treatment. There is no way to estimate the number of divers who do not choose to seek treatment for dive related symptoms. Other injuries such as marine life trauma, sinus, middle ear or pulmonary barotrauma are not counted nor reported on by DAN at this time.

TABLE 1

TOTAL REPORTED CASES

Year	Total
1986	562
1987	624
1988	565
1989	678
1990	738
1991	820
1992	876
1986-1992	4863

Since 1986 the number of decompression illness (DCI) cases has slowly increased. It is believed that this increase in reported accidents is in some part due to increased awareness of decompression illness and knowledge about the symptoms of decompression illness as well as use of the DAN service. Individuals who were unaware of symptoms may have never sought evaluation and treatment previously. This has been evidenced by the increasing number of calls on the DAN emergency and information telephone lines. The present collection system has been in place for almost six years and has continued to increase in efficiency and effectiveness resulting in a higher number of reported cases. The total population of scuba divers at risk for decompression illness is unknown so no accurate incidence rate can be determined.

Only 50 percent of DCI affected divers called for assistance within 12 hours, due primarily to the failure to recognise symptoms or denial. In 1992, 35 percent of all injured divers received oxygen first aid. Oxygen is an extremely effective first aid measure which can reduce the symptoms and severity of injuries when applied immediately after symptoms start. It is hoped that DAN's

oxygen training program introduced in 1991 will help dramatically improve oxygen use in the future.

The more general term DCI is commonly being used to describe compressed gas injury related to scuba diving. This term is replacing more specific diagnostic terms such as arterial or cerebral arterial gas embolism, which is the result of air trapping or voluntary breath holding on the part of the diver while ascending through the water column. Symptoms of arterial gas embolism (AGE) are generally immediate in onset. The most common symptoms are seizure, unilateral or bilateral paralysis, change in the sensorium such as a semiconscious state or total loss of consciousness and other cerebral symptoms. Decompression sickness (DCS) is also a specific diagnostic term which covers an entire spectrum of symptoms but is not very descriptive. DCS generally refers to symptoms which come on sometime after making a dive to 9 m (30 ft) or greater with significant time exposures. Typical symptoms are pain, numbness and tingling, weakness, dizziness, headache and extreme fatigue.

Since the mechanism of bubble formation and injury is different in DCS and AGE, they are reported on separately rather than under the general term of DCI. The frequency of occurrence for each diagnosis is also different. There are many similar aspects in the dive profiles of divers who suffer AGE or DCS. DCS is further broken down into two "types" of symptoms. DCS I is referred to as pain only DCS occurring in the joints and tissue of the arms and legs. DCS II refers to symptoms which are more likely to be related to the central nervous system such as numbness, paraesthesias and pain of the trunk.

Injured divers represent a wide range of ages. This age distribution probably represents the population of active divers. Approximately 75% of all injuries occur between the ages of 25 and 44 years of age. For the first time, there were three reports on injured individuals who were 65 or older. There are fewer accidents reported below the age of 20 or at the age of 50 or above. There may not be as many certified divers in these other age groups, or they may dive in a different pattern than the majority of the injured divers. When these age groups were rated in terms of the severity of their decompression illness, injuries were also less severe below the age of 20 and at the age of 50 or above.

The percentage of active female divers is not known, but approximately 25 percent of all dive injuries have been to females since 1987. A 1989 random sample of insured DAN members had a response rate of 69.5% with 27% of all respondents being female. The percentage of female dive accidents could simply mirror the percentage of active, non-injured female divers, or they may under-represent female participation in diving if more than 25-

TABLE 2

DISEASE DIAGNOSIS

Final Diagnosis	1987%	1988%	1989%	1990%	1991%	1992%
DCS I	17.4	22.4	22.5	22.0	17.8	17.4
DCS II	63.3	60.4	64.5	62.5	69.8	73.3
Air Embolism	19.3	17.2	13.0	15.5	12.4	9.2
Total	100.0	100.0	100.0	100.0	100.0	99.9

TABLE 3

DISTRIBUTION OF DIVER AGE

Age	1987%	1988%	1989%	1990%	1991%	1992 %
10-14	0.7	0.7	0.3	0.2	1.4	0.2
15-19	4.1	1.5	2.8	3.3	2.8	2.8
20-24	10.4	10.1	10.1	8.2	7.8	10.1
25-29	19.3	23.1	24.0	22.9	16.1	16.1
30-34	23.3	23.9	22.0	22.5	23.7	22.8
35-39	22.2	14.6	14.6	20.5	22.3	20.9
40-44	11.9	13.1	12.3	11.8	12.6	14.0
45-49	4.1	7.1	7.4	5.0	7.8	7.5
50-54	1.1	4.1	4.3	3.1	3.0	2.6
55-59	1.1	0.7	2.8	1.1	1.4	0.9
60-64	1.9	1.1	1.3	0.7	1.1	1.5
>65	0.6	—	—	—	—	—
Total	100.0	100.0	100.0	100.0	100.1	100.0

TABLE 4

SEX OF INJURY CASES

Sex	1987 %	1988 %	1989 %	1990 %	1991 %	1992 %
Female	24.1	21.6	26.1	26.4	25.2	29.2
Male	75.9	78.4	73.9	73.6	74.8	70.8
Total	100.0	100.0	100.0	100.0	100.0	100.0

27% of active divers are females.

Lack of diver experience does play a role in DCI as it does in other types of sports injury. There are differences between males and females as to when DCI occurs in their dive career. A higher percentage of female DCI injuries occurs in the first year or within the first 20 dives (31%). Only 27% of male DCI injuries occur in the first year, and 20% occur within the first 20 dives. Fifty-eight percent of the male DCI injuries and 75% of all female DCI injuries will have occurred in five years or less of starting to scuba

dive. It is possible there are fewer females who have been diving as long as males, and the small percentage of injuries is an artifact of the smaller female population. It could also be that males and females have different styles of diving. At present, it is unclear why a higher percentage of DCI occurs in females earlier in their dive career. Lack of diving experience or infrequent diving does appear to contribute to diving injuries.

It has been suggested that an episode of DCI in an individual may predispose that person to a second injury.

Previous DCI and its relationship to a second illness is difficult to qualify. Certainly, any injury that has long-term residua or injuries that have affected the brain and spinal cord must be taken very seriously when individuals wish to return to diving. The percentage of individuals who have second or third DCI injuries is relatively constant in the injury population. The 1989 random survey of the DAN membership revealed that in a group of insured, safety conscious divers, the percentage of a decompression incident was very low such that only 2.6% had ever had DCI. There may also be some predisposition to DCI in certain individuals. It may also be that individuals refuse to change the type of behaviour that contributed to their first episode of DCI.

It is difficult to generalise the injury population data that DAN acquires each year to the healthy uninjured population. Trends in diving injuries do not reveal how much of a role individual events play in creating DCI. The relationship of most dive events remains statistical and not causal in nature. Single dive conditions or factors will rarely cause a dive injury. More commonly, several factors will generate the circumstances that produce DCI.

Each diver assumes some risk when they enter the underwater environment and perform physical tasks requiring mental and physical fitness. Avoiding hazardous situations and behaviours is important in injury prevention and health maintenance. The acquisition of diver experience and knowledge in terms of additional education and practical diving experience leads to more responsible and injury free divers. Although the total number of treated cases reported appears to increase each year, the increase is not significant when compared to the increase in the number of new divers entering the sport.

US diving fatalities

The Divers Alert Network began collecting scuba fatality information in 1989. In 1990 DAN joined with the University of Rhode Island (URI) to produce a yearly report that combined both injuries and scuba fatalities. The University of Rhode Island has been tracking scuba deaths since 1970. There have been 2,296 scuba deaths recorded since that time. There was an average of 130 deaths per year during the 1970s compared with an average of 90 deaths in the 1980s. It is believed that better training and a decrease in the number of uncertified individuals participating in scuba are factors responsible for reducing the number of scuba fatalities.

The distribution of age and gender of scuba fatalities is similar to that of the injuries but with some important differences. In 1992, 13.6% of the scuba fatalities were 50 years of age or older compared to 21% of the injury cases. The percentage of female scuba fatalities has increased over the last three years and is now nearly the

FIGURE 3

YEARLY UNITED STATES RECREATIONAL DIVING FATALITIES 1970-1992

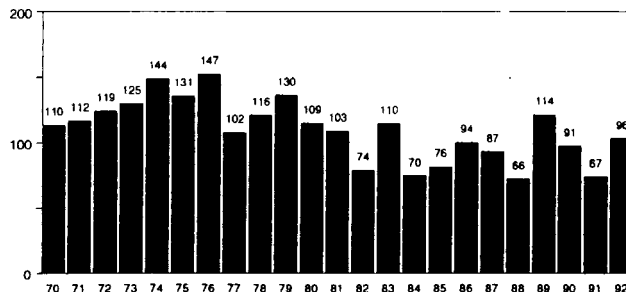


TABLE 5

PREVIOUS DECOMPRESSION ILLNESS

Year	1988	1989	1990	1991	1992
Percentage	11.6%	14.1%	12.2%	12.8%	8.6%

TABLE 6

AGE AND SEX COMPARISON OF 1992 FATALITIES

Age	Male	Female	Total	Percent
10-19	1	1	2	2.3
20-29	13	5	18	20.5
30-39	24	4	28	31.8
40-49	22	6	28	31.8
50-59	8	2	10	11.4
60-69	1	0	1	1.1
70-79	1	0	1	1.1
Totals	70	18	88	100.0

same as that found in scuba injuries. It is known there is a higher incidence of certain diseases and other illnesses in the older population. Approximately 53% of all fatality cases held only basic or beginning level certification. This includes 6.8% that were still undergoing training.

The majority of deaths in scuba diving are attributed to drowning. The most frequent cause of drowning death is an insufficient air supply. This may be

TABLE 7**1991 CONTRIBUTING FACTORS TO DROWNING SCUBA DEATHS**

Contributing Factors	Number of Divers
Insufficient air	22
Entrapment	12
Cardiovascular	4
Alcohol/drugs	4
Panic state	4
Nitrogen narcosis	3
Air embolism	7
Obesity	3
Rapid ascent	3

due to entrapment in a cave, being lost or being inattentive to the air pressure gauge. In general, the event was unexpected and the diver was unable to perform self-rescue. This happened to inexperienced as well as experienced divers. Unlike scuba injuries, scuba fatalities can be caused by a single event such as rapid ascent or diver conditions such as a panic state. The inability to adapt or respond to a sudden underwater situation may result in death.

In 1994, fifty percent of the diver deaths aged 40 or above were related to cardiovascular disease while only 5.1% of the deaths in divers under 40 were related to cardiovascular problems. In all likelihood, these individuals may have had their cardiovascular condition contribute to their death while they were doing other types of exercise. Closer health screening, however, might prevent some scuba fatalities in the older population. Individuals must take responsibility for their personal health problems. Pre-existing disease appears to make a significant contribution to scuba related deaths.

The safety standards for participating in recreational scuba diving are voluntary. These standards are reasonable and adequate safeguards to ensure diver's safety only when the diver chooses to follow them throughout their diving career. The 55 year old diver, for example, may need to be more selective in diving participation than perhaps they were when taught 30 years before. Despite the effectiveness of these guidelines, some divers will choose to dive alone and against the recommendation of safety standards. The ultimate responsibility for safety and the prevention of injury and death rests with the individual diver.

Collection and analysis of dive accident data

DAN is the only organization that collects and studies information pertaining to both fatal and non-fatal

diving accidents occurring among US citizens. The annual Report of Diving Accidents and Fatalities, illustrating trends in dive accidents, diver habits and treatment effectiveness, is distributed to hyperbaric chambers in the DAN network, government agencies, dive instruction organisations, hospitals, dive equipment manufacturers, and investigative agencies free of charge. This activity comprises DAN's largest research effort for the benefit of the diving public. Collecting and analysing this information began in 1981, but has become more organised since 1986 when increased staffing and membership funds became available. In addition to the work conducted by DAN's Duke University based staff, accident data collection efforts are supported by DAN's volunteer regional referral network of 136 chambers and 520 dive medicine physicians.

The annual reports provide information that can help prevent future accidents through education of existing divers, through refinements in diver training guidelines, and through improved equipment design. This report also benefits health care workers by improving dive accident recognition and treatment. The reports, distributed free to dive instructors, hyperbaric chambers, hospitals, government agencies, instructor organisations, and equipment manufacturers, have helped to improve educational programs and shown how training and judgment are often the cause of accidents, while equipment is rarely so. The report has identified risky dive habits, pre-existing medical conditions posing special risks, and documented the effectiveness of existing treatment and first-aid measures.

Research at DAN

The goal of DAN research is to improve the safety of recreational diving by investigating the causes and mechanisms of diving injuries, therapies that are effective for their treatment, and diving guidelines which might reduce their incidence.

Other possible risk factors for decompression illness currently under review by DAN include asthma and diabetes. These common disorders have traditionally been contraindications to diving. DAN studies are attempting to quantify the risks of these conditions in order to provide the best possible advice to prospective divers. Ongoing DAN database analysis also includes a review of the results of different forms of recompression treatment for decompression illness.

While much has been learned from the diving accident database described earlier and other publications,¹⁻³ the critical issue of DCI risk can be addressed only with data that include DCI-free dives and accurate records of depth-time exposure. DAN is embarking on prospective laboratory and field studies to develop these data.

DAN's laboratory studies have begun a project to investigate the safety of flying after diving. The next several years will be devoted to examining the effects of pre-flight surface interval and repetitive diving on DCI risk and to the development of statistical algorithms for estimating DCI risk.

DAN's field studies will be built around the mass-produced dive computers that can record depth-time profiles. A project is under development for acquiring these dive profiles as well as data on demographics, dive conditions, and symptom occurrence. These data will be linked to the existing system for acquisition and analysis of diving injury data. Several years may be needed to develop the project before field studies can formally begin.

Education Programs

DAN holds courses annually to train physicians and health care workers in the specifics of diving medicine. In addition, one and two day courses for lay persons in dive accident first aid are taught. Physician programs are conducted for educated lay persons, for physicians, and for other health care professionals by a PhD and MD faculty. The lay courses are taught by specially trained paramedics, nurses, and MDs who provide their services without compensation. To date, twenty-four (24) dive physician courses have been taught providing dive medicine training to over 1,700 physicians and health care workers. Over 500 people have participated in DAN's one and two-day diver education programs. DAN also supports a one-year Fellowship program in Diving Medicine at Duke University Medical Center that began in 1986. This program provides training and practical experience for physicians interested in diving and hyperbaric medicine.

The DAN oxygen first aid course was unveiled in 1991. Since that time, approximately 30,000 oxygen providers, 2,200 instructors, and 500 instructor-trainers have been trained in the US and 25 foreign countries. This program is a vital link in the field management of diving casualties and the emergency medical system.

It is impossible to measure what effect these educational programs have had on the outcome of diving accidents or the improvement of diving safety. It is estimated that there are fewer misdiagnoses and less improper care administered by health care workers and lay persons as a result of DAN's dive medical training efforts, as there is no dive medicine training in most US medical schools, nursing schools, or paramedic curriculums.

Dive accident insurance

Before 1987, when DAN created the world's first affordable dive accident insurance plan, DAN on-call

personnel (as well as many non-DAN dive physicians) experienced numerous delays when arranging emergency transport for injured scuba divers. The two serious conditions that affect divers; DCS and AGE, are time crucial disorders. They must be treated within hours to have a favourable prognosis. It has been documented by the US Navy that treatment within one hour of the injury results in nearly 100% recovery, but as time exceeds 24 hours, the chance of a full recovery decreases significantly.

Unfortunately, many major health care insurance companies do not cover air evacuation transport. In some cases, major medical plans do not cover hyperbaric chamber treatment when the chamber is not located in a hospital, and over 30% of the DAN network's chambers are not in a hospital. More seriously, in the past, many air evacuation transport companies would not provide transport to injured scuba divers without cash up front. The resulting delays in evacuation while physicians and family scrambled to verify cash assets and credit may have contributed to permanent, severe disabilities such as paraplegia and quadriplegia.

The delays that resulted in co-ordinating financial responsibility for evacuation not only resulted in a poorer prognosis for the injured individual, but also placed great stresses on DAN's physician volunteers. Because many chambers not located in hospitals were refused reimbursement by some major medical insurance programs, some of these facilities threatened to exclude divers from their doors.

With the advent of DAN's insurance program in 1987, guaranteeing payment to health care facilities and air ambulance companies, emergency transport became much more efficient and times were reduced. Further, many divers with minor symptoms are seeking treatment, where in the past they might not have pursued treatment. Even minor decompression cases are thought to facilitate permanent damage to the spinal cord and therefore should be treated. It is believed DAN's insurance program has significantly contributed to efforts to improve diver safety and treatment effectiveness.

Caribbean chamber assistance

Over the years, the Divers Alert Network has assisted many divers in receiving transportation and appropriate treatment to recompression facilities worldwide. DAN has been concerned that certain hyperbaric treatment facilities were at risk in popular dive destinations because of lack of funding. Because of this concern, DAN has begun a chamber assistance program, beginning with a pilot program to aid Caribbean chambers. In 1995, assistance will be extended to marginally supported chambers in other parts of the world such as the Pacific islands of Truk and Palau.

The goal of this pilot program is to provide direct financial support to recompression chambers that are involved in the treatment of recreational divers in remote dive destinations. This support may be used by the chamber to provide education to its staff, maintenance and repair of hyperbaric facilities or to purchase medical supplies. Educational courses may also be requested from DAN to help support recompression chambers and educate the local dive community. Two meetings and refresher training courses for Caribbean chamber facilities were held by DAN in 1994.

International DAN (IDAN)

International DAN comprises several independent organisations based around the world to provide emergency medical and referral services to national or continental diving communities. These local networks have pledged to uphold this mission and to operate under protocol standards agreed to by the IDAN directorate. Each IDAN member is a non-profit organization, independently administered with some support by US DAN Headquarters at Duke University Medical Center, in Durham, North Carolina. In August 1994, there were three operational IDAN branches besides the US DAN which serves North and Central America and the Caribbean:

Dan Europe (formerly International Diving Assistance, which was founded ten years ago), based in Roseto degli Abruzzi, Italy, has its central emergency hot-line in Zurich, in conjunction with an evacuation service in Milan. DAN Europe is responsible for serving European divers worldwide. Its international 24 hour emergency number is 41-1-383-1111

DAN Japan, has its central emergency hot-line in Tokyo. DAN Japan is responsible for serving divers from Japan and other Asian areas. Its international 24 hour emergency number is 81-3-3812-4999

The Diving Emergency Services (DES) operating in Australia and New Zealand are co-administered and have 24 hour emergency hot-lines in Adelaide, Australia and Auckland, New Zealand. DES Australia's international 24 hour emergency number is 61-8-373-5312. The inside Australia, toll free, number is 1-800-088-200. DES New Zealand's 24 hour emergency number is 09-445-8454.

DAN Australia is responsible for serving divers from the Australian continent and surrounding area for DAN membership services, insurance, oxygen, and other education courses and accident prevention. DAN Australia provides some support for the DES service. DAN Australia's working hours number, for administrative matters, is 03-9569-1151.

DAN Headquarters in the USA coordinates the activities between the International DAN directors and organises support services and conferences in the interest of IDAN. This includes translation of DAN materials into foreign languages, exporting training and educational materials to IDAN branches, and keeping directors apprised of new developments and changes in DAN policies. One mission of special importance is the oxygen first aid program worldwide and great strides have been made in this area. As of August, 1994, all IDAN organisations are working on an oxygen program in their respective regions of the world.

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Chris Wachholz, RN, Director of Special Projects and the liaison for DAN organisations internationally, has been employed at Divers Alert Network at Duke University Medical Centre since 1983. In that time, he has held a variety of duties including the fielding of both emergency and non-emergency medical calls, fundraising, the creation of DAN's insurance program, and general management. He was the first employee of Divers Alert Network. Chris Wachholz is a 1979 graduate of Marquette University Nursing School, a 1988 graduate of Duke University Business School, and a 1993 graduate of the Duke School of the Environment masters degree program.

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