FIELD MANAGEMENT FOR SCUBA-RELATED INJURIES

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FIELD MANAGEMENT FOR SCUBA-RELATED INJURIES

Results of a Conference
on Emergency Medical Procedures
for Scuba-Related Accidents
held at the
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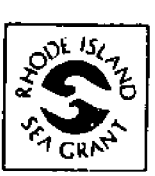

INTRODUCTION

These guidelines have been developed for use by the general public, divers, dive instructors, and emergency rescue and hospital personnel in dealing with scuba diving–related injuries. They are meant to be suggested procedures, not absolute rules, governing the treatment of injuries when breathing air underwater, usually associated with scuba-diving activities.

Scuba diving is one of the most popular water sports in the United States. In the colder regions, it is primarily a summer sport, although much of the training for new divers occurs during the winter and spring in indoor pools. In addition, year-round underwater research is conducted by universities, state and federal agencies, and consulting companies; some commercial fishing operations employ divers; and recreational divers in more temperate waters are all-season.

Unfortunately, some of these dive expeditions end in injury, either related directly to the use of scuba diving equipment, pressure-related illnesses, or to other health problems. In 1989, for instance, 143 dive-related fatalities occurred in the United States. But little information is available on the total number of nonfatal diving accidents. There is an estimated 2.3 to 3.0 million active divers, and this figure continues to grow. The fatality rate is estimated to be between 3.8 and 5.0 per 100,000 active divers. As the diving population grows, the potential for accidents also increases.

Divers present unique problems for rescue personnel because of the rare and unusual nature of serious diving injuries. Although the dive industry has contributed greatly to the safety of the sport by requiring and encouraging training in first aid, cardiopulmonary resuscitation (CPR), oxygen administration, and neurological exams, emergency rescue personnel who do not scuba dive are often overwhelmed with the equipment and injury that they must evaluate. As a result, important information may be

lost by the time the diver is transported to a hyperbaric chamber.

To facilitate an interchange of information between the diving and the rescue communities, a workshop was held on July 13, 1991 in Narragansett, R.I. Fifty people attended the workshop representing hospital emergency room staff, rescue squads, U.S. Coast Guard, diving instructors, divers, and interested community members from Rhode Island and neighboring states.

With the objective of ensuring that a dive-related injury is properly treated in the most expeditious manner, basic guidelines were developed with input from the workshop participants. These are outlined in the following pages. These recommended guidelines can be used as a basis for establishing state emergency medical service protocols for rescue personnel and hospitals, as well as classroom material for dive courses. It contains the most up-to-date knowledge about medical treatment for dive-related injuries.

GENERAL REVIEW OF DIVING PHYSIOLOGY AND DIVING-RELATED ILLNESSES

Many of the diving injuries that occur are a direct result of the physics of breathing air under pressure. Increased pressure under water results simply from the weight of the water. The deeper the person is submerged, the greater the pressure. The behavior of gases under pressure is described by the Gas Laws of Dalton, Henry, and Boyle. Although precise mathematical understanding of these laws is not necessary, a basic understanding of the effects of pressure on air breathed under water is important in understanding injuries associated with scuba diving.

Since much of the human body is noncompressible, increased pressure on the body is easily tolerated. However, air spaces are affected by pressure changes. Gases will expand and contract with changing pressures. When pressure is exerted at depth, the volume of the gas in the air spaces is diminished. Upon ascent, the gas will expand. Differences in pressure may distort the shape of the involved tissues causing pressure-related injuries known as "barotraumas." The areas most affected are the sinuses, ears, and lungs; and to a lesser extent, the teeth, stomach, and intestines. Normally, barotraumas are easily avoided by not diving with a cold or other blockage of the airway cavities; by equalizing middle ear pressure using Valsalva (forcing air into the sinuses by closing off the nose and mouth and blowing softly) while descending or ascending; and by not breath-holding while ascending.

The most common dive-related barotraumas involve the ears and sinuses. If the external pressure is not equalized by introducing air into the air spaces by opening the eustachian tubes through yawning, swallowing, or Valsalva, excess pressure is exerted directly on the tympanic membrane (the eardrum). Capillaries in the middle ear may dilate, leak, and rupture. Further pressure will cause the eardrum to rupture. A forced Valsalva may cause the round window (between the middle and inner ear) to rupture. Symptoms for these disorders include the immediate onset of dizziness and nausea; ear, jaw, or neck pain; and hearing difficulty. Nystagmus, a rapid back and forth eye movement, may be present. If the round window

membrane has been ruptured, a serious medical emergency exists requiring potential surgery. Recompression therapy is not recommended for these injuries unless additional symptoms indicate that decompression sickness or an embolism is present.

Sinus squeeze or reverse blockage may occur during descent or ascent. This is caused by the inability of the diver to equalize pressure because of a cold or head congestion, which leads to excessive pressure on the mucous membranes. Symptoms of sinus barotrauma include a sensation of fullness or pain in the affected sinus area or in the upper teeth. Numbness may be present, as well as bleeding from the nose. Barotraumas are not usually life threatening unless other symptoms are present which indicate a more serious injury. For example, a diver may panic if he/she begins bleeding from the nose into the mask (the barotrauma), and ascends rapidly to the surface causing an embolism or decompression sickness.

Face mask squeeze occurs when the diver does not equalize the air space between the face and the mask during descent. Considerable damage to the soft tissues of the face can occur. The most affected areas are the tissues covering and surrounding the eyeball and the lining of the eyelids. In serious cases, damage to the optic nerve can occur leading to blindness. Symptoms of face mask squeeze include pain, swollen and bruised face, whites of the eyes bright red or speckled with small red dots containing blood (petechiae eye), and protrusion of the eyeballs with bleeding in and behind the eyeball and eyelid.

The lungs contain the largest air space affected by pressure changes. Injuries to the lungs during descent do not usually occur to the scuba diver because the regulator delivers air at ambient pressure preventing lung collapse, provided the diver breathes normally. With scuba gear, injuries to the lung during ascent are more common. A person at depth who fills the lungs and surfaces while breath-holding does not allow for expansion of the volume of air in the lungs. The alveoli and chest wall are not very elastic and the tissue will rupture. This can result in

pulmonary overinflation pressure syndrome (POPS), and can lead to such problems as pneumothorax, mediastinal emphysema, or subcutaneous emphysema. If air from the alveoli is forced into the pulmonary vein, bubbles might enter the arterial circulation and cause a gas embolism in the brain or other organ. For this reason, all divers are taught to exhale as they ascend to the surface and never hold their breath while breathing compressed air. But extreme pressure changes can take place at any depth, so embolisms are always a possibility. An arterial gas embolism (AGE) is usually characterized by seizure activity, impairment of consciousness, or confusion occurring within minutes of surfacing—often after a rapid ascent from depths greater than 4 feet. Half of all symptoms occur within 1 minute after the diver surfaces. It is safe to assume that any diver that is unconscious has a gas embolism and must be recompressed as soon as possible.

Gases in the body are either produced or utilized in life-sustaining functions (e.g., carbon dioxide and oxygen) or are basically inert (such as nitrogen and helium) and simply inhaled and exhaled under normal conditions. Under pressure, the partial pressure of each gas increases causing increased concentrations. Although most scuba tanks contain regular air (21 percent oxygen and 78 percent nitrogen), other mixtures are becoming more popular, such as nitrox mixtures that contain higher concentrations of oxygen. When higher-than-normal concentrations of oxygen are breathed under pressure, oxygen toxicity may occur, especially at deeper depths, causing seizures, nausea, dizziness, tunnel vision, confusion, and ringing in the ears. Conversely, carbon dioxide poisoning may occur if the diver holds his/her breath under water, allowing carbon dioxide to build up. Symptoms include labored, rapid breathing, shortness of breath, headache, dizziness, nausea, and confusion. If the compressor used to fill the scuba tank with air was not properly maintained, the possibility of carbon monoxide poisoning exists. Even low concentrations of carbon monoxide affect the diver when breathed under pressure and

can cause symptoms to appear quickly. Symptoms of carbon monoxide poisoning include headache, weakness, and slight dizziness leading to unconsciousness.

When the diver descends, the partial pressure of the inert gas (nitrogen or helium) increases, and quickly diffuses into the blood. The deeper or longer the person dives, the more inert gas is dissolved in the blood. Below 100 feet, nitrogen may cause drug-like symptoms, called nitrogen narcosis, that disappear when the diver ascends. A more serious injury involving nitrogen (or helium) is associated with the rapid uptake of the gas into the blood and tissues during the dive. If the nitrogen is not given enough time to leave the tissues when ascending, bubbles form causing the "bends" or decompression sickness (DCS). Vascular bubbles in DCS usually occur on the venous side of the circulatory system and become trapped in the alveolar capillaries. But if the person has a patent foramen ovale—a shunting of blood from the right to the left side of the heart—a gas embolism may occur. There are two generally accepted categories of DCS. DCS I (pain only) is typically characterized by joint or limb pain. Usual locations are shoulders, hips, knees, and elbows. There are generally no visible symptoms, such as redness or swelling, to indicate joint pain, and the pain does not change with movement or massage. DCS II (neurological) results from nitrogen bubbles causing trauma to the central nervous system or peripheral nerve cells. Weakness, numbness, and tingling are the most common symptoms. Others include paralysis, difficulty walking, difficulty urinating, dizziness, sensation of spinning, pain, and nausea. The onset of these symptoms typically occurs 10 minutes to 24 hours after the dive.

Other diving-related injuries include drowning, hypothermia, hyperthermia, and those caused by marine life. These will not be covered under the guidelines presented here.

DIVERS ALERT NETWORK (DAN)

The Divers Alert Network (DAN) was formed in 1981 to assist in the treatment of underwater diving accidents. DAN is housed at the Duke University Medical Center and provides a 24-hour medical hotline for diving emergencies. Via phone, DAN physicians, experienced in diving medicine, can assist in the diagnosis and initial treatment of an injured diver and supervise referral to appropriate recompression chambers. The most important function of DAN is to facilitate the entry of the injured diver into the hyperbaric trauma care system. The earlier DAN is contacted in a diving emergency, the faster a chamber can be located and prepared, and the faster transportation can be arranged for the injured diver.

The 24-hour emergency phone line is (919) 684-8111. An information and office number, (919) 684-2948, can be called for non-emergency information Monday through Friday from 9 a.m. to 5 p.m. EST.

The first responder to the accident should, if at all possible, place the first call as soon as a diving injury is suspected. The emergency medical technician (EMT), via medical control, should update hospital personnel as to the victim's condition before arriving at the hospital; and the emergency room doctors and staff should update the DAN physician and follow medical advice while stabilizing and preparing the victim for transport to the hyperbaric chamber.

DIVING EQUIPMENT

Divers come with an incredible variety of equipment. The handling of the equipment may be very important in determining the mechanism of injury and type of treatment at the hyperbaric chamber.

Since not all first responders, EMTs, or hospital personnel are familiar with the equipment used in scuba diving, it is important to note the following:

As long as it does not jeopardize the safety of the patient while removing the equipment, try to do as little damage as possible to the equipment. Wet suits are designed to be tight fitting all over; dry suits will have tight neck seals and wrist seals. Try to cut at the seams or on the seal and use the zippers.

If you are the first one on the scene of the accident, try to notice if anything looks "wrong." For example, weight belt or mask is missing, the weight belt buckle is found in the back rather than the front, or the buoyancy compensator is overinflated.

Remove the equipment and place it all together. Do not disconnect the regulator from the tank. This equipment must accompany the diver to the hyperbaric chamber.

If you are familiar with the equipment, try to:

1. Note the amount of air remaining in the tank, with the date and time of reading, and tape it to the tank. **Do not** turn the tank off or on.
2. Note if the tank has a reserve valve and what position the valve is in (up or down).
3. Some depth gauges have a needle that records the deepest depth of the dive. Note it down.
4. If the diver used a dive computer, note the dive profile information. Many will reset after 24 hours. This information is critical.

RECOMPRESSION

The objective of recompressing a patient is to compress the size of the bubbles that have formed in the blood, redissolve them, restore adequate oxygen to the affected tissues, and allow the gas to slowly leave the system without forming additional bubbles. This is accomplished in a hyperbaric chamber or recompression chamber. A hyperbaric chamber is an air-tight, cylindrical container that can be pressurized with air or oxygen to simulate water depth. Chambers can be mono-place or multi-place. Mono-place chambers can only hold one patient and do not allow for a tender to be present with the patient inside the chamber. A multi-place chamber can treat more than one patient and allow for an accompanying physician or tender.

Recompression is usually indicated if the diver was exposed to increased pressure and has symptoms of decompression sickness or a gas embolism. Regardless of the distance or travel time involved, treatment is likely to be beneficial in decreasing the extent of the injury and in decreasing rehabilitation time. Other than stabilizing the patient for transport, there should be no delay in transferring the injured diver to the nearest operating chamber facility. Because high altitudes compound the pressure problems for the injured diver, ground transport to the chamber is preferred; but helicopters that maintain low altitudes may greatly decrease travel time. Pilots should be made aware that the injury is dive-related and excessive altitude may worsen the condition.

Treatment at the chamber will depend on the dive profile history and the symptoms displayed by the patient. The U.S. Navy treatment tables define several possible treatment tables to be followed, varying the depth to which the chamber must be pressurized, use of oxygen, and appropriate decompression stops. Information obtained by the first responder, EMT, and hospital personnel about the dive accident should be in the hands of the chamber operator by this time.

GENERAL POINTS: TREATMENT OF DIVE INJURIES

1. It is not always possible to distinguish between a diving-related illness and other medical emergencies. A physician must determine this. However, recompression is imperative in both decompression sickness and gas embolisms and should be done as soon as possible to avoid serious and lasting injury.

2. DAN should be contacted as soon as possible to assist in locating the nearest working and available decompression chamber. DAN physicians can also give medical advice to the emergency room doctors inexperienced with dive injuries.

3. The immediate and continuing administration of 100 percent oxygen is the most effective method of treating DCS, embolisms, and carbon monoxide poisoning—short of recompressing. While symptoms may diminish or completely disappear after oxygen administration, the patient must still be treated.

4. A field neurological assessment should be done and vital signs taken as soon as possible and every 15 minutes thereafter, until the patient is stable.

5. Information on the dive profile should be recorded, including length of the dive, depth, rate of ascent, surface intervals, and whether repetitive dives were made.

6. Dive equipment should be transported with the diver all the way to the hyperbaric chamber. If possible, dive computer information should be recorded, as well as the quantity of air remaining in the scuba tank. The equipment should not be disconnected or otherwise tampered with.

7. The "dive buddy" is also a potential patient and should accompany the patient to the hyperbaric chamber, especially if the same dive profile was followed, even if symptoms have not yet appeared in the dive buddy. If the divers are transported by air, symptoms may worsen or suddenly appear.

8. The modified Trendelenburg—placing the patient head-down on the left side—is no longer unconditionally recommended for treating diving emergencies. The patient should be in a position suitable for CPR.

A. Assessment of Patient

Suspect an injury if the person has breathed air under water and has any of the following signs and symptoms occurring within 1 minute to 24 hours after surfacing:

1. Altered level of consciousness, including unconsciousness or confusion
2. Seizure activity
3. Pain in joints or limbs not accompanied by redness or swelling; pain does not change with movement or massage
4. Generalized weakness, numbness, and tingling, including paralysis; difficulty walking; dizziness; sensation of spinning, nausea, or difficulty urinating

If these symptoms are present, begin basic treatment.

B. Basic Treatment

1. Remove person from water and remove gear. Keep equipment together.
2. Lay victim flat on back.
3. Assess for a clear airway, breathing, and circulation; if absent, initiate CPR.
4. Call 911 (or the state emergency medical service number) and then call DAN at **(919) 684-8111** to advise of a diving emergency in progress. Give the location of the incident and the hospital that the patient will be transported to.
5. Use 100 percent oxygen by tightly fitting demand mask or assisted ventilation, if it is available, and if the first responder is trained in oxygen administration.
6. Conduct a field neurological exam if familiar with content, and repeat every 15 minutes. Especially note changes in level of consciousness, pain, and movement abilities.
7. Do not attempt to recompress in the water.
8. Obtain pertinent information on the dive history from the victim or the dive buddy.
9. Make sure that the dive buddy stays with the victim.
10. Transfer all known information, verbal and written, to the rescue personnel that arrive on scene. Transfer all dive equipment with the patient.

DIVE-RELATED INJURIES: EMERGENCY MEDICAL TECHNICIAN—BASIC LIFE SUPPORT LEVEL

A. Assessment of Patient

Suspect an injury if the person has breathed air under water and has any of the following signs and symptoms occurring within 1 minute to 24 hours after surfacing:

1. Altered level of consciousness, including unconsciousness or confusion
2. Seizure activity
3. Pain in joints or limbs not accompanied by redness or swelling; pain does not change with movement or massage
4. Generalized weakness, numbness, and tingling, including paralysis; difficulty walking; dizziness; sensation of spinning, nausea, or difficulty urinating

If these symptoms are present, begin basic treatment.

B. Basic Treatment

1. Lie patient supine (CPR position).
2. Assess ABCs; initiate CPR if necessary (refer to state Respiratory Distress Protocols and Cardiac Arrest Protocols).
3. Administer 100 percent oxygen by tightly fitting a demand mask or assisted ventilations. Continue to do so even if symptoms disappear.
4. Contact medical control. Advise of a possible diving emergency.
5. Conduct field neurological exam. Repeat every 15 minutes. Monitor vitals.
6. If patient is alert and conscious, push fluids by mouth (1 liter/hour) unless an IV has been established.
7. Secure dive equipment. Note the amount of air remaining in the scuba tank. If a dive computer was used, obtain information on dive profile. Keep all equipment together. Do not disassemble.
8. Transport patient, dive buddy, and equipment to hospital facility.
9. Fill out form outlining the dive history and profile.

DIVE-RELATED INJURIES: EMERGENCY MEDICAL TECHNICIAN—BASIC LIFE SUPPORT LEVEL

A. Assessment of Patient

Suspect an injury if the person has breathed air under water and has any of the following signs and symptoms occurring within 1 minute to 24 hours after surfacing:

1. Altered level of consciousness, including unconsciousness or confusion
2. Seizure activity
3. Pain in joints or limbs not accompanied by redness or swelling; pain does not change with movement or massage
4. Generalized weakness, numbness, and tingling, including paralysis; difficulty walking; dizziness; sensation of spinning, nausea, or difficulty urinating

If these symptoms are present, begin basic treatment.

B. Basic Treatment

1. Lie patient supine (CPR position).
2. Assess ABCs; initiate CPR if necessary (follow Cardiac Arrest or Respiratory Distress Protocols).
3. Administer 100 percent oxygen by demand mask or assisted ventilations. Do not discontinue, even if symptoms disappear.
4. Monitor cardiac rhythm.
5. If alert and conscious, push fluids by mouth (1 liter/hour) or start an IV of normal saline or lactated ringers bolus 500 cc and then run at 250 cc/hour.
6. Contact medical control. Advise of a possible diving emergency.
7. Conduct field neurological exam. Repeat every 15 minutes. Monitor vitals.
8. Secure dive equipment. Note the amount of air remaining in the scuba tank. If a dive computer was used, obtain information on the dive profile. Keep all equipment together. Do not disassemble.
9. Transport patient, dive buddy, and equipment to hospital facility.
10. Fill out form outlining the dive history and profile.

DIVE-RELATED INJURIES: EMERGENCY MEDICAL TECHNICIAN—HOSPITAL EMERGENCY ROOM

A. Assessment of Patient

Suspect an injury if the person has breathed air under water and has any of the following signs and symptoms occurring within 1 minute to 24 hours after surfacing:

1. Altered level of consciousness, including unconsciousness or confusion
2. Seizure activity
3. Pain in joints or limbs not accompanied by redness or swelling; pain does not change with movement or massage
4. Generalized weakness, numbness, and tingling, including paralysis; difficulty walking; dizziness; sensation of spinning, nausea, or difficulty urinating

If these symptoms are present, begin basic treatment.

B. Basic Treatment

Determine possibility of other medical problems, other than dive-related injuries. If believed to be dive related:

1. Lie patient supine (CPR position).
2. Contact Divers Alert Network (DAN) at (919) **684-8111** to advise of a possible diving emergency and to arrange transport to a hyperbaric facility.
3. Administer 100 percent oxygen by mask or assisted ventilations. Do not discontinue even if symptoms disappear.
4. Monitor cardiac rhythm.
5. If an IV has been started in the field, continue IV of normal saline or lactated ringers and run at 250 cc/hour. If no IV was established prior to arrival at the hospital, establish and administer normal saline or lactated ringers bolus 500 cc and run at 250 cc/hour until patient is hydrated.
6. Conduct complete neurological exam and monitor vitals every 15 minutes until patient is stable.
7. If patient is unable to void, cathetorize. Urine should be checked for volume and specific gravity.
8. Once patient is stable, prepare to transfer to a hyperbaric chamber as quickly as possible. The victim, dive buddy, and equipment should all be transferred together. Paperwork outlining dive profile and history, as well as all treatment rendered and results of neurological exams should accompany the patient.

TREATMENT FOR DIVE-RELATED MEDICAL EMERGENCIES

Perform only to your level of training

Did patient take a breath under water, regardless of depth (2 feet or deeper), from a scuba tank, hose, bucket, submerged car, etc.?

If Yes

Are any of these symptoms present 1 minute to 24 hours after surfacing?

- Indifference
- Fatigue
- Skin rash
- Weakness
- Joint pain
- Dizziness
- Paralysis of extremities
- Visual disturbances
- Feeling of a blow to the chest
- Chest pain
- Severe hacking cough
- Shortness of breath
- Bloody frothing mouth
- Staggering
- Difficulty telling direction
- Paralysis or weakness in extremities
- Collapse or unconsciousness
- Convulsions
- Cessation of breathing

If Yes

If Conscious:

1. Place patient supine.
2. Administer 100 percent oxygen.
3. Perform neurological assessment.
4. If alert, push fluids by mouth (1 liter/hour) or establish IV of lactated ringers or normal saline bolus 500 cc and run at 250 cc/hour.
5. Obtain complete dive and patient history.
6. Transport patient and dive buddy to medical facility.
7. Contact DAN to arrange for hyperbaric chamber.

If Unconscious:

1. Place patient supine.
2. Assess ABCs. Initiate CPR if necessary.
3. Administer 100 percent oxygen.
4. Perform neurological exam and monitor vitals.
5. Begin an IV of lactated ringers or normal saline bolus 500 cc and run at 250 cc/hour.
6. Obtain complete dive and patient history from dive buddy.
7. Transport patient and dive buddy to medical facility.
8. Contact DAN to arrange for hyperbaric chamber.

Please copy and use as often as necessary

DIVE ACCIDENT REPORT

DATE & TIME OF ACCIDENT
Month/Day/Year

☐☐☐☐ Time _____ AM PM

PATIENT NAME

Last ☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐ First ☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐ M ☐

PATIENT PHONE (home) ☐☐☐☐☐☐☐☐☐☐ **PATIENT PHONE** (work) ☐☐☐☐☐☐☐☐☐☐

AGE YRS ☐☐

SEX M or F ☐

HEIGHT FT ☐ IN ☐

WEIGHT LBS ☐☐☐

PREVIOUS DIVE ACCIDENTS

☐
A-Possible DCS
B-DCS
C-AGE
D-Pul. barotrauma
E-None

CURRENT MEDICATIONS
Y-Yes or N-No

☐ Prescription ☐ Non-prescription

List _____

_____

_____

PREVIOUS MAJOR ILLNESSES/SURGERY
(Provide up to 3 responses)

☐☐☐
A-Lung
B-Asthma
C-Heart
D-Gastrointestinal/Abdominal
E-Brain
F-Spine/Back
G-Limb or joint of DCS site
H-Circulation/Blood
I-Neurological/Nervous system
J-Muscle/Skeleton system
K-Eye
L-Mental/Emotional
M-Other_____
N-None
List and describe specific problems:

_____

_____

_____

CURRENT HEALTH PROBLEMS WITHIN PREVIOUS 2 MONTHS
(Provide up to 3 responses)

☐☐☐
A-Lung
B-Asthma
C-Heart
D-Gastrointestinal/Abdominal
E-Brain
F-Spine/Back
G-Limb or joint of DCS site
H-Circulation/Blood
I-Neurological/Nervous system
J-Muscle/Skeleton system
K-Eye
L-Mental/Emotional
M-Other_____
N-None
List and describe specific problems or additional current medications:_____

_____

PREDIVE HEALTH

☐
A-Nausea/Vomiting
B-Hangover
C-Diarrhea
D-Other
E-No Problem

ALCOHOL

Please check: Number of drinks, beers, or wine:

☐ None
☐ Night before ☐☐
☐ Predive ☐☐
☐ Between dives ☐☐
☐ Postdive ☐☐

RECREATIONAL DRUG USE
Prior to, between, or after dive:

☐
Y-Yes
N-No

STRENUOUS EXERCISE

☐ 24 hours predive — Y-Yes N-No

☐ During dive

☐ 6 hours postdive

AIR SUPPLY

☐
A-Scuba air
B-Surface supply air
C-Mixed gas
D-None/Breath-hold dive

AIR CONSUMPTION

☐
A-Ran low
B-Out of air
C-Not a problem
D-Buddy breathing (not octopus)

BUOYANCY PROBLEM

☐
Y-Yes
N-No

RAPID ASCENT

☐
Y-Yes
N-No

WITHIN LIMITS-Y or N

☐ Tables (which table_____)
or
☐ Computer (type_____)

TYPE OF SUIT

☐
A-Wet
B-Partial wet
C-Dry
D-Lycra
E-Swim

EQUIPMENT USED ON DIVE
(please check all that apply)

- ☐ Depth gauge
- ☐ Timing device/watch
- ☐ Buoyancy vest
- ☐ BC inflator hose used
- ☐ Decompression computer

EQUIPMENT MALFUNCTION

☐ ☐ A-None
B-Regulator
C-BC vest
D-Weight belt
E-Dry suit
F-DC computer
G-Inflator hose
H-Contaminated air supply
I-Equipment was not familiar to you
J-Other reason:____

TYPE OF DIVE

Y-Yes
N-No

☐ Single

☐ Repetitive

WOMEN ONLY
(up to 2 responses)
When accident occurred, were you:

☐ ☐ A-Menstruating
B-On birth control medication
C-Pregnant
D-None of the above

DIVE SERIES
Please fill in all that apply up to and including your last dive. If you skipped a day please leave that day blank.

	DAY 1	DAY 2	DAY 3	DAY 4	DAY 5	DAY 6	DAY 7
Total # of dives	☐	☐	☐	☐	☐	☐	☐
Any night dive? (How many?)	☐	☐	☐	☐	☐	☐	☐
Any symptoms? (Y or N)	☐	☐	☐	☐	☐	☐	☐
A-All no-stop dive(s) B-Any safe stop C-Any dive requiring decompression stops	☐	☐	☐	☐	☐	☐	☐
Deepest Dive (ft.)	☐☐☐	☐☐☐	☐☐☐	☐☐☐	☐☐☐	☐☐☐	☐☐☐

DIVE PROFILE FOR DAY OF DIVE ACCIDENT

	Maximum Depth	Bottom Time	Surface Interval Time
Dive #1	☐☐☐	_____	_____
Dive #2	☐☐☐	_____	_____
Dive #3	☐☐☐	_____	_____
Dive #4	☐☐☐	_____	_____
Dive #5	☐☐☐	_____	_____

SIGNS AND SYMPTOMS

1st Symptom ☐
2nd Symptom ☐
3rd Symptom ☐
4th Symptom ☐
5th Symptom ☐
6th Symptom ☐

A-Pain
B-Rash
C-Itching
D-Weakness
E-Numbness/Tingling
F-Dizziness/Vertigo
G-Semi-consciousness
H-Unconsciousness
I-Restlessness
J-Extreme fatigue
K-Visual disturbance
L-Speech disturbance
M-Headache
N-Paralysis
O-Difficulty breathing
P-Nausea/Vomiting
Q-Hemoptysis/Coughing blood from lungs
R-Muscle twitching
S-Convulsions
T-Hearing loss
U-Ringing ears
V-Decreased skin sensation
W-Bladder problem
X-Bowel problem
Y-Personality change
Z-Difficulty walking/standing
1-Reflex change
2-Other_____
_____

LOCATION
Block A=location of symptom. Then please check (✓) L=Left R=Right B=Bilateral/Both sides

	A	L	R	B
1st Symptom	☐	☐	☐	☐
2nd Symptom	☐	☐	☐	☐
3rd Symptom	☐	☐	☐	☐
4th Symptom	☐	☐	☐	☐
5th Symptom	☐	☐	☐	☐
6th Symptom	☐	☐	☐	☐

A-Head
B-Face
C-Sinus
D-Eyes
E-Ears
F-Neck
G-Shoulder
H-Entire arm
I-Upper arm
J-Elbow
K-Forearm
L-Wrist
M-Hand
N-Fingers
O-Chest
P-Back
Q-Upper back
R-Lower back
S-Abdomen
T-Buttock
U-Groin
V-Hip
W-Entire leg
X-Thigh
Y-Knee
Z-Calf
1-Shin
2-Ankle
3-Foot
4-Toes
5-Trunk
6-Generalized
7-Other
_____
_____
_____
_____
_____

Total delay from symptom onset to contacting DAN or other medical help

Hours or Days ☐☐

FLYING OR INCREASED ELEVATION AFTER DIVING AND PRIOR TO TREATMENT?

☐ A-Commercial airline
B-Nonpressurized aircraft
C-Med-evac flight
D-Mountain elevation
E-Does not apply

Hours postdive (flew or went into elevation) ☐☐☐☐☐

Elevation in feet ☐

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