



NC Department of Environmental Quality
Marine Life Wounds & Infections

rev. 08-2023



Marine Life Puncture Wounds

- Common sources of marine life puncture wounds include rays, catfish, fish spines, and oyster shells.
- Marine puncture wounds can be painful. They can also lead to infections. In some extreme circumstances these injuries can lead to amputation or even death.



Injury Categories

Envenomation involves venom injected by a bite, puncture, or sting. Sources of envenomation include jelly fish, fire coral, rays, catfish, & lionfish.

Traumatic Injuries include bites, skin abrasions, and cuts.

- Bites account for the majority of marine life trauma to humans. They are usually a result of an animal's perceived threat or confusing a person's body part with a food source.
- Skin abrasions & cuts are common around rocks, shellfish, barnacles, coral & debris.



Jellyfish Stings

Jellyfish describes many marine animals including fire coral, jellyfishes, anemones, and sea wasps.

Stings occur after contact with appendages or tentacles. They contain millions of stinging cells which each contain venom and a microscopic stinger.

Symptoms can include pain, burning, skin redness, blistering, muscle spasms, shortness of breath, vomiting, nausea, and low blood pressure.

Detached Tentacles should not be handled. They can maintain toxicity for months even if they appear withered and dried out.



Jellyfish Sting Treatment

- Apply a topical treatment (vinegar, ¼ strength ammonia, baking soda, citrus juice) for 10-30 minutes. Use seawater if nothing else is available. Use a stream of fresh water to wash away any stinging cells. Apply ice for pain.
- Shave the affected area if necessary.
- Reapply the topical treatment for 15 minutes.
- Apply 0.5-1.0% hydrocortisone lotion twice daily. Anesthetic ointment may be used for pain.
- Very young or old victims and those with large affected areas or mouth/throat injuries should seek medical treatment.



Stingray Envenomations

- **Stingray** tails have up to four sharp stingers. These stingers are supplied with venom so their injuries often involve both puncture wounds and envenomation.
- **Stingray Wounds** can be very painful with bleeding, vomiting, headaches, shortness of breath, fainting, paralysis, and occasionally death.
- **Prevention:**
 - Shuffle your feet when walking or wading.
 - Only handle stingrays when necessary.
 - Stingers may be removed with pliers.
 - Handle rays on the boat deck to prevent unexpected movements.



Stingray Injuries

- Stingray Wounds can be very painful with bleeding, vomiting, headaches, shortness of breath, fainting, paralysis, and occasionally death. They also create a risk for tetanus.
- Treatment: Rinse the injury with the cleanest water available. Immerse the wound in hot water. Most wounds should be soaked for 30-90 minutes. Extract any parts of the stinger. This step may require medical help.
- Apply a dressing and seek medical attention. Best practice is to start antibiotics within 12 hours to prevent Vibrio bacteria.
- Take pain medicine as needed.



Catfish Stings

- DEQ employees may encounter blue catfish, channel catfish, flathead catfish, white catfish, yellow bullhead, brown bullhead, black bullhead, & madtoms.
- Catfish envenomations are common in fresh and saltwater and can result in complex puncture wounds and severe infections.
- Most catfish wounds are hand wounds.
- Over 1,000 catfish species can sting humans.



Avoiding Catfish Stings

- Catfish sting through dorsal or pectoral fins on the top or side of the fish
- Saltwater catfish are more likely to sting than freshwater.
- Pain can last from minutes up to 6 hours.
- Catfish venom can lead to a super infection know as Aeromonas.



How to Safely Hold Catfish

- Small fish (1-4 pounds): Hold from the top behind the pectoral and dorsal spines.
- Medium fish (3-7 pounds): Place one hand behind the pectoral fin and one behind the dorsal fin.
- Large fish (>7 pounds): The fins are likely to be dull. The mouth may be more dangerous than the fins. Fish this large are better held with a lip grip.
- Wear protective gloves when possible.



Skin Abrasions

- Cuts, scrapes and skin abrasions are common injuries in the marine environment
- Even minor cuts can be infected by Mycobacterium Marnium or Vibrio
- Prevention:
 1. Be aware of your surroundings
 2. Move with caution
 3. Wear the appropriate clothing and PPE



Skin Abrasions: First Aid

Initially:

1. Rinse thoroughly with clean water (sterile water if possible)
2. Apply an antiseptic solution
3. Apply pressure with sterile gauze or bandage to stop bleeding

When bleeding has stopped:

1. Allow wound to dry
2. Apply antibiotic ointment
3. Cover with sterile bandage
4. Seek medical care within 24 hours



Oysters and Vibrio

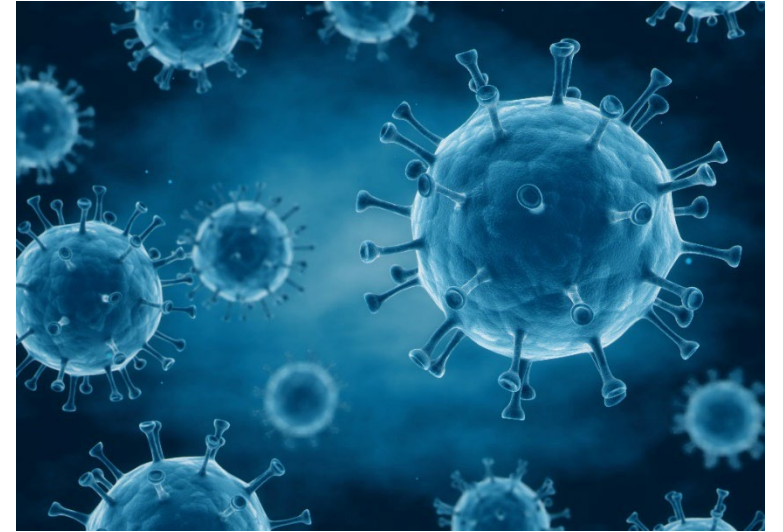
- Vibrio bacteria live in coastal waters
- About a dozen strains of Vibrio cause illnesses in humans
- Vibrio are at their highest concentrations when water is warmest (May-Oct)
- Vibrio causes about 80,000 illness in the US each year
- About 52,000 of those 80,000 are food-related
- Vibrio causes about 100 deaths each year in the US
- Diarrhea and vomiting are the main symptoms
- Symptoms usually last no more than 3 days



Vibrio Infections

Vibrio infections can be caused by:

- Eating raw or undercooked oysters
- Open wounds exposed to salt or brackish waters
- Open wounds exposed to raw shellfish or their juices
- Crab or shrimp stick injuries
- Fishhook injuries



Vibrio Vulnificus

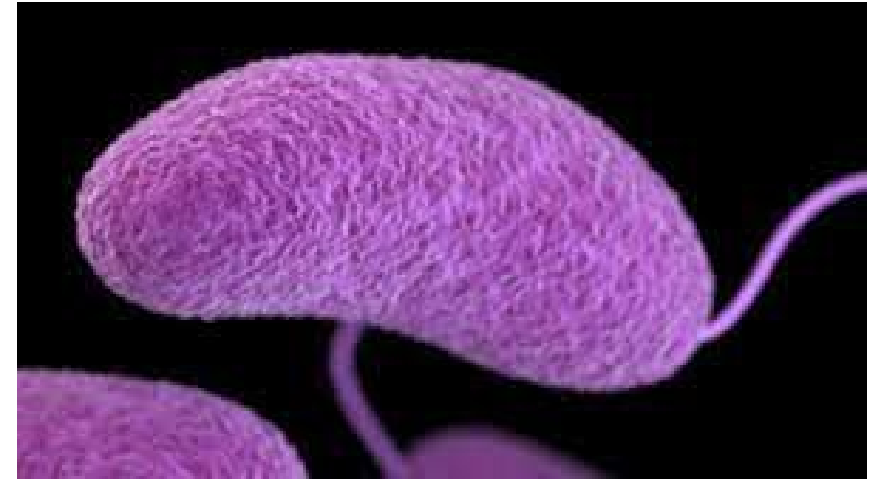
- This strain of Vibrio causes more serious illnesses (skin lesions & bloodstream infections)
- People infected by Vibrio Vulnificus may require intensive care and amputations
- About 1 in 5 people with Vibrio Vulnificus will die, often within a day or two
- V. Vulnificus infections are probably underreported
- Most US cases occur in the gulf states



Vibriosis: High Risk Groups

One study showed those with pre-existing conditions are 80 times more likely to develop *Vibrio Vulnificus*. High risk groups include:

- Compromised immune systems
- Chronic liver disease, cancer, diabetes, or HIV
- Those on medicine to reduce stomach acids
- Those who had recent stomach surgery



Avoiding Vibriosis

- Do not eat raw or undercooked seafood
- Do not allow wounds (including recent tattoos or piercings) to contact salt water, brackish water, raw seafood, or raw seafood juices
- Wear clothes and shoes to prevent cuts and scrapes in salt or brackish water
- Cover wounds with waterproof bandages
- Wear gloves when handling raw shellfish



NCDHHS Statement

After three NC based Vibrio deaths in July 2023 the NCHHS released this statement:

“While healthy individuals typically develop mild illness, Vibrio infections can be severe or life threatening for people with weakened immune systems or chronic liver disease. If you start to see signs of a skin infections after contact with brackish waters or salt water, you should contact your health care provider.”



Safe Handling of Shellfish

- Avoid exposure of broken skin to warm salt or brackish water, shellfish, and their juices
- Avoid cross-contamination of cooked foods with raw seafood and their juices
- Wear protective gloves when handling shellfish
- Eat or refrigerate shellfish promptly after harvesting
- Eat shellfish promptly after cooking and refrigerate leftovers promptly



Source: CDC



CDC Guide to Safely Cooking Shellfish

Do not eat raw or undercooked shellfish

In the shell:

- Boil until the shells open plus 5 minutes
- Steam until shells open plus 9 minutes
- Do not eat any shellfish that don't open during cooking

Shucked oysters:

- Boil at least 3 minutes
- Fry in oil at least 10 minutes at 375 degrees F.



Source: CDC



First Aid Items

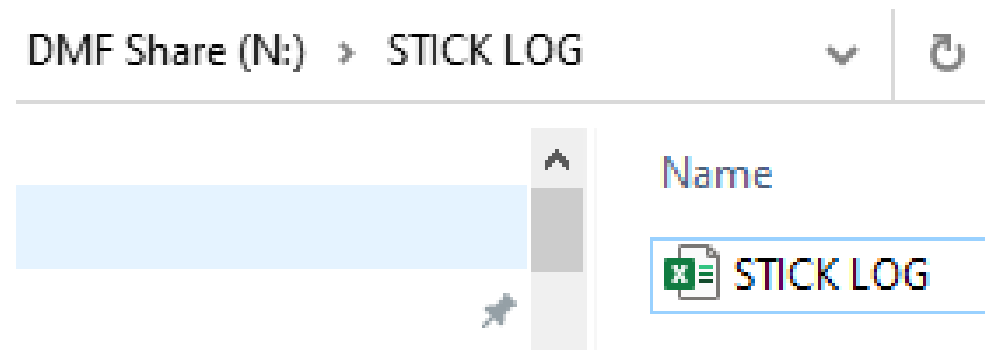
These items are useful in a first kit to treat marine life stings and wounds:

- Vinegar
- Sterile Water
- Baking Soda
- Antiseptic Solution
- Antibiotic Ointment
- Sterile Bandages
- Sterile Gauze and Tape
- Waterproof Bandages
- Tweezers



Reporting Marine Injuries

- Serious marine life injuries should be reported like any other workplace incident with the employee, witness, and supervisor copies submitted to Human Resources
- All other marine life puncture wounds should be documented on the DMF share drive. The spreadsheet is found in a file named STICK LOG.
- Documenting injuries in the STICK LOG protects the worker. It preserves your worker's compensation benefits for puncture wounds that may become infected later.



Thank you for your time!

Feel free to contact me with any questions or concerns related to workplace safety and health:

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