SPRING LAKE DIVE ACCIDENT MANAGEMENT PLAN

Address for Spring Lake Ticket Kiosk
201 San Marcos Springs Drive
San Marcos, Texas 77666

Introduction
A diving accident victim could be any person who has been breathing compressed breathing gas (e.g. air, Nitrox, Trimix) underwater regardless of depth. It is essential that emergency procedures and medical treatment be initiated as soon as possible. Accidents may also occur outside of the water as divers begin or end a dive (e.g. heat stroke, heat exhaustion, sprains, breaks, cuts etc.). Decompression Illness (DCI) describes a collection of symptoms arising from decompression (pressure changes) of the body. DCI is caused by two different mechanisms, Decompression Sickness (DCS) and Arterial Gas Embolism (AGE). The signs and symptoms of DCI are listed on page 8 of this document.

This Dive Accident Management plan is specific to Spring Lake located in San Marcos, Texas and contemplates the following four scenarios:

1. Conscious and alert SCUBA diving accident victim
2. Unconscious and non-responsive SCUBA diving accident victim
3. Conscious and alert non-SCUBA related accident victim
4. Unconscious and non-responsive non-SCUBA related victim

General Procedures
Depending on the nature of the accident:
• Stabilize the victim (if DCI is suspected and you are trained in oxygen administration, administer High Flow 100% oxygen);
• Dial 911 to initiate the Emergency Medical System (EMS) for transport to the closest medical facility;
• Alert the Meadows Center's Ticket Booth/Person in Charge (PIC) at (512) 245-7590 so they may direct EMS to the victim.
• Evaluate and monitor the victim until EMS arrives.

The Meadows Center follows the Diver Alert Networks (DAN) recommendation to get the victim to the nearest medical care facility immediately, even if DCI is suspected (see page 10 of this document for clarification). Once at the medical facility, medical personnel should contact DAN's Emergency Hotline at 1-919-684-9111 for advice on patient care.

It is critical that the circumstances of the dive incident are clearly explained to the evacuation teams, medics and physicians. If DCI is suspected, stress to first responders that this is a SCUBA diving accident. Do not assume that first responders understand why 100% oxygen may be required for the diving accident victim or that recompression treatment may be necessary.

Location of emergency supplies at Spring Lake:
Emergency supplies are located in the Dive Locker next to the Ticket Kiosk. Emergency Oxygen and First Aid Kit are in the restroom under the sink, our 2 Backboards are located above the lockers. The Meadows Center Person in Charge has the keys to open this room.

Diving Instructors bringing students for any training at Spring Lake are required to have First Aid Kit and Emergency Oxygen with them at all times.
SCENARIO #1

CONSCIOUS AND ALERT SCUBA DIVING ACCIDENT VICTIM

1. Make appropriate contact with victim or rescue as required
2. If spinal injury is suspected, move the victim only if necessary
3. Evaluate victim’s Airway, Breathing, Circulation (ABC’s)
4. Administer 100% oxygen if DCI is suspected or if it is a near drowning
5. Call 911 (SEE SCRIPT BELOW)
   a. Stay on the line with dispatcher until EMS personnel arrive or until dispatcher tells you to hang up
6. Alert ticket booth/person in charge at 512-245-7590 so that they can meet and direct EMS to the accident scene.
7. Evaluate and monitor victim until EMS arrives
   a. Gather as much information about the dive as possible (See MEDEVAC form page 7)
   b. Interview victim’s buddy for additional information
   c. Secure the victim’s dive gear for examination (Do not disassemble gear or exhaust any breathing gas from the system) Transport dive computers and logbook with the victim.
8. If DCI, or any other type of pressure related injury is suspected keep the victim on their back (Do not raise their legs)
9. Place the victim on their side if feeling nauseated or vomiting. Keep the airway clear.
10. If possible keep victim in the shade
11. Await the arrival of EMS personnel

Script for EMS 911 call:
Hello my name is ________________. I am at 201 San Marcos Springs Drive
San Marcos, Texas 77666.
We have a SCUBA diver emergency involving (give divers name), the diver is conscious and alert and has the following injuries (list injuries).

NOTE: If DCI is suspected, stress that this is a SCUBA diving accident, not just a diving accident. If medical personnel need any clarification on the treatment of diving injuries they should call the Divers Alert Network Emergency Hotline 1-919-684-9111

If helicopter transport is needed, use the following coordinates:
29°53’33.57”N, 97°55’53.51”W
If a DCI patient is transported by helicopter, advise the helicopter crew to maintain low level (<1000 ft.) altitude.
SCENARIO #2

UNCONSCIOUS AND NON-RESPONSIVE SCUBA DIVING ACCIDENT VICTIM

1. Make appropriate contact with victim or rescue as required
2. If spinal injury is suspected, move the victim only if necessary
3. Evaluate victim’s Airway, Breathing, Circulation (ABC’s)
4. Start CPR (if required)
5. Call 911 (SEE SCRIPT BELOW)
6. Alert ticket booth/person in charge at 512-245-7590 so that they can meet and direct EMS to the accident scene.
7. Evaluate and monitor victim until EMS arrives
   a. Gather as much information about the dive as possible (see MEDEVAC form (page 7)
   b. Interview victim’s buddy for additional information
   c. Secure the victim’s dive gear for examination (Do not disassemble gear or exhaust any breathing gas from the system) Transport dive computers and logbook with the victim.
8. If DCI, or any other type of pressure related injury is suspected keep the victim on their back (Do not raise their legs)
9. If possible keep victim in the shade
10. Await the arrival of EMS personnel

Script for EMS 911 call:
Hello my name is ____________________, I am at 201 San Marcos Springs Drive
San Marcos, Texas 77666.
We have a SCUBA diver emergency involving (give divers name), the diver is unconscious and non-responsive and has the following injuries (list injuries).

NOTE: If DCI is suspected, stress that this is a SCUBA diving accident, not just a diving accident. If medical personnel need any clarification on the treatment of diving injuries they should call the Divers Alert Network Emergency Hotline +1-919-684-9111

If helicopter transport is needed, use the following coordinates:
29°53’33.57”N, 97°55’53.51”W
If a DCI patient is transported by helicopter, advise the helicopter crew to maintain low level (<1000 ft.) altitude.
SCENARIO #3

CONSCIOUS AND ALERT NON-SCUBA DIVING ACCIDENT VICTIM

1. Make appropriate contact with victim or rescue as required
2. If spinal injury is suspected, move the victim only if necessary
3. Evaluate victim's Airway, Breathing, Circulation (ABC's)
4. Call 911 (SEE SCRIPT BELOW)
   a. Stay on the line with dispatcher until EMS personnel arrive or until dispatcher hangs up
5. Alert ticket booth/person in charge at 512-245-7590 so that they can meet and direct EMS to the accident scene.
6. Evaluate and monitor victim until EMS arrives
   a. Gather as much information about the accident as possible (See MEDEVAC form page 7)
   b. Interview victim’s buddy for additional information
7. Place the victim on their side if feeling nauseated or vomiting. Keep the airway clear.
8. If possible keep victim in the shade
9. Await the arrival of EMS personnel

Script for EMS 911 call:
Hello my name is ______________, I am at 201 San Marcos Springs Drive San Marcos, Texas 77666.
We have a medical emergency involving (give victims name), the victim is conscious and alert and has the following injuries (list injuries).

If helicopter transport is needed, use the following coordinates:
29°53'33.57"N, 97°55'53.51"W
SCENARIO #4

UNCONSCIOUS AND NON-RESPONSIVE NON-SCUBA DIVING ACCIDENT VICTIM

1. Make appropriate contact with victim or rescue as required
2. If spinal injury is suspected, move the victim only if necessary
3. Evaluate victim’s Airway, Breathing, Circulation (ABC’s)
4. Start CPR (if required)
5. Call 911 (SEE SCRIPT BELOW)
   a. Stay on the line with dispatcher until EMS personnel arrive or until dispatcher hangs up
6. Alert ticket booth/person in charge at 512-245-7590 so that they can meet and direct EMS to the accident scene.
7. Evaluate and monitor victim until EMS arrives
   a. Gather as much information about the accident as possible (see MEDEVAC form page 7)
   b. Interview victim’s buddy for additional information
8. If possible keep victim in the shade
9. Await the arrival of EMS personnel

Script for EMS 911 call:
Hello my name is ________________, I am at 201 San Marcos Springs Drive, Texas 77666. We have a medical emergency involving (give victims name), the victim is unconscious and non-responsive and has the following injuries (list injuries).

If helicopter transport is needed, use the following coordinates:
29°53′33.57″N, 97°55′53.51″W
Emergency Contact Numbers

Local Emergency Telephone Numbers
All Emergencies – 911
Texas State University Police Department – 512-245-2805
San Marcos Fire Department – 512-805-2660
Central Texas Medical Center Emergency Department – 512-753-3516
Central Texas Medical Center – 512-353-8979
San Marcos Area Rescue Team (SMART)
  ▪ 512-353-1671 (dispatch)
  ▪ 512-754-7963 (South Hayes FD)

Meadows Center Person in Charge
Ticket Booth (512) 245-7590

Emergency Transportation
Hays County EMS – 911
Life Flight – 888-303-9112
Starflight - 800-531-7827
  • Spring Lake Training Area Landing Zone: 29°53’33.57”N, 97°55’53.51”W

Divers Alert Network (Call DAN after EMS has been activated)
Emergency Hotline +1-919-684-9111
Non-Emergency Medical Information +1-919-684-2948

Nearest Hospital Facility
Central Texas Medical Center
1301 Wonder World Drive
San Marcos, TX 78666
Telephone: (512) 353-8979
**MEDEVAC Sheet**

**Date:**

**Time:**

### Patient Information

**Name:**

**Date of Birth:**

**Age:**

**Sex:**

**Blood type:**

**Divers Alert Network (DAN) Insurance #:**

**Medical Insurance #:**

**Emergency Contact:**

**Emergency Contact Relation:**

**Medications:**

### Patient Vital Signs:

**Airway** (check appropriate choice)
- Obstructed
- Open
- Gurgling

**Respirations** (check appropriate choice)
- Normal
- Shallow
- Deep
- None* is CPR being conducted?

**Pulse** (check appropriate choice)
- Normal
- Weak
- Pounding
- None* is CPR being conducted?

**Other signs and symptoms** (check appropriate choice)
- Conscious?
- Convulsions?
- Vomiting?
- Shock?
- Bleeding?
- Paralysis?
- Tingling?
- Joint pain?

### Dive information

- **# of dives today?** _________________
- **Buddy’s Name**____________________
- **Breathing mixture?** ______________
- **Buddy’s Contact Info.**____________________
- **Average depth?** ________________
- **Maximum depth?** ________________
- **Bottom time?** ________________
- **Any dives in the previous 24 hours?** __________________
- **Comments:** ____________________
The Signs and Symptoms of Decompression Illness

Decompression Illness (DCI) describes a collection of symptoms arising from decompression (pressure changes) of the body. DCI is caused by two different mechanisms, Decompression Sickness (DCS) and Arterial Gas Embolism (AGE).

<table>
<thead>
<tr>
<th>Decompression sickness</th>
<th>Arterial Gas Embolism</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Signs</strong></td>
<td></td>
</tr>
<tr>
<td>Skin rash</td>
<td>Bloody froth from mouth or nose</td>
</tr>
<tr>
<td>Paralysis, muscle weakness</td>
<td>Paralysis or weakness</td>
</tr>
<tr>
<td>Difficulty in urinating</td>
<td>Convulsions</td>
</tr>
<tr>
<td>Confusion, personality changes, bizarre behavior</td>
<td>Unconsciousness</td>
</tr>
<tr>
<td>Loss of memory, tremors</td>
<td>No breathing</td>
</tr>
<tr>
<td>Staggering</td>
<td>Death</td>
</tr>
<tr>
<td>Collapse or unconsciousness</td>
<td></td>
</tr>
<tr>
<td><strong>Symptoms</strong></td>
<td></td>
</tr>
<tr>
<td>Fatigue</td>
<td>Dizziness</td>
</tr>
<tr>
<td>Skin itch</td>
<td>Blurring of Vision</td>
</tr>
<tr>
<td>Pain in joints or muscles</td>
<td>Areas of decreased sensation</td>
</tr>
<tr>
<td>Dizziness, vertigo, ringing in the ears</td>
<td>Chest pain</td>
</tr>
<tr>
<td>Numbness, tingling and paralysis</td>
<td>Disorientation</td>
</tr>
<tr>
<td>Shortness of breath</td>
<td></td>
</tr>
</tbody>
</table>

Decompression Sickness (DCS) and Arterial Gas Embolism (AGE)
The Diver Alert Networks recommendation for DCI victim positioning

The consensus on the ideal posture for an injured diver has changed over the years and, unfortunately, many training materials for emergency medical technicians do not reflect these trends.

The following observations challenge the advice to place an injured diver in the Trendelenburg position (left lateral recumbent):

- It is often difficult to distinguish Cerebral Arterial Gas Embolism (CAGE) from cerebral Decompression Sickness (DCS);
- Significant Arterial Gas Embolism (AGE) probably occurs in DCS by arterialization of venous bubbles. A head-down position increases venous return;
- In the smaller vessels, bubbles trapped in circulation will travel with blood flow without regard to posture;
- A prolonged head-down position increases cephalic venous volumes and compromises subsequent middle ear equalization, necessary in recompression therapy;
- The Trendelenburg position limits resuscitation;
- Studies show that the recovery of brain function is slower in those positioned head-down than those horizontal (Dutka 1990).

In summary, according to DAN’s Senior Medical Advisor, Dr. Richard Moon, there may be benefit in a transient head-down posture for divers with arterial bubbles, but the balance of opinion and data favors a horizontal position. If the diver is unconscious or vomiting, or if the diver’s upper airway is compromised, place them laterally recumbent, either left or right, so that the airway can be effectively managed. Divers who are experiencing neurological symptoms of decompression illness must not be allowed to sit up until inside a recompression chamber.

This information is taken directly from the Divers Alert Network Website:
http://www.diversalertnetwork.org/medical/faq/Proper_Position_for_Emergency_Care_
The Diver Alert Networks recommendation for getting a DCI patient to a medical care facility immediately, and NOT to a hyperbaric chamber.

DAN frequently consults on the care, transport and hyperbaric treatment of injured divers but does not provide chamber location information. This is an effort to get divers with a suspected decompression illness into hospital care.

In the past, divers would often drive past legitimate health-care facilities to get to a recompression chamber. Even when divers surface with clear symptoms of an arterial gas embolism, the treatment of choice is the local emergency service and hospital. Your best option is to use existing emergency services for an injured diver.

The reasons:

- Hospitals and urgent-care facilities have an unlimited supply of oxygen, intravenous fluids and medications.
- A physician/emergency care provider needs to rule out other illness such as pneumothorax (collapsed lung), myocardial infarction (heart attack), and neurological and musculoskeletal injuries with symptoms similar to DCI.
- An injured patient needs to be stabilized before and during transport and should be transferred under medical supervision.
- Transporting a diver without a proper evaluation may adversely affect the diver’s health and treatment outcome.
- A chamber’s operational status can change. Chambers may close for scheduled maintenance, staff vacation or a limited staff because of a high daytime patient treatment load. The chamber you are driving to may not be available. Prior notification from an evaluating facility is usually necessary to begin the call-in procedure to staff a hyperbaric treatment. Finally, most hyperbaric facilities have regular daytime business hours and are not staffed in the evenings and on weekends. In fact, some chamber facilities choose not to staff their unit after hours and do not wish to treat divers. Most cases of decompression sickness report for evaluation after normal business hours.

If you suspect a diver has a dive-related injury and needs evaluation, you should safely:

- Monitor airway, breathing, circulation
- Provide 100 percent oxygen if you are a trained oxygen provider.
- Call the local EMS for transport or assist in the transport of the injured diver to medical care.
- Call the DAN Emergency Hotline at +1-919-684-9111 (emergencies can call collect) for consult and advice.

If you are uncertain about symptoms that occur hours or days after diving, and there is no emergency, or you wish to ask questions about the signs and symptoms of decompression illness, contact the DAN Information Line at +1-919-684-2948, 9 a.m. to 5 p.m. ET, Monday through Friday.

This information is taken directly from the Divers Alert Network Website: [http://www.diversalertnetwork.org/medical/faq/Why_DAN_Does_not_Provide_Chamber_Location_Information](http://www.diversalertnetwork.org/medical/faq/Why_DAN_Does_not_Provide_Chamber_Location_Information)