First Aid for Hazardous Marine Life Injuries
Acknowledgment

DAN Training would like to thank those individuals who, through their tireless efforts and dedication, has made the development of these training programs a reality. Their actions make a difference in dive safety.

Divers Alert Network America
6 West Colony Place • Durham, NC 27705

DAN America Education +1-919-684-2948 extension 555
DAN Emergency Services +1-919-684-9111
General Information +1-919-684-2948
Membership Information 1-800-446-2671
Fax +1-919-490-6630

All rights reserved. No part of this publication may be reproduced, stored in a retrieval system or transmitted, in any form or by any means, electronic, mechanical, photocopying, or otherwise without prior written permission of Divers Alert Network®, 6 West Colony Place, Durham, NC 27705-5588.
# Table of Contents

**Introduction**

- Standards and Procedures ................................................................. 4
- Overview .................................................................................................. 4
- Course Prerequisites ........................................................................... 4
- Recommended Training Time ............................................................ 5
- Standards Overview ............................................................................ 6
- Curriculum Subject Areas and Objectives ........................................... 7
- HMLI Provider Skills Development and Objectives ............................... 8

**Student Skills**

- Skill 1: Scene Safety Assessment ......................................................... 10
- Skill 2: Initial Assessment ................................................................. 12
- Skill 3: Shock .................................................................................... 14
- Skill 4: Injury Management ............................................................... 16
- Skill 5: Pressure Immobilization ...................................................... 18
- Skill 6: Traumatic Injuries ............................................................... 20
- Skill 7: Severe Allergic Reaction ..................................................... 22
- Skill 8: Emergency Assistance Plan ............................................... 24

**Appendix**

- HMLI Provider Assessment
- HMLI Provider Assessment Answer Key
- HMLI Quick Reference Chart
DAN First Aid for Hazardous Marine Life Injuries Provider Course

Standards and Procedures

This Instructor Guide is for use of DAN Instructors who are authorized by DAN to conduct the DAN First Aid for Hazardous Marine Life Injuries (HMLI) provider course. It is to be used in conjunction with the DAN Instructor Manual. The General Standards and Procedures Section of the Instructor Manual will provide general course guidelines, equipment configuration descriptions, and ratios. Additional information on teaching DAN courses is available in the Appendix of the DAN instructor Manual.

This course is intended for anyone (divers or non-divers) who might come in contact with divers or diving related injuries. It is written to meet the Guidelines for Resuscitation as released by the International Liaison Council on Resuscitation (ILCOR)/American Heart Association (AHA) in October 2010 and the U.S. Occupational Safety and Health Administration (OSHA).

Overview

Although serious hazardous marine life injuries are rare, at some point most divers experience minor discomfort from unintentional encounters with fire coral, jellyfish and other marine creatures. Knowing how to recognize potential threats and minimize these injuries helps you reduce diver discomfort and pain.

The First Aid for Hazardous Marine Life Injuries course is designed to provide information regarding specific types of marine creature injuries and the general first aid treatment for those injuries. In addition, this course introduces students to the identification of potentially hazardous marine life as well as how to avoid hazardous marine life injuries.

The section on Seafood Poisoning addresses three well established types of seafood poisoning. Other conditions such as shellfish poisonings (eg paralytic shellfish poisoning, diarrheal shellfish poisoning and neurotoxic shellfish poisoning) are not included here as they are beyond the scope of this course.

Course Prerequisites

There are no prerequisites to participate in this course. However, the key foundation to the chain of survival is basic life support (BLS). Therefore, we highly recommend cardiopulmonary resuscitation prior to participation.
Recommended Training Time: 4 hours

- Knowledge development (lecture) hours = 1
- Skills development (practice) hours = 3

This module should be taught as a four-hour program as outlined in this manual. The time needed to teach the course varies and depends on many factors, including the number of students and their ability to process the educational components of the program. Instructors who want to include subjects or training beyond the course requirements may do so only before or following the course. Any additional training must not be required for completion of course requirements.
STANDARDS OVERVIEW

Prerequisites: none (CPR certification is highly recommended)

Student-to-Instructor Ratio: 12:1 during skills development sessions

Recommended course hours: Four (4) hours
  • Knowledge development (lecture) hours = 1
  • Skills development (practice) hours = 3

Required student materials:
  HMLI Student Handbook

Required instructor materials:
  DAN First Aid for Hazardous Marine Life Injuries Instructor Guide
  Reference copy of FA HMLI student handbook

Required audiovisual materials:
  DAN First Aid for Hazardous Marine Life Injuries video and slide presentation
  or
  DAN First Aid for Hazardous Marine Life Injuries Online Knowledge Development

Required equipment and supplies:
  CPR Manikins
  Oronasal resuscitation mask (one per student)
  Non-latex medical gloves
  First Aid supplies including tweezers, irrigation device, dressing and bandaging materials, splints (commercial or improvised)
  Epinephrine Auto-injector trainer

Recommended equipment:
  Moulage supplies to create mock injuries caused by marine life

Retraining Required: 24 months
First Aid for Hazardous Marine Life Injuries
Curriculum Subject Areas and Objectives

Students participating in this course will be able to answer the following questions at the end of the knowledge development section:

Introduction to Hazardous Marine Life
• What are the three general categories of hazardous marine life injuries.
• What is an envenomation?
• What is the usual trigger for marine animal bites?
• What is the primary cause of seafood poisoning?

Envenomations and Toxins
• By what mechanism do envenomations occur?
• Why do most envenomations occur?
• What are the first-aid steps for venomous fish injuries?
• For which three injuries is the pressure immobilization technique recommended?
• What are the general first-aid guidelines for jellyfish stings?
• What are the general first-aid guidelines for treating injuries from contact with marine life?

Traumatic Injuries
• For what three reasons do marine animal bites occur?
• Why are marine animal bites of particular concern?
• What are the signs and symptoms of an allergic reaction?

Life Threatening Complications
• What steps should be taken if an allergic reaction occurs?
• What are the signs and symptoms of cardiogenic shock?
• What steps should be taken if cardiogenic shock occurs?
• What are the signs and symptoms of hypovolemic shock?
• What steps should be taken in the case of severe bleeding?

Seafood Poisonings
• What is the primary cause of seafood poisoning?
• What kinds of contaminants trigger seafood poisoning?
• What are the three well-established types of seafood poisoning?
• How can the risk of seafood poisoning be minimized?

Avoiding Hazardous Marine Life Injuries
• What are the likely causes of injuries by marine life?
• What dive practices can reduce the risk of injuries from marine life?
First Aid for Hazardous Marine Life Injuries
Provider Skills Development and Objectives

Students who have participated in the skill development portion of this course will be able to:

Scene Safety Assessment
- List the steps in performing a scene safety assessment.
- Perform scene safety assessment in a scenario.
- Use appropriate first-aid barrier devices in a scenario.
- Demonstrate a caring attitude toward a simulated diver who has become ill or injured.

Initial Assessment with Basic Life Support
- Establish responsiveness of a simulated injured/ill diver.
- Demonstrate current sequence of providing care with proper ventilation and compression rates.

Shock Management
- Demonstrate the proper technique for managing shock by placing the victim on his back or in a position of comfort and taking steps to maintain normal body temperature in a scenario.

Injury Management
- Demonstrate the proper technique in a scenario for managing
  - Spiny envenomation
  - Stinging envenomations
  - Contact injuries
- Traumatic Injuries (control of external bleeding)
  - Demonstrate applying direct pressure to control bleeding on a simulated patient.
  - Demonstrate bandaging to secure a dressing in place once bleeding has stopped on a simulated patient.

Pressure Immobilization Technique
- Demonstrate the proper technique for applying a pressure immobilization bandage.

Severe Allergic Reactions
- Demonstrate the proper technique for assisting with an epinephrine auto-injector in a scenario.

Emergency Assistance Plan
- List the components of an emergency assistance plan.
- Develop an emergency assistance plan for the local diving area.
Skill: Scene Safety Assessment

Required Equipment:
1. Latex or non-latex medical gloves

Objective:
1. List the steps in performing a scene safety assessment.
2. Perform a scene safety assessment in a scenario.
3. Use appropriate first aid barrier devices in a scenario
4. Demonstrate a caring attitude towards a simulated diver who becomes ill or injured.

Rationale:
Protecting yourself is always your first responsibility. You can’t help anyone else if you are injured. You should decide if the scene is safe for you to enter and determine if there are any threats that may cause an injury/illness to you, bystanders, or the injured diver while preparing yourself to lend assistance.

Skill Description:
S A F E
S — Stop.
• Stop.
• Think.
• Act.
A — Assess scene.
• Is the scene safe?
• Is it safe to approach the injured diver?
• Any other hazards present?
F — Find and secure oxygen, first aid kit and AED unit.
• First aid kits contain critical supplies such as barriers.
E — Ensure exposure protection.
• Use barriers such as gloves and mouth-to-mask barrier devices.

Putting on gloves:
• Inspect gloves for damage

Removing gloves:
• Take the first glove at the outside at the wrist, pull the glove toward the fingers of that hand, and turn it inside out.
• Use the protected hand to make a ball of the glove you removed.
• Go with an “unprotected” finger inside the second glove and pull the glove toward the fingers as done before, keeping the first glove inside the second one.
• Place the gloves in a “hazardous waste” bag.
**Scenario**

You and your buddy are performing a safety stop. Your buddy jerks suddenly and then signals to ascend. On the surface you see red welts already rising on her arms and neck areas not covered by her wetsuit. You help your buddy out of the water.

**Instructor:** What is the first thing you should do?
**Students:** Complete S-A-F-E

**Instructor:** Are there any specific concerns on this scenario?
**Students:** Jelly fish tentacles

**Scene Safety Assessment Key Points:**
- **S** – Stop
- **A** – Assess
- **F** – Find First aid, oxygen kits, AEDs
- **E** – Exposure Protection
Skill: Initial Assessment with Basic Life Support

Required Equipment:
1. Latex or non-latex medical gloves
2. Oralnoseal resuscitation mask
3. CPR manikins

Objective:
1. Establish responsiveness of a simulated injured/ill diver.
2. Demonstrate current sequence of providing care with proper compression and ventilation rates.

Rationale:
At any point, the potential exists for an injured/ill diver (or other individual in the area) to collapse &/or become unresponsive. This is a review of skills you should already know. Regular review is essential to be able to respond without hesitation when required.

Skill description:
☐ Remember S-A-F-E.
☐ Assess responsiveness.
☐ State your name, training and desire to help.
☐ Ask permission to help.
☐ If unresponsive,
   o Tap on the shoulder.
   o Shout, “Are you OK?”
   o If no response, call for help and activate Emergency Medical Services (EMS).
   o While assessing responsiveness, determine if the diver is breathing normally.
☐ If he is not breathing normally, initiate CPR, beginning with 30 compressions.
☐ If an AED unit is available, deploy it.
**Scenario** Continuing from the previous scenario - After carefully assisting your buddy with removing her wetsuit, she begins having trouble breathing, collapses and becomes unresponsive. A moment later, she stops breathing.

**Instructor:** What action should you take?  
**Student:** Perform initial assessment.

**Instructor:** She is not breathing normally. What is your next step?  
**Student:** Provide 2 minutes of continuous CPR

**Initial Assessment Key Points:**
- Remember S A F E
- Ask the injured diver if they are OK
- Identify yourself and ask permission to assist
- Activate EMS if indicated
- Initiate CPR if required
Skill: Shock Management

Equipment:
1. Non-latex gloves
2. Blanket or other aids to assist with controlling body temperature

Objective:
1. Demonstrate proper technique for managing shock by placing the victim on their back or in a position of comfort and taking steps to maintain normal body temperature in a scenario

Rationale:
Shock is a life threatening condition. Death may result if steps are not taken to reverse the effects of shock. Maintaining an open airway, ensuring adequate breathing and circulation, and controlling bleeding are the most effective methods of preventing shock.

Skill description:
- Assess scene safety
- Support the airway and breathing if indicated
- Activate EMS
- Control external bleeding if present
- Provide comfort and reassurance
- Place the victim on her back or in a position of comfort
- Protect the victim from cold or heat - maintain normal body temperature
- Monitor the level of responsiveness
- Avoid giving anything by mouth

Scenario
Continuing - Your buddy has quickly regained consciousness but is not fully alert and still experiencing shortness of breath. Her skin feels cool and clammy.

Instructor: What is the next step for providing first aid?
Students: Provide care for shock and maintain a normal body temperature

Instructor: Should you provide any food or drinks?
Students: No.
Shock Management Key Points:
1. Have the victim lay down on their back or in a position of comfort. Do not force a person (especially with a heart or breathing problem) to lie down.
2. Monitor patient for thermal control
3. Do not give anything by mouth.
4. Continuously monitor level of consciousness
Skill: Injury Management

Required equipment:
1. Non-latex Gloves
2. First Aid supplies including tweezers, simulated hot pack, dressings and bandages

Recommended supplies:
   Moulage for mock injuries

Objectives:
Demonstrate the proper technique in a scenario for managing
   Spiny envenomations
   Stinging envenomations
   Contact injuries

Rationale: Most injuries caused by hazardous marine life are not life-threatening and only require proper cleaning and bandaging particular to the type of injury.

Skill Description
   Spiny Envenomations
   1. Wash area thoroughly
   2. Remove visible foreign material
   3. Control any bleeding
   4. Use hot or cold packs to manage pain
   5. Apply topical antibiotic ointment if available
   6. Bandage if necessary
   7. Seek medical evaluation
   8. Monitor for infection

   Stinging Envenomations
   1. Irrigate with vinegar
   2. Remove tentacles with tweezers or forceps. Wear gloves
   3. Irrigate with saline solution or sea water
   4. Control pain
      Oral analgesics
      Apply topical anti-inflammatory agents
      Use hot or cold packs

   Contact Injuries
   1. Clean area with soap and water
   2. Remove foreign material
      a. Irrigate with syringe and catheter
      b. Cellophane tape may help with bristles from worms
   3. Control bleeding if present
   4. Apply steroid ointment if available
   5. Cover with dressing and bandage
   6. For eye contact, flush with fresh water

Note to instructor: Every student should complete each of the following scenarios.
Scenario 1
You have just completed a shore dive and after exiting the water one of the divers in your group is holding his hand. You notice several small punctures with some dark discoloration around them. When you ask what happened, he replies he lost his balance as he got into shallow water and he thinks he hit a fish as he caught himself along the rocks. You remember seeing a scorpionfish in that area before you surfaced.

Instructor: What action should you take?
Students: Provide any assistance need to get out of his gear then initiate first aid for a spiny envenomation.

Scenario 2
The dive group was warned about jellyfish in the area as you entered the water for a night dive. As one buddy team returned to the boat and exited the water, one diver was experiencing considerable pain. You can see several angry red streaks on her exposed arms.

Instructor: What action should you take?
Students: Initiate first aid for a stinging envenomation being sure to use gloves to protect yourself against personal injury.

Scenario 3
The surge at your exit point following a shore dive has picked up considerably as the divers in your group are trying to get out of the water. You see one diver take tumble as the waves knock him down. When he stands up, you see big scrapes on one knee and a forearm. Both are bleeding but not badly.

Instructor: What action should you take?
Students: Provide any assistance needed to get him out of the water without further injury and help him remove his gear. Initiate first aid for a contact injury.

Wound Management Key Points:
Spiny Envenomations and Contact Injuries
1. Wash area thoroughly
2. Remove visible foreign material
3. Control any bleeding
4. Apply steroid ointment if available for contact injuries
5. Use hot or cold packs to manage pain
6. Bandage if indicated

Stinging Envenomations
1. Irrigate with vinegar
2. Remove tentacles with tweezers or forceps. Wear gloves
3. Irrigate with saline solution or sea water
4. Control pain
Skill: Pressure Immobilization

Required equipment:
1. Non-latex Gloves
2. First Aid supplies including dressings and elastic bandages, splints and slings

Objective:
Demonstrate the proper technique for applying a pressure immobilization bandage.

Rationale:
The pressure immobilization technique may be beneficial in delaying venom absorption in the case of injuries inflicted by sea snake, cone shells and the blue-ringed octopus. It is not universally effective but has been reported to delay systemic envenomation. It is an interim measure to be used while getting an injured person to medical care.

Skill Description:
1. Keep the injured diver as still as possible.
2. Thoroughly clean wound with soap and water
3. Remove any foreign material
4. Place dressing over bite.
5. Apply an elastic bandage snugly but not excessively tight over dressing starting 6 inches (15 cm) above the wound and extending 6 inches (15 cm) below the wound. If there is insufficient space to wrap 6 inches on either side, wrap as far as possible.
6. Check for adequate circulation using peripheral pulses and/or capillary refill of finger or toe nail beds if on an extremity. Press nail beds until they blanch and watch for color to return. If more than 2-3 seconds or if the patient experiences tingling in their finger or toes, loosen bandage slightly.
7. Splint the extremity immobilizing the joints on either side of the wound.
8. Use a sling and swath when an upper extremity is involved.
9. Transport immediately to a medical facility
10. Do not remove the bandage until the injured diver is under advanced medical care and anti-venom is available.
**Scenario**
You observe a diver in your group picking up shells and turning them over in his hands. He suddenly grabs his hand and appears to be in pain. You assist him to the surface. Once on the boat, he describes feeling an immediate but moderate pain which has moved into numbness. You see an area of swelling and redness on his fingers and palm.

**Instructor:** What is your course of action?

**Students:** Keep the injured diver still and activate the emergency assistance plan. Apply a pressure immobilization bandage and monitor the injured diver’s level of responsiveness and breathing.

**Pressure Immobilization Key points:**
1. Keep the injured diver still
2. Bandage snugly but not too tight (like wrapping a sprain)
3. Leave the bandage in place until the injured diver is under advanced medical care and anti-venom is available.
Skill: Traumatic Injuries (Control of External Bleeding)

Equipment:
1. Non-latex gloves
2. Gauze dressings or pads, bandages, tape
3. Splinting material, such as triangular bandages, SAM® splints, magazines and roller bandages

Objective:
1. Demonstrate applying direct pressure to control bleeding on a simulated patient.
2. Demonstrate bandaging to secure a dressing in place once bleeding has stopped on a simulated patient.

Rationale: Uncontrolled external bleeding reduces the amount of blood circulating throughout the body. Shock is a resulting condition caused by lack of oxygen to the body’s vital organs due to inadequate blood volume. Being able to control external bleeding may reduce the risk of shock and is potentially a lifesaving skill.

Skill Description:
1. If possible, wash the area with soap and water as soon as possible.
2. Cover the wound completely with a sterile or clean dressing and apply pressure until the bleeding stops. Use additional layers of dressing if the dressing becomes soaked. Do not remove any layers of dressing materials as it may disrupt the clotting mechanism of the body.
3. Once bleeding has stopped, use conforming bandage, roller gauze or tape to secure the dressing, making sure there are no loose edges.
4. Remove all jewelry or constricting clothing on the injured appendage.
5. Be careful not to interfere with circulation
   o Check capillary refill on appendage nail beds to assure adequate circulation
   o Ask the patient is any tingling or numbness is present.
   o Adjust bandage if necessary to assure circulation
6. Monitor the pulse and motor function distal to the bandage before and after bandage application.
7. For Small Wounds: Bandage several inches on either side to ensure coverage and even pressure distribution.
8. For wounds around or involving joints: apply the bandage in a comfortable position
   o Keep the joint immobilized after bandage application. Splint the injury only if EMS will be delayed.
**Scenario**
You and a friend are out spear fishing on snorkels following one up - one down protocols. He surfaces clutching his hand. A large grouper took his catch from him lacerating his hands. He has several slashes on one hand that are bleeding heavily.

**Instructor:** How should you manage the wounds?
**Students:** Wash the wound if possible then apply a dressing and bandage it in place.

Teaching tip: Unrolling a bandage so the roll is on top of the bandage instead of under it helps keep the roll under control and minimizes the risk of dropping it.

**Bandaging Key Points**
1. Use direct pressure to stop bleeding.
2. Dressings should completely cover bleeding wounds.
3. Apply additional layers of dressing material (gauze) if the dressing becomes soaked. Do not remove soaked layers.
4. Bandage dressings in place once bleeding has been stopped.
5. Wrap extremity bandages towards the heart.
**Skill: Severe Allergic Reaction**

**Required equipment:**
1. Epinephrine auto-injector trainer

**Objective:**
Demonstrate the proper technique for assisting with an epinephrine auto-injector in a scenario.

**Rationale:**
Some individuals experience extreme reactions to specific exposures such as bee stings or certain foods. The speed of the reaction may inhibit the individual's ability to respond on their own. Assistance form another individual may be necessary.

**Skill Description:**
1. Remove the auto-injector from its case
2. Remove the protective cap.
3. Grasp the auto-injector in the palm of your hand keeping fingers and thumb from covering either end.
4. With a firm grasp, jab the indicated end against the mid-thigh of the individual experiencing the reaction.
5. Hold the injector in place for at least 10 seconds.
6. Massage the area where the injection was administered to assist with dispersion of medication.
7. Return the auto-injector to its case and give to EMS personnel when they arrive.
8. Note the time the medicine was administered.

**Scenario**
The dive group is out for dinner one evening after a full day of diving. One of the diners suddenly starts itching and complaining of irritated eyes and fullness in his throat. He has shared earlier that he is allergic to shellfish. The dish he ordered has a clam sauce on it he overlooked on the menu.

**Instructor:** What is your immediate response?
**Students:** Ask if he carries anything to take for allergic reactions. If so, secure it and assist as may be required to administer it.
Severe Allergic Reaction Key Points:
1. Assist the individual only if they are unable to administer the medication themselves.
2. Avoid covering either end with your fingers or thumbs.
3. Hold the injector in place for at least 10 seconds to assure full administration of medication.
4. Turn used auto-injector over to medical personnel.
Skill: Emergency Assistance Plan

Required Equipment:
1. Paper and pencil, word processing program or other means of developing and recording and EAP.

Objectives:
1. List the components of an emergency assistance plan.
2. Develop an emergency assistance plan for a local diving area.

Rationale:
Accidents happen when we are not expecting them. Having a plan in place minimizes the stress and can facilitate prompt action by those involved saving valuable time.

Skill Description
Key elements of an emergency assistance plan include:
1. Identifying local resources and emergency phone numbers (including the DAN Emergency Hotline number: +1- 919-684-9111
2. Identifying communications equipment and how it is used (IE. marine or CB radios)
3. Directions to the dive site location if it will be required to assist emergency services
4. A method to record information about the injured diver, their dive profile and first aid rendered.

Scenario
Complete the following form for a dive site you frequent or will be going to in the near future.
Emergency Assistance Plan

Diver information
Name: _______________________________ Age: _____
DAN Member # _______________________
Address: _______________________________________________________
_______________________________________________________
Emergency contact phone: ________________________________
Current complaint: _________________________________________
________________________________________________________
Significant past medical history (medications, allergies, previous injuries, etc.):
________________________________________________________
Dive Profile (including S.S./deco) Depth Time Surface Interval
Dive #1 _____________________________________________________________
Dive #2 _____________________________________________________________
Dive #3 _____________________________________________________________
Dive #4 _____________________________________________________________
Dive #5 _____________________________________________________________
Exit water time: AM/PM Breathing gas: air/nitrox/mix _____%

Emergency assistance plan
Initial contact information: _________________________________________
Emergency medical assistance: ______________________________________
Nearest medical facility directions: ________________________________
_______________________________________________________________
Phone: _________________________________________________________

Diving medical consultation information:
Divers Alert Network (DAN): +1-919-684-9111*
* This number may be called collect in an emergency.
Other important information: ________________________________
Phone: _________________________________________________________
DAN HMLI Provider Course
Quick Reference Chart

1. Registration and Introductions
   a. Course registration forms
   b. Statement of Understanding
   c. Completion of course roster – student information

2. Knowledge Development Session [Choose one of these methods.]
   a. DAN HMLI Provider video (50 minutes)
   b. DAN HMLI Provider online knowledge development

3. Skills Development Session [Perform the following exercises.]
   a. Scene Safety Assessment
   b. Initial Assessment with Basis Life Support
   c. Shock Management
   d. Injury Management
      i. Spiny envenomations
      ii. Stinging envenomations
      iii. Contact injuries
   e. Traumatic injuries (control of external bleeding)
   f. Pressure immobilization technique
   g. Severe Allergic Reaction
   h. Emergency Assistance Plan

4. Examination and Review

5. Present DAN HMLI Provider Successful Completion Certificates and Cards.

6. Additional time for knowledge and skill remediation for individuals requiring additional practice.

7. Submit your student roster
   a. on-line
   b. Fax +1-919-493-3456
   c. Email oxygen@diversalertnetwork.org.
First Aid for Hazardous Marine Life Injuries Provider Assessment

The following questions have only one correct answer.

1. The general categories of marine life injuries are
   a. Envenomations
   b. Traumatic injuries
   c. Seafood poisonings
   d. All of the above

2. An envenomation is a process by which venom or toxin is injected into another creature.
   a. True
   b. False

3. Marine animal bites are usually the result of
   a. Hungry animals
   b. Defensive action by the animal
   c. Humans feeding marine life
   d. B and C

4. Contamination with bacteria, parasites, viruses, or toxins in the cause of most seafood poisonings.
   a. True
   b. False

5. Envenomations occur by means of:
   a. Spoiled food or bacteria
   b. Improperly stored food.
   c. Stings, spines, bites, barbs
   d. B and C

6. The severity of envenomations is impacted by
   a. Potency and volume of toxin injected
   b. Time and storage method since the marine animal was caught
   c. Victim’s health status and sensitivity to the venom
   d. A and C

7. First aid for injuries from venomous fish starts with
   a. applying a dressing and bandage to control bleeding
   b. applying topical ointments
   c. washing the area thoroughly
   d. pain control measures

8. Pressure Immobilization Technique is recommended for which of the following types of injuries?
   a. Lionfish stings, sea urchin punctures and bristle worm contact
   b. Cone snail, sea snake, blue-ring octopus
   c. Bites from triggerfish, moray eels and grouper
   d. Bluebottle jellyfish, sea stars and fire coral
9. In general, jellyfish stings should be treated using which of the following sequences:
   a. Treat symptoms, remove tentacles, soak affected area in hot water
   b. Remove tentacles, rinse with vinegar, manage pain
   c. Inactivate nematocysts, remove tentacles, wash area, manage pain
   d. Manage pain, remove tentacles, inactivate nematocysts

10. Which is the first step in first aid treatment of contact injuries?
   a. Control bleeding
   b. Wash the area with soap and water
   c. Getting the injured individual to an emergency room
   d. None of the above

11. Portuguese Man-of-War is considered to be the most venomous marine creature.
   a. True
   b. False

12. Irukandji syndrome presents initially as moderate pain but
   a. symptoms show a clear progression, getting worse.
   b. can move on to cardiovascular symptoms.
   c. is rarely fatal but may require medical support.
   d. All of the above

13. Marine animal bites are of particular concern due to the resulting high volume of blood loss
   a. True
   b. False

14. Bites from marine animals should be followed up with a medical evaluation because a tetanus booster may be indicated.
   a. True
   b. False

15. Signs of infection include
   a. Pain, redness and swelling
   b. Loss of function and increased heat in the affected area.
   c. Tissue blanching and poor circulation
   d. A and B

16. Symptoms of a life threatening allergic reaction include
   a. Raised, itching rash
   b. Pus and foul smell
   c. Airway narrowing and difficulty breathing
   d. None of the above

17. Emergency medical services should be called if you suspect a severe allergic reaction.
   a. Yes, immediately
   b. No, wait to see if the symptoms get better
   c. Depends on what triggered the reaction
   d. Most allergies are seasonal and will go away on their own.
18. Cardiogenic shock refers to the heart’s inability to circulate blood to the brain and vital organs.
   a. True
   b. False

19. Symptoms of cardiogenic shock include
   a. Pale, cool, clammy skin
   b. Severe shortness of breath and a weak pulse
   c. Altered mental state and possibly unconsciousness
   d. All of the above

20. Envenomation always causes cardiogenic shock.
   a. True
   b. False

21. Hypovolemic shock is the result of a sudden decrease in circulating blood. In the marine environment, this is usually due to bites from large marine animals.
   a. True
   b. False

22. Control of external bleeding begins with the use of direct pressure.
   a. True
   b. False

23. Which of the following are medical emergencies necessitating contacting emergency services immediately?
   a. Sudden, itchy hives; rashes that do not respond to topical ointments
   b. Accidental contact with fire coral; minor cuts and scrapes
   c. Anaphylactic shock, cardiogenic shock, hypovolemic shock
   d. All of the above

24. Seafood poisoning is the result of
   a. Toxins stored in skin and muscles of seafood
   b. Bacteria, parasites, viruses or toxins
   c. Spoilage from improper storage
   d. All of the above.

25. Many contaminants that cause seafood poisoning can be eliminated by thorough cooking.
   a. True
   b. False

26. One of the classic symptoms of ciguatera poisoning is temperature reversal.
   a. True
   b. False
27. Tetrodotoxin
   a. is found in other animals besides seafood.
   b. poisoning symptoms can progress rapidly.
   c. can cause death in as little as 15 minutes.
   d. All of the above

28. Scromboid fish poisoning is primarily the result of improper storage.
   a. True
   b. False

29. Most injuries due to marine life are accidental.
   a. True
   b. False

30. Dive practices that can help you prevent injuries from marine life are
   a. Practicing good buoyancy control and streamlining your equipment
   b. Situational awareness as you dive and looking up and around as you ascend
   c. Shuffling your feet when entering the water from shore and wearing appropriate exposure protection for environmental risks
   d. All of the above
Final examination may be administered in written or oral form.
Each question must be reviewed with each student so that 100 percent comprehension of the material is assured.
Questions have only one correct answer.

<table>
<thead>
<tr>
<th>Name</th>
<th>Date</th>
<th>Test Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>B</td>
<td>C</td>
</tr>
<tr>
<td>1</td>
<td>T</td>
<td>F</td>
</tr>
<tr>
<td>2</td>
<td>T</td>
<td>F</td>
</tr>
<tr>
<td>3</td>
<td>T</td>
<td>F</td>
</tr>
<tr>
<td>4</td>
<td>T</td>
<td>F</td>
</tr>
<tr>
<td>5</td>
<td>T</td>
<td>F</td>
</tr>
<tr>
<td>6</td>
<td>T</td>
<td>F</td>
</tr>
</tbody>
</table>
Final examination may be administered in written or oral form.
Each question must be reviewed with each student so that 100 percent comprehension of the material is assured.
Questions have only one correct answer.

Name ___________________________ Date ___________ Test Score ___________

<table>
<thead>
<tr>
<th></th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>T</td>
<td>F</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>T</td>
<td>F</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>T</td>
<td>F</td>
<td></td>
<td></td>
</tr>
<tr>
<td>12</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>T</td>
<td>F</td>
<td></td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>T</td>
<td>F</td>
<td></td>
<td></td>
</tr>
<tr>
<td>15</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>16</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>17</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>18</td>
<td>T</td>
<td>F</td>
<td></td>
<td></td>
</tr>
<tr>
<td>19</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>20</td>
<td>T</td>
<td>F</td>
<td></td>
<td></td>
</tr>
<tr>
<td>21</td>
<td>T</td>
<td>F</td>
<td></td>
<td></td>
</tr>
<tr>
<td>22</td>
<td>T</td>
<td>F</td>
<td></td>
<td></td>
</tr>
<tr>
<td>23</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>24</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>25</td>
<td>T</td>
<td>F</td>
<td></td>
<td></td>
</tr>
<tr>
<td>26</td>
<td>T</td>
<td>F</td>
<td></td>
<td></td>
</tr>
<tr>
<td>27</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>28</td>
<td>T</td>
<td>F</td>
<td></td>
<td></td>
</tr>
<tr>
<td>29</td>
<td>T</td>
<td>F</td>
<td></td>
<td></td>
</tr>
<tr>
<td>30</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>