First Aid for Hazardous Marine Life Injuries

INSTRUCTOR GUIDE
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First Aid for Hazardous Marine Life Injuries Provider Course

Overview

The First Aid for Hazardous Marine Life Injuries course is designed to provide information regarding specific types of injuries caused by marine creatures and the general first-aid treatment for those injuries. This course also introduces students to the identification of potentially hazardous marine life as well as how to avoid hazardous marine life injuries.

The individual skills are outlined for easy delivery based on the skill presentation outline from the CORE Instructor Manual. This includes skill objective, rationale, and key points. Key points to be addressed during each skill are referenced in the purple text of the Talk Through Demonstration Skill Description and then itemized at the end of each of skill to facilitate the debriefing after the skill practice.

Scenarios included in each skill are only suggestions and may be altered to more closely reflect the environment where the course is being conducted.

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 after the course. Any additional training must not be required for completion of course requirements.

Standards and Procedures

This Instructor Guide is for instructors who are authorized to conduct the First Aid for Hazardous Marine Life Injuries (HMLI) course. It is to be used in conjunction with the General Standards and Procedures Section of the Instructor Manual, which will provide general course guidelines, equipment-configuration descriptions and ratios. The appendix of the Instructor Manual provides additional information on teaching courses.

This course is intended for anyone who might come in contact with divers or diving-related injuries. It is written to meet the 2015 American Heart Association Guidelines Update for Cardiopulmonary Resuscitation and Emergency Cardiovascular Care.
Standards Summary

Course prerequisites: None (CPR certification is highly recommended.)

Age: No minimum age requirement

Student-to-instructor ratio: 12:1 during skills-development sessions

Recommended course hours: Four (4) hours
  - Knowledge development (lectures) = 1 hour
  - Skills development (practice) = 3 hours

Required student materials:
  - First Aid for Hazardous Marine Life Injuries Student Handbook (digital or print)

Required instructor materials:
  - CORE Instructor Manual
  - First Aid for Hazardous Marine Life Injuries Instructor Guide
  - First Aid for Hazardous Marine Life Injuries Student Handbook

Required audiovisual materials:
  - First Aid for Hazardous Marine Life Injuries instructor slides and video – or –
  - First Aid for Hazardous Marine Life Injuries Online Knowledge Development

Required equipment and supplies:
  - CPR manikins
  - Oronasal resuscitation mask (one per student)
  - Nonlatex medical gloves
  - First-aid supplies, including tweezers, irrigation device, dressing and bandaging materials, and splints (commercial or improvised)
  - Epinephrine auto-injector trainer

Recommended equipment:
  - Moulage supplies to create mock injuries caused by marine life
  - Commercial tourniquet (training version preferred)
  - First Aid for Hazardous Marine Life Injuries slates
Final assessment:
- A minimum score of 80 percent (24 correct) on the final written assessment is required for certification.
- The instructor must review with each participant any missed questions on the assessment or any information that is unclear to ensure 100 percent understanding of the material.

Retraining required: Every 24 months
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 Injuries**
  - What are the three general categories of 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 mechanisms do envenomations occur?
  - Why do most envenomations occur?
  - What factors may impact the victims’ response to envenomations?
  - 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 (Control of External Bleeding)**
  - For what three reasons do marine animal bites occur?
  - Why are marine animal bites of particular concern?
  - What is the primary method to control most external bleeding?
  - When should a tourniquet be utilized?
  - How long should a tourniquet be left in place?
  - What are the signs and symptoms of infection?

- **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?

- **Life-Threatening Complications**
  - What are the signs and symptoms of an allergic reaction?
  - 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?
• 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?
Provider Skill Objectives

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

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

2. Donning and Doffing Gloves
   - Don gloves without tearing or compromising the glove integrity.
   - Demonstrate removal of gloves without contaminating exposed skin.

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

4. 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.

5. Injury Management
   - Demonstrate the proper technique in a scenario for managing
     - spiny envenomations
     - stinging envenomations
     - contact injuries

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

7. 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.

8. Applying a Tourniquet
   - Demonstrate applying a tourniquet to control bleeding on a simulated patient.

9. Severe Allergic Reactions
10. Emergency Assistance Plan
   o List the components of an emergency assistance plan.
   o Develop an emergency assistance plan for the local diving area.
Skill: Scene Safety Assessment

Required Equipment:
1. Latex or nonlatex medical gloves

Objectives:
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 toward a simulated person 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 or illness to you, bystanders or the injured person while preparing yourself to lend assistance.

Conduct Real Time Demonstration.

Talk Through Demonstration Skill Description:
Use the mnemonic S-A-F-E to address each concern.

\[
\begin{align*}
S & \quad \text{Stop.} \\
& \quad \begin{itemize}
  \item Stop.
  \item Think.
  \item Act.
\end{itemize}
A & \quad \text{Assess scene.} \\
& \quad \begin{itemize}
  \item Is the scene safe?
  \item Is it safe to approach the injured person?
  \item Any other hazards present?
\end{itemize}
F & \quad \text{Find and secure oxygen, first aid kit and AED.} \\
& \quad \begin{itemize}
  \item First aid kits contain critical supplies such as barrier devices.
\end{itemize}
E & \quad \text{Ensure exposure protection.} \\
& \quad \begin{itemize}
  \item Use barriers such as gloves and mouth-to-mask barrier devices.
\end{itemize}
\end{align*}
\]

Remember S-A-F-E

- \textbf{S} \quad \text{Stop}
  - Stop
  - Think
  - Act

- \textbf{A} \quad \text{Assess scene}
  - Scene safe?
  - Safe to approach?
  - Any hazards?
  - Additional risks?

- \textbf{F} \quad \text{Find and secure oxygen, first aid kit and AED}
  - First aid kits contain critical supplies such as barrier devices

- \textbf{E} \quad \text{Ensure exposure protection}
  - Use barriers such as gloves and mouth-to-mask barrier devices
  - Don gloves and inspect them for damage
Set up practice groups, and provide 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 in this scenario?
**Students:** Jellyfish tentacles

Debrief skill.

Scene Safety Assessment Key Points:

- **Stop.**
- **Assess scene.**
- **Find and secure oxygen unit, first aid kit and AED.**
- **Ensure exposure protection.**
Skill: Donning and Doffing Gloves

Required Equipment:
1. Nonlatex gloves

Objectives:
1. Demonstrate donning of gloves without tearing or compromising glove integrity.
2. Demonstrate removal of gloves without contaminating exposed skin.

Rationale:
Protecting oneself while providing care is essential to the provider’s long-term health. Provider safety does not end once care has been rendered. Exposure to bloodborne pathogens is still possible until all the cleanup and disposal has occurred.

Conduct Real Time Demonstration.

Talk Through Demonstration Skill Description:
- Before donning gloves, remove rings or other jewelry that may puncture gloves during use.
- To doff gloves, grasp the first glove at the outside of the wrist, and pull the glove toward the fingers of that hand while pulling the first gloved hand out of the glove.
  - Avoid touching the outside of the gloves with your unprotected hand as you remove it, whether you can see contaminates or not.
  - Avoid snapping off the glove. The dual action should facilitate smooth removal.
- Turn the glove inside out.
- Use your protected hand to crumple the glove into a ball (making a fist with the gloved hand).
- When the removed glove is in the palm of the still-protected hand (fist), place an “unprotected” finger inside the second glove (between wrist and glove), and pull the glove toward the fingers as before.
- This glove will also turn inside out, and the first glove will be inside the second. Ball the gloves together for disposal.
- Place the gloves in a hazardous waste bag to avoid others having contact with the gloves. This bag can also be used for the disposal of all other infected materials after use.
Set up practice groups, and provide scenario.

You have just finished assisting an injured diver with a scrape that was bleeding. You were wearing protective gloves to avoid personal contact with the blood. The bleeding has now been stopped and a bandage placed. You have finished cleaning up and are ready to remove your gloves.

**Instructor:** How should your gloves be removed?
**Students:** Remove gloves without contaminating exposed skin.

**Teaching Tip:**
*Place a little canned shaving or whipped cream in each student’s gloved hands. Ask them to spread it over their gloved hands. After they have removed their gloves, ask them to check their hands and fingertips for contamination.*

**Debrief skill.**

**Donning and Doffing Gloves Key Points:**
1. Remove any jewelry that may puncture gloves, and place the items in a secure place for retrieval later.
2. Do not touch the outside of the gloves whether or not you can see contaminates.
3. Avoid snapping off the gloves. Use a smooth dual-action motion to remove them.
4. Ball the gloves up together once removed, and place them in a hazardous waste bag for disposal.
**Skill: Initial Assessment with Basic Life Support**

**Required Equipment:**
1. Latex or nonlatex medical gloves
2. Oronasal resuscitation mask
3. CPR manikins

**Objectives:**
1. Establish responsiveness of a simulated injured/ill person.
2. Demonstrate current sequence of providing care with proper ventilations and compression rates.

**Rationale:**
At any time an injured or ill person (or other individual in the area) can collapse and/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.

**Conduct Real Time Demonstration.**

**Talk Through Demonstration Skill Description:**
- Remember **S-A-F-E**.
- Assess responsiveness.
- **State your name**, training and **ask permission to help**.
- If the person is unresponsive:
  - Tap on the shoulder.
  - Shout, “**Are you OK?”**
  - If no response, call for help, and **activate emergency medical services** (EMS).
  - While assessing responsiveness, determine if the person is breathing normally.
    - If he is not breathing normally, **initiate CPR**, beginning with **30 compressions**.
    - If an AED unit is available, deploy it.
Set up practice groups, and provide 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 an initial assessment.

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

Debrief skill.

Initial Assessment with Basic Life Support Key Points:
1. Remember S-A-F-E.
2. Identify yourself, and ask permission to assist.
3. Ask the injured person if he is OK.
4. Activate EMS if indicated.
5. Initiate CPR if required.
**Skill: Shock Management**

**Required Equipment:**
1. Nonlatex gloves
2. Blanket or other aids to assist with controlling body temperature

**Objective:**
1. 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.

**Rationale:**
Shock is a life-threatening condition that may result in death unless steps are taken to reverse its effects. Maintaining an open airway, ensuring adequate breathing and circulation, and controlling bleeding are the most effective methods of preventing shock.

**Conduct Real Time Demonstration.**

**Talk Through Demonstration Skill Description:**
- Assess scene safety.
- Activate EMS.
- Control external bleeding if present.
- Provide comfort and reassurance.
- Place the victim **on his back or in a position of comfort**.
  - Do not force a person (especially with a heart or breathing problem) to lie down.
  - Consider elevating legs 6-12 inches if no neck, spine or pelvic injuries are suspected.
- **Maintain normal body temperature** by adjusting body coverings for cold or heat.
- **Do not give anything by mouth.**
- Monitor the **level of responsiveness**.
Set up practice groups, and provide scenario.

Continuing from the previous scenario: Your buddy has quickly regained consciousness but is not fully alert. She is still experiencing shortness of breath, and 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.

Debrief skill.

Shock Management Key Points:

1. Place the victim on his back or in a position of comfort.
   - Do not force a person (especially with a heart or breathing problem) to lie down.
2. Monitor the patient for thermal control, and adjust body coverings as indicated.
3. Do not give anything by mouth.
4. Continuously monitor the level of consciousness.
Skill: Injury Management

Required Equipment:
1. Nonlatex gloves
2. First-aid supplies, including tweezers, simulated hot pack, dressings and bandages

Recommended Supplies:
1. Moulage for mock injuries

Objective:
1. Demonstrate the proper technique in a scenario for managing
   o spiny envenomations
   o stinging envenomations
   o 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.

Conduct Real Time Demonstration.

Talk Through Demonstration Skill Description:
- Spiny envenomations
  o Wash area thoroughly with soap and fresh water.
  o Remove visible foreign material with tweezers or forceps.
  o Control bleeding if present.
  o Manage pain by applying hot or cold packs.
  o Apply a topical antibiotic, if available, as appropriate to the injury.
  o Bandage if necessary.
  o Seek medical evaluation.
  o Monitor for infection or allergic reaction.

- Stinging envenomations
  o Irrigate with vinegar for 30 seconds.
  o Remove tentacles with tweezers or forceps. Wear gloves.
  o Irrigate with saline solution or sea water. Do not rub.
  o Control pain with use of the following:
    - oral analgesics
    - topical anti-inflammatory agents
    - hot or cold packs
- **Bandage** if indicated.

- **Contact injuries**
  - **Clean area** with soap and fresh water.
  - **Remove any foreign material.**
    - Irrigate with syringe and catheter using clean water or saline solution.
    - Cellophane tape may help remove bristles from worms.
  - **Control bleeding** if present.
  - **Manage pain** by applying hot or cold packs.
  - **Apply steroid ointment** if available.
  - Cover with dressing and bandage.
  - For eye contact, flush with fresh water.

**Note:** Every student should complete at least one of the following scenarios.

**Set up practice groups, and provide scenario.**

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**SCENARIO**

You have just completed a shore dive. 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:** Help him get out of his gear, then initiate first aid for a spiny envenomation.
The dive group was warned about jellyfish in the area as you entered the water for a night dive. As a 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, and don gloves to protect yourself against personal injury.

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 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:** Help him get out of the water without further injury and remove his gear. Initiate first aid for a contact injury.

**Debrief skill.**

**Injury** Management Key Points:

- **Spiny envenomations and contact injuries**
  1. Wash area thoroughly.
  2. Remove visible foreign material.
  3. Control any bleeding.
  4. Manage pain by applying hot or cold packs.
  5. For contact injuries, apply antibiotic or steroid ointment if available.

- **Stinging envenomations**
  1. Irrigate with vinegar.
  2. Remove tentacles with tweezers or forceps. Wear gloves.
  3. Irrigate with saline solution or sea water.
  5. Bandage if indicated.

**Note:** Monitor any injury caused by marine life for infection.
Moulage Application Tips for Injury Management Scenarios

Spiny Envenomations:
- Use clear/white decorator icing gel to create a film on the hand.
- Shake chocolate sprinkles onto gel film to simulate broken sea urchin spines.
- This also simulates the fragility of the spines during removal.

Stinging Envenomations:
- Simulate jellyfish tentacles with cooked spaghetti, aerosol string, cut rubber bands, etc.

Contact Injuries:
- Use clear/white decorator icing gel to create a film on the hand.
- Sprinkle cut bristles from a lightweight paint brush onto gel film.
- Use cellophane tape to remove the bristles.

Control of External Bleeding:
- Generously apply ketchup or chocolate syrup to the arm or hand to simulate blood.

NOTE: Strawberry ice cream topping is not a good choice because it becomes even more liquid in contact with warm skin. It is meant to congeal on cold products such as ice cream.

Other ideas for simulating injuries include the use of makeup pencils, lipstick, theatrical moulage/makeup supplies and Halloween costume makeup. Your imagination is the limit.
Skill: Pressure Immobilization Technique

Required Equipment:
1. Nonlatex gloves
2. First-aid supplies, including dressings and elastic bandages, splints and slings

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

Rationale:
The pressure immobilization technique may help delay venom absorption in wounds from sea snakes, cone-shell snails or blue-ring octopus. While it is not universally effective, it has been reported to delay systemic envenomation. It is an interim measure to use while getting an injured person to medical care.

Conduct Real Time Demonstration.

Talk Through Demonstration Skill Description:
- Keep the injured person as still as possible.
- Thoroughly clean the wound with soap and water.
- Remove any foreign material.
- Place dressing over the bite or wound.
- Apply an elastic bandage snugly but not excessively tight over the 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.
- Check for adequate circulation using peripheral pulses and/or capillary refill of fingernail or toenail beds if bandage is on an extremity. Press the nail beds until they blanch, and watch for color to return. If it takes more than 2-3 seconds or if the patient experiences tingling in his finger or toes, slightly loosen the bandage.
- Splint the extremity to immobilize the joints on either side of the wound.
- Use a sling and swath when an upper extremity is involved.
- Immediately transport the injured person to a medical facility.
- Do not remove the bandage until the injured person is under advanced medical care and antivenom is available.
Set up practice groups, and provide scenario.

You observe a person in your dive 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 person still, and activate the emergency assistance plan. Apply a pressure immobilization bandage, and monitor the injured person’s level of responsiveness and breathing.

**Debrief skill.**

**Pressure Immobilization Technique Key Points:**

1. Keep the injured person still.
2. Bandage snugly but not too tightly (like wrapping a sprain).
   - Check capillary refill, and adjust bandage if necessary
3. Splint to restrict movement.
4. Leave the bandage in place until the injured person is under advanced medical care and antivenom is available.
Skill: Traumatic Injuries (Control of External Bleeding)

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

Objectives:
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:
Direct pressure successfully controls most external bleeding. Uncontrolled external bleeding reduces the amount of blood circulating throughout the body and could result in shock, which is caused by a lack of oxygen to the body’s vital organs due to inadequate blood volume. The ability to control external bleeding may reduce the risk of shock and is potentially a life-saving skill.

Conduct Real Time Demonstration.

Talk Through Demonstration Skill Description:
• If possible, wash the area with soap and water as soon as possible.
• **Cover the wound completely** with a sterile or clean dressing, and **apply pressure until the bleeding stops**.
  o **Use additional layers of dressing** if the dressing becomes soaked.
  o **Do not remove any layers of dressing materials** because it may disrupt the clotting mechanism of the body.
• **Once bleeding has stopped**, use conforming bandage, roller gauze or tape to **secure the dressing**, making sure there are no loose edges.
  o **Wrap bandaging toward the heart**.
• Remove all jewelry or constricting clothing on the injured appendage.
• Be careful not to interfere with circulation.
  o Check capillary refill on appendage nail beds to ensure adequate circulation.
  o Ask the patient if any tingling or numbness is present.
  o Adjust bandage if necessary to ensure circulation.
• Monitor the pulse and motor function distal to the bandage before and after bandage application.

• Bandage small wounds several inches on either side to ensure coverage and even pressure distribution.

• When bandaging across a joint, apply the bandage in a comfortable position.
  o Keep the joint immobilized after bandage application to minimize further discomfort or bandage displacement. Splint the injury only if EMS will be delayed.

**Set up practice groups, and provide scenario.**

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**SCENARIO**

You and a friend are out spearfishing on snorkels and 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 with the roll on top instead of underneath will help keep the roll under control and minimizes the risk of dropping it.

**Debrief skill.**

**Traumatic Injuries (Control of External Bleeding) Key Points:**
1. Dressings should completely cover bleeding wounds.
2. Use direct pressure to stop bleeding.
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 stopped.
5. Wrap extremity bandages toward the heart.
Skill: Applying a Tourniquet

Required Equipment:
1. Commercial (preferred) or improvised tourniquet

Objective:
1. Demonstrate applying a tourniquet to control bleeding on a simulated patient.

Rationale:
Severe, life-threatening bleeding from extremities may require bleeding-control measures beyond direct pressure and cold therapy. For these kinds of injuries, application of a tourniquet may save a life.

Conduct Real Time Demonstration.

Talk Through Demonstration Skill Description:
- Inspect the wound to ensure direct pressure was being applied directly to the site of the bleeding. If not, attempt direct pressure once more.
- Apply tourniquet 1-2 inches (2.5-5 cm) proximal to the wound.
- Secure the tourniquet.
- Turn the windlass device to stop bleeding and secure.

CRITICAL NOTE:
When applying a tourniquet as part of skill practice for course requirements, the tourniquet should not be tightened to the point the distal pulse disappears. Advise students tourniquets are painful when placed appropriately, but it will be released promptly. It may also cause temporary bruising.

For safety and to prevent localized injury, do not tighten a tourniquet during practice beyond the point your practice partner starts to feel changes in sensation.

In an actual emergency, tighten the windlass until bleeding stops and/or the distal pulse disappears.

- Verify absence of pulse in the distal portion of the bleeding extremity.
- Secure the windlass.
- **Note on the victim’s forehead a T or TK** (indicating the use of a tourniquet) and **time of placement**.

- **Monitor bleeding**, and **tighten the tourniquet if necessary** as blood vessels relax.

- **Leave a tourniquet used in an actual injury in place** until the injured person is under medical care.

- **Tell the patient that the tourniquet will be painful** but is being used as a life-saving measure.
  - **Provide verbal support**.

*Set up practice groups, and provide scenario.*

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**Continued from the previous scenario:** The bleeding is not responding to direct pressure, and you have verified you are applying pressure directly over the bite.

**Instructor:** What is the next step?

**Students:** Apply a tourniquet, and immediately seek medical assistance.

**Teaching Tips:**
- **Use of dressings impregnated with hemostatic agents may also be required in some cases.**
- **Monitor bleeding, and tighten the tourniquet if necessary as blood vessels relax.**

**Applying an improvised tourniquet:**
- Fold a triangular bandage so it is 2 inches wide.
- Wrap the folded bandage tightly around the limb, and tie an overhand knot.
- Place a stick (pencil, dowel or similar object) over the knot, and tie a second overhand knot on top of the stick.
- Turn the stick to tighten the tourniquet.
- Secure it with a second bandage so it does not come loose.

*Debrief skill.*
Applying a Tourniquet Key Points:
1. Verify direct pressure was being applied over the wound.
2. If so, then apply tourniquet 1-2 inches (2.5-5 cm) above the wound.
3. Verify absence of distal pulse and/or stoppage of bleeding.
4. After tightening the windlass, secure it so it will not come loose.
5. Note on the patient’s forehead a T or TK and the time the tourniquet was applied.
6. Leave a tourniquet in place until the patient is under advanced medical care.
7. Provide verbal support to the injured person.
Skill: Severe Allergic Reaction

Required Equipment:
1. Epinephrine auto-injector trainer

Objective:
1. 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 his own. Assistance from another individual may be necessary.

Conduct Real Time Demonstration.

Talk Through Demonstration Skill Description:
• Ensure the airway and breathing.
• If the individual is unable to administer the medication himself, assist him by removing the auto-injector from its case. Epinephrine should be administered only if it is prescribed for the individual having the reaction.
• Remove the protective cap.
• Grasp the auto-injector in the palm of your hand, and keep your fingers and thumb from covering either end.
• With a firm grasp, jab the indicated end against the mid-thigh of the individual experiencing the reaction.
• Hold the injector in place for at least 10 seconds.
• Massage the area where the injection was administered to assist with dispersion of medication.
• Note the time the medicine was administered.
• Activate EMS.
• Return the auto-injector to its case, and give it to EMS personnel when they arrive.
Set up practice groups, and provide 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.

Debrief skill.

Severe Allergic Reaction Key Points:
1. Assist the individual only if he is unable to administer the medication himself.
2. Avoid covering either end of the auto-injector with your fingers or thumb.
3. Hold the injector in place for at least 10 seconds to ensure full administration of the medication.
4. Note the time of administration.
5. Activate EMS; give the used auto-injector to medical personnel when advanced care arrives.
**Skill: Emergency Assistance Plan (EAP)**

**Required Equipment:**
1. Paper and pencil, word processing program or other means of developing and recording an 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 the following:
  - identifying local resources and emergency phone numbers (including the DAN Emergency Hotline number: +1-919-684-9111)
  - identifying communications equipment and how it is used (e.g., marine or CB radios)
  - directions to the dive site location if it will be required to assist emergency services
  - a method to record information about the injured person, his dive profile and the first aid rendered
- Place the emergency assistance plan in a place easily accessible by anyone during the dive outing.

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

**Patient information**
Name:______________________________________________ Age: _____
Member #_____________________________
Address: _________________________________________________________
_________________________________________________________________
Emergency contact phone: ___________________________________________
Current complaint: _________________________________________________
_________________________________________________________________
Significant past medical history (medications, allergies, previous injuries, etc.):
_________________________________________________________________

<table>
<thead>
<tr>
<th>Dive Profile</th>
<th>Depth</th>
<th>Time</th>
<th>Safety Stops/Deco</th>
<th>Surface Interval</th>
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<tbody>
<tr>
<td>Dive #1</td>
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<td>Dive #4</td>
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<tr>
<td>Dive #5</td>
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</tbody>
</table>

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: _________________________________________________________
Notes: _________________________________________________________
Notes:
First Aid for Hazardous Marine Life Injuries
Final 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 is 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 direct pressure and bandage to control bleeding
   b. applying topical ointments
   c. washing the area thoroughly
   d. pain-control measures
8. The 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 and blue-ring octopus bites
   c. bites from triggerfish, moray eels and grouper
   d. bluebottle jellyfish, sea stars and fire coral stings

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. get 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 and get 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, call immediately.
   b. No, wait to see if the symptoms get better.
   c. It 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 immediately calling emergency medical services?
   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 may 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. Scombroid 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. having 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
# First Aid for Hazardous Marine Life Injuries

## Answer Sheet

The final assessment may be administered in written or oral form. The instructor must review every question with each student to ensure 100 percent comprehension of the materials. Questions have only one correct answer.

|   | A | B | C | D |   | A | B | C | D |   | A | B | C | D |   | A | B | C | D |   | A | B | C | D |
| 1 |   |   |   |   |   | T | F |   |   |   | 7 |   |   |   |   |   |   |   |   | 13 | T | F |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 2 | T | F |   |   |   |   |   |   |   |   | 8 |   |   |   |   |   |   |   |   | 14 | T | F |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 3 |   |   |   |   |   | T | F |   |   |   | 9 |   |   |   |   |   |   |   |   |   | 15 | T | F |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 4 | T | F |   |   |   |   |   | T | F |   | 10 |   |   |   |   |   |   |   |   | 16 | T | F |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 5 |   |   |   |   |   | T | F |   |   |   | 11 |   |   | T | F |   |   |   |   | 17 |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 6 |   |   |   |   |   |   |   |   |   |   | 12 | T | F |   |   |   |   |   |   | 18 | T | F |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |

I have reviewed this assessment with the course instructor, and I understand the correct responses as indicated by my initials. Any questions regarding this assessment and the contents of this course have been answered to my satisfaction.

________________________________________   _____________________
Student Signature                      Date
Practical Evaluation Record

First Aid for Hazardous Marine Life Injuries
(The instructor will retain the answer sheet and Practical Evaluation Record for seven years.)

Student Name ___________________________________________________

<table>
<thead>
<tr>
<th>Provider Skills Development</th>
<th>Instructor Initials</th>
<th>Student Initials</th>
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</thead>
<tbody>
<tr>
<td>Scene Safety Assessment</td>
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<tr>
<td>Donning and Doffing Gloves</td>
<td></td>
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<tr>
<td>Initial Assessment with Basic Life Support</td>
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<tr>
<td>Shock Management</td>
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<td>Injury Management</td>
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<tr>
<td>Pressure Immobilization Technique</td>
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<tr>
<td>Traumatic Injuries (Control of External Bleeding)</td>
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<tr>
<td>Applying a Tourniquet</td>
<td></td>
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<tr>
<td>Severe Allergic Reaction</td>
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<tr>
<td>Emergency Assistance Plan</td>
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</tbody>
</table>

I am comfortable with my skills performance as a First Aid for Hazardous Marine Life Injuries provider.

I have reviewed these skills with the course instructor. Any questions regarding the execution of these skills and the contents of this course have been answered to my satisfaction.

________________________________________   ___________________
Student Signature Date
**First Aid for Hazardous Marine Life Injuries**

**Answer Key**

The final assessment may be administered in written or oral form. The instructor must review every question with each student to ensure 100 percent comprehension of the materials. Questions have only one correct answer.

|   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 1 |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 2 | T | F |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 3 |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 4 | T | F |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 5 |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 6 |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
**Quick Reference Chart**

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

2. Knowledge Development Session [Choose one of these methods.]
   a. First Aid for Hazard Marine Life Injuries slides and video (60 minutes)
   b. First Aid for Hazard Marine Life Injuries online knowledge development

3. Skills Development Session [Perform the following exercises.]
   a. Scene Safety Assessment
   b. Donning and Doffing Gloves
   c. Initial Assessment with Basic Life Support
   d. Shock Management
   e. Injury Management
      i. Spiny envenomations
      ii. Stinging envenomations
      iii. Contact injuries
   f. Pressure Immobilization Technique
   g. Traumatic Injuries (Control of External Bleeding)
   h. Applying a Tourniquet
   i. Severe Allergic Reactions
   j. Emergency Assistance Plan

4. Final Assessment and Review

5. Remind students to download e-card when they receive their email notification.

6. Provide additional time for knowledge and skill remediation for individuals who require additional practice.