First Aid for Hazardous Marine Life Injuries
Provider Registration

- DAN First Aid for Hazardous Marine Life Injuries Course Registration Form
- Statement of Understanding
- DAN Membership Form
- Other Administrative Procedures
- Introductions
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  - DAN First Aid Provider Candidates
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- Warning Signs of Hazardous Marine Life Injuries
- Types of Hazardous Marine Life Injuries
- First Aid Procedures
Course Overview

- Avoiding Hazardous Marine Life Injuries
- What is DAN?
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Course Overview
Skills Session

- Scene Safety Assessment
- Initial Assessment With Basic Life Support
- Basic Life Support With Supplemental Oxygen (Optional)
- Providing Care with an AED (Optional)
- Control of External Bleeding
- Shock Management
- Wound Management
- Pressure Immobilization Technique
- Emergency Assistance Plan
Hazardous Marine Life
Hazardous Marine Life Injuries

- Injuries caused by hazardous marine life are infrequent
- Usually occur due to diver carelessness or a defensive reaction by the animal
- However, there is a risk of being stung, bitten or cut by a marine animal
- Almost every diver at some point has an encounter with hazardous marine life
Warning Signs of Hazardous Marine Life Injuries

- Warning signs of hazardous marine life injuries vary with the type of marine animal that causes the injury.
- Individual reactions vary due to:
  - Age and health of the injured diver
  - Susceptibility to the venom injected or injury
  - Possible allergic reaction
  - Previous exposure to venom
Warning Signs of Hazardous Marine Life Injuries

• Factors that may cause individual reactions to vary include:
  • Type of marine animal that causes the injury
  • Potency of the venom injected
  • Amount of venom injected
  • For seafood poisoning, the amount and type of toxin eaten will cause variability in the warning signs
Types of Hazardous Marine Life Injuries

- Envenomations
- Bites
- Irritations
- Poisonings
Envenomations

- **Envenomation** means to sting and deposit venom
- **Hundreds of venomous animals live in the sea**
- **Spines serve as a defense mechanism**
- **Most fish spine injuries are accidental**
  - Stepping on a stingray
  - Handling or playing with venomous fish
Envenomations

- Nematocysts, or stinging cells, are used by jellyfish to immobilize prey
- Accidental contact by a diver will discharge the stinging cells
- Nematocysts may continue to fire once the jellyfish is dead or no longer attached
- Allergic reactions to a venomous marine life injury is a primary concern for the rescuer
Warning Signs of Spine Puncture

Scorpionfish, Stingrays, Lionfish, Zebrafish, Turkeyfish, Stonefish, Catfish, Weeverfish

- Puncture or laceration
- Purple or black skin coloration
- Shock
- Respiratory distress or arrest
- Immediate pain
- Nausea
- Vomiting
- Swelling
- Cardiac arrest
First Aid Procedures for Spine Punctures

- Remove any visible pieces of spine with tweezers
- Immerse area in hot water (113°F/45°C) for 30-90 minutes
- Scrub with soap and water
- Irrigate vigorously with fresh water
- Seek evaluation by a medical professional
- Monitor for allergic reaction
- Use antivenin for stonefish
Warning Signs of Blue-Ringed Octopus Bite

• Nausea / Vomiting
• Paralysis
• Speech and swallowing difficulty
• Respiratory distress or arrest
• Numbness and fullness around the mouth, neck and throat
• Loss of coordination
• Cardiac arrest
First Aid Procedures for Blue-Ringed Octopus Bite

- Ensure Airway, Breathing and Circulation (ABCs)
- Provide cardiopulmonary resuscitation as required
- Use pressure immobilization technique
- Place diver in recovery position
- Monitor, calm and reassure injured diver
- Transport to nearest medical facility
Blue-Ringed Octopus Bite

- Bite is small and usually painless
- Bite injects a powerful neurotoxin that blocks nerve conduction and produces paralysis
- Death can occur rapidly
Warning Signs of Sea Snake Bite

- Small bite pattern
- Stiffness and aching
- Respiratory distress
- Difficulty speaking and swallowing
- Weakness
- Paralysis
- Vomiting

Note: Often the snake will only bite and not inject any venom
First Aid Procedures for Sea Snake Bite

- Ensure ABCs
- Control any external bleeding
- Use pressure immobilization technique
- Look for shock and/or allergic reaction
- Monitor, calm and reassure injured diver
- Provide antivenin where applicable

Note: Never leave the diver unattended
Warning Signs of Sea Urchin and Starfish Puncture

- Puncture of the skin
- Purple or black skin discoloration at puncture site
- Observable spines in the skin or attached pincers
First Aid Procedures for Sea Urchin and Starfish Puncture

- Soak in hot water (113°F/45°C)
- Remove any easily grasped spine debris with tweezers
- Clean wound with soap and water
- Apply sterile dressing and bandage
- Monitor for allergic reaction and for infection
Warning Signs of Cone Shell Sting

- Pain
- Numbness
- Swelling
- Redness
- Respiratory distress or arrest
- Cardiac arrest
First Aid Procedures for Cone Shell Sting

- Ensure ABCs
- Provide CPR as required
- Use pressure immobilization technique
- Place diver in recovery position
- Monitor, calm and reassure injured diver
- Transport to the nearest emergency medical facility
Warning Signs of Stings

Fire Coral, Hydroid, Anemone, Jellyfish

- Redness / rash
- Welts
- Swelling
- Unresponsiveness
- Respiratory distress or arrest

- Stinging sensation
- Burning
- Blisters
- Cardiac arrest
First Aid Procedures for Stings

- Irrigate with vinegar, baking soda, papain powder or solution, or rubbing alcohol, depending on species
- Rinse with salt water or sterile saline solution if none of the above items are available
- Remove tentacles with tweezers
- Shave area with shaving cream and safety razor
- Apply hydrocortisone lotion or cream
- Monitor for allergic reaction and/or infection

Note: If sting is from box jellyfish, use vinegar and pressure immobilization technique
Warning Signs of Severe Allergic Reaction

- Weakness
- Dizziness
- Flushed, itching or burning skin
- Swelling around the face, eyes, neck and tongue
- Nausea
- Decreased level of responsiveness
- Respiratory distress or arrest
- Cardiac arrest
First Aid Procedures for Severe Allergic Reaction

- Ensure ABCs and, if necessary, provide oxygen
- Assist in the delivery of any allergy medication carried by the diver such as an EpiPen®
- Activate emergency medical services (EMS)
- Inform EMS personnel of any medications used

Note: Severe allergic reaction may accompany any marine life injury
Marine Animal Bites

- Attacks by marine animals are rare
- Usually occur due to misidentification of the diver or a defensive reaction
- May occur when feeding fish or animals
- Probability of attack overestimated by divers
- Blood loss in water may appear dramatic
Marine Animal Bites

- Primary concern is to control bleeding and to minimize the risk of infection.
- Bleeding is easily controlled using direct pressure, elevation and bandaging.
- Bites are rarely life-threatening.
Warning Signs of Marine Animal Bites

Moray Eels, Sharks, Barracuda, Seals

- Bleeding
- Pain
- Lacerations or punctures
- Teeth in wound
First Aid Procedures for Marine Animal Bites

- Ensure ABCs
- Control bleeding with direct pressure, elevation and pressure dressing
- If necessary, use pressure points
- Provide supplemental oxygen
- Monitor for shock and/or infection
- If necessary, transport to nearest emergency medical facility
Warning Signs of Irritations, Cuts and Abrasions

- Bleeding
- Redness
- Swelling
- Discomfort
First Aid Procedures for Irritations, Cuts and Abrasions

- Control bleeding
- Irrigate wound with clean water or saline solution
- Remove any visible debris
- Cover with sterile dressing and bandage
- Monitor for allergic reaction and infection
Warning Signs of Infection

- Swelling
- Redness
- Pus
- Foul smell
- Swollen glands
- Fever

Note: Infection occurs days after injury and needs medical attention
Warning Signs of Seafood Poisoning

- Allergic reactions
- Headache
- Abdominal cramps and burning
- Paralysis
- Muscle and joint aches
- Reversal of hot and cold sensations
- Diarrhea
- Vomiting
- Nausea
- Dizziness
- Chills
- Fever
- Tingling around the mouth and lips
First Aid Procedures for Seafood Poisoning

- Monitor the ABCs and if necessary, provide CPR
- Manage any allergic reaction
- If responsive, induce vomiting and save fish or vomitus for analysis
- Seek evaluation from a medical professional because warning signs of seafood poisoning are similar to decompression illness
Skills Development Session
Scene Safety Assessment

Remember S-A-F-E

- S - Stop
- A - Assess scene
- F - Find and secure first aid kit, oxygen and AED units
- E - Exposure protection
Initial Assessment with Basic Life Support

- Remember SAFE
  - Assess responsiveness
    - Activate EMS
- Open airway
- Assess breathing
  - Look, listen and feel for up to 10 seconds
  - Provide 2 rescue breaths, if not breathing

- Assess signs of circulation for up to 10 seconds
  - If there are signs of circulation but no breathing, continue rescue breathing
  - If there are no signs of circulation, begin CPR
Basic Life Support with Supplemental Oxygen (Optional)

- Remember S-A-F-E
- Perform initial assessment of ABCs
- Provide supplemental oxygen as soon as it becomes available

- If breathing, use:
  - Demand inhalator valve
  - Non-rebreather mask

- If not breathing:
  - Provide rescue breaths using an oronasal resuscitation mask with an oxygen inlet
Providing Care with an AED (Optional)

- Assess ABCs
- Verify no circulation
- Attach the defibrillator pads
- Allow the AED to analyze heart rhythm
  - Don't touch the patient
- If shock required:
  - Follow the AED unit's prompts
  - Visually and physically clear the patient
  - Say “Clear”
  - Administer shocks
- If no shock required, begin CPR
Control of External Bleeding

- Remember S-A-F-E
- Use personal protective equipment
- Control bleeding
- Apply dressing
- Use direct pressure
- Elevate the wound
- Bandage the wound
- If necessary, use pressure points
Shock Management

- Assess responsiveness
- Assess breathing
- Assess circulation
- Control external bleeding
- Manage shock
- Provide supplemental oxygen
- Maintain normal temperature
- Provide for ongoing assessment
First Aid for Wounds

- Irrigate with sterile water or saline solution
- Use a catheter attached to syringe that is forceful enough to dislodge debris
- Remove any visible debris with tweezers
- Cover with sterile dressing and bandage
First Aid for Stings

- Irrigate with vinegar or other solution
- Remove tentacles with tweezers
- Shave area with shaving cream and razor
- Monitor for allergic reaction
First Aid for Spine Punctures

- Remove spine debris with tweezers
- Immerse in hot water (113° F / 45° C) for 30-90 minutes
- Scrub with soap and water
- Irrigate vigorously with fresh water
- Seek evaluation by a medical professional
- Monitor for allergic reaction
Pressure Immobilization Technique

- Place dressing over wound
- Apply elastic bandage
- Check for adequate circulation on the extremity
- Splint the extremity
- Use a sling to limit movement
- Seek medical evaluation
Emergency Assistance Plan

• Diver Information
  • Name
  • Age or Date of birth
  • Address
  • Emergency contact phone
  • Current complaint(s)
  • Past medical history including current medication
  • Dive profile(s)
  • Drug allergies

• General Information
  • Emergency contact information (EMS, DAN)
  • Initial contact phone number (Call back #)
  • Directions to nearest medical facility
  • DAN phone numbers
  • Other
Avoiding Hazardous Marine Life Injuries
Avoiding Hazardous Marine Life Injuries

- Practice buoyancy control skills
- Be aware of your surroundings
- Look up and around when ascending
- Shuffle your feet when entering the water
- Wear thick-soled boots or fins
- Avoid carrying speared fish
- Streamline your body and equipment
Avoiding Hazardous Marine Life Injuries

- Know what hazardous marine life inhabit the area
- Pack an appropriate first aid kit including an oxygen unit
- Wear appropriate exposure protection
- Be passive when interacting with marine life
Avoiding Hazardous Marine Life Injuries

- Avoid using the reef to stabilize yourself
- Avoid picking up shells
- Avoid eating raw fish
Avoiding Hazardous Marine Life Injuries

Scuba diving injuries often result due to:
- Lack of training and skills
- Lack of experience
- Poor dive planning
- Poor diving skills
- Diving beyond abilities
- Poor execution of dive
- Diver’s health status

Follow standard safe diving practices and be a responsible diver
What is Divers Alert Network?
The Mission of DAN

• Divers Alert Network (DAN), a nonprofit organization, exists to provide expert information and advice consistent with current medical literature

• Provides emergency medical advice and assistance for underwater scuba diving accidents, works to prevent accidents and promotes diving safety
The Mission of DAN

• Promotes and supports underwater diving research and education, particularly as it relates to the improvement of diving safety, first aid and medical treatment

• Provides accurate, up-to-date, and unbiased information on issues of common concern to the diving public, and advocates for divers’ concerns for diving safety
DAN Services

- DAN Medicine
  - Diving Emergency Hotline
  - Diving Medicine Information
  - Chamber Assistance
- DAN Membership
  - DAN TravelAssist
  - Alert Diver
  - Dive accident insurance eligibility
- DAN Research
- DAN Training
Skills Overview

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