

Alert DIVER LITE

Your compact *Alert Diver* companion
August/September 2017



EMERGENCY PLANS

QUESTION

What are the most important aspects?

CAUTION

Be ready for a variety of scenarios

DAN-SA

Prevent, prepare and respond

5

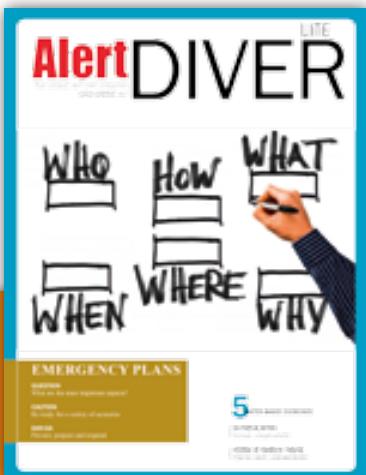
WATER-BASED EXERCISES

OCTOPUS BITES

Serious complications

DIVING IN REMOTE AREAS

Special safety considerations



ON THE COVER

Proper preparation is essential to an effective emergency plan. You need to have all your steps in place in order to respond calmly and swiftly in an emergency.
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PERSPECTIVES

Bust the dust: It may be hard to imagine it while we are still in the grip of winter, but the next dive season is just around the corner. So, we must prepare for warmer days, when our wetsuits will start looking far more attractive. Below are some tips about equipment maintenance and safety that you may want to think of right now, as you are getting ready for the next plunge. If you are keen to read additional resources related to the 10 tips listed, scan the QR code at the end of the article.



- Regulators:** These should be serviced regularly, with most manufacturers suggesting that this be done annually. Avoid running out of air by maintaining your equipment and planning your dives.
- Regulator hoses:** Check your regulator hoses for signs of perishing, especially the power inflator hose which, according to statistics, is the most vulnerable to failures. Beware of cheap, replacement, nylon-braided hoses. If you have ever replaced your regulator hoses with nylon-braided ones that were not supplied by the regulator manufacturer, be sure to read the *Invisible Crystals* article by François Burman published in the *Alert Dive LITE* section of *SUBMERGE*'s August/September 2016 issue.
- O-rings:** Ensure that the O-rings in your cylinder are in good condition and replace them when necessary. Always carry spares.
- Safety is in the air:** Make sure that what you have in your cylinder is what you want to breathe.
- Fins:** Fins are for finning. So exercise now, using your fins, to avoid cramps when you get back to diving. You can do this in a heated pool at your local gym. Also, remember that fins do not last forever, so let them go before they let you down.
- Dive computers:** Do not forget that dive computers run on batteries, and batteries run down. So replace them in time and make sure that you know what to do if your dive computer fails.
- Wetsuits:** Wetsuits are much less likely to shrink than you are to expand! Make sure your wetsuit still fits correctly and, if it is time to replace it, consider the various features that are available.
- You – the diver:** Diving is not only about your equipment and the ocean; the most important ingredient is you! Always make sure you are fit to dive.
- Oxygen first aid:** If you have never thought of it before, consider getting trained in the use of oxygen. Alternatively, you can acquire an oxygen unit. This way, you can contribute towards our diving safety network by helping to ensure that there is first-aid equipment at every dive site and on every dive boat.
- Consider joining DAN-SA:** Last but not least, consider joining the largest organisation of recreational divers in the world: an organisation that is committed to diving safety and peace of mind. 

Dr Frans Cronje, MChB, MSc
Founder of DAN Southern Africa



EVENTS

DAN Europe Internship 2017

DAN Europe develops young minds interested in the areas of dive medicine, physiology, biomedical engineering and research through the DAN Europe Research Internship Programme. All 2017 internships commenced on 3 July. The DAN Southern Africa team participated in the Programme this year and presented several lectures, including discussions on risk identification and mitigation within a dive business. We also showcased the diving research projects that have been conducted in the DAN Southern Africa region since the start of the year.

Programme participants learnt about diving-related research and had the opportunity to enhance professional skills that could lead to career advancement. Each participant had a custom-tailored programme with a common training period of three weeks. Following this initial, basic training, participants worked closely with expert mentors, maximising their learning opportunities by implementing their new skills in the field. The duration of this second phase varied according to the customised programme set for every intern, and according to the productivity, research needs and interests of both intern and mentor.

Training mainly took place at the Institute of Tourism Studies in Malta. In some cases and for part of their training, interns were also hosted by DAN Research partner organisations appropriate to their interests and abilities. Activities included field, laboratory and epidemiological studies. Research interns assisted in data collection and worked on a variety of assignments to develop their practical skills, critical thinking and technical communication expertise.

Interns are primarily recruited among undergraduate students at colleges and universities. They are also recruited as early-stage researchers from private organisations; some are post-graduate students. Academic credits are often available for students registered in educational programmes while completing the research internship. DAN can provide documentation to meet typical institutional requirements such as those of the ECTS (European Credit Transfer System).

If you are interested in joining the Programme in 2018, learn more about it at <https://www.daneurope.org/web/guest/internships>

DAN Training Workshop

Patty Seery, the DAN America training director, will visit the DAN Southern Africa office in August. She will host a DAN training workshop to introduce the new DAN e-learning platform which will be launched in Southern Africa during the last quarter of 2017. During this two-day workshop, instructors and instructor trainers will be informed about all the new developments and will also be offered a skills refresher. DAN instructors and instructor trainers wanting to participate in this workshop will need to take note of the following considerations.

1. To participate, you will need to be an active DAN Southern Africa member
2. You will need to complete the new e-learning Provider modules for each of the courses you wish to teach
3. After completing the e-learning Provider modules, you will need to complete the e-learning DAN IQC CORE module
4. After completing the e-learning IQC CORE module, you will need to complete the e-learning Instructor modules for each of the DAN Provider courses you wish to teach

Date: 1-2 August

Venue: DAN Southern Africa office in Midrand

To register for the workshop, contact the DAN Southern Africa training department via email at training@dansa.org or call 011 266 4900.

TEAM & CONTACT

ALERT DIVER LITE PHILOSOPHY

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You Better Get That Examined

By Payal Razdan

As far as possible, divers should avoid handling marine life, as doing so may lead to injuries with serious complications. Should you receive such an injury, timely treatment is essential to reduce the risk of severe infection.

REFERENCES

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THE DIVER

The diver was a healthy, 32-year-old woman with 130 lifetime dives. Her medical history included no allergies or other health problems. She had just completed her second dive on the second day of a dive series.

THE INCIDENT

During the dive, the diver's buddy collected what he thought was an empty moon snail shell. The divers did not realise that a juvenile giant Pacific octopus (*Enteroctopus dofleini*) had taken up residence in the shell. When the octopus crawled out after the dive, the diver picked it up with her bare hands to return it to the water.

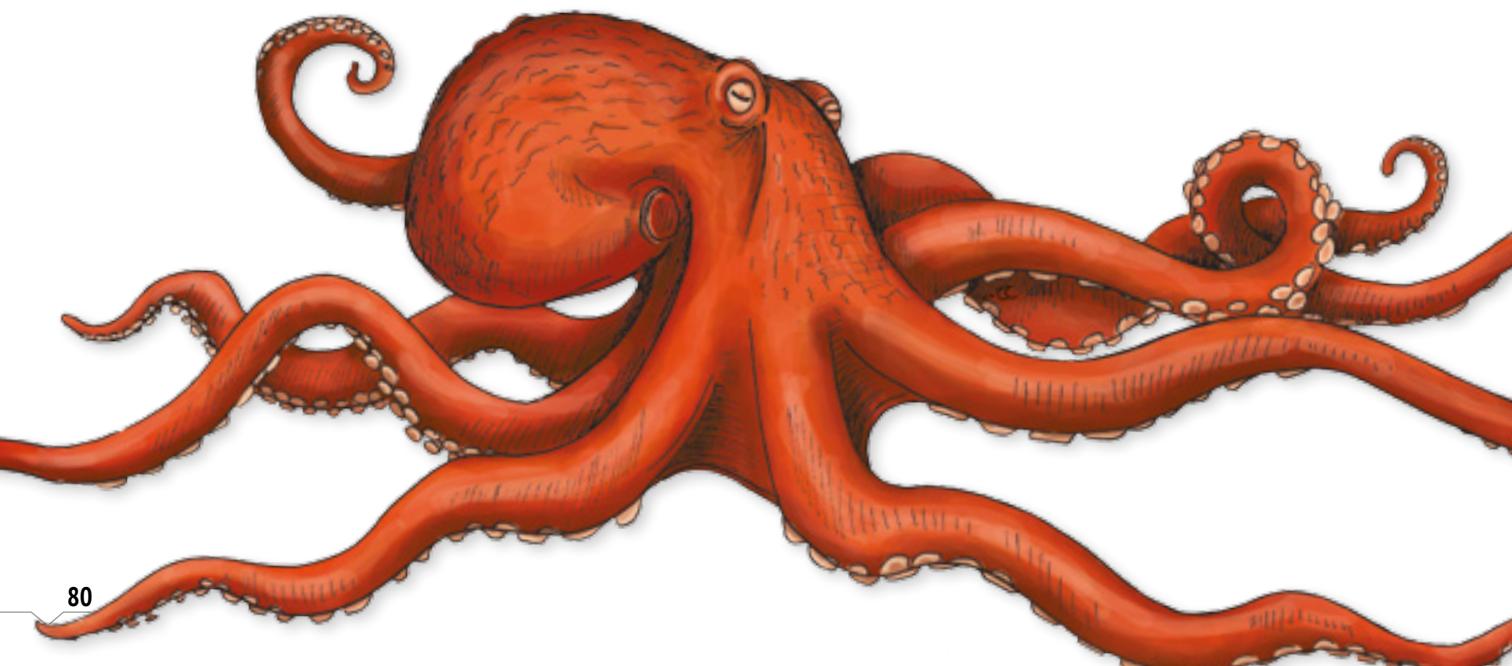
Before she could put the octopus back in the water, it bit her three times on the back of her left hand, in the same place. She described the bites as surprising and feeling similar to bee stings. The wound bled moderately, and the diver rinsed it first with salt water and then 40 minutes later

with soap and fresh water. Swelling appeared within 30 minutes and became severe within about an hour.

Approximately four hours later, the diver made another dive. Upon surfacing, she was nauseous and vomited (she had not previously experienced such symptoms after diving). The nausea resolved quickly, and the diver conducted five more dives over the next two days, despite significant swelling and compromised mobility that lasted for about four days.

Before she could put the octopus back in the water, it bit her three times on the back of her left hand.

The diver wore a drysuit and neoprene wet gloves on every dive. When not diving, she kept the wound dry and applied an over-the-counter antibiotic ointment to



it. She also took an over-the-counter antihistamine and applied crushed aspirin to the skin surrounding the puncture site (not directly on the wound), but none of these practices provided any relief. Significant itching and pain reached their peak five to six days after the incident.

COMPLICATIONS

About three days after the bite, the wound became infected and developed into a dark lesion half a centimetre in size, surrounded by a raised, red area. Black-green discolouration surrounding the lesion appeared about nine days after the incident. Moderate pain, and significant itching and swelling lasted for more than a month.

The lesion took approximately seven weeks to heal, although pain, sensitivity to touch and itching lasted for three months. Minor flare-ups still occurred four to five months after the incident, usually after exercise or early in the morning. Six months after the incident, a tissue nodule remained at the bite site.

DISCUSSION

Although blue-ringed octopus bites are known for being potentially deadly, bites by most octopus species are generally not problematic. Recently, scientists have come to understand that all octopuses may be venomous to some degree.³ The medical literature indicates that bites by octopuses of the same class as the giant Pacific octopus have resulted in ulceration.^{1,2,4} The diver's small puncture wound developed into what appeared to be an ulcerous lesion, similar to one that developed following a common octopus bite documented in a 2011 medical case report.¹

The delay in proper wound care may have been a complicating factor. DAN recommends washing marine bites immediately with soap and clean water to minimise the risk of infection. Infection can impair healing and lead to significant tissue damage. Divers should not dive with open wounds because exposure to the aquatic environment can increase infection risk.

Monitoring the wound site is important, since signs of infection can appear from within hours to several weeks following an injury. The immediate swelling the diver experienced may have been a consequence of the initial trauma, or the subsequent exposure to multiple antigens and toxins. Prolonged symptoms were most likely a result of infection.

The drysuit wrist seals may have been another complicating factor. Although the swelling was probably the result of an acute inflammatory reaction, tight-fitting wrist seals may have compromised distal perfusion, further exacerbating symptoms.

In addition to inflammation of the affected area, other symptoms of infection include pain, redness and immobilisation. These symptoms can be remembered using the acronym PRISH: pain, redness, immobilisation (impaired function), swelling and heat (elevated warmth of the infected area). The cause of the diver's nausea upon completing the dive is unclear.

A third complicating factor in this case may have been the delay in medical care. DAN advises that divers treat wounds caused by marine life like any other animal bite and seek prompt medical attention. In this case, the wound was evaluated 10 days after the incident, thereby delaying treatment that might have limited the progression of the diver's symptoms.

Divers should not dive with open wounds because exposure to the aquatic environment can increase infection risk.

Initially, the physician prescribed a 10-day course of the antibiotic levofloxacin. However, evolving symptoms and progressing discolouration prompted the doctor to prescribe an additional antibiotic, amoxicillin and clavulanate, for 10 days, along with an antihistamine to manage the itching.

This incident should serve to emphasise that timely treatment of wounds can reduce the risk of serious infection. Whenever possible, divers should photograph wounds because images can help medical staff provide care that is more effective and efficient. Divers should understand that handling marine life may lead to injuries, some of which can result in serious complications. 



DAN LETTERS

Outstanding dive incident assistance

I would like to say a very heartfelt thanks to your organisation. I recently had to make use of DAN during a club trip and although the incident was unfortunate, I thanked my lucky stars that I was a DAN member!

Everyone from DAN who assisted, from the operator to the doctor, was an absolute star. As the patient, it was a huge relief knowing that professionals were looking after me and guiding those charged with caring for me. Your staff were professional, calm and organised at all times, and I thank you for this. They went out of their way to continuously keep in touch and check up on me. They offered a huge amount of help to my instructor and fellow divers, both during and after the incident.

They say something good always comes out of a bad situation, and this was true for us. Because of the way DAN assisted us, many of my dive friends made a point of joining DAN immediately after my incident. This puts me at ease, knowing that they are now in good hands should they ever need them.

Once again, a huge thank you!

JA

Easy-peasy renewal

Thank you very much for a phenomenally efficient service! It is amazing to find a service provider whose services are so prompt and hassle-free. I spent just a few minutes on the internet and within a few hours I had received confirmation of renewal via a range of media.

I dive frequently with students new to diving, and my dive buddies and I always make a point of telling them how great DAN is and how worthwhile it is to be a member. I always add that it is so easy to join and renew.

Thank you and keep up the good work.

Neil



Dive Industry Profile

Keryn van der Walt, Dive Shop Owner, Outdoor Focus



I am the co-owner of RAID Southern Africa and I own Outdoor Focus Dive and Adventure Centre in Port Alfred, which I started 16 years ago. Diving was never on my bucket list. As a kid, I swam provincially and during my training sessions, I spent quite a bit of time watching diving students swim under us, and always wondered what the fascination was.

Shortly after moving to Port Alfred in 1993, my mother-in-law decided that she was going to do a dive course with Dennis Croukamp from Kowie Dive School. She informed me that I was doing it with her! That first course sparked my love for diving and my passion continues to grow, especially since I started rebreather diving. During my first pool session with Dennis, I decided that this was what I wanted to do and I worked my way up with him, eventually completing my dive master and instructor courses in 1996, this time with Ian Symington.

I was besotted with diving. Dennis gave me all his old *Sources* magazines which he had collected over the years (a stack about 1.5 m high). I read and studied these magazines with fascination and with a growing awareness of the industry. My interest in diver rescue was piqued after I joined the NSRI, and I started to realise the potential risks of diving in a relatively isolated area like Port Alfred. By this time, I had become a training officer at our Port Alfred Sea Rescue station, and we practised various diving-related injuries and scenarios on a regular basis.

Over time, we slowly started hearing snippets of information about DAN-SA. We all knew about DAN in America because of the magazines our agency was publishing. However, without social media as we know it today, news took a long time to filter down to a small town where there was only one dive centre.

In April 1997, a technical diver passed away during a 100 m course off Port Alfred. I was skippering the back-up boat and treated him for the long 20 nautical miles back to Port Alfred and into the fixed-wing aircraft waiting for us. After this event, I realised how little I knew about the process, even after all my training.

I attended Rescue Sunday at the Naval Base in Simon's Town, where this very incident was presented as a case study. It was explained that the treatment that was given to the diver was certainly less than ideal, although it was unlikely to have made any difference to the outcome. This became a huge motivator to learn more, especially how to treat an injured diver correctly.

So, in February 1998, I looked into DAN-SA and ended up doing their oxygen provider course with Sean French. I began teaching oxygen administration for diving injuries. Over the years, I have taught NSRI crews and many divers how to provide oxygen correctly. I have marvelled (especially on the NSRI side) at how additional oxygen can save a life that seemed to be slipping away.

We take advantage of the amazing DAN-SA Student Membership Programme.

DAN-SA has helped us build a culture of diving safety at Outdoor Focus and our students are introduced to this organisation on every course we run. We take advantage of the amazing DAN-SA Student Membership Programme and DAN-SA has been incredibly helpful to us over the years, counsellling us about students who are taking various medications or who have medical conditions. Not having a diving doctor nearby often puts us instructors in a pickle; however, DAN-SA is always there to advise us (and occasionally doctors) on whether a student is to fit to dive. 



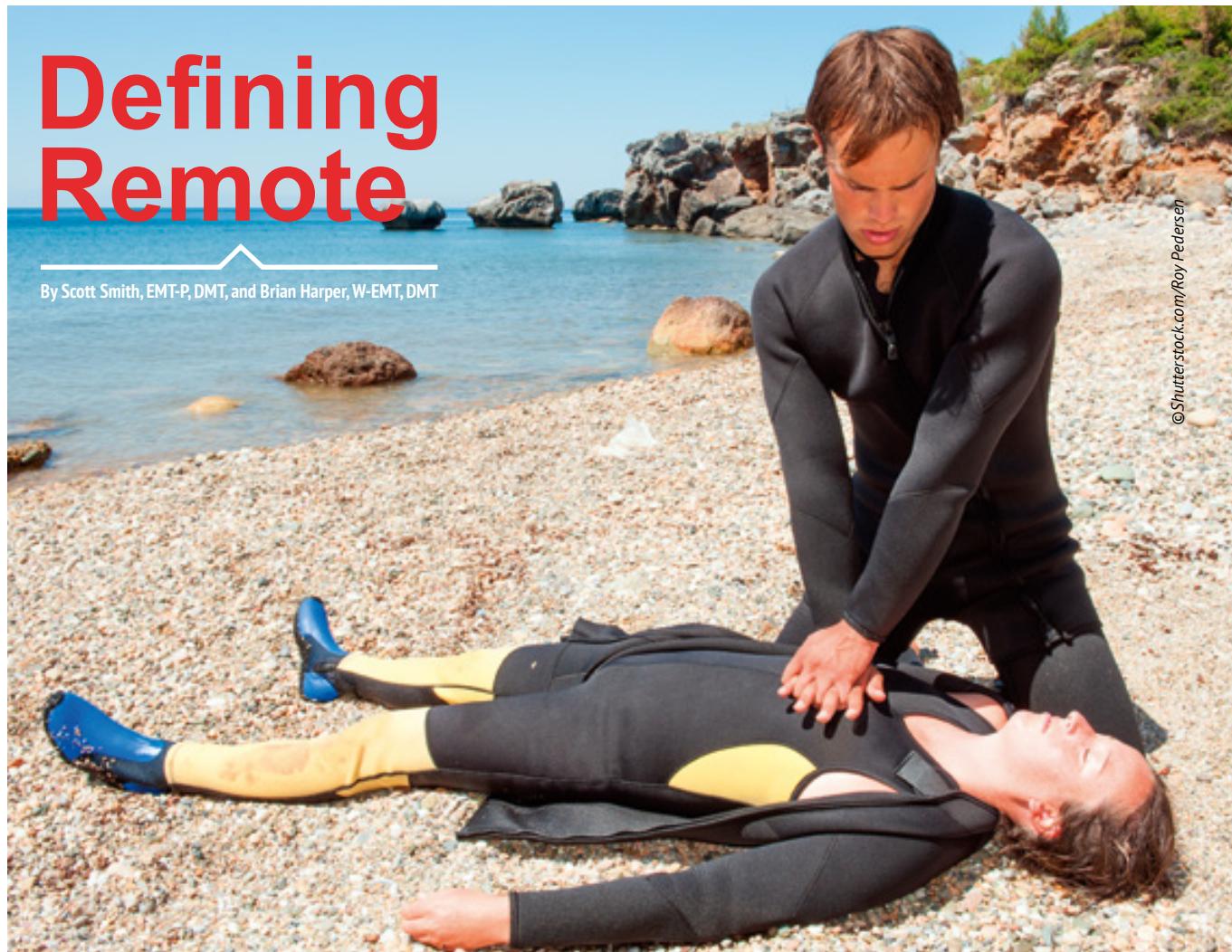
In a diving emergency, call:
0800 020 111 (local)
+27 828 10 60 10 (int.)



Defining Remote

By Scott Smith, EMT-P, DMT, and Brian Harper, W-EMT, DMT

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Exotic, distant destinations have a certain charm and promise pristine beauty. However, the more remote the location, the more difficult it may be to manage an emergency, should one occur. Understanding the specific challenges presented by remote environments gives adventurers a leg up. These challenges include time, environment, resources and independent decision-making.

TIME

In cities, towns and many resort areas, people are rarely required to spend more than a few minutes with individuals who are severely injured. Emergency medical technicians (EMTs), paramedics, nurses or doctors are available to take over the victim's care within minutes. With the short amount of time it takes to call Emergency Medical Services (EMS) and have an ambulance dispatched and arrive on the scene, a patient can be in the hands of expert medical-care providers within minutes. However, in remote environments, the travelling companions of those who become ill or injured may find themselves forced to give care, to the best of their ability, for hours or even days.

Due to these possible delays, wounds must be cleaned thoroughly to prevent infection. Similarly, splints, wraps or slings may need to be constructed to limit further injury to bones and muscles. Medication may have to be administered, and careful notes should be taken to give to professional caregivers when an evacuation can be conducted.

Be prepared to care for injured travelling companions in darkness, rain and high winds when you visit remote areas.

There is more to providing care over an extended period than just addressing patients' medical needs. Caregivers must also figure out how to help them stay nourished, hydrated, warm and able to relieve themselves. It is not just training, planning and sound judgement that are helpful in extended-care situations; a professional bedside manner and a willingness to provide comfort and encouragement are necessary as well.

ENVIRONMENT

Hospitals, clinics and even ambulances offer climate control, shelter, light and other amenities that are not guaranteed in wilderness settings. Be prepared to care for injured travelling companions in darkness, rain and high winds when you visit remote areas. Be ready to face the sun's relentless rays, lethargy-inducing heat or finger-numbing cold as you administer aid. Since adverse conditions can increase the potential for injury, it is entirely possible you will be called on to provide care in bad weather, at night or in extreme temperatures. Evacuation so as to acquire a higher level of medical attention will not be necessary for every little annoyance. However, should travelling companions develop simple infections or other seemingly mundane problems, be prepared for trips to the doctor to become day-long ordeals.

RESOURCES

When an ambulance arrives at the scene of an accident, it comes loaded with equipment designed to provide assistance and relief to the sick or hurt. When no ambulance is available, you are stuck with the gear on your boat or in your pack. This means that time spent deciding what equipment to bring on a trip, is time well spent. It is worth brainstorming a variety of scenarios to improve your chances of being prepared for the most likely and most serious situations you may face. It also means you may need to improvise essential gear you do not have with you. Effective improvisation of equipment is an essential skill in wilderness medicine.

Even where medical care is available in rural or remote areas, the imaging equipment necessary to determine injury severity may not be. Additionally, basic casting materials, medications and expertise in reducing fractures, for example, may likewise be unavailable. It might be necessary to splint an injury using whatever padding and rigid materials are available. When doing so, immobilise the injury without restricting circulation, and always use lots of padding.

Group members may even need to build a makeshift stretcher that can be dragged along the ground or carried to transport a patient to a clinic, hospital or airstrip. This is appropriate except when a patient may have suffered a spine injury. When a spine injury cannot be ruled out, avoid moving the injured person unless there is an immediate threat to life, or group members have the training to secure the patient to an available backboard, a device designed specifically for moving people who may have spine injuries. Some equipment, such as a backboard, should not be improvised.

INDEPENDENT DECISION-MAKING

When a satellite phone is not available and you cannot find a cell phone signal, you may find yourself having to make decisions without the guidance of a doctor, DAN-SA medic or another expert. Good judgment and decision-making abilities come from training and experience. If you do not have these yet, travel with those who do. Ask your guides or tour operators about their training and emergency protocols before you book your trip. Some small islands have clinics through which physicians or nurses rotate, but even in these cases, the simplest diagnostic tests may not be available. This means that you may be faced with making significant decisions with less information than you would like to have.

Ask your guides or tour operators about their training and emergency protocols before you book your trip.

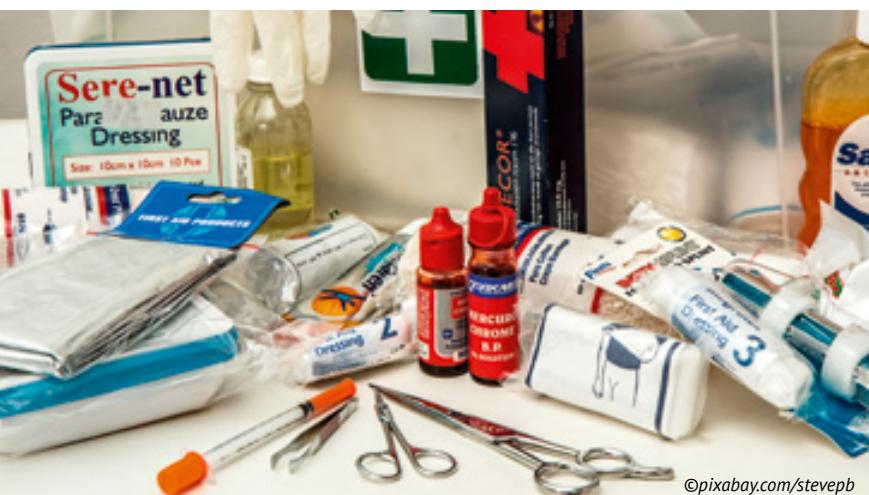
When you are able to reach DAN-SA, a doctor or local EMS for consultation and evacuation, be ready to answer the questions that they will ask. From the moment an accident occurs or symptoms of an illness first appear, designate a member of your group to take notes on the evolving situation.

PREPARATION

Pack a headlamp and spare batteries in your first aid kit, so you are prepared to help a travelling companion at night. Extra water, sunscreen and insect repellent will be appreciated by all if a group is forced to stop moving in an exposed area, because of an injury or acute illness. Although packing space and weight allowances are often at a premium when travelling off the beaten track, an extra

*Brainstorm a variety of scenarios to improve your chances of being prepared for the most likely and most serious situations you may face.
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insulating layer is invaluable if someone gets hurt. When in doubt about items like rain jackets or wide-brimmed hats, bring them. Appropriate exposure protection will help maximise the number of available caregivers, while minimising the number of individuals who need help. Pack a notebook and pen so you can keep a record should any injuries occur. A log of the patient's condition over time will assist medical professionals who take over the patient's care later.

Before you travel to a remote area, determine whether any immunisations are recommended for the area, and schedule those accordingly. Research the locations of the nearest clinics and hospitals, and find out the emergency number for the South African Embassy for the area in which you are travelling. The websites for the Department of International Relations and Cooperation, South African Visas and Embassy Information are good sources of this information.

Sometimes travellers' primary-care doctors or dedicated travel clinics can provide precautionary antibiotics to treat simple infections should they occur. DAN-SA does not support or discourage this; it is a decision to be made by the traveller and his or her doctor. If you take any medication regularly, ask your doctor about prescribing a backup supply you can keep in a separate place, in case something happens to your medicine and it is not available at your destination.

Travellers with chronic health problems or unusual medical conditions should consider carrying literature about their condition that they can share with a healthcare provider. Some rare diseases that require treatment by specialists may be tricky to manage for practitioners who are unfamiliar with them. Ask your doctor to prepare instructions for emergency management of your condition, so you are ready for any complications that may occur. If there is a significant risk of an exacerbation of the condition, have an honest discussion with your doctor about your medical fitness for a particular trip. It is possible that certain destinations might not be recommended due to their remoteness, but other, more popular, ones might be appropriate.

With training, your preparation, decisions and judgment will improve.

Consider completing training in wilderness first aid. With training, your preparation, decisions and judgment will improve. Since most people travel with their friends or family members, the well-being of your travelling companions may be a powerful motivator for seeking training.

EMERGENCY RESPONSE

In the event of a serious illness or injury, contact local emergency services first, if they are available and you have the means to reach them. Then call DAN-SA at +27 828 10 60 10. DAN-SA medical staff will monitor your care, answer questions and, if you are a DAN-SA Member, arrange for you to be moved to a better hospital if necessary. This may mean returning to your home country or travelling to a more populous area near your location.

Evacuation takes time; there are many logistical elements to medical transport. Air ambulances are not able to take off at a moment's notice. They must work with local authorities to obtain landing permits, exit visas and other documentation before moving patients. Immigration must be cleared in the destination country. The process may be expedited in a medical emergency, but it must still take place. Sometimes the patient will need to be transported to a larger airstrip so an air ambulance may safely land and take off. Immediate flights are not always possible at night or outside normal hours of operation; some airports close and will not open after hours, even for medical emergencies.

Consider the logistical challenges imposed by remote environments before you set out, and you will be better prepared to provide care and comfort to your fellow travellers. ■



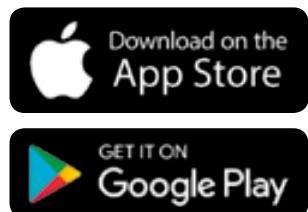
DAN®'s Diving Safety Essentials App is here!

The DAN-SA App provides divers with a new way to learn about safety.

Three screenshots of the DAN SA mobile application are displayed side-by-side. The first screenshot shows the home screen with the DAN logo at the top, followed by three main menu items: "Useful Information" (with a list icon), "DAN Chat Lines" (with a speech bubble icon), and "DAN Partner Locations" (with a location pin icon). The second screenshot shows the "DAN Information" page, which features a photograph of a diver in the water, the DAN logo, and a detailed text block about the organization's mission. It also includes links to "For more information visit our website" and "www.dansa.org". The third screenshot shows the "Contact Us" page, which has a red header and features a large envelope icon, the text "DAN Southern Africa Get in touch with us", and two buttons: "Contact info" and "DAN Office". Below these buttons is a paragraph of text and a phone number for general inquiries.

The DAN-SA App helps you locate DAN Industry, Diving Safety and HIRA Partners as well as Diving Doctors. You can access your DAN-SA profile via the member portal, keep up to date with the latest DAN-SA news and access essential health and diving resources.

YOUR ADVENTURE
YOUR SAFETY





How Good is Your Emergency Plan?

By Dan Nord and Brian Harper



When preparing for emergencies, be ready for a variety of scenarios. A good plan can reduce the fear, anxiety and loss associated with an emergency. Emergency plans can be divided into three sections: prevention, preparedness and response. How does your plan measure up?

Few people consider that DAN-SA's emergency on-call staff answers more than 670 calls to the DAN-SA Emergency Hotline each year. Not surprisingly, a considerable number of these calls involve situations that could have been managed with proper planning and a meticulous approach to preparation. Although contacting DAN-SA can be a vital part of any emergency plan, DAN-SA's effectiveness as an assistance provider is greatest when it is treated as one component of a larger, more comprehensive plan. Not all dive emergency plans are created equal, but all have the same purpose: to list essential considerations and provide a framework for performing key functions in response to an incident.

PREVENTION

Written emergency plans typically start at "the incident". However, paying attention to factors that cause dive emergencies can avert them altogether. The following considerations can help to mitigate risk factors.

Physical fitness: Exercise for cardiopulmonary fitness, strength, flexibility and muscular endurance in a way that is commensurate with your style of diving, and the demands of the dive environment concerned.

Medical fitness: Consider both chronic medical issues and short-term health concerns. Congestion increases the risk of ear or sinus barotrauma, and travelling divers often deal



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with gastrointestinal problems that can affect general health and stamina. Be honest with yourself before diving; if you are feeling less than 100% healthy, it may be best to postpone diving.

Appropriate training and education: Never stop developing your diving abilities. Continuing education helps refine basic skills and broadens general diving knowledge, both of which increase your ability to prevent or respond to an emergency. Get training for the type of diving you are interested in pursuing, whether it is drift, reef, wreck, mixed-gas or cave diving, and practise skills like buoyancy and navigation.

Proper and well-maintained diving equipment: Divers must understand the capabilities and limitations of their own equipment, and their buddy's. This means having your gear inspected and getting appropriate training in its use and maintenance.

Divers must understand the capabilities and limitations of their own equipment, and their buddy's.

Safe and conservative diving habits: Take the time to examine and evaluate your dive habits and styles. Work to develop a culture of safety for yourself and your group.

Knowledge of local hazards: Familiarise yourself with potential hazards unique to particular dive sites. Consider hazardous marine life, currents, and the potential for rapid changes in weather or sea conditions.

PREPAREDNESS

Despite our best efforts to prevent them, emergencies still happen. The better prepared you are to deal with them, the better the outcomes will be. Preparedness is about having the right pieces in place when disaster strikes.

Knowledge of local resources: Develop a written list of facilities and emergency resources in the area, including hospitals and clinics, search-and-rescue providers and transportation or evacuation services. Keep the list up-to-date by periodically verifying the accuracy of the information, and save the most important numbers on your phone. Remember that injured divers should always be taken to the nearest medical facility, not the closest chamber. Chambers are not always equipped to receive injured divers directly; an evaluation by a doctor must come first.

First aid training: Become trained in basic life support and oxygen administration, and know what training and skills your fellow divers have. DAN offers the Basic Life Support and First Aid, and the Oxygen First Aid for Scuba Diving Injuries courses, among others (see www.dansa.org/courses).

Emergency equipment: Have a well-stocked first aid kit and enough oxygen to last for the duration of a trip to the hospital for at least one injured diver. Routinely inspect the contents of your first aid kit to ensure nothing is missing, damaged or expired. Check the hose, O-ring and pressure of your oxygen cylinder.



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Information sharing: Tell your buddy about any allergies or medical conditions you have, as well as what medical aid you are on, whether you are a DAN-SA member and anything else that might be important in the event you are not able to participate in your own care. If you are uncomfortable sharing personal information, write it down, seal it in an envelope, and let your buddy know where it is. Also, make sure someone on shore knows where you are and when to expect you back.

Mental readiness: Be an aware diver. Know that even when we do everything right, bad things can happen. Do not be caught off guard when they do. One level head can create calm in the midst of chaos.

RESPONSE

The response is the implementation of the plan. It is the split-second decisions made and actions taken that affect the outcome of the day's events.

Scene management: During an emergency situation, it is important to have preassigned tasks for specific individuals. Determine who will provide care to the injured, who will call emergency medical services (EMS), who will manage bystanders, and who will secure equipment. Make sure your plan accounts for any divers still in the water.

Patient care: Remember that rescuer and bystander safety comes first. Do not forget to wear gloves when providing care. Ensure circulation, airway and breathing. Stop any

bleeding you find and provide oxygen.

Communications and logistics: Proper co-ordination of the various parties involved in an emergency reduces everyone's stress. Designate someone to liaise with the caregivers, the captain and crew, emergency services personnel, and DAN-SA. This person ensures everybody has the information they need.

Documentation: Good notes allow caregivers to observe trends in an injured diver's condition, serve as a reminder of what treatments have been administered, and provide legal protection.

Debriefing: Give everyone involved in an emergency the opportunity to discuss what happened. Allow each participant to describe his or her own experiences, and ask each other questions in an environment free from judgment. Formal processing of the event can improve psychological well-being and enhance individuals' ability to respond to future emergencies.

FINAL THOUGHTS

Diving should be a positive experience. Dive with care. Remember that DAN-SA is here to answer any questions you may have about your emergency plan, but we cannot create it for you. DAN-SA is a part of your emergency plan, but there are many other aspects you must put into place yourself. Incorporating these essential elements, and promoting good planning to divers of all levels, from novice to instructor, contributes to safer diving for everyone. 

Student Membership



Diving Safety Partners



Temporary Membership



Global cover



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Depth limit of 18 m



Travel assist
benefits



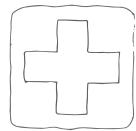
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Medical advice

Peace of mind
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Water

Element of Life and Fitness

By Kelli Cuppett

Human life begins in liquid, with amniotic fluid protecting and surrounding the prenatal body. The human body is made up of four main elements: water, fat, minerals and proteins. Water accounts for 50-60% of the body's mass. So, it seems natural that we are drawn to water for consumption, exercise, recreation and relaxation.

The physical principles of immersion in water provide benefits to the body. When the body is submerged, hydrostatic pressure can decrease swelling, aid in blood circulation and support the body. The weightlessness you feel in the water also means that the water is reducing the compression of your joints. Moreover, assuming the water temperature is not too cold, your heart rate decreases after submersion, resulting in a relaxed state.

Water also provides an excellent environment for rigorous exercise. It is 12 times more resistant than air, and exercising in water provides bidirectional resistance that is difficult to obtain on land without specialised equipment.

Scuba divers must work the water efficiently, swimming, streamlining and managing air consumption by moving smoothly. As with any sport, maintaining a healthy body and good physical state are key to maximising your experience. Water aerobics provides a diverse exercise programme, and its bidirectional resistance targets opposing muscle groups throughout the entire body.

A typical one-hour water aerobics class consists of five minutes of warm-up exercises using short-lever movements (i.e., jogging, marching, side-stepping, paddle-wheeling forearms and plunging arms). This is followed by five minutes of stretching, five minutes of cardiovascular warm-ups, 25-30 minutes of cardio, 10 minutes of muscular conditioning and five minutes of final stretching. The water's resistance, coupled with the force behind each movement, increases strength and endurance while burning 250-500 calories per hour.

Try the following five shallow-water exercises to condition the core. The water depth should be between your chest and belly button while your feet are flat on the pool floor. These exercises require the use of a playground ball of approximately 20 cm. They can be performed using repetitions (16-32 repetitions each) or time (one minute each), or as interval training (vigorous exercise for 30-60 seconds) between each ball exercise. If you choose to use

these exercises in interval training, the duration of each ball exercise portion should be about three times as long as each cardio portion.

Before completing each exercise, follow these steps to align your body:

- Stand on the pool floor with your feet hip distance apart or wider, being careful not to hyperextend your knees. Draw your navel to your spine, and hold the contraction throughout the exercises to keep your core engaged
- Place your hands on top of the ball and press the ball down toward the pool floor. Keep the ball close to your hips and the tops of your thighs
- Stabilise your shoulders by rolling them back and down and retracting the shoulder blades (squeeze the shoulder blades together)

TRICEPS PRESS



1. Keeping the elbows tight beside the body, inhale as you bend your elbows to a 90° angle, resisting the upward force of the ball. Your palms should be on top of the ball, facing the pool floor.
2. Exhale as you extend your forearms, pressing the ball back toward your hips and tops of your thighs.

OBLIQUE TWIST (SHORT LEVER OR LONG LEVER)



1. Keeping the elbows tight beside the body, bend your elbows to a 90° angle, resisting the upward force of the ball. Your palms should be on top of the ball, facing the pool floor.
2. Square your hips forward and plant your feet on the pool floor. Inhale and twist from the belly-button area to the left (around 10 o'clock), exhale and hold. Inhale and twist from the belly-button area to the right (around 2 o'clock), exhale and hold.

Tip: To make this a long-lever twist, extend the arms, keeping the ball submerged, and twist.

LATISSIMUS DORSI



1. Straighten your arms and press the ball to the tops of your thighs.
2. Inhale as you lift your arms straight out in front of you, only high enough that you can keep the ball underwater.
3. Exhale as you press down on the ball to return it to the tops of your thighs.

ADDUCTORS SQUEEZE



1. Place the ball between your legs, just above your knees.
2. Stand tall and squeeze the ball with your inner thigh muscles (adductors). This is a quick action.

RECTUS ABDOMINAL CRUNCH



1. With extended arms, hold the ball about 15-30 cm away from the front of your body.
2. Exhale as you lower the base of your rib cage to the top of your hip bones for a crunch. Inhale as you raise your upper body to stand, releasing the crunch. Resist the pressure of the ball throughout the movement.

It is important to participate in exercise programmes that are diverse and designed to focus on muscle movement, muscular strength, endurance and functional movements. Before beginning any exercise programme or changing your physical activity patterns, you should always consult with your doctor.

DAN NOTE

DAN-SA recommends that divers avoid strenuous exercise for 24 hours after making a dive. This avoids increasing the chances of decompression sickness.



Medical queries

Pregnancy, nitrogen supplements and DVT

By the DAN medical staff



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Q | I signed up for an open-water course but just found out that I am pregnant. Can I at least participate in the pool sessions?

A | There are risks inherent to all dives, even those done in the pool. Dive injuries such as arterial gas embolism (AGE) and pulmonary barotrauma can occur in water as shallow as 1.2 m and both have the potential to cause serious symptoms.

AGE (which can occur with or without pulmonary barotrauma) is characterised by the presence of gas bubbles in the arterial circulation. These bubbles are distributed throughout the body and may interrupt circulation or cause direct tissue trauma to the foetus.

While not a concern during pool training, decompression sickness (DCS) is a risk for both the mother and foetus when diving, and is an additional reason to postpone all diving until full recovery following the delivery.

The definitive treatment for decompression illnesses (DCI) is hyperbaric oxygen therapy (HBOT). In addition to the potential foetal risks associated with diving, HBOT may also cause unintended harm. Because of this, the deliberate exposure of pregnant women to HBOT for research purposes is considered unethical, so definitive data do not exist. However, animal studies support this concern by showing some added foetal risks.

Most mothers are careful to limit or avoid alcohol, tobacco and caffeine during their pregnancy, and it seems reasonable to add all scuba diving activities to this list. Dive medicine experts and training organisations all agree that while the risk may be small, it is avoidable. With all the emotion tied to pregnancy and the hopes for a healthy baby, there is no reason to risk harm, or to subject yourself to a life of second-guessing if congenital disabilities were to occur.

John Lee and Marty McCafferty

ASK US ANYTHING

DAN-SA is here to answer all your medical questions. You can call the DAN-SA Hotline at 0800 020 111 toll free from inside South Africa or +27 828 10 60 10 from outside of South Africa. You can also email any questions to mail@dansa.org

Q | I have heard that deep vein thrombosis (DVT) is a concern for travellers on long flights. What are the risk factors for DVT, and will I still be able to dive with it?

A | DVT is a condition in which a blood clot forms in one or more of the deep veins, usually in the legs. When blood clots break free and travel through the blood, DVT can cause life-threatening conditions such as stroke or pulmonary embolism. DVT is not related to diving, but divers often travel and are thus exposed to the risk of DVT.

DVT while travelling is rare; the prevalence for travellers on flights of more than eight hours is between 0.3 and 0.5%. Risk factors for DVT include older age (with increasing risk after age 40), obesity, oestrogen use, recent or current pregnancy, thrombophilia, prior personal or family histories of DVT, active cancer, serious illness, recent surgery, limited mobility, central venous catheterisation and being significantly above or below average height.

If you will be on a long flight and believe you might be at increased risk for DVT, you can reduce the likelihood of developing the condition by wearing compression socks and talking with your doctor regarding the possible benefits of anticoagulant medications. It is also good practice to periodically stand up and walk around, exercise the feet and calves while you are seated, and stay well hydrated.

If you develop DVT, you should not dive during the acute phase of the condition or while you are taking

anticoagulants. You may return to diving after DVT, but you should not do so before consulting a doctor trained in dive medicine. It is less likely that you will be able to return to diving after a pulmonary embolism, but you may be able to do so in consultation with a doctor. Returning to diving after a stroke should also be evaluated on an individual basis.

Peter Denoble, M.D., D.Sc.

Q | I have started taking a dietary supplement which contains nitrogen to complement my muscle-building exercise programme. Could it increase my risk of DCS?

A | Nitrogen is present in two primary forms: inorganic gas (N_2) and as part of organic amine compounds that make up amino acids, the building blocks of proteins. Organic forms of nitrogen (those ingested in food or supplements) are not absorbed into tissues as gasses and thus do not have any impact on DCS risk.

Inorganic nitrogen gas, inhaled under pressure, is absorbed by body tissues as described by Henry's law. With increased bottom time and depth, more gas is absorbed, and the risk of DCS increases. Although it is a good idea to avoid strenuous exercise for 24 hours after diving, you can be confident that your supplements will not increase your risk of DCS.

John Lee and Marty McCafferty

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