LIFEGUARD

TRAINING MANUAL

AMERICAN AQUATICS AND SAFETY TRAINING

www.lifeguardandsafetytraining.com

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Introduction

Lifeguards must be trained to handle all emergencies that can occur at a swimming facility, including water rescues, first aid, and CPR. As a part of the lifeguard certification program, the student will learn techniques ranging from rescuing an unconscious person from a pool to checking for breathing and pulse and administering rescue breathing and CPR.

This course follows AHA ECC guidelines, and meets and exceeds OSHA guidelines.

Objectives for the Lifeguard

Lifeguard, Shallow Pool Lifeguard, Waterfront Lifeguard, CPR/ AED and First Aid

The objectives for the Lifeguard are as follows:

- To meet the prerequisites to become a lifeguard, in age and skill level,.
- To explain the roles and responsibilities of the lifeguard, both in the day-to-day tasks as well as in emergency situations.
- To define the legal issues which affect the lifeguard.
- To describe the use and function of all of the different types of rescue equipment
- To understand the importance of scanning and swimmer surveillance, and how to anticipate possible problems from swimmers at risk, environmental issues, loss of focus and fatigue.
- To outline the different types of Emergency Action Plans, and how the lifeguard will create and implement plans at different swim facilities.
- To recount the stages of drowning, and how the lifeguard can recognize a drowning victim quickly.
- To demonstrate lifts and assists from poolside or in the water.
- To illustrate the steps in various rescue procedure—both at the surface of the water as well as at the bottom of the water—and practice and master these skills.
- To learn to perform rescue breathing both in and out of the water.
- To explain the process of assessing a victim before providing first-aid to assess the best course of action, and then to put it into action.
- To describe the most effective ways to prevent contamination by using precautions and personal protection.
- To outline the different systems of the human body, along with the major organs and their functions.

Lifeguard Training Course and Components

The Lifeguarding course includes Lifeguarding or Shallow Water Lifeguarding, First Aid, CPR/AED with an option for Waterfront[1].
The following modules can be added/combined with the lifeguarding course and/or taken independently:

- Asthma Inhaler Training—1 hour
- Epinephrine Auto-Injector Training—1 hour
- Administering Emergency Oxygen—3 hours

Methods of Course Completion

The course can be completed in 2 different manners—classroom and blended learning. The blended learning option combines online learning with in-person skill sessions. Participants in blended learning courses acquire the same knowledge and skills as those in traditional classroom training courses.

Classroom Course

Lifeguarding, Shallow Pool Lifeguarding, Waterfront Lifeguarding
For all in-person classes, the instructor must teach and lecture the full manual with the option to add Waterfront and Emergency Oxygen.
CPR/AED and First Aid
Instructor must teach all chapters associated with CPR/AED and/or First Aid.

Online Option

Lifeguarding, Shallow Pool Lifeguarding, Waterfront Lifeguarding
For all Blended Learning classes, the instructor has the option to teach/review the full manual with the option to add Waterfront and Emergency Oxygen.
CPR/AED and First Aid
Instructor must review/teach all CPR and/or First Aid skills.

Pool Requirements for Lifeguarding, Shallow Pool Lifeguarding, Waterfront Lifeguarding
All aquatic classes must be taught at a minimum of a 7 feet deep pool. If the instructor only has access to a 6 feet deep pool or less, the class will be counted as a Shallow Pool Lifeguarding class.

Methods of Course Completion

The course can be completed in 2 different manners—classroom and blended learning. The blended learning option combines online learning with in-person skill sessions. Participants in blended learning courses acquire the same knowledge and skills as those in traditional classroom training courses.

Course Schedule - Original Lifeguard Course (LO)

The training hours required for lifeguard certification - including first aid training - are 26 hours of coursework. Waterfront is an optional add-on for all lifeguard students and is 3 hours 45 minutes.

- Original lifeguard course - 26 hours
- Original with Waterfront - 29 hours 45 minutes

Course Schedule - Blended Learning (LE)

The training hours required for lifeguard certification - including CPR/AED, First Aid training - are 19 hours 30 minutes of in-person coursework. In-person portion of the class includes:

- Waterfront (optional add-on for all lifeguard students) - 3 hours
- Blended learning lifeguard course - 19.5 hours
- Blended learning lifeguard course with Waterfront - 22 hours 30 minutes

Course Schedule - In-person Shallow Water Course (SLO)

The training hours required for lifeguard certification - including first aid training - are 24 hours 30 minutes of coursework.

Course Schedule - Blended Shallow Water Course (SLE)

The training hours required for lifeguard certification - including first aid training - are 18 hours of coursework.

Course Schedule - Recertification Lifeguard Course (RO)

The training hours required for lifeguard recertification - including first aid training - are 12 hours of coursework.

- Waterfront (optional add-on for all lifeguard students) - 3 hours
- Recertification lifeguard course - 12 hours
- Recertification lifeguard course with Waterfront - 15 hours

Course Schedule - Recertification Shallow Water Lifeguard Course (RS)

The training hours required for lifeguard certification - including first aid training - are 8 hours of coursework.

Qualifications

In order to qualify to become a lifeguard, there are certain prerequisites to qualify. They are:

- A candidate must be at least 15 years old before the final scheduled session of the course.
- A candidate must be able to swim non-stop 300 yards continuously using the crawl or breaststroke. (Sidestroke and backstroke are not acceptable strokes) This is the only activity for which goggles are permitted during the lifeguard training course.
- A candidate must be able to tread water for 2 minutes using only their feet. The candidate's hands must be crossed with hands in armpits or with the hands above the head during this exercise.
- A candidate must be able to:
  - swim 20 yards
  - surface dive to a depth of 7-10 feet
  - retrieve a 10-pound object from the bottom
  - return to the surface
  - swim 20 yards back to the starting point, while holding the object with both hands
  - exit the pool without using the ladder
  - This must be accomplished within 1 minute and 40 seconds.

Shallow Water Lifeguarding

Students who sign up for a regular lifeguarding class but cannot successfully pass the prerequisites, but were able to pass the following may be certified as shallow pool lifeguards up to 5 feet[4]. Training and final evaluation exam must be at 5 feet.

- A candidate must be at least 15 years old before the final scheduled session of the course.
- A candidate must be able to swim non-stop 200 yards continuously using the crawl or breaststroke. (Sidestroke and backstroke are not acceptable strokes)
- A candidate must be able to tread water for 1 minute using only their feet. The candidate's hands must be crossed with hands in armpits or with the hands above the head during this exercise. Taller participants will need to lean slightly forward if needed while treading to keep from touching the bottom.
- A candidate must be able to:

- swim 20 yards
- surface dive to a depth of 5 feet
- retrieve a 10-pound object from the bottom
- return to the surface
- swim 20 yards back to the starting point, while holding the object with both hands
- exit the pool without using the ladder
- This must be accomplished within 1 minute and 40 seconds

Americans with Disabilities Act

The Americans with Disabilities Act (ADA) was enacted in 1992, which bars discrimination against people with disabilities[6]. This includes:

- Discrimination against people with disabilities in public places.
- Discrimination against people with disabilities in their goods and services.
- People with physical or mental disabilities must be allowed similar participation in activities offered to the public.

In order to best accommodate people with disabilities, the instructor must:

- Permit anyone who wants to participate in a course (provided they pass the prerequisites) to participate in the course.
- Assist participants in every course to participate within the limits of their ability. Not all participants have certification as their goal, but rather, would like to learn as much as possible.
- Work with the student (and/or guardian/medical professional) to provide reasonable accommodations so that the student can participate in the class.
- Provide certification to students who meet course knowledge and skill testing objectives.

Accommodations for Participants with Disabilities

The instructor should work with the student (and/or guardian/medical professional) to provide reasonable accommodations so that the student can participate in the class. This will include:

- Discussing health and safety requirements of the course in advance so that all parties are fully informed.
- Considering ways in which a skill can be modified to allow the student to successfully master the critical component of the skill. As long as the objective of the particular skill is met, the method of delivery may be altered to fit the situation.
- Students with learning disabilities or limited language proficiency may find the reading and written test portion of the course to be difficult. In such cases, the instructor can work with the student to find an optimal solution—such as testing aurally (have the test read aloud) or having the textbook read aloud may prove to be helpful, and include the student more fully in the coursework.

Passing the Course

In order to qualify for certification, the student must successfully complete the lifeguard course, be able to perform each skill as detailed in the manual, and apply those skills to an emergency situation[7].
The student must:

- Attend and participate in all class sessions.
- Demonstrate ability to perform all required skills.
- Successfully pass the written exam with a minimum grade of 80 percent.

All students must be told of the requirements when they enroll for the course and again during the course introduction.

Skills Exam and Written Exam

The student must pass the correct written exam for the course they are taking in order to qualify for certification.

- Lifeguarding
- CPR/AED
- First Aid
- CPR/AED & First Aid
- Open Water

A student must score an 80% or better in order to pass the exam. If a student does not pass the exam, they must be given the opportunity to retake the exam using the alternative exam. A student may request to take their exam aurally—having the questions read aloud—as an accommodation due to a disability.

Taking the Test

The instructor must administer the correct written exam for the course they are teaching.

- Lifeguarding
- CPR/AED
- First Aid
- CPR/AED & First Aid
- Open Water

A student must score an 80% or better in order to pass the exam. If a student does not pass the exam, they must be given the opportunity to retake the exam using the alternative exam. The instructor may give the student the chance to review their missed questions before retaking the exam. However, all exams must remain in the possession of the instructor.
A student may request to take their exam aurally—having the questions read aloud—as an accommodation due to a disability.

Grading Participants

The students will be graded at the end of the course as follows:

- A student will be graded **Successful** if they have successfully participated in all class sessions, met the course objectives and demonstrated competency in the required skills as detailed in the manual.
- A student will be graded **Unsuccessful** if they have not successfully participated in all class sessions, have not met the course objectives, or have not demonstrated competency in the required skills due to missing any of the steps of the specified rescue as detailed in the manual.
- A student will be graded **Not Evaluated** if they were not taking the course with the intention of certification. **Not Evaluated** is not the same as **Unsuccessful** in that such students who are auditing the course (taking for knowledge only and not for certification) must make that desire known at the beginning of class.

In a multiple-rescuer skill scenario, the instructor will grade the entire team with a **Pass** or **Fail** rating on their ability to work together as a team, as well as grade each individual student with a **Pass** or **Fail** rating, based upon the student's own competence in demonstrating the skills. It is possible for the team and the individual student to receive different ratings—for example, for the team to receive a **Pass** rating for teamwork skills, but for the individual student to receive a **Fail** rating for inability to demonstrate individual skills.

Awarding Certification

Upon successful completion of the course, the instructor will award certification certificates to those students who have met the course objectives, score at least 80% on the written exam and demonstrated proficiency in the rescue skills[8]. Training and final evaluation exam must be at a minimum of 7 feet for a regular lifeguard and 5 feet for a shallow pool lifeguard.

Unit 1—Becoming a Lifeguard

Training and Qualifications

Congratulations on your decision to train and become a lifeguard! You will find being a lifeguard an incredibly rewarding experience, as you assist guests in enjoying a wonderful leisure activity while remaining safe in their aquatic pursuits. Not only is being a lifeguard fulfilling, but you will also find the training process rewarding as well, as you will gain practical rescue and first aid skills while learning ways to keep others safe, as well as act in an emergency situation.

Prerequisites

In order to qualify to become a lifeguard, there are certain prerequisites to qualify. They are:

- A candidate must be at least 15 years old before the final scheduled session of the course.
- A candidate must be able to swim non-stop 300 yards continuously using the crawl or breaststroke. (Sidestroke and backstroke are not acceptable strokes) This is the only activity for which goggles are permitted during the lifeguard training course.
- A candidate must be able to tread water for 2 minutes using only their feet. The candidate's hands must be crossed with hands in armpits during this exercise.
- A candidate must be able to:
  - swim 20 yards
  - surface dive to a depth of 7-10 feet
  - retrieve a 10-pound object from the bottom
  - return to the surface
  - swim 20 yards back to the starting point, while holding the object with both hands
  - exit the pool without using the ladder
  - This must be accomplished within 1 minute and 40 seconds.

Shallow Water Lifeguarding

A student who signs up for a regular lifeguarding class but cannot successfully pass the prerequisites, but was able to pass the following may be certified as a shallow pool lifeguard up to 5 feet. Students who take the Shallow Water lifeguarding class must pass the following prerequisites:

- A candidate must be at least 15 years old before the final scheduled session of the course.
- A candidate must be able to swim non-stop 200 yards continuously using the crawl or breaststroke. (Sidestroke and backstroke are not acceptable strokes)

- A candidate must be able to tread water for 1 minute using only their feet. The candidate's hands must be crossed with hands in armpits during this exercise. Taller participants will need to lean slightly forward if needed while treading to keep from touching the bottom.
- A candidate must be able to:
  - swim 20 yards
  - surface dive to a depth of 5 feet
  - retrieve a 10-pound object from the bottom
  - return to the surface
  - swim 20 yards back to the starting point, while holding the object with both hands
  - exit the pool without using the ladder
  - This must be accomplished within 1 minute and 40 seconds.

Passing the Course

A candidate will become lifeguard-certified after the successful completion of all coursework, rescue skills, CPR/AED, First Aid skills, and the final written exam.
The candidate must receive an 80 or higher on the final written exam to successfully pass the course.
The candidate must successfully demonstrate knowledge of equipment, swimming and rescue techniques, including:

- Victim approaches and escapes
- Types of carries and tows
- Swimming with and using a rescue tube
- Surface dives and underwater swimming
- Spinal rescues from shallow water—from water entry and approach through turning and supporting the victim
- Spinal rescues in deep water—from water entry and approach through turning and moving the victim to shallower water or poolside

All certifications are valid for 2 years. If the student will be working in New York State, the CPR certification is valid for 1 year.

Certifications

Lifeguard class
These certifications will include:
1) Lifeguarding (2-year certification)
2) CPR/AED (1-year certification)
3) First Aid (2-year certification)
Optional: Waterfront Lifeguarding (2-year certification)

Shallow Water Lifeguard
These certifications will include:
1) Shallow Water Lifeguarding (2-year certification)
2) CPR/AED (1-year certification)
3) First Aid (2-year certification)

Recertification

To take a lifeguard recertification class, the student must have a current lifeguard certification or one that expired within 45 days. If the certification has been expired for more than 45 days, the student must retake the certification course and is not eligible to take the recertification class.

Skills

The lifeguard candidate must demonstrate all acquired skills for the instructor, including:

- Entries and approaches
- Escapes
- Carries/tows
- Spinal victim in shallow water, including entry, approach while the victim is face down and face up, support victims and remove from pool.
- Spinal victim in deep water, including entry, approach while the victim is face down and face up, move victim to poolside or shallow end and remove victim from pool.
- Non-spinal rescues
- Swimming using a rescue tube
- Feet first surface dive and head first surface dive
- CPR/AED
- First Aid
- Waterfront (optional)
- All skills listed on the Skills Assessment Chart.

Final Exam (hands-on and written exam)

Along with the hands-on exams/skills demonstrations, there will be a 1-hour written exam where the lifeguard candidate will be tested on the knowledge of hazard identification and rescue equipment, rescue techniques, CPR/AED and First Aid.

Role and Responsibilities

A lifeguard has many responsibilities while on duty, and each of these is vital to the safe experience of all guests. Essentially, the **lifeguard's primary responsibility** is to ensure safety at all times, prevent drowning and accidents, enforce the rules and policies of the facility, and act quickly and effectively in case of an emergency.

Rule Enforcement

The rules at a water facility are there in order to keep patrons safe, prevent drowning, promote orderly conduct, and prevent accidents from occurring. It is critical that lifeguards:

- Learn the rules of the particular facility. From restrictions for certain ages in different locations to rules about slides and diving boards, it is impossible to enforce the rules without first knowing the rules.
- Follow the rules themselves—it is impossible to enforce rules without setting a good example for guests by following the rules themselves.
- Enforce the rules uniformly—it isn't fair for the rules to be enforced for some guests but not others, or at sometimes but not others. Rules must be rules—at all times and for all guests.

Rules must be known, personally followed, and enforced consistently for the safety of all guests.

Injury Prevention

The best way to prevent injuries is to educate patrons about possibilities of injuries and enforce facility rules and regulations. Strategies aimed at the prevention of injuries at a swim facility include:

- Development of safety rules for all areas of the swim facility, including the pool decks, public lounge areas, rest rooms/lockers, and walkways.

- Such rules should include prohibiting running near water or other dangerous areas, prevention of moving objects into unsafe locations, and the direct supervision of children.
- The facility must be aware of potential safety hazards, such as keeping the walkways safe from foreign objects, keeping all trafficked areas areas clear and dry, and keeping sight lines visible.
- It his vital to post and adhere to facility rules, and making such that others follow the rules consistently.

Drowning Prevention

A primary responsibility of the lifeguard is drowning prevention. Drowning prevention involves:

- Water supervision and surveillance
- Ensuring that swimmers are swimming at an appropriate depth for their skill level, and are wearing lifejackets if needed
- Enforcing the safety rules poolside
- Signs around the pool starting the pool depth
- Educating swimmers regarding pool safety
- Acting quickly in the case of an incident or emergency
- Not allowing running on the pool deck

The lifeguard is trained to supervise swimmers and act quickly in the case of an emergency.

Guest Relations

From answering questions to directing guests to the restrooms, the lifeguard will learn that “guest relations” is a major responsibility of the job. While establishing a good relationship with guests is important, it is critical that the lifeguard not become distracted by conversation while on duty. The lifeguard should be helpful, respectful and courteous at all times, while alert and ready to act in the case of an emergency.

Rescuer Responsibilities

In the case of a medical emergency, the rescuer is responsible to:

- Activate the Emergency Action Plan—which includes notifying Emergency Medical Services (EMS)
- If needed, rescue the victim
- Provide emergency care to the Standard of Care
- Document/report the incident afterward

Other rescuers responding to the Emergency Action Plan will direct other guests to clear the area, assist the EMS to bring them quickly to the victim, and help retrieve emergency equipment, as is stated in the facilities Emergency Action Plan.

Paperwork

Each facility will have different requirements for the lifeguard regarding the types of paperwork required of a lifeguard. Most likely, the lifeguard will be required to:

- Log working hours, so that there is a record of exactly when the lifeguard was on duty.
- Submit written requests for time/days off, so that another lifeguard is available to provide full coverage of all shifts.
- File a written report of all incidents and emergencies. The written report should include:
  - The time and date of the incident
  - The name of the victim, as well as the names of all participating rescuers
  - A detailed description of the event, the rescue/aid performed, and the aftermath.
  - The written report should be signed and dated by all named lifeguards.

Some facilities may require additional paperwork to be completed by the lifeguard, including:

- Battery check/testing of the AED unit
- Inventory of first aid supplies
- Bathroom supplies/clean-up checklist

The lifeguard should also be sure that his/her personal paperwork is complete, including lifeguard certification and identification.

Legal Issues and Accountability

Exposure Control Plan

An Exposure Control Plan is intended to minimize the risks associated with blood-borne pathogens and the rescuers possible exposure by detailing the following:

- Determination of possible exposures
- Training for personnel to reduce possible exposure
- Availability of personal protective equipment for all rescuers
- Work practice controls and methods implemented for the protection of personnel
- Availability of hepatitis B vaccination
- Communication regarding exposure, including training, record keeping and post-exposure evaluation and follow-up
- Method for evaluation and implementation of procedures

The Exposure Control Plan must be available to all employees and updated regularly to remain current.

Aquatic Liability

The lifeguard's responsibility is to ensure the safety of all guests, by adhering to the following:

- A lifeguard must remain alert at all times.

- A lifeguard must be actively scanning the water to look for signs of distress or drowning.
- A lifeguard must assess what is seen, and target any unusual activity or signs of drowning.
- A lifeguard must act quickly and effectively to bring the drowning victim to safety.

From scanning to saving, a lifeguard must be alert, trained and ready to act at all times while on duty.

Consent

Consent means that a rescuer must obtain the permission of a person/victim before giving emergency care. Of course, if the person/victim is unconscious at the time, other legal considerations apply.

Implied Consent

If a victim is unresponsive, seriously injured or very confused, the victim may not be able to give direct consent for medical care. In a case like this, it is assumed legally that the victim would have given consent if they could. This also applies to a child whose parent or guardian is not present to give consent to medical aid.

Duty to Act

One has the duty to act in a medical emergency and provide medical care if the person is working and on the job at the time.

Good Samaritan Laws

When a person is a bystander and did not have a duty to act, but instead chose to help, the Good Samaritan Law provides basic legal protection for the responder. All 50 states and the District of Columbia have some type of Good Samaritan Law. However, a lifeguard on duty who was hired to monitor swimmers has a duty to act, and would be expected to perform to a standard of care. In such a case, the Good Samaritan Law would not apply[1].

Standard of Care

A person is expected to provide emergency care at the level of the person's emergency training. Therefore, a trained lifeguard on duty is expected to provide emergency care at the level of a certified lifeguard[2]. This will include:

- Alerting people of potential danger to prevent injuries
- Recognizing a person in need of medical assistance
- Attempting to rescue a person in need

Negligence

If a lifeguard fails to act in an emergency and does not provide a standard of care on par with lifeguard training, the person is negligent[3]. Some examples of negligence include:

- A lifeguard failing to stop others from behaving in such a way which could result in harm
- A lifeguard failing to fix an unsafe condition in the area
- A lifeguard providing care which is inappropriate for the situation

Abandonment

Once a rescuer has begun emergency care, they must not leave the victim or stop providing care until someone of equal or greater training—such as EMS—arrives and takes over the care of the victim. If a lifeguard leaves a person in need without consent or passing the responsibility onto a more qualified rescuer, the lifeguard can be charged with abandonment. A lifeguard on duty cannot legally abandon a person in need once emergency care has begun.

Refusal of Care

Anyone over the age of 18 is able to refuse care[4]. If the rescuer feels like they must receive care, they should call 911. Additionally, all parents are able to refuse care for their child. Rescuers must document all refusals of care and the reason for refusal. It's best practice to have the victim sign the refusal of care form.

If a victim denies treatment, then goes unconscious, the rescuer has implied consent and may treat the victim.

Recording and Reporting an Incident

It is vital that the rescuer records and reports the medical emergency as soon as possible before important details are forgotten. These forms will become very important if legal action is initiated after the emergency. The documentation must be detailed, including:

- A statement of all of the facts of the incident, including the date, time and location of the incident, as well as all victims and rescuers
- Details about what exactly happened and what was done for the victim(s)
- Dated signatures of all rescuers who were involved in the incident

Such forms must be kept by the facility and stored.

Right to Privacy

Every victim has a right to privacy[5]. The rescuer may not share any information about the victim with anyone aside from medical professionals directly associated with the victim. If the victim is a minor, the rescuer may give information to the parents or guardians of the victim. Any information shared to anyone who is not a medical professional directly associated with the victim is in violation of the HIPAA law.

Personal Health and Safety

Lifeguards can only be helpful to others if they take care of themselves first, both physically as well as mentally[6].

Physical Condition and Health

Being a lifeguard is a physically grueling job, and it is critical that a lifeguard remains in top physical condition so that they can act quickly in the case of an emergency. To reach this end, a lifeguard should:

- **Swim regularly.** A lifeguard must be in top physical condition, especially when it comes to swimming skills, which must be practiced regularly.
- **Get enough sleep.** A tired lifeguard is unable to effectively monitor the water and swimmers, and certainly will not be able to act quickly and effectively in case of an emergency.
- **Stay healthy.** Eat well, do not drink alcohol or use drugs, drink plenty of water and take care of your body. The safety of the swimmers and other pool guests relies upon a healthy, attentive and well-trained lifeguard ready to act in an emergency.

Attitude

A lifeguard needs to have a positive attitude in order to be successful. This includes:

- Working together with other staff members in a respectful manner.
- Being alert and focused when on duty.
- Keeping control of the area without being abusive or mean to others.
- Acting as a well-trained leader in an emergency situation.
- Looking and acting professionally at all times.
- Being punctual and responsible in your work.

- Helping others in a courteous manner.

A lifeguard should be pleasant and professional at all times in order to be effective at the job.

Sun Exposure

Many lifeguard posts are outdoors, and sun exposure is a very real threat to the lifeguard. While some lifeguard stations may be outfitted with sunshades, a lifeguard should never count on such shading, as it may be important for the lifeguard to move locations in order to be placed in a more effective position. A lifeguard must rely on their own sun protection, which should include:

- **Sunscreen**—which should be applied regularly to all exposed skin, including the back, ears, nose, shoulders and feet. The lifeguard should find a sunscreen that is waterproof, and reapply it as necessary to provide continuous coverage. Because a lifeguard will be wearing a bathing suit/uniform, wearing additional clothing as a cover-up is not appropriate[7].
- **Sunglasses** - should be worn, and they should be anti-glare so that the lifeguard can see the water area clearly[8].
- **Water**—the lifeguard should be sure to remain hydrated by drinking water regularly.

Working with Others

Staffing Levels and Teamwork

In order to maintain a safe environment for all, there must be enough lifeguards and at proper locations to ensure that all areas of the water are within view and accessible by a lifeguard. The facility manager or head lifeguard will assign locations for lifeguards based upon the layout of the facility or by the number of guests at a particular location[9]. It is vital that each lifeguard:

- Listen carefully to learn about the location of the assigned area.
- Remain alert in the assigned area, being sure to clearly survey the water from the lifeguard post.

- If a lifeguard must leave their post—either in the case of an emergency or for a personal reason—the lifeguard must follow the rules regarding alerting another lifeguard to come and cover the area.
- In the case of an emergency, the lifeguard may have a whistle/signal to alert other lifeguards to come and cover a particular location while the lifeguard on duty there is attending to a distressed swimmer or rescue situation.
- In the case of a shift change/personal reason, the lifeguard must follow the rules of the facility regarding switching shifts/locations while being sure that the water is constantly watched.

The lifeguard must be sure to act with others as a team, whether it is in responding to an emergency situation or in assisting other lifeguards in providing full water coverage. While lifeguarding, a person's ego should never get in the way of teamwork, as the lifeguards working together is critical to the safety and well-being of the guests.

Supervisor

The supervisor[10] at a facility has a unique role in relation to the other lifeguards and the facility as a whole. The supervisor must:

- Assign lifeguards to various locations, being sure that enough lifeguards are located in the correct places in regard to the number of swimmers as well as the layout of the facility (obstructions, glare, etc.).
- Be sure that the lifeguards have break times to rest and eat/drink so that they are always at their best while making sure that all areas of the water are watched at all times.
- Monitor the weather/environmental conditions, in case there is a reason why the pool area needs to be evacuated.
- Ensure that all rules are being followed by guests and lifeguards alike.
- In the case of an emergency, the supervisor should have a role in the emergency action plan—EAP—including the filing of a detailed report after the emergency has passed.

Emergency Services

Emergency Services may not be a permanent member of the facility staff, but they play an important role in dealing with medical emergencies which occur at the facility. Whenever there is a serious health emergency, drowning incident or accident at the facility, Emergency Services need to be called.

If the victim does not have a pulse, or has a pulse but isn't breathing, it is considered a life-

threatening condition. If a victim has drowned and has been removed from the pool, EMS should be called to assess the victim. Other conditions may be life-threatening, including severe bleeding, sudden illness, spinal injury, shock, serious burns, and other medical conditions. Below is a list of possible emergencies when EMS should be called immediately, but a rescuer should use proper judgement in assessing a situation.

- The victim is unconscious
- The victim is in severe pain
- The victim is bleeding heavily or gets a deep cut
- The victim has suffered a serious accident
- The victim is confused or disoriented, or has difficulty speaking
- The victim has a severe allergic reaction
- The victim is experiencing chest pain
- The victim experiences shortness of breath or has an asthma attack
- The victim has vision problems, including blurry vision, double vision or loss of vision
- The victim exhibits signs of a stroke
- The victim experiences a seizures
- The victim suffers with a burn
- The victim is vomiting
- The victim experiences a head injury
- The victim has stomach pain
- The victim exhibits a high fever
- The victim has broken and dislocated bones
- The victim experiences conscious and unconscious choking
- The victim experiences hypothermia or hyperthermia

As part of the emergency action plan EAP, Emergency Services provide professional medical assistance to supplement the work of lifeguards. Emergency Medical Services are called when a medical emergency arises including breathing and cardiac emergencies. It is imperative that the person contacting EMS[11] quickly and clearly describes:

- The exact location of the facility, including the street address
- The type of incident which has occurred
- A callback number where you can be reached
- Additional information concerning quick access, such as which door/entrance to enter, and that someone would be there to meet them.

A person should then wait at the entrance for the Emergency Medical Services to arrive and guide them quickly to the victim.

Stay Sharp

In the best possible scenario, a lifeguard rarely needs to use their rescue and first aid skills while on duty. However, it is vital that a lifeguard be ready to act in an emergency, and that the lifeguard's skills and knowledge are maintained[12].
In-service training of 4 hours per month should be coordinated by the facility manager, head lifeguard or other supervisors, and include such topic areas as:

- emergency response drills
- rescue skills
- facility rules
- physical conditioning
- water surveillance
- first aid and CPR

Regular in-service training provides the lifeguard with the opportunity to refresh their skills and work together as a team with the other lifeguards, to be ready to act immediately in the case of an emergency.

Facility Safety

Along with other water safety issues, lifeguards must be sure that the swimming water is safe and clean for the safety of all swimmers. A lifeguard's responsibilities will often include test and monitoring the water to insure that safe levels are maintained. The areas that the lifeguard is most concerned with regarding water chemistry and illness prevention include:

- chlorine/bromine levels of the water
- pH level of the water
- Human discharge/fecal matter in the water

Chlorine is a common chemical used in swimming pools and spas which cleans the water and kills germs and contaminants. There should be 2-4 parts of chlorine per million (ppm) in the swimming water so that it will work effectively. Bromine is another chemical used to disinfect pools and spas, and is often used in hot tubs as it remains stable at very warm temperatures. The chlorine or bromine level can be checked by using a pool chemical testing kit.

If the pH level of a pool too high, the chlorine or bromine will not be able to work effectively. Subsequently, when the pH level is too low, swimmers may find their eyes become irritated, and pool equipment may become corroded. An ideal pH level for a pool is 7.4 to 7.6, and can be tested using a pool water testing kit.

A commercial grade test kit should be on-hand for testing the pool water. One can easily raise or lower the PH values and chlorine values with additives and follow the instructions provided by the products themselves.

Most private home pools are small and homeowners typically only measure their Total Chlorine level along with the PH. Because of a higher volume of swimmers and potential contaminants larger pools often require Free Chlorine levels to be monitored as well. When a chlorine particle attaches itself to a contaminant, it oxidizes or cleans it. That “used” chlorine particle is no longer potent, but still appears when you measure the total chlorine. Free chlorine refers to the unused chlorine that is still floating around waiting to oxidize contaminants or eventual be burned away by the sun and air. If your facility has a hot tub or pool that maintains heat above 90 degrees the chlorine level should be between 3ppm to 4ppm to be effective.

Additionally, human discharge—such as vomit—or fecal matter in the water could sicken pool patrons and cause RWIs, which are Recreational Water Illnesses.

While chlorine and bromine can effectively kill many germs in the water, when there is solid human waste in the pool, the following steps must be commenced by the lifeguard:

- All swimmers must exit the pool
- The solid waste must be removed from the pool
- The water properly treated before patrons can return
- Proper treatment depends upon the type of discharge present.

With solid fecal matter:

- After swimmers have left the water, adjust the pH level to below 7.5
- Raise the free chlorine level to 2 ppm or higher
- Keep these levels for at least 25 minutes before swimming can resume

However, if there is diarrhea in the water:

- After swimmers have left the water, adjust the pH level to below 7.5
- Raise the free chlorine level to 20 ppm.
- Retain these levels on an empty pool for 13 hours.
- Backwash the pool filter.
- Return the chlorine level to normal before allowing anyone to return to the water.

Preservice Orientation

Orientation is the perfect time to set the tone for new staff members, along with distributing uniforms, identification tags and other personal equipment. When a lifeguard is hired work in a swim facility, the aquatic supervisor will meet with the new lifeguard in order to:

- Issue a uniform and any other needed equipment
- Conduct an orientation session—either alone with the new employee or along with other new staff members if others were all hired together. The orientation session must include:
    - A detailed tour of the facility, including the locations of emergency exits, the AED and other first aid supplies, the backboard and other rescue equipment, and the best ways to quickly evacuate the area if needed.
    - A comprehensive discussion of the EAPs (Emergency Action Plans), including the new employee's role in the EAPs.
    - A walk-though of the different lifeguard stands and zones, including discussion regarding zone coverage in the case of an emergency, as well as shift rotations and changes.

In addition to the orientation session, the new lifeguard may require training in the use of the AED and other rescue equipment. If the new hire occurs at the beginning of the season, it would be best to include all new and returning lifeguards into the orientation/training sessions, in order to keep their skills and knowledge sharp from year to year.

Evaluation

Staff members should be evaluated regularly by the aquatic supervisor, and these evaluations should be retained by the facility with other employee records. Regular evaluation serve both to assist the staff member in improving their skills in a variety of areas, as well as to serve as a permanent record of suggestions, recommendations and skill deficiencies should it be necessary to discipline, retrain or remove a lifeguard from their position.

The following are areas which should be included in an evaluation form, and each area should be rated Satisfactory, Improvement Needed or Unsatisfactory. Any areas marked Improvement Needed or Unsatisfactory should include additional notes on the evaluation form that specify the details of the deficiency, and follow-up measures should be taken to rectify such situations.

Lifeguard Skills

The following are measures of the lifeguard's competence and attention to the particular skills learned in lifeguard training.

- The lifeguard is proactive in preventative lifeguarding.
- The lifeguard is attentive and vigilant at all times.
- The lifeguard is focused upon the primary objective of surveillance and avoids distractions from patrons and other objects.
- The lifeguard is able to recognize swimmers is distress, and reacts quickly and appropriately.
- The lifeguard recognizes potential problem areas and behaviors and addresses them before an issue arises.
- The lifeguard is competent and confident in the use of lifeguard equipment.
- The lifeguard is competent and confident in the use of first aid equipment.
- The lifeguard takes care of equipment, storing it properly for future use, and alerting an aquatic supervisor if something is missing, broken or needs to be replenished.

Job Skills

The following are measures of different skills required of the lifeguard, aside from those specific to lifeguarding.

- The lifeguard understands the various procedures in place—both emergency and non-emergency—and follows the procedures at all times.
- The lifeguard maintains a professional image in uniform and attitude.

- The lifeguard is dependable in completing assigned tasks.
- The lifeguard completes appropriate forms and documents, including accident reports, attendance records, inventory sheets, and other required paperwork.
- The lifeguard completes all paperwork and reports neatly and on time.
- The lifeguard arrives for work shifts on time as scheduled, and remains for the entire shift time.
- The lifeguard makes arrangements in advance for desired scheduling changes.
- The lifeguard finds coverages for absences.
- Monthly Evaluation Reports are important to reaffirm Lifeguard Skills and either correct or praise their work. Where other job positions may get six month performance reviews a lifeguard position is often seasonal and a critical life or death job, so evaluations are recommended to be monthly.

A ROC, Record of Counseling, is an important method of correcting immediate incidents or reporting a staff members lack or failure to perform as expected. Any attendance, attitude, uniform or respect issue can be reported in a ROC. ROCs should be presented to the staff member by the Aquatic Supervisor and a senior staff member as a witness. ROCs are to be filed and are important back-up material in the event that a staff member may be released for cause.

Interpersonal Skills

The following are measures of different communications skills and attitudes when dealing with others.

- The lifeguard is willing to train and participates in team development activities with enthusiasm.
- The lifeguard is receptive to constructive criticism.
- The lifeguard is eager to assist other lifeguards.
- The lifeguard performs well in physical training and lifeguarding skills activities with others.
- The lifeguard treats the public with respect and courtesy.
- The lifeguard is a positive part of the team environment with other staff members.
- The lifeguard treats other lifeguards with respect.

After completing an evaluation form, the aquatic supervisor should:

- Schedule a meeting with the lifeguard to review the form in person.
- Areas of excellence should be commended so that the lifeguard sees that their contributions to the staff and competence is different skills are recognized and appreciated.
- Areas marked Improvement Needed or Unsatisfactory should be addressed, with specific recommendations for improvement made in writing on the form.

- An action plan—including a timetable— for addressing these problem areas should be discussed and added to the evaluation form.
- A follow-up evaluation date should be set so that improvement in these problem areas can be noted.
- The evaluation form should be signed by both the lifeguard as well as the aquatic supervisor.
- A copy of the signed form should be given to the lifeguard, while the original form is kept on file.

Regular evaluations of lifeguards will result in a team which works well together and feels recognized for their efforts.

Review

Write 3 items to remember regarding each of the following responsibilities of a lifeguard:

Rule Enforcement

1.

2.

3.

Guest Relations

1.

2.

3.

Rescuer Responsibilities

1.

2.

3.

Paperwork

1.

2.

3.

Match the legal issue with its definition:

Consent Good Samaritan Laws Abandonment Right to privacy	Implied Consent Standard of Care Refusal of Care Aquatic Liability	Duty to Act Negligence Documentation

_____— A person is expected to provide a certain level of emergency care aligned with the person's level of emergency training.

_____—Anyone over the age of 18 is able to refuse care. If the rescuer feels like they must receive care, they should call 911.

_____— It is vital that the rescuer records and reports the medical emergency as soon as possible before important details are forgotten.

_____— If a person does not hold up to the level of standard of care, they may be sued for this if a person incurs resultant damage which can be proven.

_____— One has the duty to act in a medical emergency and provide medical care if the person is working and on the job at the time.

_____— The rescuer may not share any information about the victim with anyone aside from medical professionals directly associated with the victim.

_____— From scanning to saving, a lifeguard must be alert, trained and ready to act at all times while on duty.

_____— Once a rescuer has begun emergency care, they must not leave the victim or stop providing care until someone of equal or greater training—such as EMS—arrives and takes over the care of the victim.

_____— A person must obtain the permission of a person before giving emergency care.

_____— When a person is a bystander and did not have a duty to act, but instead chose to help, this law provides basic legal protection for the responder.

_____— If a victim is unresponsive, seriously injured or very confused, the victim may not be able to give direct consent for medical care. In a case like this, it is assumed legally that the victim would have given consent if they could.

What are 3 ways a lifeguard can remain in good physical condition?

1.

2.

3.

What are 3 things a lifeguard should do to exhibit a good attitude?

1.

2.

3.

Unit 2—Hazard Identification and Accident Prevention

Equipment

Rescue Equipment

There is certain rescue equipment that every facility should have within arm's reach of the lifeguards, whether it is a pool facility or open water location.

Buoys/Life Rings

A rescue buoy can have an oblong shape with handles for easier gripping around the sides, or can be a traditional life ring. Buoys and life rings have a rope attached to them so that they can be thrown to a distressed swimmer, and then once the swimmer is holding onto the buoy or life ring, they can be pulled to safety. Buoys and life rings are able to be thrown much farther than a shepherd's crook or rescue tube, and are especially helpful in larger bodies of water.

Reach Pole/Shepherd's Crook

A shepherd's crook is a long pole with a single or double shepherd's hook on the end. A shepherd's crook can extend much further than a rescue tube, as rescue poles are typically 8-16 feet in length. The lifeguard can safely extend the rescue pole to a swimmer in need, who can hold onto the hook and be pulled to safety.

Rescue Tubes

A rescue tube should be available to the lifeguard at all times, as it is one of the most versatile pieces of lifesaving equipment. Whether the lifeguard is sitting and scanning or standing alongside the water, a rescue tube should be on hand, with the strap over one shoulder.
A rescue tube can be used in various types of rescues, from non-swimming rescues where the tube is extended from the lifeguard to the distressed swimmer, through rescues at the bottom of the pool. A lifeguard should have a rescue tube at all times while on duty.

Wearing a Rescue Tube

- The tube strap loop should be over the rescuer's shoulder and under one armpit
- Whether sitting or standing, the tube's remaining hanging strap must be bundled in one hand avoiding any portion of the strap from dangling.

Backboard

A backboard is used to remove a victim from the water who has a suspected head, neck or spinal injury or removing an unconscious victim from a pool. A lifeguard must learn to work together with others in keeping the victim's head and neck stabilized and in alignment while securing the victim to the backboard with the head brace and straps for safe transport out of the pool. A backboard can also be used without the straps and head restraints in order to remove victims without head/neck/back injuries from the pool easily.

Additionally, in an open water situation, the following equipment should be available for rescues and searches:

Rescue Board/Surfboard

A surfboard can be used by a lifeguard in a situation where the distressed swimmer is far away. The lifeguard will use the surfboard to approach the victim quickly, and then upon reaching the victim, the lifeguard will place the victim on top of the surfboard and paddle/kick the victim back to shore.

Boat

A boat is useful in open-water situations where there is a large distance between the lifeguard and the victim. With a boat—whether it is a kayak, rowboat or inflatable—the lifeguard can reach the victim much quicker and safer than swimming such a distance by hand, and upon reaching the victim, the lifeguard can place the victim into the boat for a rapid return to the shore and safety.

Mask

A mask[2] is helpful for visibility in murky water, and this extra visibility will be helpful in a search function in open water. It consists of flexible material—like silicon, tempered safety glass and a head strap which is adjustable. Proper fit is very important, so lifeguards should try on and choose a mask which fits properly. To check the fit, a lifeguard should:

- hold the mask against the face without using the head strap
- inhale through the nose, so that the mask suctions to the face
- adjust the head strap
- try wearing the mask in the water to be sure that it fits well with no leaking
- It is important to do this before needing to wear the mask in an emergency situation.

Preventing Fog

Often a mask will fog[3] up, preventing clear vision. To prevent fogging, the lifeguard should spit into the mask, rub the saliva around on the safety glass, and rinse the mask with water before putting it on the face. There are also commercially accessible drops lifeguards can purchase to prevent fogging.

Water-Filled Mask

If the mask fills with water while submerged, the lifeguard should press a hand against the top of the mask, which will loosen the seal at the bottom of the mask. The lifeguard will then tilt his/her head forward to allow the water to drain while blowing air out of the nose[4].

Equalizing Pressure

When swimming deep under the water, the lifeguard may experience an increase in pressure causing pain in the ears and head[5]. The lifeguard will need to equalize the pressure in the ears by squeezing the nose while wearing the mask and blowing out through the nose. The mask material on the nose should be flexible so that the lifeguard can squeeze the nose through the material.

- Using the thumb and pointer on either side of the nose, pinch the nose while keeping the mouth shut.
- Exhale gently through the nose while pinching the nose shut. This should relieve the pressure.
- Repeat as necessary. As the lifeguard ventures deeper in the water, the pressure may need to be equalized again.
- If the lifeguard's mask begins to squeeze the face due to the pressure, the lifeguard should exhale a bit of air through the nose into the mask.
- If the lifeguard is unable to equalize the pressure and relieve the ear pain, the lifeguard should not go any deeper in the water until the pressure is relieved.
- Sometimes an illness/congestion prevents the lifeguard from equalizing the pressure. In this case, the lifeguard should return to the surface and not risk an ear injury.

Fins

Fins[6] can help a lifeguard to swim much farther and faster in open water than usual, helping the lifeguard to reach a victim quickly in the water. It is important that the fins are sized to fit the lifeguard, both in the size of the foot-part of the fin, as well as the length of the fin. Longer fins require stronger legs for use, so the lifeguard must find a pair of fins which work well before needing fins in a rescue situation.

It is generally easier to put wet fins onto wet feet, so the lifeguard should wet both fins and feet before putting them on. When putting on fins, be sure

not to pull by the strap, as it can easily break. Instead, push the foot into the fin and then slide up the strap[7].
Fins work best with a modified flutter kick, and are easiest to use under the water rather than at the water's surface. The lifeguard should practice swimming with the fins on, to get the feeling of the slow kick speed that works best with fins. Wearing fins propels the swimmer much farther and faster, and generally it is better to swim using only the feet/legs, keeping the hands at the sides or extended out, when wearing fins.

Entering the Water with Mask/Fins

When entering the water with mask and fins, the lifeguard should enter using a stride jump, while one hand pushes the mask towards the face[8]. This prevents the mask from falling off and water entering the mask during the entry.

Snorkel

A snorkel allows a person to breathe underwater just below the surface of the water. A snorkel is very helpful to a lifeguard in the case of a rescue mission, when the lifeguard will wish to remain below the surface of the water for an extended period of time.

Lifeguarding Equipment

Lifelines

Lifelines are ropes tied to stationary objects or throwing objects—like buoys and life rings—which swimmers can cling to during a rescue. In an open water situation, lifelines may be much longer than in a pool setting.

Lifeguard Stands

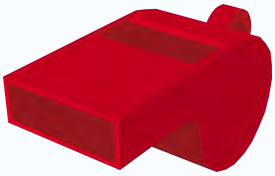
Lifeguard stands serve several purposes at a swimming facility, including:

- A set location for a lifeguard, ensuring that there is adequate coverage of the water.
- Aiding the lifeguard in visibility by lifting the lifeguard

above the swimmers for a better view.

- A place for patrons to look for a lifeguard.

Lifeguard stands should be off-limits to guests.



Personal Equipment

Each lifeguard will be issued personal equipment, and the lifeguard will be responsible for their own equipment, its maintenance, and having all of the proper equipment at all times.

Uniform/Clothing

A uniform will be issued to the new lifeguard, which is intended to make the lifeguard easily visible to the guests as well as to other lifeguards. A lifeguard should always be in uniform, and not wear any clothing over their uniform which would cover it from view.

Whistle

Each lifeguard will be issued a whistle, which should be kept accessible at all times. There may be certain signals—such as a short toot to catch someone's attention and a longer whistle for an emergency—that the lifeguard should know.

Sunglasses

Sunglasses serve both to protect the lifeguard's eyes from the sun as well as to improve the lifeguard's vision by cutting down on glare. Sunglasses should be considered an essential piece of equipment, as the lifeguard's vision will be compromised without them.

Binoculars

Binoculars are especially helpful in an open-water location, where the distance from the lifeguard to the swimmers may be quite far. The lifeguard should practice with the binoculars, learning how to focus the binoculars, scan the water, and zero in on possible issues.

Sunscreen

Since lifeguards spend so much time outdoors, sunscreen is essential. A lifeguard cannot wear clothing which would cover the uniform/swimsuit, so thorough application of sunscreen to all exposed skin and re-application to remain protected during long shifts is critical to the lifeguard's health and well-being.

Scanning and Swimmer Surveillance

Scanning Strategies

Scanning the water when on duty involves much more than simply “watching” the people in the pool. Scanning involves a deliberate course of action, actively searching all areas of the water—both over and under—while being alert for signals of distress. Drowning happens quickly—and often silently—so the lifeguard on duty must be alert and aware of all swimmers and their activities at all times[9].

Scanning strategies include:

- Searching your zone both in and out of the water
- Scanning deliberately, moving the eyes and head both up and down as well as across in the water
- Sweeping the entire zone every 10 seconds with your eyes in order to scan the entire area effectively
- Focusing on potential trouble spots or swimmers in distress
- Searching the water in a systematic manner
- Scanning the top, middle and bottom of the water
- Being sure to scan in the blind spots, such as directly beneath the lifeguard stand

Keep alert for signs of trouble:
Non-swimmers—must be watched, as they may suddenly enter the water and find themselves in trouble
Behaviors—that can lead to trouble, like horseplay, games or races, should be monitored before they turn dangerous
Weakness—in swimmers can be seen in poor swimming, flailing arms or other signs which can lead to trouble
Obstacles—may block your view, including crowds, pool obstructions and umbrellas, so be sure to position yourself for a full view
Distractions—like questions or conversation from others should never interrupt your primary responsibility, actively scanning the pool[10]

Coverage Zones

A supervision system is created to define the positions, zones and rotations of lifeguards at a swimming facility to ensure that there is adequate supervision at all times. The supervision system will be developed reflecting upon many factors, including:

- The size of the facility

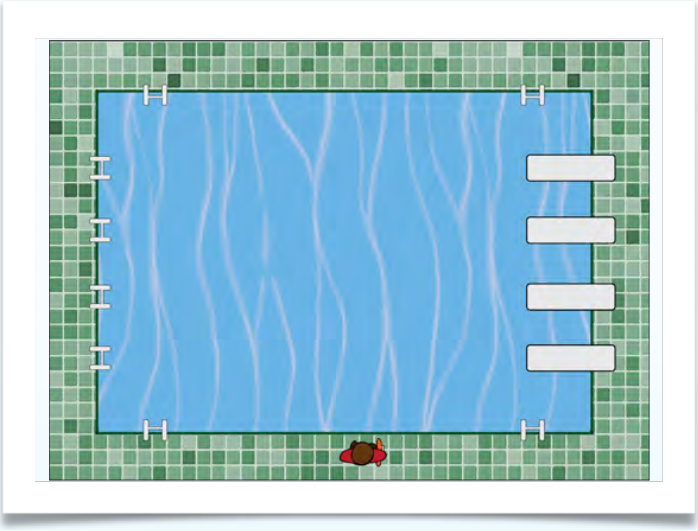
- The number of swimmers at the facility
- Viewing conditions, such as obstructions or glare
- The types of activities, such as wading, classes or slides
- Number of available lifeguards

The three most common systems for supervising a facility regarding coverage are total coverage, zone coverage and emergency coverage.

Total Coverage

In total coverage, one lifeguard is responsible for the entire pool area. This method can be effective if:

- the pool/swimming areas are relatively small
- there aren't too many swimmers present
- there are additional lifeguards available to rotate with the lifeguard to provide breaks, as well as to partner with the active lifeguard in the case of an emergency.

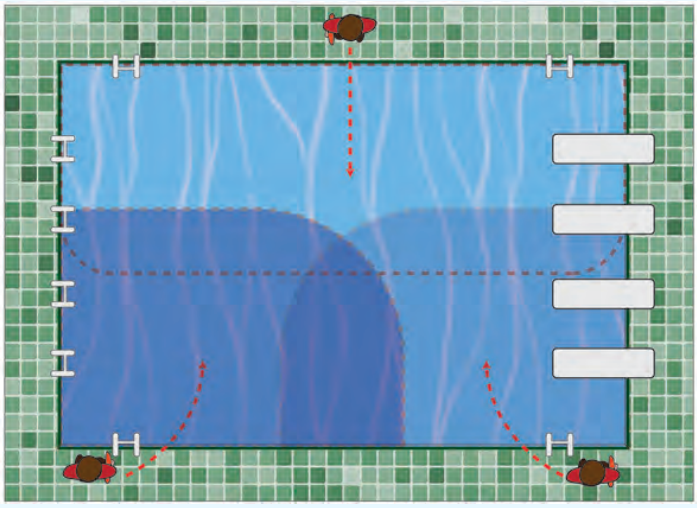


In the right location which adheres to the points above, total coverage can certainly be a workable solution. However, breaks are critical to avoid fatigue, as a tired lifeguard will not be effective in thoroughly scanning the water.

Zone Coverage

In zone coverage[11], the swimming area is broken into smaller areas—or zones—with different lifeguards responsible for each zone. For zone coverage to be safe and effective, it is important that:

- Each lifeguard is certain of where the zone begins and ends, so that there aren't any unsupervised areas of water.
- The zones overlap, to be sure that there is complete pool



coverage by the lifeguards.

- A lifeguard's zone is not so large that the lifeguard couldn't reach any end of the zone within 10-15 seconds.

Emergency Coverage

In an emergency situation where a lifeguard must enter the pool to perform a rescue, all lifeguards must assist. While one or two lifeguards will assist in the rescue, another lifeguard will take over the primary rescuer's stand, and yet another lifeguard will prevent victims from going down the slides/diving boards. If the emergency happened in a wave pool, and the primary rescuer did not turn off the emergency shut off button, one rescuer must press the button to turn off the waves.

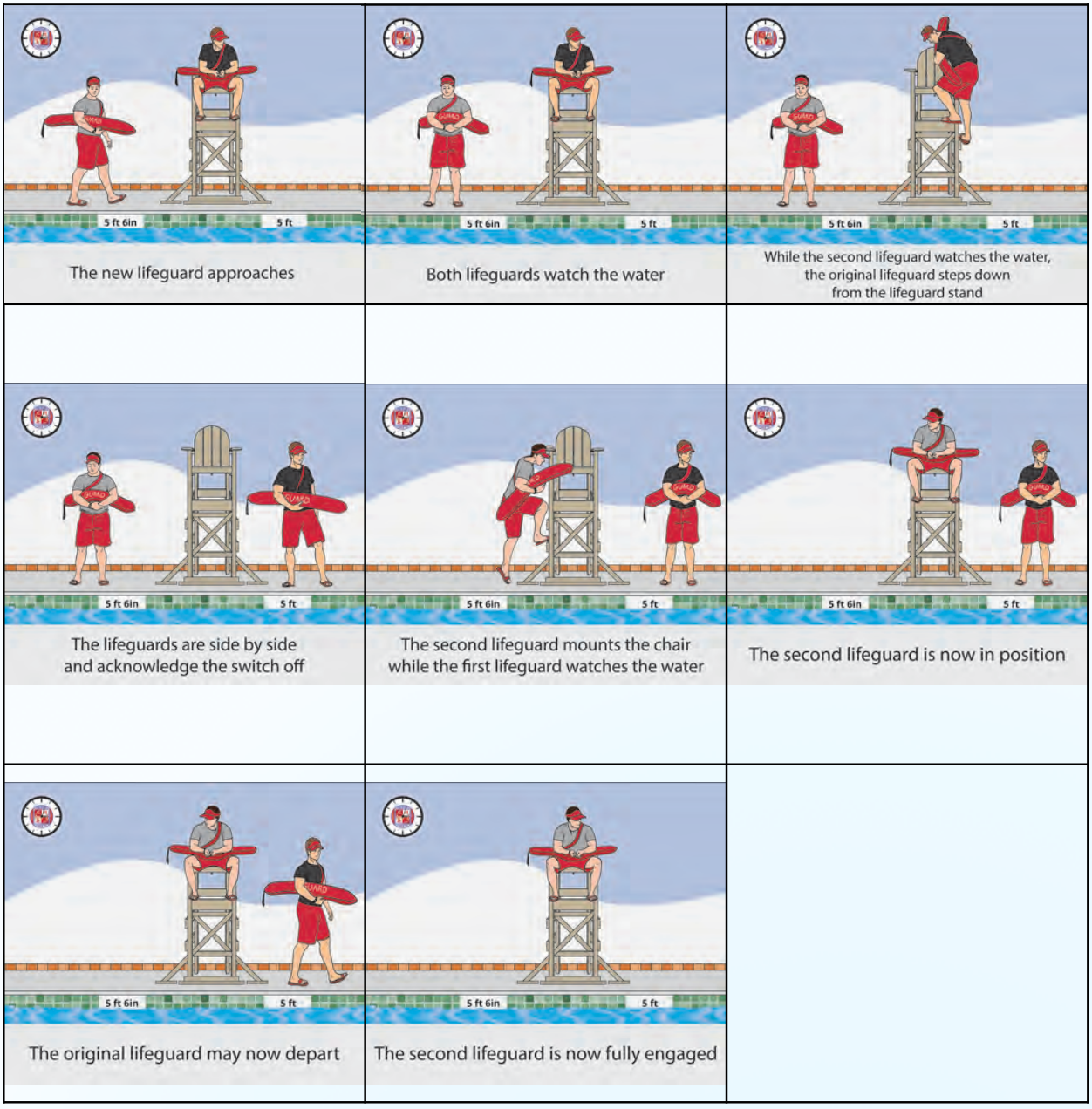
If the EAP says to remove all patrons from the pool, lifeguards must follow the EAP and remove all patrons from the pool.

Lifeguard Stations

Lifeguard stations can be towers or elevated chairs which are permanently set in place at various locations around the water. A lifeguard station can also be a location poolside where a lifeguard stands to scan the water. There are some locations where the added height from a lifeguard chair makes it the preferred lifeguard station, but around shallow pools or near play structure, lifeguards on the ground may be more effective, as they can easily interact with guests. A combination of chairs and "roving" lifeguards may be the best options to reflect the different needs of the different areas of the pool.

Changing Stations

When zone coverage is used, the time will come when the lifeguards will rotate their stations. In order to combat the fatigue that accompanies the level of focus proper surveillance can cause, it is important for lifeguards to rotate regularly—even every 20-30 minutes. It would be best if there was an "extra" lifeguard for rotations[12], as the new lifeguard would replace one lifeguard, who in turn would walk over and replace another. At all times until a replacement is in place and active, the lifeguard on duty should continue surveying the water.


5 ft 6in
5 ft
The new lifeguard approaches
Both lifeguards watch the water
While the second lifeguard watches the water, the original lifeguard steps down from the lifeguard stand
The lifeguards are side by side and acknowledge the switch off
The second lifeguard mounts the chair while the first lifeguard watches the water
The second lifeguard is now in position
The original lifeguard may now depart
The second lifeguard is now fully engaged

Focus and Fatigue

Focus and fatigue[13] are two of the biggest challenges to a lifeguard, so it is important for a lifeguard to take steps to combat these issues before they become a safety issue.
To remain **focused**, a lifeguard should:

- Not carry on an extended conversation with a guest or other lifeguard, as it takes the focus away from the water.
- Leave phones/electronic devices away to avoid distraction.
- Actively search—not stare at—the water, scanning up and down, left and right to keep eyes and focus active and alert.
- Count the victims in your zone
- Risk profiling the patrons

To avoid **fatigue**, a lifeguard should:

- Remain cool and hydrated at all times, using sunscreen and sunglasses as needed.
- Change his/her position regularly, sitting or standing up tall and ready for action.
- Request breaks if needed, for a tired lifeguard is a safety hazard.
- Get a good night's rest before working.

Be sure to remain:
Focused—your attention must always remain on the swimmers and on the water—do not let your mind drift
Upright—you should always sit or stand erect, which will both keep you alert and ready to spring into action if required
Moving—don't stare into one place, rather, keep your head and eyes moving to look squarely at each area in your charge
Searching—visually seek out all swimmers at all levels of the water—at the surface, below the surface, and at the bottom of the pool

Recognizing Potential Victims

Recognizing a drowning[14] victim quickly and acting immediately to bring the person to safety and restore breathing and heart function, if necessary, is one of the primary responsibilities of a lifeguard. It is critical that the lifeguard continually scan their area, targeting those swimmers who may be in distress and acting accordingly. It can take just a few short seconds for a

person to slip below the surface. It is important to remember that a drowning victim may not always call for help or appear to struggle on the surface of the water, so the lifeguard must watch for other indicators and characteristics of drowning victims.

Active Drowning

The lifeguard must be alert to swimmers in distress, as well as those who are actively drowning. Additionally, a victim may be responsive and appear active, or the victim may instead be unresponsive and appear passive.

The following characteristics indicate a swimmer in distress:

Passive submerged drowning

- A person may have a panicked facial expression indicating their distress
- A person may look as if their kick and arm movements are ineffective at propelling them to shallower water or the side of a pool.
- A person's head may be back and body positioned low in the water as they attempt to breathe.
- A person may appear to be bobbing up and down in the water
- A person may be hanging onto the rope, a busy or other object/side of the pool in order to remain above the surface

A distressed swimmer may become a drowning victim if not assisted. A drowning victim:

- May be above the water or below the surface.
- If below the surface, the submerged victim may be motionless and look more like a shadow from above the pool.

Can You Guess What's Wrong?

Imagine that you are a lifeguard and take a good look at the scene below and see if you can spot any problem areas. Some places you want to focus upon include:

The behavior and attention of the lifeguards on duty:

- Are they focused and attentive?
- Are they interacting appropriately with the pool guests?
- Are they inattentive and unprepared for an emergency situation?

Around the pool:

- Are the pool guests behaving as they should around a pool?
- Do you spot any behavior that should be corrected?
- Do you see anyone acting in a potentially dangerous manner?

In the pool:

- Are all pool guests safe from danger, or are they in a bad, potentially dangerous location?
- Do you see any issues that may result in serious injuries in the immediate future?
- Are any guests exhibiting drowning behavior or appear to be in distress?

Correct behavior:

- Do you see any guests in or around the pool who are behaving safely?
- Which lifeguards are actively scanning and surveying the pool?
- If you were a lifeguard on duty, what would you do?

Now look at this picture below and see if you were able to spot all of the potentially dangerous behaviors on the part of the guests and lifeguards.

You can see kids running on the pool deck. Lifeguards must enforce the rules at all times especially with children running on the pool deck. Lifeguards should tell the children to stop running and explain to them that it is dangerous.
By the diving board you can see a child pushing someone into the pool. No pushing should be allowed at any pool.

Here you can see someone diving over swimmers. Diving over swimmers in the pool is very dangerous.

How about this, did you spot the children fighting over the ball in the shallow end of the pool? Fighting should never be allowed at all times, especially at a pool.

Did you also spot the child who is diving in the shallow end of the pool? Diving in the shallow end of the pool can cause a head, neck or back injury. Lifeguard should prevent diving in the shallow part of the pool.

Did you spot the child pushing his friend into the pool? As mentioned earlier, pushing someone into a pool can be very dangerous.

What about the lifeguards? Are they doing anything wrong? What about the lifeguard on her phone and not watching her zone? Lifeguards should not be on their phone and must watch and be focused on their zone at all times.

Did you spot the child in the deep end holding onto the edge of the pool? The child here is holding on to the edge of the pool. A lifeguard should remove the child from the pool.

The most serious emergency of all is the one that you can't hear, and that one already drowned. A lifeguard should have recognized the victim before they became a passive victim. The lifeguard must remove the victim from the pool and, if needed, begin CPR.

Did you spot them all?

Are there any that you didn’t recognize immediately as potentially dangerous behaviors, but now realize the problems which are displayed? A lifeguard on duty at a busy pool may see all types of pool guests while on duty, including those behaving exactly like the picture. Hopefully, you will be more aware than the lifeguards on duty in this picture to keeping your pool guests safe.

You can get more information regarding drowning victims at the beginning of chapter 4.

Environmental Issues

A lifeguard must be alerted to changes in the environment and act quickly if conditions change or deteriorate such that they are a hazard to swimmers and guests.

Severe Weather Conditions

Storms can move in quickly during summer months, and a pool in no place for a person to be if lightning were to strike. A lifeguard should check the weather conditions—and anticipated

forecast—before coming on duty, and if storms have been predicted, be prepared for an evacuation. Sometimes weather conditions change unexpectedly, and the lifeguard must be attuned to the sounds of thunder (as opposed to the sound of a train or other local sounds), the sight of a darkening sky, a drop in temperature or the first drops of rain and act immediately.
If the lifeguard or anyone sees lighting while patrons are swimming, the lifeguard must clear the pool.

Electrical Safety

Electrical issues can arise in a pool setting if there is an electrical issue—such as a downed light pole—in close proximity to the water. If there is any potential for electrical wires or currents coming into contact with the water, guests must be evacuated immediately.
Additionally, when performing a rescue or otherwise using electrical devices—such as an AED—the lifeguard must be sure to place it far from the water's edge[15].

Water Clarity

Water clarity[16] can be an issue due to excessive splashing, glare, or cloudiness in the water due to a chemical imbalance. In an open water scenario, water clarity can be compromised due to silt or sand getting kicked up from swimmers, algae blooms or even seaweed. Depending upon the cause of the issue, the safety of the swimmers—including the clear visibility of the lifeguard—are the most important factors, and if the lifeguard cannot see the swimmers effectively, the water should be cleared.

Open Water Issues

In addition to water clarity issues, open water has its own set of possible environmental issues, including:

- The development of riptides.
- Strong waves and undertows.

- Marine creatures—from jellyfish to sharks.
- Boats and jet skis coming in too close to swimmers.

Lifeguards attending to an open water swim area must learn about the different potential issues of that location, check before coming on duty as to any issues occurring that day, and communicate with other lifeguards about any unusual environmental activity so that others will be informed[17].

The biggest challenges to effective scanning are
Personal Challenges and Visual Challenges

Personal Challenges include boredom, exhaustion and distraction.

To combat **boredom**, be sure to:

- Remain fully active and alert
- Change your position regularly
- Sit or stand erect and ready
- Actively and constantly search the water

To avoid exhaustion, you must:

- Stay cool—be sure to have shade, sunglasses and water
- Request breaks—if you are not at your best, be sure to ask for assistance

Don’t be distracted, instead:

- Be sure to continue scanning the pool if someone comes and asks a question
- Do not carry on extended conversations while on duty
- Keep electronic distractions to a minimum by storing cell phones while on duty

Visual challenges to effective scanning include **poor water clarity**, **obstacles** and **sunlight**

Poor water clarity can include:

- Splashing and other movement which could block your view of all swimmers
- Cloudy or murky water, which may require better positioning, high alert or even more assistance
- Pool markings which may be confusing while scanning

Obstacles can include many things, including:

- Crowds may gather—in the pool or on deck—and block your view
- Inflatables, pool toys and other items in the water blocking your view
- Umbrellas, fountains and other items which can block your view

Sunlight can cause glare on the water, so be sure to:

- Wear polarized sunglasses to cut down on glare
- Stand, sit or otherwise adjust your position for best visibility
- Move to a new location if the glare is blinding (be sure to check with a supervisor first)

Swimmers at Risk/Preventative Lifeguarding

There are dangerous behaviors which should alert you even before a distress incident occurs, as people can become drowning victims very quickly.

Races and Rough Games

Young people having fun can often become dangerous when races and rough games mix with water. Races in the water can be dangerous to both the racers—who may push their swimming capacity beyond their ability in order to "win," as well as a danger to the other guests who are not involved in the race, but may simply be in the wrong place at the wrong time, getting hit or hurt by racers speeding by.

Rough games—either in the water or

poolside—are rarely structured and safety-conscious, and participants think only of their own objectives without considering safety, either their own or that of the other guests. A lifeguard must watch guests both in the pool and poolside for the first sign of rough games or racing and act before it becomes dangerous. Guests should be encouraged to race in the swim lanes if they are available, to channel their competitive spirit to something more productive.

Slides and Diving Boards

Slides and diving boards are among the most dangerous areas of a pool, as the pool guests (usually children or young people) are so anxious for their turn that they don't wait for the diving board/slide area to be cleared before continuing on themselves. This can result in a guest crashing at high-speed right on top of another guest, putting them both in great danger. A lifeguard assigned to a slide or diving board area must be aware of regulating the "turns," especially if the next slider/diver doesn't have a clear view of the endpoint. It is the lifeguard's responsibility to be sure that the first swimmer has safely finished their "turn" and cleared the area before signaling the next one to begin.

Breath Holding Activities

At aquatic facilities, guests sometimes like to have a breath holding game, whether they are competing to remain submerged for the longest time or swim the farthest underwater without coming up for air. These games are very dangerous, and can cause blackouts and drowning, which can lead to cardiac arrest. All lifeguards must be able to identify and stop visitors who are having these breath holding games. Some ways to accomplish this include:

- Posting signs forbidding such games/contests
- Educating guests about the dangers of such activities
- Remaining alert to such activities and stopping them before there are emergencies
- Stop any swimmer who is voluntarily hyperventilating

Crowds and Disturbances

The more people are gathered in the pool or poolside, the less able the lifeguard will be to see clearly and recognize a distressed swimmer or drowning victim. When there is a disturbance in a crowd—such as a fight—the distraction, visual impediment and safety issue become even greater. Such crowds are often unpredictable, and breaking up such a crowd or removing them from the pool area in the interest of safety for the other guests is often the only solution.

Vulnerable Swimmers

Lifeguards should be aware of vulnerable swimmers, from the youngest to the oldest, and watch for such behaviors as:

- Weak swimmers whose head is bobbing up and down in the water.
- Pool guests hanging on to the side in deeper water.
- Young children, who are unable to stand comfortably in the water.

It is best for a lifeguard to take a proactive approach to water surveillance and watch for those vulnerable swimmers and intervene before it becomes a safety issue.

Health and Safety Issues

Health and safety issues at a pool include those times when a pool guest vomits, bleeds or has a fecal accident in the pool. It is important for the lifeguard to act quickly and evacuate the pool if necessary in such a case[18]. The following chart—based upon the recommendations of the CDC—Centers for Disease Control and Prevention—outlines the different approaches which must be taken following such an incident.

Administering a Swim Test

In some swim facilities, there are requirements set forth regarding the usage of different areas of the facility—such as deeper water or diving boards—and the lifeguard is required to differentiate such swimmers with a swim test. Each facility should have their own requirements based upon the features and layout of the particular location, and the new lifeguard should be provided with information regarding:

- What requirements are necessary for swimmers to use different areas/features of the facility

- What type of swim test should be administered in order to evaluate swim patrons of their baldness to use all areas of the facility

Swim tests should never be administered by a lifeguard who is on duty, as such activity would surely prevent the lifeguard from giving their full focus and attention upon surveillance and scanning of the pool.

When a lifeguard is not on duty and is charged with the task of administering a swim test, the following should be kept in mind, regardless of the specific requirements of the facility's designated test requirements:

- Swimmer often overestimate their abilities, and thus must be watched carefully during a swim test in case the swimmer is testing above their ability level
- The lifeguard administering the test must focus upon just one swimmer at a time, to insure the safety of each individual swimmer.

While specific requirements may differ from facility to facility, swimmers who will be eligible to swim in deep water where they cannot stand should at least be able to:

- jump into the water and surface without assistance
- swim the length of the deeper water section without assistance from a rope or wall
- exit the water safely

The RID Factor

The majority of drownings occur where a lifeguard is not on duty. However, a small number of drownings occur when a lifeguard IS on duty, and they are generally caused by a lack of recognition, intrusion or distraction—RID.

Recognition

If a lifeguard does not recognize that a swimmer is in distress or that a person has slipped unseen beneath the surface of the water, the problem is one of Recognition. The lifeguard must learn to recognize the signs of a swimmer in distress, whether the swimmer is noisily thrashing about or silently becoming submerged. Lifeguards must keep alert and look for signs of distress constantly in their section.

Intrusion

The lifeguard's primary duty is to continually survey the water, but other activities may intrude upon the lifeguard's focus, such as moving pool furniture, checking the chemical level of the water or attending to pool guests. The lifeguard must never forget that the safety of all swimmers is paramount and that all other responsibilities are to be accomplished only when the lifeguard is not responsible to watch the water,

Distraction

Lifeguards should be sure to remain focused while on the job, and not allow themselves to become distracted by electronics, other pool guests or other distractions vying for the lifeguard's attention. The more tired a lifeguard becomes, the easier it will be for the lifeguard to become distracted, so breaks are important, as is keeping electronics and other distractions away.

Review

Give a short description for each of these important pieces of equipment:

Rescue Tube	
Backboard	
Shepherd's Crook	
Snorkel	
Life Ring	

Why should a lifeguard wear:

A uniform?

Sunglasses?

Sunscreen?

What is the difference between “total coverage” and “zone coverage?” When should each be used?

What are 3 ways a lifeguard can keep their focus?

1.

2.

3.

What are 3 ways a lifeguard can help prevent fatigue?

1.

2.

3.

Describe each of the following environmental conditions and how they affect the lifeguard:

Downed electrical pole	
Thunder and lightning	
Murky water	
Sharks and jellyfish	

Unit 3—Emergency Action Plans (EAPs)

Preparing for Emergencies

Each swim facility will have its own Emergency Action Plans—or EAPs—which should be written down and practiced with the staff regularly so that all participants can act quickly and effectively in the case of an emergency.

Facilities/Equipment Layout

EAPs must be developed for each pool facility individually, as each will have different facilities and a layout[2]. The EAP will specify such items which are location-specific, such as:

- How the lifeguards will provide coverage for the zones if one lifeguard is performing a rescue or is busy with an emergency situation.
- Where the first aid equipment, AED and backboard are located for use in an emergency.
- Which entrance the EMS unit should use for easy access to the pool area.
- Where guests should go if evacuated from the water, or if evacuated from the entire facility.

Because each facility is different, it is important to tailor the EAPs to the specific location.

Lifeguards and Emergency Medical Services

The lifeguards and other staff members will play important roles in the Emergency Action Plans developed for the facility. EMS becomes part of the rescue team when they are called in to

assist with a medical emergency. Part of the development of an EAP is determining who—and when—EMS will be called, and who will be waiting to let them in quickly when they arrive.

EMS—Onsite Emergency Response Plan (ERP)

Emergency Medical Services are called when a medical emergency arises, including breathing and cardiac emergencies. It is imperative that the person contacting EMS quickly and clearly describes:

- The exact location of the facility, including the street address
- The type of incident which has occurred
- A callback number where you can be reached
- Additional information concerning quick access, such as which door/entrance to enter, and that someone would be there to meet them

A person should then wait at the entrance for the Emergency Medical Services to arrive and guide them quickly to the victim.

Creating and Implementing Action Plans

Action plans[3] must be:

- Tailored to the individual facility, taking into account the layout of the facility, as well as the number and types of personnel who are typically present and part of the EAP team in the case of an emergency.
- Written down and posted so that all staff members have equal access to viewing the EAPs.
- Practiced regularly with the staff members so that all participants are trained and ready to act effectively in the case of an emergency.

The best action plans are created, implemented and practiced by all team members.

Team Members

At a swimming facility, there are various members of the emergency team[4] in addition to the lifeguards who will be called upon in the case of an emergency. These members of the team on-site include:

- swim instructors
- maintenance staff
- food/store staff
- administrative staff
- security/admissions
- supervisors/administrators

All on-site members of the team should be trained in First Aid and CPR/AED in order to be

3—Emergency Action Plans (EAPs)

able to effectively respond to an emergency and assist the lifeguard. Also, all team members should know where all equipment—such as an AED machine or backboard—is located to retrieve it in an emergency. Team members should practice emergency drills together to be prepared to act effectively as a unit.

There are additional members of the team who work off-site, but who are also involved in serious emergency situations, such as those involving serious injury or death. These may include staff members in management, communications and legal counsel.

Each member of the team should know their role in the Emergency Action Plans EAPs. Some of the ways that on-site emergency team members may assist the lifeguard include:

- Calling EMS, and meeting EMS members at the entrance and directing them to the scene of the emergency.
- Controlling crowds and clearing swimming areas.
- Retrieving needed equipment, such as an AED machine or backboard.
- Alerting other safety team members of the emergency.

If necessary, team members can instruct helpful bystanders to assist with crowd control, communications or equipment retrieval, especially if the rescue team is small and could benefit from the additional assistance.

Single Guard Facility

If a drowning emergency occurs at a single guard facilty, the lifeguard on duty should:

- Activate the EAP, and rescue the victim from the water.
- After rescuing the victim from the water, if needed, contact EMS, and provide the location. A bystander may assist with contacting EMS.
- A bystander may assist by meeting EMS members at the entrance and directing them to the scene of the emergency.
- If a backboard, AED or any other equipment is needed, a lifeguard can instruct a bystander to assist.

Communication Systems

There are several different types of communication systems[5] that lifeguards and staff members will use to communicate with each other, EMS and facility guests in a case of an emergency. These include:

Whistles—Each lifeguard should be equipped with a whistle, and they should learn the specific signals that they can send and receive with their whistle, including warning guests, alerting other lifeguards about imminent rescues and communicating with others about needs such as back-up help or in the case of a weather emergency.

Intercom system—Larger swim facilities may have an intercom system which they use to alert guests to such messages as pool evacuations, weather emergencies and other broadcast messages.

Radios—Lifeguards may have radios to communicate with each other as well as other staff members regarding items ranging from emergency alerts down to shift changes.
Telephones—Used for calling EMS in the case of an emergency, as well as communicating with any other off-site team members.

Decision Making

It is critical that lifeguards are prepared to make quick decisions in emergency situations, as time cannot be wasted while alternatives are considered. In order to best prepare for emergencies and learn to make correct decisions quickly during a stressful situation, the lifeguard must be taught about the different types of situations which may be encountered, so that the lifeguard is ready to act quickly and decisively should a similar situation arise. Lifeguards should regularly practice various rescue drills and drowning scenarios so that the lifeguard finds such needs rather routine, and is able to act appropriately while under pressure. Emergency Action Plans (EAPs) should be clearly established, memorized by all lifeguards, and practiced regularly so that all staff members know exactly what to do in the case of an emergency, and are able to act quickly and decisively.

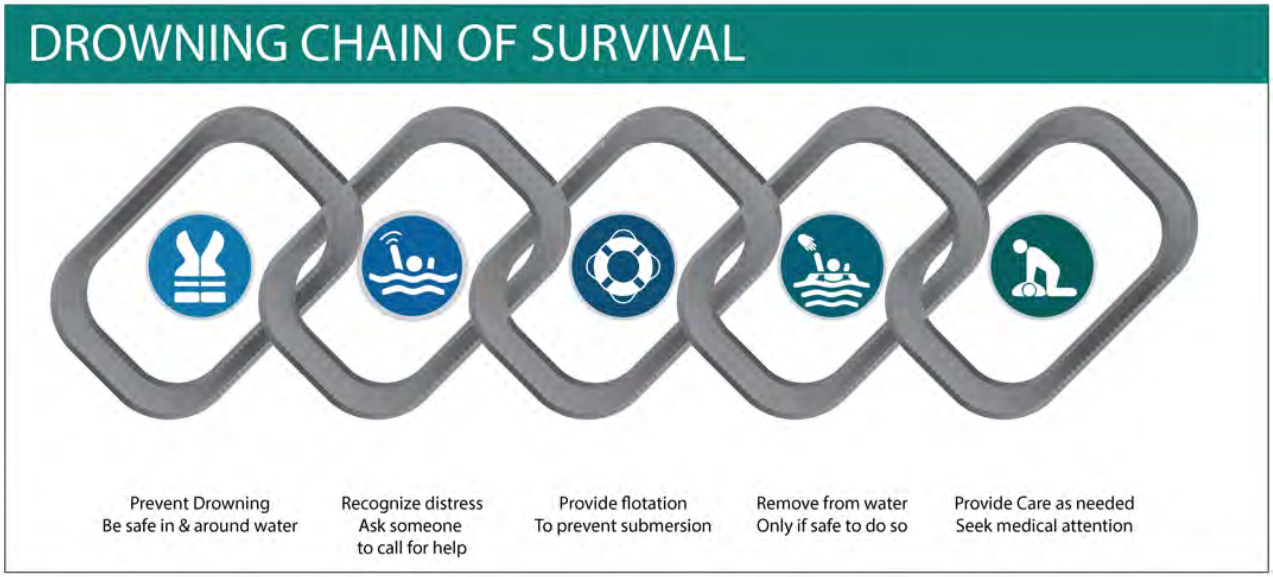
To make decisions quickly and effectively in any scenario, the lifeguard must learn to:
- Determine what exactly the problem is at that moment
- Consider possible solutions to the problem
- Choose the best solution and act upon it quickly

Types of Emergencies

There are several different types of emergencies which may occur at a swimming facility, and each should have its own EAP. Listed below are typical action plans for the particular type of emergency, but the actual EAP for the facility should be developed especially for that facility and the available team members.

Medical Emergency Drowning

In the case of a medical emergency caused by drowning, a sample EAP should include:



- The rescuer will activate the EAP by sounding the signal or using whatever has been determined to activate the EAP—such as a long whistle blow. This will alert the other lifeguards that they will be leaving their post and performing a rescue in the water.
- If the victim is drowning in a wave pool, the rescuer must press the emergency shut off valve prior to entering the pool.
- If a lifeguard enters the pool to perform a rescue, another lifeguard should bring a backboard for the victim.
- At the signal, lifeguards who are monitoring slides or diving boards should stop the next guest from continuing on.
- The other lifeguards will back up surveillance coverage, typically by standing and scanning the additional area of water. At some locations, an additional lifeguard will immediately come to the area to provide surveillance.
- Other functions of the other lifeguards/additional staff members could include:
    - Clearing the swimming area.
    - Summoning EMS if necessary.
    - Controlling bystanders, keeping them back from the incident.
- While the rescuer performs the rescue, additional staff may be clearing the area or even providing backup to the rescuer if needed.
- If the victim is healthy with no additional medical care required, the rescuer will write up a complete report on the incident, advise the victim on what the person could do to avoid such an event in the future, and release the victim—either alone if they are of age, or to a parent/guardian for a young child. All equipment used should be checked and returned, and then the lifeguard can return to duty.

If the victim requires additional medical care:

- The rescuer will provide emergency care, while the other lifeguards either monitor the pool or evacuate the water.
- A team member will be designated to call EMS and meet the EMS professionals at the entrance.
- Other team members will perform roles such as retrieving medical supplies/AED, clearing away bystanders, assisting with the emergency care and providing backup coverage.
- After the EMS team has taken over the medical emergency, the rescuer will write up a complete report on the incident. All equipment used should be checked and returned, and then the lifeguard can return to duty.

Weather Emergency/Pool Evacuation

In the case of a weather emergency or pool evacuation[7] due to a serious incident:

- The first lifeguard to become aware of the emergency will activate the EAP by sounding the signal or using whatever has been determined to activate the EAP—such as a long whistle blow.
- All lifeguards will assist in evacuating the pool immediately. An intercom/microphone/public address system may be helpful in getting the attention of all guests quickly and informing the guests of the plan.
- Depending upon the layout of the facility and the type of emergency, other team members may assist the evacuation by giving directions to guests, opening doors and exits, and facilitating a calm but quick evacuation.

Facility Emergency (Water/Chemical/Mechanical)

If there is a chemical issue with the water—such as a diaper accident or bodily fluids in the pool—or a mechanical issue with the pool or pool facilities, an evacuation will take place as above[8].

- The first lifeguard to become aware of the emergency will activate the EAP by sounding the signal or using whatever has been determined to activate the EAP—such as a long whistle blow.
- All lifeguards will assist in evacuating the pool immediately. An intercom/microphone/public address system may be helpful in getting the attention of all guests quickly and informing the guests of the plan.
- An announcement should be made informing guests of the nature of the evacuation, along with the approximate length of time that the evacuation will continue. Depending upon the layout of the facility, other team members may assist the evacuation by giving directions to guests, opening doors and exits, and facilitating a calm but quick evacuation.

Missing Person

An EAP should be developed for dealing with a missing person[9] at a swim facility. This EAP should include the following:

- The first lifeguard to become aware of the situation should activate the EAP and quickly alert the other lifeguards. The first lifeguard should gain complete information about the missing person, including age, appearance, last known location, and swimming ability.
- The swimming area should be cleared immediately so that all lifeguards could assist in the search. The search should begin at the location where the person was last seen, and expand outward from there.
- The water should be searched first. Only after it has been determined that the missing person is not in the water should a land search be initiated. The swimming area should remain closed.
- The intercom/microphone/public address system may be helpful in getting the attention of all guests quickly to assist in the search. The announcement should also ask the missing person to report to a particular area—such as the main lifeguard—as the missing person may not realize that they are missing.
- If the missing person is not found, the police should be called to assist in the search. EMS should also be summoned in case the missing person requires immediate medical attention once found.

In addition to developing Emergency Action Plans for a variety of different circumstances, informing the staff of their roles in the plan, and practicing the plans regularly so that they can be executed in the case of an emergency, a swimming facility should also develop report forms for each emergency to be documented fully after the incident has passed.

Review

Why wouldn't the same EAP work for all swimming facilities?

In the case of an EAP developed for a drowning victim, what is the main responsibility of the other lifeguards?

If there is a weather or other emergency requiring an evacuation, who is responsible to evacuate the pool?

When there is a missing person, the swimming area should be _____ so that the _____ could be searched first. An announcement should be made telling the missing person to please report, in case the missing person did not realize that they were _____ . If the person cannot be found, then the _____ and _____ should be called.

Unit 4—Emergency Response

Recognizing Drowning

At the end of this section the student will:

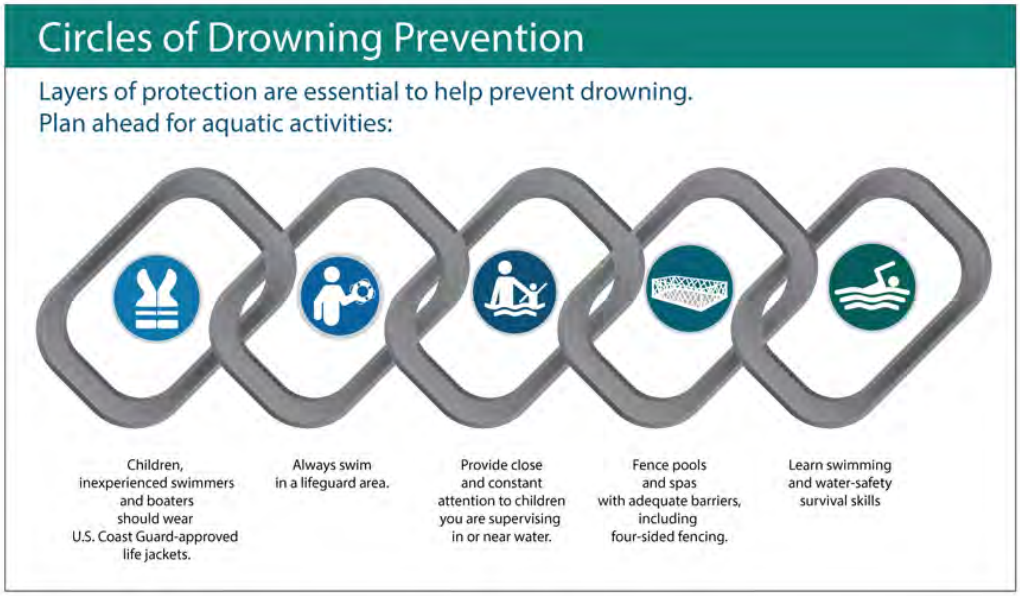
- Understand the definition of drowning
- Be able to recount the steps of the drowning process
- Describe the characteristics of a drowning victim, including physical, visual and aural characteristics
- Detail the responsibilities of the lifeguard in addressing swimmers in distress, as well as drowning victims

The Definition of Drowning

According to the Merriam-Webster Dictionary, to “drown” means to suffocate by submersion especially in water. As a lifeguard, preventing such tragedies is certainly one of your primary goals, and thus recognition of the signs and sounds of drowning and mastering methods to address the drowning victim quickly and safely are among your most important responsibilities during lifeguard training.

The Cambridge Dictionary is more explicit in its defining of drowning when it states “drowning” is that death caused by being underwater and not being able to breathe, or a case when this happens, and the Oxford Dictionary expands upon this by adding that “to drown” is to die through submersion in and inhalation of water.

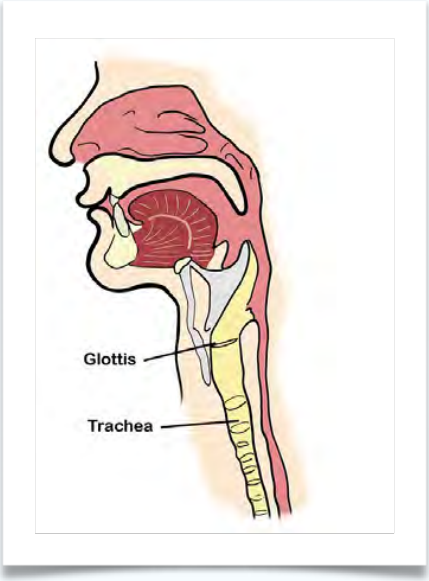
We thus recognize that drowning involves the submersion and inhalation of water—the fact of being under the water in a stressful situation (as opposed to an active, swimming underwater choice), and this distress causes the drowning victim to cease in their ability to breathe, which would cause death if the situation is not quickly reversed[2].



The World Health Organization—WHO[3]
Drowning is the process of experiencing respiratory impairment from submersion/immersion in liquid. Drowning outcomes are classified as death, morbidity and no morbidity. The victim may live or die after the process, but regardless of the outcome, **they have been part of a drowning incident.**
Agreed terminology is essential to describe the problem and to allow effective comparisons of drowning trends. Thus, this definition of drowning adopted by the 2002 World Congress on Drowning should be widely used.
The WHO *Global Report on Drowning: Preventing a Leading Killer*, published in 2014, highlights that 372,000 people drown worldwide each year. Drowning is among the ten leading causes of death for children and young people in every region of the world.
(World Health Organization: Violence and Injury Prevention)

Drowning Process

The stages of the drowning process[5] progress as a continuum of events from the victim's first airway contact with the water through the stopping of the heart and subsequent brain damage. The amount of time through the drowning process is relatively short—just 3-5 minutes—so quick action is certainly paramount to intercede before the drowning process has progressed.

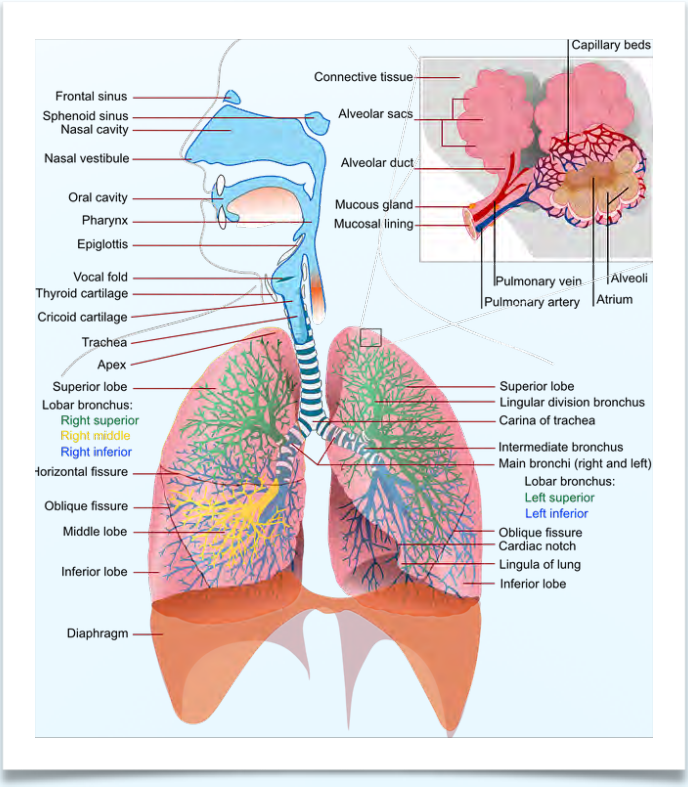


Stage 1—Distress and Initial Apnea

Stage 1 of the drowning process begins with the initial struggle and distress of the swimmer/drowning victim, and continues through the temporary inability to receive oxygen.

- The distressed swimmer begins to struggle and panic as they attempt to stay above the water.
- The victim's glottis closes off by a reflex action to keep the water from entering the trachea, causing a lack of oxygen.
- Apnea means the temporary stoppage of breathing. At this stage, because the victim's glottis has closed to prevent water from entering the trachea, the victim has temporarily ceased to breathe.
- At this stage in the drowning process, full recovery is likely.

Stage 1 can last from just a few seconds to several minutes.



Stage 2—Swallowing Water and Dyspnea

In Stage 2 of the drowning process, the glottis—which had been preventing water from entering the trachea—partially relaxes, and water is able to enter the body. Dyspnea, by definition, means difficulty in breathing, and the drowning victim will experience this difficulty not only in a visual manner (including convulsive coughing) but internally as well.

- The glottis relaxes and water is able to enter the trachea and flow to the lungs.
- The lungs contain air sacs called alveoli, and each alveolus is covered with a substance to allow for the exchange of oxygen and carbon dioxide in regular breathing.
- Water introduced into the lungs washes away this substance and reduces the ability for the exchange of oxygen and carbon dioxide.
- The brain is not able to receive the necessary oxygen.
- The victim may cough or vomit at this stage.

When a rescue is performed at this stage of the drowning process, it is important for a medical professional to examine the victim for lasting damage.
Stage 2 of the drowning process lasts for just 1 to 1 ½ minutes.

Stage 3—Terminal Apnea

At Stage 3, the drowning victim becomes unconscious and stops breathing. Terminal apnea means that breathing has stopped.

- The victim is unconscious.
- Victim movements may be caused by convulsions due to a lack of oxygen in the brain. This can cause the body to become rigid and jerk or thrust involuntarily.
- Other signs may include involuntary urination or defecation, as the victim's muscles may relax and/or convulse.

Stage 3 can last between 1 ½ and 3 minutes. However, in some cases, stages 3 and 4 occur simultaneously. Survival and recovery are likely at this stage, but permanent damage is probable the longer the time period lasts.

Stage 4—Cardiac Arrest

In Stage 4, the heart stops beating and blood is no longer pumping through the body. If breathing and heart function are not restored, the brain will be damaged, organs will shut down, and the victim will die.

- During this stage, the victim's eyes will dilate and the skin turns blue.
- Without oxygen, brain cells will begin to die within minutes.
- Biological death occurs at the point when irreversible brain damage begins.
- This process may be slowed if the water is very cold—below 50 degrees Fahrenheit—as the body functions are slowed due to the extreme cold.

Stage 4 will occur in just 4-6 minutes, at which time death is likely to result from the drowning.

Characteristics of Drowning Victims

Recognizing a drowning victim[6] quickly and acting immediately to bring the person to safety and restore breathing and heart function, if necessary, is one of the primary responsibilities of a lifeguard. It is critical that the lifeguard continually scan their area, targeting those swimmers who may be in distress and acting accordingly. It can take just a few short seconds for a person to slip below the surface. It is important to remember that a drowning victim may not always call for help or appear to struggle on the surface of the water, so you must watch for other indicators and characteristics of drowning victims.

The following characteristics indicate a swimmer in distress:

- A person may have a panicked facial expression indicating their distress
- A person may look as if their kick and arm movements are ineffective at propelling them to shallower water or the side of a pool.
- A person's head may be back and body positioned low in the water as they attempt to breathe.
- The water is at mouth level
- Appearing as if they are "climbing a ladder", pulling their body up with their hands
- A person may appear to be bobbing up and down in the water
- A person may be hanging onto the rope, a busy or other object/side of the pool in order to remain above the surface
- Gasping for air or hyperventilating

A distressed swimmer may become a drowning victim if not assisted. A drowning victim:

- May be above the water or below the surface.
- If below the surface, the submerged victim may be motionless and look more like a shadow from above the pool.

There are dangerous behaviors which should alert you even before a distress incident occurs, as people can become drowning victims very quickly. Watch for:

- Weak swimmers whose heads are bobbing up and down in the water.
- Pool guests hanging on to the side in deeper water.
- Crowded conditions which may impede your ability to see all swimmers.
- Pool games and contests, such as breath-holding.
- Wearing a lifejacket improperly
- Dog paddling

- A person who is vertical in the water with little leg movement

There are certain guests who are at risk and require extra vigilance, including:

- The elderly, who may be at risk for a heart attack occurring while in the water.
- Guests running or playing, who may have accidents near the pool edge.
- Those with underlying medical conditions, including epilepsy or other seizures.
- People who have been drinking, as alcohol or drug use will impede upon a person's ability to swim safely.
- Young children, who are unable to stand comfortably in the water
- Babies who may not be effectively and actively monitored by their guardian.

It is vital that you recognize the characteristics of a drowning victim and act quickly, as every moment counts in a rescue situation. When in doubt, always check it out.

The Responsibility of the Lifeguard

The lifeguard's responsibility is to ensure the safety of all guests, by adhering to the following:

- A lifeguard must remain alert at all times.
- A lifeguard must be actively scanning the water to look for signs of distress or drowning.
- A lifeguard must assess what is seen, and target any unusual activity or signs of drowning.
- A lifeguard must act quickly and effectively to bring the drowning victim to safety.
- A lifeguard should be able to recognize and respond to a drowning victim within 20-30 seconds.

From scanning to saving, a lifeguard must be alert, trained and ready to act at all times while on duty.

In the case of a drowning victim, when the victim is removed from the water, the rescuer should do the following:

- Open the victim's airway
- Check to see if the victim is breathing
- If the victim is not breathing, the rescuer should give 2 rescue breaths to make the chest rise
- Check the victim's pulse

If after the 2 rescue breaths a pulse is not felt, the rescuer should begin chest compressions and ventilations according to the guidelines outlined in this chapter.
If the victim is out of the water, has no pulse, is unresponsive and is not breathing after 2 rescue breaths, if an AED is accessible, it should be attached to attempt defibrillation. Be sure to dry the chest area before applying an AED to attempt defibrillation.

Review

Fill in the blanks:

- **Drowning involves _____ in liquid.**
- **Drowning involves a person's impairment of a person's ability to _____ .**
- **A person may have _____ or _____ as a result of drowning.**

Fill out the following chart depicting the stages of drowning:

Stage	Name	Amount of Time	External Indicators	Internal Damage/ Indicators
1				
2				
3				

4				

A drowning victim may not appear to be thrashing or calling for help, but they are in distress nonetheless. List signs and characteristics to watch for below:
Visual clues of drowning include:

Dangerous behaviors to be aware of are:

Particular guests who may be at risk of drowning are:

Rescue Procedures—Pool and Open Water

Non-swimming Water Rescues

If the victim is close to the edge of a pool or surface or water, a non-swimming rescue may be the fastest and most effective option for the lifeguard. The swimmer must be close enough to reach with your hand or rescue equipment in order for a non-swimming rescue to work.

Rescue Equipment

The pool area or waterfront should always have rescue equipment[7] ready, available and in functioning order to be used in case of an emergency. The most common pieces of rescue equipment you may be called upon to use include a shepherd's crook, ring buoy/life rings and rescue tubes.

Poles/Shepherd's Crook

A shepherd's crook[8] is a long pole with a single or double shepherd's hook on the end. A shepherd's crook can extend much further than a rescue tube, as rescue poles are typically 8-16 feet in length. The lifeguard can safely extend the rescue pole to a swimmer in need, who can hold onto the hook and be pulled to safety.

Buoys/Life Rings

A rescue buoy[9] can have an oblong shape with handles for easier gripping around the sides, or can be a traditional life ring. Buoys and life rings have ropes attached to them, so that they can be thrown to a distressed swimmer, and then once the swimmer is holding onto the buoy or life ring, they can be pulled to safety. They are able to be thrown much farther than a shepherd's crook or rescue tube, and are especially helpful in larger bodies of water.

Rescue Tubes

A rescue tube[10] should be available to the lifeguard at all times, as it is one of the most versatile pieces of lifesaving equipment. Whether the lifeguard is sitting and scanning or standing alongside the water, a rescue tube should be on hand, with the strap over one shoulder.

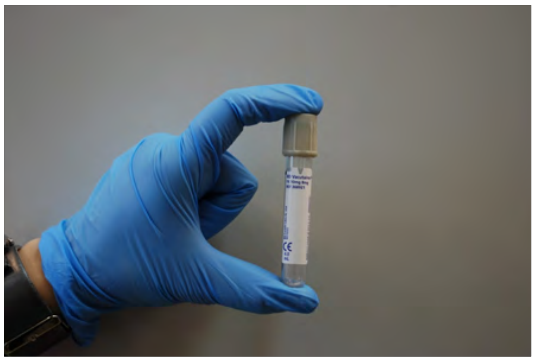
A rescue tube can be used in various types of rescues, from non-swimming rescues where the tube is extended from the lifeguard to the distressed swimmer, through rescues at the bottom of the pool. A lifeguard should have a rescue tube at all times while on duty.

Equipment Always Required

Rescue Tube

In all rescue techniques when the victim is at or near the surface, the rescue tube is an integral part of the rescue. A lifeguard should have a rescue tube at all times when on duty, and be sure that the strap is secured over one shoulder.

Resuscitation Mask



A resuscitation mask[11] should be with the lifeguard at all times, as rescue breathing may be required even before the victim is brought to land.

Gloves

Non-latex gloves[12] should be carried by the lifeguard while on duty. Most resuscitation masks come with gloves. Some lifeguards carry fanny packs and put non-latex gloves and their resuscitation mask inside them.

Assists

The major types of assists a lifeguard must be prepared to use with a swimmer in distress during a non-swimming rescue include the lift and assist, the reach assist, and the throwing assist.

1. Walking Assist

If the victim/distressed swimmer is conscious, the lifeguard may simply walk[13] the victim out of the shallow water, offering support as needed arm over shoulder.

2. Lift and Assist

If both the swimmer and the lifeguard are in shallow water, the lifeguard may quickly and safely lift[14] the victim from the armpits and assist the victim in regaining balance. This lift and assist can be performed from the front or the back, depending upon which direction the swimmer is facing.

1. As soon as the lifeguard notices a swimmer in distress, the lifeguard approaches the victim.
2. Whether from the front or from the rear, the lifeguard grasps the victim below the armpits and lifts the victim to their feet.
3. The lifeguard assists the victim in regaining balance, and if necessary, escorts the victim to the pool edge.

A lift and assist generally does not require the use of a rescue tube in shallow water, so the lifeguard can simply reach over the rescue tube to perform the lift and assist.

3. Reach Assist

In the reach assist, the lifeguard reaches out their hand, rescue tube or Shepherd's Crook to the distressed swimmer. This should only be used if the victim is close enough to reach without endangering the lifeguard. It is important that:

- The distressed swimmer is able to see the lifeguard and follow directions.
- The distressed swimmer possesses enough strength and coordination to be able to hold onto the rescue tube/pole or hand while being pulled to safety. If the distressed swimmer is unable to hold onto a pole/rescue tube by their own volition (due to age, coordination or other Impediment) a reach assist should not be utilized.
- The lifeguard is careful not to be pulled into the water.

Once the lifeguard observes a swimmer in distress within reaching distance, a reach assist with a rescue tube progresses as follows:

- The lifeguard removes the strap of the rescue tube from the shoulder
- The lifeguard extends the rescue tube point out to the swimmer while holding onto the other end of the rescue tube.
- The lifeguard tells the swimmer to grasp the rescue tube, and while still communicating with the swimmer, the lifeguard pulls the swimmer to the pool edge.

If the lifeguard is standing during a reach assist, the lifeguard should stand with one foot forward and one foot back, shifting body weight away from the water. The lifeguard can also lie on the ground with legs apart for stability, and extend the hand or rescue tube/pole to the distressed swimmer.

4. Throwing Assist

If the distressed swimmer in open water is too far away for a reach assist, it is preferable to attempt a non-swimming rescue, a throwing assist[15] will allow the lifeguard a much further reach. Using a buoy or life ring, the lifeguard will throw the rescue equipment in the direction of the distressed swimmer, taking care not to hit the swimmer and cause them to become injured.

When the lifeguard throws a buoy or life ring, be sure to:

- Check that the rope is unencumbered so that it may extend freely when the buoy/life ring is tossed.
- Keep the end of the rope secured so that it does not follow the buoy/life ring into the water so the swimmer may be pulled to safety.
- Aim the ring buoy beyond the distressed swimmer, and then drag the buoy to the victim. This way the lifeguard will not need to throw the buoy again if it is too short, wasting critical time.

After throwing the buoy or life ring, the lifeguard will instruct the distressed swimmer to grasp it firmly with their hands so that they may be pulled to safety.

5. Throwing and Reaching

After throwing a buoy or life ring to a distressed swimmer and pulling them closer, the lifeguard may then reach out with a hand, rescue tube or rescue pole to continue the rescue. The lifeguard should continue attending to the situation until the distressed swimmer is safely on land.

Rescue at or Near the Surface of the Pool

In many instances, the victim will be at or near the surface of the water, and the lifeguard will have particular methods for entering the water, approaching the victim and assisting them to safety[16].

Water Entry

The goal with the entry of the lifeguard into the water for a rescue at or near the surface of the water is to enter quickly while maintaining visual contact with the victim, if possible. If there is any risk that the victim has suffered a spinal injury, entering the water with the least disruption is paramount as well. The major types of water entry include the ease-in entry, the touch-and-go entry, compact-jump entry, the stride-jump entry and the shallow-dive entry.

1. The Ease-in Entry

The Ease-in Entry[17] is best when there is a chance that the victim has suffered a spinal injury, and the lifeguard wants to create as little water disruption as possible. In the Ease-in Entry method the lifeguard enters the water from a crouched or seated position on the side of the pool, and slides smoothly yet quickly into the water, without creating any waves or splashes that could potentially further injure a spinal injury.

1. The lifeguard sits or crouches at the side of the pool
2. The lifeguard puts their feet in the water, and hands at the sides with palms on the pool deck
3. While holding the sides of the pool deck with both hands, the lifeguard slides into the water without creating any waves or disruption to the water.

While easing into the water, the lifeguard should keep visual contact with the victim.

2. The Touch-And-Go Entry

In the touch-and-go entry, the lifeguard is standing near the water's edge. The lifeguard puts one hand on the side of the pool, with the other hand holding the rescue tube, and steps or jumps into the water.

1. The lifeguard approached the edge of the pool deck, and puts one hand on the edge with the other hand grasping the rescue tube.
2. The lifeguard jumps or steps into the water while keeping one hand on the edge of the pool to control the water entry.
3. Once in the water, the lifeguard releases the side of the pool and approaches the victim.

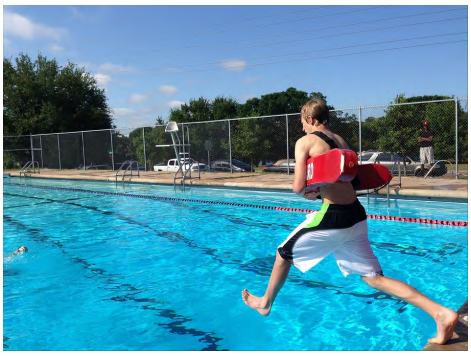
The lifeguard can maintain visual contact with the target victim, and the touch-and-go entry can be used in all water depths.

3. The Compact-Jump Entry

The compact jump[18] entry is often used when the lifeguard is entering the water from a height above the pool deck, such as from a lifeguard stand. The compact-jump entry should not be used in shallow water, or water below 5 feet deep. In the compact-jump entry, the lifeguard will:

1. Hold the rescue tube across the body horizontally.
2. Jump into the water with bent knees and flexed (not pointed) feet.
3. Bend the knees upon impact with the water.

When using the compact-jump entry, the lifeguard is trying to remain near the surface, not to jump deeply into the water. Before jumping, the lifeguard should take note of the location of the victim including, when possible, a fixed location near the victim. During the compact-jump entry, it is possible that the lifeguard may temporarily lose sight of the victim, so it is important to regain a visual location after surfacing to swim towards the fixed location you noted.



4. The Stride-Jump Entry

In the stride-jump[19] entry, the lifeguard is in motion, entering the water while stepping in. A stride-jump entry should only be used in water over 5 feet deep. When using a stride-jump entry, the lifeguard should:

- Maintain eye contact with the victim.
- Keep arms extend to the sides to prevent the lifeguard from going deeply under the water.
- Slow the downward motion once in the water by bringing the arms forward and the legs together in a scissor kick.
- The rescue tube can be held or dropped to the side, attached to the lifeguard by its strap.

5. The Shallow-Dive Entry (optional)

The shallow-dive entry[20] can be used during the following:

- The water is at least 5 feet deep.
- The victim is far enough away from the lifeguard to warrant such an entry.
- Time and speed are of the essence, and are worth the loss of visual contact temporarily.
- The lifeguard's rescue tube is secured to their shoulder, as it will not be held in the hand during the shallow-dive.

If all of those criteria are met, the shallow-dive can be an effective way for the lifeguard to approach a distressed swimmer or drowning victim who is at a distance in a short amount of time.

Approach Strokes

When approaching[21] a distressed swimmer or drowning victim at or near the surface of the water, the lifeguard has several different strokes and options to choose from. The lifeguard will consider the following:

- The crowd level of the water.
- The distance to the victim.
- The condition of the victim.

The most common approach strokes used in the deep water are the crawl and breaststroke. In the shallow water, the rescuer should use the walking approach.

If the victim is far from where the lifeguard stand is, the rescuer should enter the water using the appropriate entry and swim to the victim with the tube trailing behind. Prior to reaching the victim, the rescuer should bring the tube in front and then perform the appropriate rescue.

The Crawl

The crawl[22] is generally the fastest stroke, allowing the lifeguard to cover the most distance quickly. When doing the crawl, the rescuer should place the rescue tube under the torso, and swim toward the victim with the head up. The rescuer must keep the rescue tube in control at all times. If the victim is far away from the rescuer or the tube slips out from underneath, the rescuer should let the tube trail behind. Prior to reaching the victim, the rescuer should place the tube between themselves and the victim.

The Breaststroke

The breaststroke[23] is generally a slower stroke than the crawl, covering less distance than the crawl in the same amount of time. However, the breaststroke has the added advantage of being relatively waveless, thus is the appropriate choice when it is suspected that the victim has suffered a spinal injury. In such cases, the lifeguard is better able to control their water disruption using the breaststroke as they approach the victim.

When doing the breaststroke, the rescuer should place the rescue tube under the armpits and swim toward the victim with the head up. The rescuer must keep the rescue tube in control at all times. If the victim is far away from the rescuer or the tube slips out from underneath, the rescuer should let the tube trail behind. Prior to reaching the victim, the rescuer should place the tube between themselves and the victim.

Shallow Water Approach

If the victim is in shallow water, it will be easier if the lifeguard walks to the victim to perform the appropriate rescue. Prior to reaching the victim, the rescuer should put the rescue tube between themselves and the victim.

Rescue Techniques

The rescue techniques[24] most commonly used when the victim is at or near the water surface are the front and rear rescue methods. As the victim may or may not be conscious while the rescue takes place, they can be further divided into the following:

- Front rescue of a conscious victim
- Front rescue of an unconscious victim—face up
- Front rescue of an unconscious victim—face down
- Rear rescue of a conscious victim
- Rear rescue of an unconscious victim—face up
- Rear rescue of an unconscious victim—face down
- Cross Chest Carry
- Two-guard rescue
- Multiple victim rescue

In all instances, the goal remains the same—to bring the victim to safety as quickly as possible without endangering the lifeguard.

Front Rescue of a Conscious Victim

The front rescue[25] of a conscious victim is appropriate when the lifeguard is approaching the victim from the front, the victim can see the lifeguard approach, and the victim is conscious and breathing. The lifeguard will use the rescue tube actively in all rescues.

1. While approaching the victim, the lifeguard will position the rescue tube horizontal in front of the chest.
2. Extend the tube right before you reach the victim, pushing it down below the surface and under the victim's armpits and pushing the victim towards the wall.
3. The lifeguard will continue holding the rescue tube and begin swimming towards the wall, pushing the victim towards the wall and extending their arms so that the victim cannot reach the lifeguard to grab the lifeguard.

		
While approaching the victim, the lifeguard will position the rescue tube horizontal in front of the chest.	Extend the tube right before you reach the victim, pushing it down below the surface and under the victim's armpits and pushing the victim towards the wall.	The lifeguard will continue holding the rescue tube and begin swimming towards the wall, pushing the victim towards the wall and extending their arms so that the victim cannot reach the lifeguard to grab the lifeguard.

In some cases, the victim will panic and try to grab the lifeguard instead. The lifeguard will want to keep the rescue tube between them and the victim at all times for a safe rescue.

Front Rescue of an Unconscious Victim—Face Up

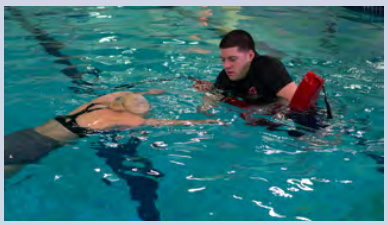
If the victim is unconscious face up yet facing toward the lifeguard's approach, then the rescuer should follow these steps[26].
The approach to the victim is the same as with a front rescue of a conscious victim. This rescue technique can work in deep or shallow water.

1. The lifeguard will approach the victim behind the victim's head.
2. The lifeguard will the position the rescue tube beneath the victim, under the shoulders.
3. The lifeguard should wrap the victim's hands on the rescue tube. Then the lifeguard should place their right hand over the victim's right shoulder and under the tube.
4. In this position, if it is necessary, the lifeguard can administer rescue breathing immediately.
5. With the lifeguard's left hand, the lifeguard can swim to bring the victim to the side of the pool.

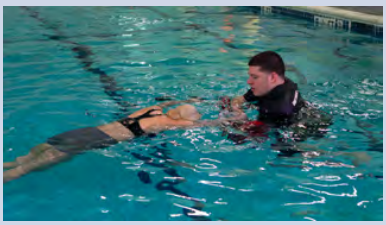
Front Rescue of an Unconscious Victim—Face Down

If the victim is unconscious face down yet facing toward the lifeguard's approach, a similar approach is used, with the lifeguard acting first to flip the victim so that the victim's face is up out of the water.

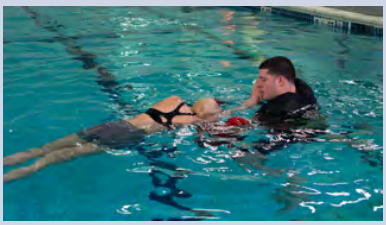
1. While approaching the victim, the lifeguard will position the rescue tube in front of the chest.
2. Reach over the tube and grasp the victim's wrist. The rescuer's right hand should grab the victim's right wrist. Then the rescuer should turn the victim counterclockwise so that the victim is facing up on top of the rescue tube.
3. The lifeguard should position the victim's head towards themselves out of the water and on top of the rescue tube, so that you are both facing the same direction and you are behind the victim.
4. The lifeguard should wrap the victim's hands on the rescue tube. Then the lifeguard should place their right hand over the victim's right shoulder and under the tube.
5. In this position, if it is necessary, the lifeguard can administer rescue breathing immediately.
6. With the lifeguard's left hand, the lifeguard can swim to bring the victim to the side of the pool.



While approaching the victim, the lifeguard will position the rescue tube in front of the chest.



Reach over the tube and grasp the victim's wrist. The rescuers right hand should grab the victim's right wrist. Then the rescuer should turn the victim counterclockwise so that the victim is facing up on top of the rescue tube.



Position the victim's head towards you out of the water, on top of the rescue tube, so that you are both facing the same direction and you are behind the victim.

		
The lifeguard should wrap the victim's hands on the rescue tube. Then the lifeguard should place his right hand over the victim's right shoulder and under the tube.	In this position, if it is necessary, the lifeguard can administer rescue breathing immediately.	With the lifeguards left hand the lifeguard can swim to bring the victim to the side of the pool.

Rear Rescue of a Conscious Victim

Oftentimes the victim will be facing away from the lifeguard, in which case this rear rescue[27] will be used.

1. While approaching the victim, the lifeguard should position the rescue tube in front of the chest.
2. When reaching the victim, the lifeguard should extend their arms over the rescue tube and under the victim's arms.
3. The lifeguard's hands should grasp the shoulders, holding the victim firmly in place. The lifeguard should tilt the head to one side so that victim doesn't knock heads if thrashing about.
4. The lifeguard should kick, propelling them both back to the pool wall, while instructing the victim to relax.

In some cases, the victim will panic and try to grab the lifeguard instead. The lifeguard will want to keep the rescue tube between them and the victim at all times for a safe rescue.

While approaching the victim, the lifeguard will position the rescue tube in front of the chest.

When reaching the victim, the lifeguard will extend their arms over the rescue tube and under the victim's arms.

The lifeguard's hands will grasp the shoulders, holding the victim firmly in place. The lifeguard should tilt the head to one side so that victim doesn't knock heads if thrashing about.

The lifeguard will kick, propelling them both back to the pool wall, while instructing the victim to relax.

Rear Rescue of an Unconscious Victim—Face Up

If the victim is unconscious, facing up and facing away from the lifeguard, then the rescuer should follow these steps.

1. While approaching the victim, the lifeguard should position the rescue tube in front of the chest.
2. Reaching over the rescue tube, the lifeguard should extend their arms over the rescue tube and under the victim's armpits.
3. The lifeguard's hands should grasp the shoulders, holding the victim firmly in place.

4. The lifeguard should wrap the victim's hands on the rescue tube. Then the lifeguard should place their right hand over the victim's right shoulder and under the tube.
5. In this position, if it is necessary, the lifeguard can administer rescue breathing immediately.
6. With the lifeguard's left hand, the lifeguard can swim to bring the victim to the side of the pool.

Rear Rescue of an Unconscious Victim—Face Down

If the victim is unconscious and facing away from the lifeguard, then the rescuer should follow these steps.
Similar to the front rescue of an unconscious victim, once reaching the victim, the lifeguard will want to flip the victim over to be positioned face up on top of the rescue tube to be sure that the victim is able to breathe with the face out of the water.

1. While approaching the victim, the lifeguard should position the rescue tube in front of the chest.
2. The lifeguard should rotate the victim face up by first hooking their arms under the victim's arms and grasping the shoulders.
3. The lifeguard should push the rescue tube into the victim's back with their chest.
4. The lifeguard will dip their shoulder and roll underneath the victim. The lifeguard will surface on the other side, underneath the victim with the victim face up on the rescue tube.
5. The lifeguard will wrap the victim's hands on the rescue tube. Then the lifeguard should place their right hand over the victim's right shoulder and under the tube.
6. In this position, if it is necessary, the lifeguard can administer rescue breathing immediately.
7. With the lifeguard's left hand, the lifeguard can swim to bring the victim to the side of the pool.

Cross-Chest Carry

In the cross-chest carry, the lifeguard approaches the victim from behind to bring them to safety.

1. The lifeguard will extend one hand under the victim's arm and around their chest.
2. The lifeguard will hold the victim against their own chest.
3. Using their free hand and feet, the lifeguard should swim to bring the victim to safety.

The cross-chest carry can be used with or without a rescue tube to bring a conscious victim to safety.

Two-Guard Rescue

At times a two-guard rescue[28] becomes preferable, such as in cases where the victim is large in size, uncontrollable due to panic, or otherwise difficult for just one lifeguard to manage effectively. In such cases, two lifeguards will coordinate in order to perform an effective rescue.

1. While approaching the victim, the lifeguards will position their rescue tubes in front.
2. One lifeguard will be approaching from the front, and the other from the rear.
3. Essentially one lifeguard will perform a front rescue while the other lifeguard performs a rear rescue.
4. The victim will be sandwiched between the two rescue tubes, and the lifeguards will position the rescue tubes under the victim's arms to support the victim in the water.
5. The lifeguards on either side of the victim can secure the victim by grasping the other lifeguard's tube.
6. The lifeguards should kick towards the wall/exit while continuing to hold onto the rescue tube and victim's arm as they move to safety.

In some cases, the victim will panic and try to grab the lifeguard instead. The lifeguard will want to keep the rescue tube between him/herself and the victim at all times for a safe rescue.

Multiple Victim Rescue

In cases where multiple victims must be rescued simultaneously, it would be best if more than one lifeguard were available to assist. If one lifeguard must manage multiple victims at once, the lifeguard can employ one of these techniques:

1. The lifeguard can approach one victim and secure the victim to the rescue tube before approaching the second victim.

2. If the victims are in very close proximity, the lifeguard may push the rescue tube between the two victims so that they will each grab hold of the rescue tube from opposite sides. From there, the lifeguard can tow them to safety.

Multiple victims can occur in open water, as in the case of a large wave, knocking over several victims at once. In a pool setting, rough play or a pool guest attempting to help another can also result in multiple victims requiring rescue at the same time.

Rescue At or Near the Bottom of the Pool

If the victim is near the bottom of the pool[29], it is most likely that the victim is unconscious. Speed in rescuing the victim is a primary concern, so that the lifeguard can quickly bring the victim to the surface of the water and restore breathing.

Water Entry

The goal with the entry of the lifeguard into the water for a rescue at or near the surface of the water is to enter quickly to get below the water and rescue the victim. If there is any risk that the victim has suffered a spinal injury, entering the water with the least disruption is paramount as well. The major types of water entry outlined in the previous section include the ease-in entry, the touch-and-go entry, compact-jump entry and the stride-jump entry. The best option takes into consideration the following:

The Distance from the Lifeguard to the Victim

Is the victim submerged near the location of the lifeguard, or at a greater distance away? If the victim is submerged nearby, the ease-in entry would be best for a potential spinal victim. If there is no potential spinal injury, the touch-and-go entry, compact-jump entry and the stride-jump entry would get the lifeguard into the water quickly without traveling away from the submerged victim.

The Potential for a Spinal Injury

As mentioned above, if there is a possibility that the submerged victim has suffered a spinal injury, then a waveless entry would be preferable to cause the least disruption.

The Clarity of the Water

The lifeguard does not enter the water head-first if there is a potential for obstructions or other items in the water to avoid the possibility for injury.

In addition to the different types of water entry, the lifeguard will also need to get beneath the surface of the water to perform the rescue. The two types of surface dives are the feet-first surface dive and the head-first surface dive.

The Feet-First Surface Dive

In the feet-first surface dive[30], the lifeguard begins in a vertical position in the water. The object of the feet-first surface dive is to bring the lifeguard below the surface of the pool quickly while remaining in a vertical position.

1. First the lifeguard will propel upwards out of the water, in order to gain momentum for the downward descent.
2. With the legs extended from front to back and the arms extended to the sides, the lifeguard will quickly snap the legs together in a scissor-motion while pushing down on the water with the arms.
3. This motion will bring the lifeguard's upper body up out of the water and then begin a downward descent below the surface.
4. Raising the arms overhead during the descent will propel the lifeguard deeper.
5. If the lifeguard needs to go deeper, they should bring their arms to the sides and repeat, quickly bringing them overhead to continue the downward descent.

The Head-First Surface Dive

The head-first surface dive[31] can be initiated while the lifeguard is swimming toward the victim. The lifeguard will end up beneath the surface of the water in a head-down position.

1. The rescuer should start in the deep water, place their hands directly upward and create upward inertia with their legs.
2. Then arch their body forward to dive forward into the water.
3. Proceed to kick and stroke with the hands to continue forward downward momentum into the water.
4. The rescuer should continue with downward inertia until they reach at least seven feet and stay at that depth for five seconds.
5. The lifeguard can continue the descent deeper by using the arms in an underwater breaststroke.

The best type of descent will depend upon the position of the victim and whether the lifeguard wishes to be head-up or feet-up for the rescue. If the water clarity allows, and the victim is in an appropriate location to the lifeguard, the lifeguard can incorporate either of these surface dives into their pool entry, so that the feet-first dive or head-first dive actually begin on the pool deck, and the water entry can be combined into one unit.

Approach Strokes

As with the surface rescue, the most common strokes the lifeguard will use to get closer to the victim are the crawl and the breaststroke. However, depending upon the location of the victim, the crowd level of the pool, and the skill of the lifeguard, the underwater swim may also be used effectively.

Underwater Swimming

Swimming underwater involves doing the breaststroke beneath the surface of the water. The lifeguard will propel through the water using the arms and legs in a breaststroke fashion, alternating with gliding underwater for speed. The lifeguard may choose to swim underwater just when near the victim, or longer if they find it helpful in getting quickly to the victim and performing the rescue. The lifeguard should always be aware of their own physical limitations, and be sure to surface and breathe when necessary.

Underwater Search

An underwater search becomes necessary if the area where the victim is presumed located is large or the water quality is poor and visibility compromised. In either situation, it is imperative that the lifeguard plan accordingly for the search, so that a thorough search may be carried out while keeping all lifeguards safe.

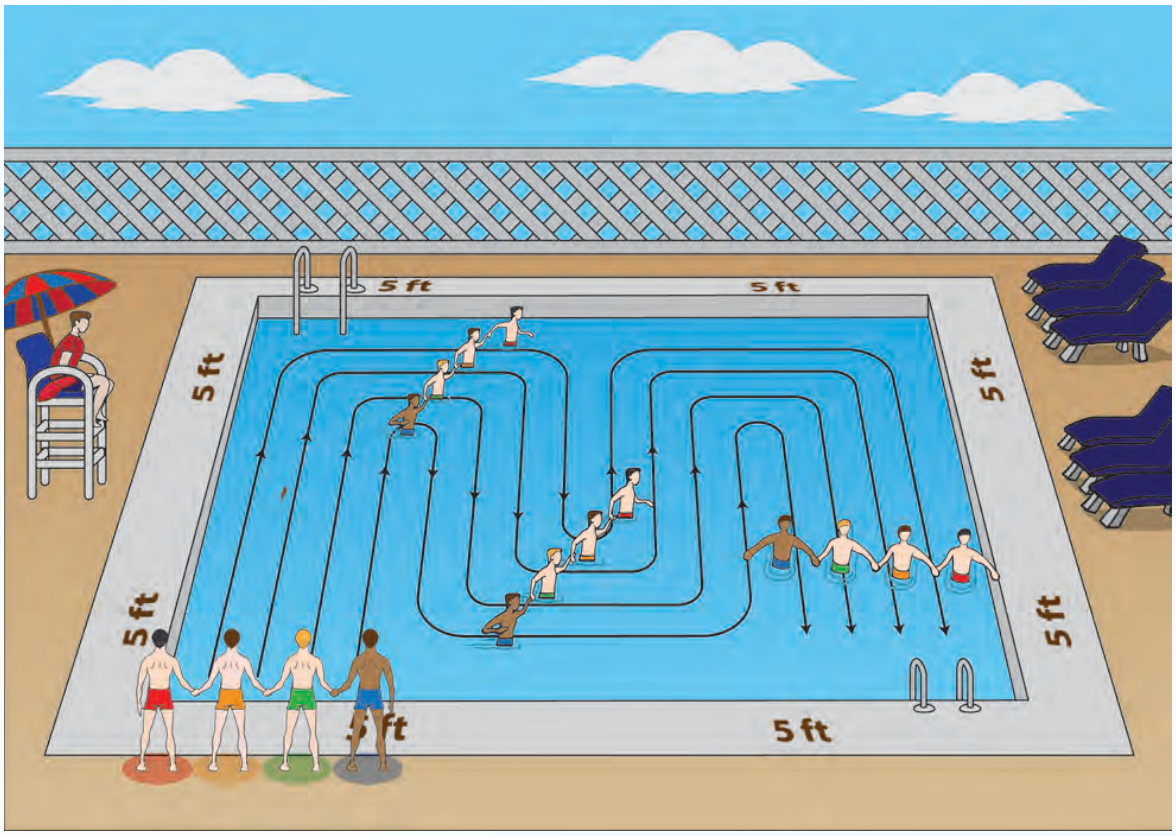
- The first point of information is to establish the most precise location possible for the victim. This could be done by eyewitnesses, landmarks, or other clues as to where to begin the search.
- Once a location is determined, a search pattern must be established. The purpose of a search pattern is to ensure that the area is thoroughly checked while visibility may be low, before expanding the search area if the victim is not located.
- If multiple lifeguards will be joining in the search, the search pattern should be communicated to the other lifeguards so that time is used most effectively by all.

The Up-and-Down Method - A Shallow Water Search Method

The up-and-down method ensures that all areas are adequately covered by the group of lifeguards.

In the Up-and-Down Method:

1. The lifeguards begin in a row and search straight out from the edge to a fixed point.

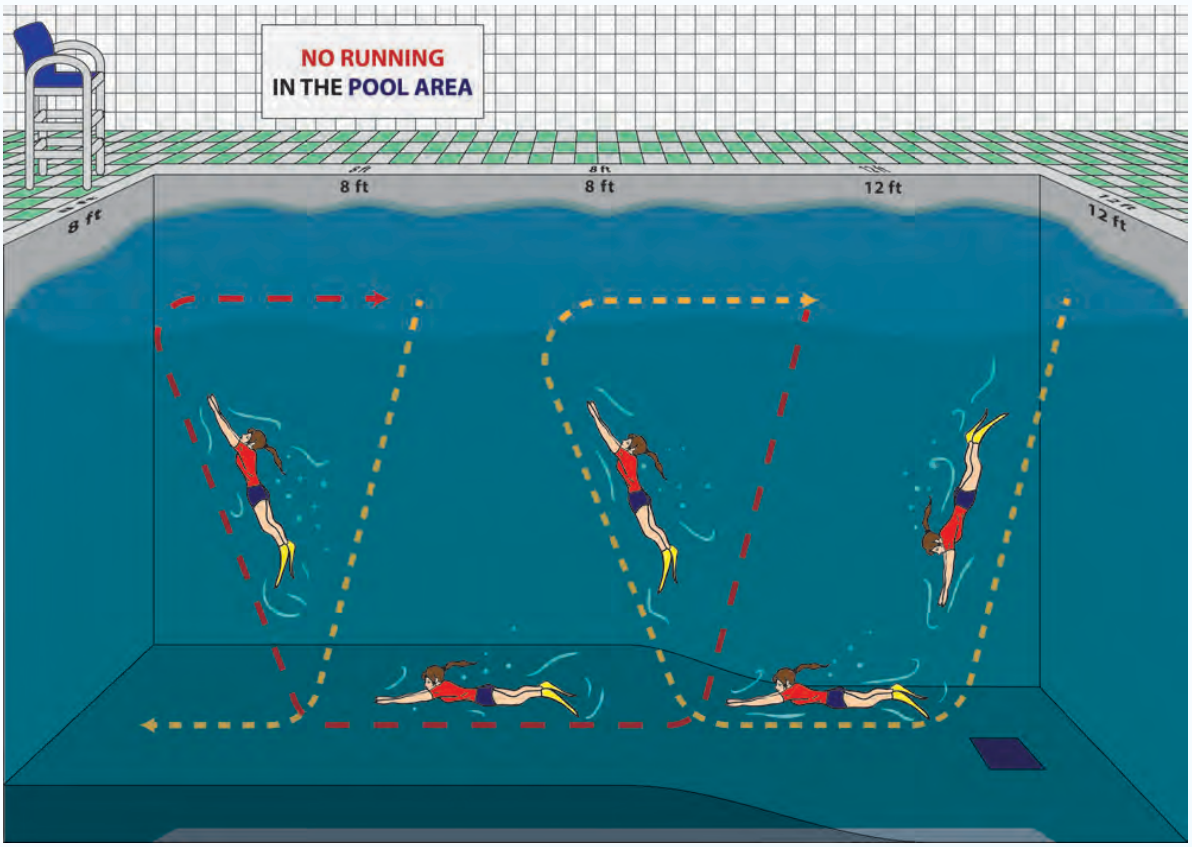


2. The lifeguard group will pivot to return to the edge. This pivot will occur by having the lifeguard farthest to the left swim out farther than the next one, and so on, so that the lifeguards can be in a row horizontal to the edge.
3. The lifeguards will then face the edge and return while continuing their search.
4. This up-and-down motion will continue, with the lifeguards conducting a thorough search.

Deep Water Search

A deep water search[33] should only be conducted by lifeguards/trained rescuers. Lifeguards should first put on masks and fins before beginning a deep water search.

1. A group of lifeguards lines up in the water. The lifeguards should be no more than arm's-length from each other.
2. The lifeguards will go down to the bottom head first, and swim 3 strokes underwater while searching for the victim with their hands on the ground before resurfacing.
3. When the lifeguards surface, they should make sure everyone is aligned with the person farthest back. Then all lifeguards should take a small step/stroke back and then continue the search. The reason for the step back is because when people swim up from the bottom of the pool, they never come up straight, rather they come up at an angle.



4. Before all the lifeguards go down for the next search, the head lifeguard does a 3-count.
5. The lifeguards submerge again, do a 3-stroke search, and come back up before they go down again.
6. Each time the lifeguards surface, the head lifeguard makes sure all the lifeguards surfaced, then the entire team reforms their line and take a step back, then the head lifeguard does a 3-count and the rescuers continue the search.

Rescue Technique—Unconscious Submerged Victim

When a victim is submerged beneath the surface of the water, the following steps are followed:

1. The lifeguard will perform a head-first or a feet-first surface dive to bring themselves to the victim.
2. When the lifeguard approaches the victim, the rescuer will go behind the victim, place their left hand under the victim's left armpit and across the shoulder.
3. With the lifeguard's right hand, the lifeguard will grab the strap and place it in their left hand. The lifeguard will continue to move the strap from one hand to the other until the lifeguard and the victim reach the surface of the pool.
4. After the lifeguard and victim have surfaced, the lifeguard will place the rescue tube between them.
5. The lifeguard should then tilt the victim's head back and out of the water.
6. The lifeguard should wrap the victim's hands on the rescue tube. Then the lifeguard should place their right hand over the victim's right shoulder and under the tube.
7. In this position, if it is necessary, the lifeguard can administer rescue breathing immediately.
8. With the lifeguard's left hand they can swim to bring the victim to the side of the pool.

In this scenario, the primary objective is for the lifeguard to bring the victim to the surface as quickly and safely as possible.

Spinal Rescues

Recognizing a Potential Head, Neck or Back Injury

If a victim has suffered a spinal injury, the following physical indications may be observed:

1. There may be blood or yellow fluids coming out of the ears
2. The lifeguard may observe a condition known as "Raccoon eyes," which refers to bruises around both eyes. These bruises look like the dark patches around the eyes that are characteristic of raccoons. Raccoon eyes signal a serious condition related to a skull or brain injury.

3. A condition known as “Battle's sign,” also known as mastoid ecchymosis, is an indication of fracture of middle cranial fossa of the skull. These fractures may be associated with underlying brain trauma. Battle's sign consists of bruising over the mastoid process as a result of extravasation of blood along the path of the posterior auricular artery. (The sign is named after William Henry Battle.)
4. Impaired movement of the victim is an indicator of a head, neck or back injury.

The least likely place in the pool area for a person to suffer a head, neck or back injury is in the deep end of the pool[34].

Rescue Techniques

If there is a possibility that the victim has suffered a spinal injury, additional precautions must be taken to minimize the head movement during the rescue[35]. This will include the following:

Ease-In Entry

When a spinal injury is suspected, an ease-in entry is the preferred choice, in order to cause the least disturbance to the victim.

The Head-Splint Technique

The goal in the rescue of a suspected spinal injury victim is to minimize the head motion. Because of this, the head-splint technique[36] will be incorporated in the rescue and removal procedures. The head-splint technique provides the in-line stabilization necessary for the spinal injury victim. The head-splint technique involves stabilizing the victim’s head by bracing it between their arms, which will be placed overhead and squeezed together.

If the Victim is Face Up in the Water

1. The lifeguard will position themselves on the side of the victim facing the victim.
2. The lifeguard’s right hand will grasp the victim’s right biceps and the lifeguard’s left hand will grasp the victim’s left bicep.
3. The lifeguard will gently move the victim’s arms up alongside the victim’s head.
4. The lifeguard will slowly squeeze the victim’s arms together with the victim’s head in-between them.
5. The lifeguard will need to continue to provide pressure keeping the victim’s arms together throughout the rescue procedure. The lifeguard should also be sure to remain partially submerged so as not to pressure the victim out of a straight line. The victim’s ears should remain in the water until removal.

If the Victim is Face Down in the Water

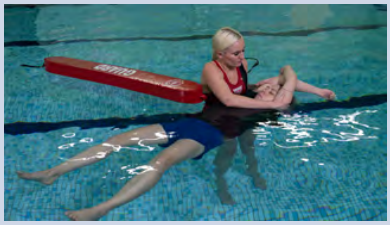
The lifeguard will initiate the head-splint technique before turning the victim over into the **over-arm head-splint** technique.

1. The lifeguard will position themselves on the side of the victim while facing the victim.
2. The lifeguard's right hand will grasp the victim's right biceps and the lifeguard's left hand will grasp the victim's left bicep.
3. The lifeguard will slowly squeeze the victim's arms together with the victim's head in-between.
4. If the victim's legs are lower than the head, the lifeguard should take two steps forward while holding the head splint. This forward motion will cause the victim's legs to rise in the water to the surface.
5. While moving forward and continuing to pressure the victim's arms together around their head, the lifeguard will roll the victim face up and towards the rescuer. The lifeguard will do this once the victim's body is horizontal in the water.
6. The lifeguard's arm will be beneath the victim. In order for the lifeguard to move their arm into the over-arm position so that the victim can be backboarded, the lifeguard will need to press the victim against their body to keep the victim's arms together, and then reach over the victim and place their hand where the other hand is.
7. The lifeguard will continue to squeeze the victim to the lifeguard's chest, while bringing the arm beneath the victim's back to the victim's closest arm, so that the lifeguard will be in the over-arm position.

The lifeguard will position themselves on the side of the victim facing the victim.

The lifeguard's right hand will grasp the victim's right biceps and the lifeguard's left hand will grasp the victim's left bicep.

The lifeguard will slowly squeeze the victim's arms together with the victim's head in-between.

 If the victim's legs are lower than the head, the lifeguard should take 2 steps forward while holding the head splint. This forward motion will cause the victim's legs to rise in the water to the surface.	 While moving forward and continuing to pressure the victim's arms together around their head, the lifeguard will roll the victim's face up and towards the rescuer. The lifeguard will do this once the victim's body is horizontal in the water.	 The lifeguard's arm will be beneath the victim. In order for the lifeguard to move their arm into the over-arm position so that the victim can be backboarded, the lifeguard will need to press the victim against their body to keep the victim's arms together, and then reach over the victim and place their hand where the other hand is.
 The lifeguard will continue to squeeze the victim to the lifeguard's chest, while bringing the arm beneath the victim's back to the victim's closest arm, so that the lifeguard will be in the over-arm position.		

Extremely Shallow Water Techniques

In extremely shallow water[37], the lifeguard will do the following:

1. The lifeguard will approach the victim from behind—nearest the victim's head.
2. The lifeguard's right hand will grasp the victim's right biceps and the lifeguard's left hand will grasp the victim's left bicep.
3. The lifeguard will gently move the victim's arms up alongside the victim's head.

4. The lifeguard will slowly squeeze the victim's arms together with the victim's head in-between them.

From this position, the victim can either be backboarded with the assistance of other lifeguards, or kept there in the shallow water until EMS arrives, keeping the victim warm with towels or blankets.

If the victim is face-down in extremely shallow water:

1. The lifeguard will position themselves on the side of the victim while facing the victim.
2. The lifeguard's right hand will grasp the victim's right biceps and the lifeguard's left hand will grasp the victim's left bicep.
3. The lifeguard will gently move the victim's arms up alongside the victim's head.
4. The lifeguard will slowly squeeze the victim's arms together with the victim's head in-between them.
5. While continuing to pressure the victim's arms together around the victim's head, the lifeguard will roll the victim face up and towards the rescuer.
6. The lifeguard will lower their arm to be beneath the victim and the victim's arms will go over the lifeguard's arm. The lifeguard will continue to press the victim's arms together, and will end up standing above/behind the victim's head, holding the victim's arms together.

From this position, the victim can either be backboarded with the assistance of other lifeguards, or kept there in the shallow water until EMS arrives, keeping the victim warm with towels or blankets.

Removal

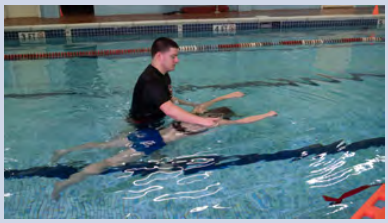
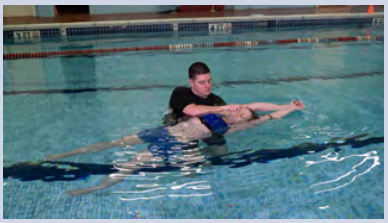
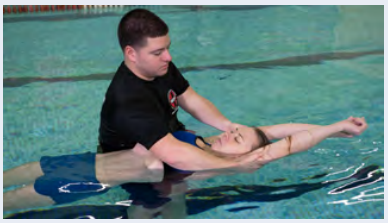
When a spinal injury victim is to be removed[38] from the water, it is imperative that the head remains braced throughout the removal process. A backboard with a head stabilizer will be used for removal of the victim from the water.

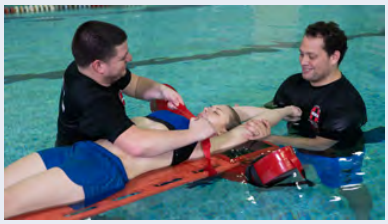
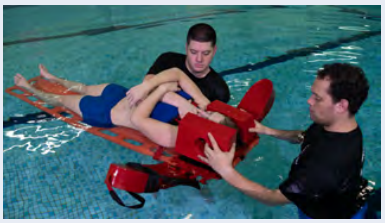
Shallow Pool Backboarding

In a shallow pool, the lifeguards will be able to secure the victim to the backboard while standing on the ground, allowing them the most personal balance and support[39]. Ideally there should be at least two lifeguards present to secure the victim to the backboard. The steps to secure a victim to a backboard in a shallow pool are as follows:

1. If the victim is face up in the water, the first lifeguard will follow the steps above to position the victim into an over-arm head-splint.
2. While the first lifeguard continues to apply pressure in the head-splint, the second lifeguard places the backboard parallel to the victim.
3. The second lifeguard lifts the long side (away from the victim) of the backboard up to press the backboard down into the water and under the victim, while the first lifeguard continues to maintain in-line stabilization of the victim in the head-splint.
4. The first lifeguard puts their knee beneath the backboard to keep it steady while the second lifeguard places a rescue tube beneath the backboard under the victim's head.
5. The second lifeguard stands behind the victim's head and then takes hold of the victim's arms, applying pressure in the head-splint, so that the first lifeguard can release the victim's arms.
6. The first lifeguard then secures the top strap on the victim's chest. The lifeguard then places one hand under the backboard pushing up while laying their forearm on the victim's chest and forming their hand in a "C" around the victim's chin, stabilizing the victim's head from the front.
7. The second lifeguard can then release the victim's arms and lower them to their side.
8. The second lifeguard will next place both pieces of the head stabilizer to secure the victim's head.
9. The second lifeguard will then put on the head strap. Until the victim's head has been secured, the lifeguard providing frontal in-line stabilization must continue.
10. Once the victim's head is secured, the lifeguards can remove the victim on the backboard from the pool.
11. Removing the backboard with a High Pool Edge
    1. One lifeguard will crouch on the pool deck and grasp the front of the backboard, while one remains in the pool at the feet of the backboard.
    2. The lifeguard on the pool deck will angle the backboard upward until it is able to clear the pool deck height.
    3. The lifeguard in the pool will then push the backboard onto the pool deck, while the lifeguard on the pool deck guides it back into a horizontal position.
    4. The backboard is then slid at least four feet from the edge of the pool to attend to the victim.
12. Removal the backboard with a Low Pool Edge
    1. In a zero-entry pool or one with a very low edge, both lifeguards may be able to slide the backboard directly onto the pool deck.

2. The backboard is then slid at least four feet from the edge of the pool to attend to the victim.

 If the victim is face-down, the lifeguard's right hand will grasp the victim's right biceps and the lifeguard's left hand will grasp the victim's left bicep. The lifeguard will slowly squeeze the victim's arms together with the victim's head in-between them.	 If the victim's legs are lower than the head, the lifeguard should take two steps forward while holding the head splint. This forward motion will cause the victim's legs to rise in the water to the surface.	 While moving forward and continuing to pressure the victim's arms together around their head, the lifeguard will roll the victim face up and towards the rescuer. The lifeguard will do this once the victim's body is horizontal in the water.
 The lifeguard's arm will be beneath the victim. In order for the lifeguard to move their arm into the over-arm position so that the victim can be backboarded, the lifeguard will need to press the victim against their body to keep the victim's arms together, and then reach over the victim and place their hand where the other hand is.	 The lifeguard will continue to squeeze the victim to the lifeguard's chest, while bringing the arm beneath the victim back to the victim's closest arm, so that the lifeguard will be in the over-arm position.	 While the first lifeguard continues to apply pressure in the head-splint, the second lifeguard places the backboard parallel to the victim.

 The second lifeguard lifts the long side (away from the victim) of the backboard up to press the backboard down into the water and under the victim, while the first lifeguard continues to maintain in-line stabilization of the victim in the head-splint.	 The first lifeguard puts their knee beneath the backboard to keep it steady while the second lifeguard places a rescue tube beneath the backboard under the victim's head.	 The second lifeguard stands behind the victim's head and then takes hold of the victim's arms, applying pressure in the head-splint, so that the first lifeguard can release the victim's arms.
 The first lifeguard then secures the top strap on the victim's chest. The lifeguard then places one hand under the backboard pushing up while laying their forearm on the victim's chest and forming their hand in a "C" around the victim's chin, stabilizing the victim's head from the front.	 The second lifeguard can then release the victim's arms and lower them to their side.	 The second lifeguard will next place both pieces of the head stabilizer to secure the victim's head.

 The second lifeguard will then put on the head strap. Until the victim's head has been secured, the lifeguard providing frontal in-line stabilization must continue.	 Once the victim's head is secured, the lifeguards can remove the victim on the backboard from the pool.	 One lifeguard will crouch on the pool deck and grasp the front of the backboard, while one remains in the pool at the feet of the backboard. The lifeguard on the pool deck will angle the backboard upward until it is able to clear the pool deck height.
 The lifeguard in the pool will then push the backboard onto the pool deck, while the lifeguard on the pool deck guides it back into a horizontal position.	 The backboard is then slid at least four feet from the edge of the pool to attend to the victim.	

Deep Water Backboarding

In deeper water, if there is a shallow end to the pool nearby, and time allows, the victim can be moved to shallower water for removal. However, if such a move takes place:

- The lifeguard must be providing in-line stabilization using the over arm head-splint.
- The victim must be on their back while the head is stabilized between the arms.
- The pool must be calm and empty enough so that there is no water disruption near the victim.

Otherwise, the lifeguards will remove the victim to a backboard directly in the deep side of the pool. Lifeguards are recommended to wear rescue tubes while backboarding the victim in deep water.

1. The first lifeguard will follow the steps above to position the victim into an over-arm head-splint.

2. While the first lifeguard continues to apply pressure in the over-arm head-splint, the second lifeguard places the backboard parallel to the victim.
3. The second lifeguard lifts the long side (away from the victim) of the backboard up to press the backboard down into the water and under the victim, while the first lifeguard continues to maintain in-line stabilization of the victim in the head-splint.
4. The first lifeguard puts their knee beneath the backboard to keep it steady while the second lifeguard places a rescue tube beneath the backboard under the victim's head.
5. The second lifeguard goes behind the victim's head and then takes hold of the victim's arms, applying pressure in the head-splint, so that the first lifeguard can release the victim's arms.
6. The first lifeguard then secures the top strap on the victim's chest. The lifeguard then places one hand under the backboard pushing up while laying their forearm on the victim's chest and forming their hand in a "C" around the victim's chin, stabilizing the victim's head from the front.
7. The second lifeguard can then release the victim's arms and lower them to their side.
8. The second lifeguard will next place both pieces of the head stabilizer to secure the victim's head.
9. The second lifeguard will then put on the head strap. Until the victim's head has been secured, the lifeguard providing frontal in-line stabilization must continue.
10. Once the victim's head is secured, the lifeguards can remove the victim on the backboard from the pool.
11. Removal with a High Pool Edge
    1. One lifeguard will crouch on the pool deck and grasp the front of the backboard, while one remains in the pool at the feet of the backboard.
    2. The lifeguard on the pool deck will angle the backboard upward until it is able to clear the pool deck height.
    3. The lifeguard in the pool will then push the backboard onto the pool deck, while the lifeguard on the pool deck guides it back into a horizontal position.
    4. The backboard is then slid at least four feet from the edge of the pool to attend to the victim.
12. Removal with a Low Pool Edge
    1. At a pool with a very low edge, both lifeguards may be able to slide the backboard directly onto the pool deck.
    2. The backboard is then slid at least four feet from the edge of the pool to attend to the victim.

Submerged Victim Spinal Rescue

If the victim with the spinal injury is submerged[40], the following steps will be used:

1. The lifeguard will dive under the water towards the submerged victim
2. The lifeguard will approach the victim from above or behind.
3. The lifeguard will grasp the victim's arms at the bicep and raise them above the victim's head.
4. The lifeguard will trap the victim's head between their arms.
5. While holding the victim's arms together over their head to provide in-line stabilization, the lifeguard will move to the surface of the pool.
6. If the victim is facing down, the lifeguard will roll with the victim while swimming towards the surface of the pool.
7. At the surface, the lifeguard will position the victim face up in the water, while continuing to support the in-line stabilization, and guide the victim to the side of the pool for backboarding and removal.

Special Circumstances

Special circumstances may arise when performing a rescue for which the lifeguard should be prepared. These include rescue breathing before reaching the land, defenses and escapes with difficult victims, and multiple victim rescues.

Rescue Breathing

If a lifeguard is performing a rescue and the victim is not breathing, every second counts. If the traveling distance with the victim to the shore or pool deck will take more than mere seconds, it is important to begin rescue breathing[41] immediately, using a resuscitation mask attached to the lifeguard rescue tube. In order to begin rescue breathing, the lifeguard should follow these steps:

1. Check to see if the victim is breathing by listening closely near the mouth and observing whether the victim's chest is rising/falling.
2. If the victim has a pulse but is not breathing, take out the mask and remove any excess water.
3. Place the mask over the victim's nose and mouth, and be sure there is a seal between the mask and the victim's face.
4. Tilt the victim's head backwards to open the airway. ***Please note—in the case of a potential spinal injury, do NOT tilt the victim's head backwards. Instead, thrust the victim's jaw forward using your hands to open the airway.
5. Begin rescue breathing through the mask (please see individual mask instructions prior to use).

6. It is very common for a victim to vomit. Should vomiting occur, turn the victim's head to wipe away any obstructions and continue rescue breathing through the mask. The lifeguard will want to continue rescue breathing while moving the victim to safety.

Rescue Breathing With Flotation

In cases that the lifeguard has the victim positioned face up on a flotation device, rescue breathing can be done from the side, as the victim is supported in the water[42].

Rescue Breathing Without Flotation

If there is no flotation device available, the lifeguard will need to support the victim on one upper arm, facing away from the lifeguard, so that the lifeguard can reach over and perform rescue breathing.
Rescue breathing is an important skill, and one which should be practiced with the equipment that will be available at your location.

Defense/Escapes

In certain instances, a victim panics and is uncooperative with the lifeguard's rescue attempt.

Front Escape

If the victim tries to grab the lifeguard instead of the rescue tube in a front-rescue:

- The lifeguard should bring their chin to their chest, preventing the victim from getting their hands around the rescuer's neck.
- The lifeguard should submerge under the water ("escaping" from the victim temporarily) to free themselves from the victim's clutches.
- If the victim doesn't let go, the lifeguard can squeeze the victim's biceps and force open the victim's arms.
- Once the lifeguard is free from the victim, the lifeguard should swim underwater 2-3 feet away from the victim, put the rescue tube in front and then attempt another rescue.

Rear Escape

If the victim tries to grab the lifeguard instead of the rescue tube in a rear-rescue:

- The lifeguard should bring their chin to their chest, preventing the victim from getting their hands around the rescuer's neck.

- The lifeguard should submerge under the water (“escaping” from the victim temporarily) to free themselves from the victim’s clutches.
- If the victim doesn't let go, the lifeguard can squeeze the victim’s biceps and force open the victim’s arms.
- Once the lifeguard is free from the victim, the lifeguard should swim underwater 1-2 feet away from the victim, put the rescue tube in front and then attempt another rescue.

A lifeguard should call for backup assistance if they feel as if making a safe rescue alone is impossible. A second lifeguard can join and perform a two-person rescue[43].

Removing Victims from the Water

Various methods for removing victims from the water have been mentioned in the preceding chapter, and their uses are dependent upon the condition of the victim (spinal or non-spinal injury), the type of pool exit, and the number of available lifeguards.

Water Exits

The simplest exit to perform is the water exit, whereby the lifeguard is able to walk or assist the victim out of the water on their own strength. This is appropriate providing that the victim is:

- Conscious
- Able to walk
- Has no risk of a spinal injury

Two lifeguards may also carry a victim out of the water by forming their hands as a chair with the victim’s arms around their necks for support. This exit would be appropriate if the victim is conscious but unable to walk.

Board Lift

If the victim is unconscious but has no risk of a spinal injury, the lifeguards may use a backboard to remove the victim from the water. If there is no risk of a spinal injury, a head restraint is unnecessary, and the body straps are omitted for speed, providing that more than one lifeguard will be assisting and the board can be kept straight. The steps to removing a victim with a backboard are as follows:

1. The rescuing lifeguard brings the victim to the side of the pool, head out of the water, facing the wall. The victim’s head is tipped back and face out of the water
2. A second lifeguard brings the backboard to the scene.
3. The second lifeguard crosses their hands and grasps the victim’s hands and holds them while the first lifeguard gets out of the water.

4. The first lifeguard grabs the backboard and places it vertically in the water, head up against the wall next to the victim.
5. The second lifeguard then turns the victim onto the backboard so that the victim’s back is against the board.
6. Each lifeguard quickly grasps one of the victim's wrists and one of the handholds of the backboard.
7. With one hand grasping the victim and one hand holding the handholds of the board, the first lifeguard gives the signal and both lifeguards lift the victim and board up out of the water and onto the pool deck, using their legs and not backs for strength.
8. The lifeguards step backward away from the pool while carefully lowering the backboard to the ground, away from the pool edge.

Review

In a non-swimming rescue, describe the following pieces of rescue equipment and their uses:

Rescue Pole:

Buoys/Life Rings:

Rescue Tubes:

Different water entries are appropriate for different situations. Considering the following criteria, write the appropriate words next to each water entry.
Terms to use: fast, clear water, cloudy water, short-distance, long-distance, waveless, spinal injury, deep water, shallow water, maintain eye contact

- **Ease-In Entry:**
- **Touch-And-Go Entry:**
- **Compact-Jump Entry:**
- **Stride-Jump Entry:**
- **Shallow-Dive Entry:**

What are the priorities that a lifeguard must consider when performing a rescue?

Why is a rescue tube an essential piece of equipment for a lifeguard?

When is it important to perform rescue breathing in the water?

What are some special considerations when the victim is at risk of a spinal injury?

Describe the use of each of the following pieces of rescue equipment:
Resuscitation Mask:

Backboard:

Different removal methods are appropriate for different situations. Considering the following criteria, write the appropriate words next to each removal method.
Terms to use: spinal injury, conscious victim, unconscious victim, one lifeguard, multiple lifeguards, head restraint, body straps, in-line stabilization
Water Exit:

Board Lift:

Backboarding:

Unit 5—First Aid and Emergency Care

Equipment

First-Aid Station

A fully equipped first aid station should be accessible for all rescuers. A first aid station should include the following[1]:

- Adhesive bandage
- Adhesive tape
- Antibiotic application (Follow local protocols.)
- Antiseptic
- Breathing barrier
- Burn dressing (gel soaked)
- Burn treatment
- Cold pack
- Eye covering (with means of attachment)
- Eye/skin wash
- First aid guide
- Hand sanitizer
- Medical exam gloves (non-powdered/non-latex gloves)
- Roller bandage (2 inch)
- Roller bandage (4 inch)
- Scissors
- Splint
- Sterile pad
- Tourniquet
- Trauma pad
- Triangular bandage

Devices

A well-equipped first aid station should also have certain devices available in case of an emergency, including:

- Epinephrine injectable pen
- Resuscitation Mask
- Bag Valve Mask Ventilation (BVM)
- Automated External Defibrillator (AED)

Recognizing Emergencies

Part of every rescuer's responsibility is injury prevention. The rescuer should always try to prevent emergencies from happening[2].

Examples of life-threatening emergencies

- Victim does not have a pulse
- Victim is not breathing
- Victim has major bleeding
- Victim has a head neck or back injury
- Victim was drowning

Examples of non-life-threatening emergencies

- Scrapes
- Abrasions
- Avulsions
- Bruises
- Superficial burns
- Sprains
- Fracture
- Dislocation

Examples of sudden illness emergencies

- Seizures
- Nausea
- Fever
- Diarrhea
- Stroke
- Allergies
- Changes in Level of Consciousness
- Loss of Vision
- Dizzy
- Poison
- Heat Stroke
- Changes in Skin CTC (Color, Temperature, Condition)

Injury prevention

The best way to prevent injuries is to educate patrons about possibilities of injuries and enforce facility rules and regulations. One way to educating patrons is having safety signs around the facility.

Rescuers must make sure that all patrons follow facility rules. If patrons do not, the rescuer must step in and enforce the rules. When enforcing the rules, the rescuer must be polite and explain the danger of what the patron is doing.

Primary Assessment

During the Primary Assessment, the rescuer will check the victim's LOC (Level of Consciousness) by asking the victim “Are you OK?”

The rescuer will then be able to determine where the victim falls on the “AVPU” scale:

- Alert—Responds to questions correctly
- Verbal—Is able to talk but does not make sense
- Pain—The rescuer provides painful stimulus such as squeezing the trapezius muscle (behind the shoulders) and check for a response (such as the victim’s eyes opening, or verbal such as moaning)
- Unresponsive—If the victim is not Alert, Verbal, or does not Respond to Pain, then the victim is considered to be unresponsive

After checking the “LOC” and “AVPU,” the rescuer should have someone call 911 if needed. Then the rescuer will look for and address all life-threatening conditions. These life-threatening conditions include but not excluded to:

- Victim does not have a pulse
- Victim is not breathing
- Victim has major bleeding

If the victim has a life-threatening condition, the rescuer should treat it accordingly.

(The APVU scale is an acronym used by first responders and medical professionals in assessing a victim’s Level of Consciousness. See https://www.health.ny.gov for more information)

Secondary Assessment

If the victim does not have a life-threatening condition, then the rescuer will start a secondary assessment. If, while conducting the secondary assessment, a life-threatening condition suddenly occurs, the rescuer must immediately address the life-threatening condition before continuing the secondary assessment.

During the secondary assessment the rescuer should get a **SAMPLE** history. The **SAMPLE** history will be able to give the rescuer more information about the incident and history of the victim.

SAMPLE history:

- **S** = Signs and symptoms—Signs are things that a person can measure, such as heart rate or respiratory rate. Symptoms are things that the victim is complaining about, such as chest pain or a fever.
- **A** = Allergies—Ask the victim if they are allergic to anything.
- **M** = Medications—Ask if the victim takes any medications.
- **P** = Past medical history—Ask if this has ever happened to the victim before.
- **L** = Last oral intake—Find out what was the last thing the victim ate or drank.
- **E** = Events leading up to the incident—Find out what happened right before this issue occurred.

If the victim is unresponsive, or not able to respond, the rescuer should try to get a SAMPLE history from family or bystanders.

(SAMPLE is an acronym used by first responders and medical professionals in performing a secondary assessment including a person's history and a physical exam. See https://www.health.ny.gov for more information)

After taking the **SAMPLE** history, the rescuer should do a Head-to-Toe assessment. If the victim is a child, the rescuer should do a Toe-To-Head assessment.

When doing this assessment, the rescuer will check for **DCAP-BTLS**

- **D**eformities
- **C**ontusions
- **A**brasions
- **P**unctures/penetrations
- **B**urns
- **T**enderness
- **L**acerations
- **S**welling

The rescuer should treat any injury that they find. If the rescuer finds any life-threatening injury, the life-threatening injury must be addressed before continuing the assessment.

(DCAP-BTLS is an acronym used by first responders and medical professionals to rapidly assess a victim from head to toe. See https://www.health.ny.gov for more information)

Determining Life-Threatening/Non-Threatening/Sudden Illness

The rescuer will want to assess the victim for responsiveness/consciousness, breathing and pulse. Prior to treating any victim, the rescuer should put on non-latex gloves.

- The rescuer should check responsiveness by tapping and shouting to the victim "Are you okay?" If the victim is able to respond, then they are responsive. If the victim does not respond to tapping and shouting, "Are you okay?" then they are said to be unresponsive.
- If the victim is unresponsive, then the rescuer should point and tell a bystander to call 911, get an AED, and report back to the rescuer.

- After the rescuer has someone call 911, he should Look, Listen and Feel for 5-10 seconds. They should Look at the victim's chest to see if it goes up and down, Listen for breathing by putting his ears right above the victim's mouth, and Feel for a pulse. For an adult the rescuer should feel by the carotid artery and for the infant by the brachial artery.
- If the victim has no pulse, the rescuer should start CPR.
- If the victim has a pulse but is not breathing, the rescuer should start ventilations
- If the victim has a pulse and is breathing, but has major bleeding, the rescuer should stop all bleeding by applying pressure using a gauze bandage.

Life-threatening Conditions

If the victim does not have a pulse, or has a pulse but isn't breathing, it is considered a life-threatening condition. Other conditions may be life-threatening, including severe bleeding, sudden illness, spinal injury, shock, serious burns, and other medical conditions. EMS should be called immediately if:

- The victim is unconscious
- The victim is in severe pain
- The victim is bleeding heavily
- The victim has suffered a serious accident
- The victim is confused or disoriented

A rescuer needs to become familiar with common injuries and illnesses to determine the seriousness of a medical incident.

Non-threatening Emergency

In the case of a non-threatening emergency or sudden illness, the rescuer should:

- Examine the victim for signs and symptoms of injury or illness
- Inquire about the circumstances surrounding the incident
- Ask about allergies and pre-existing medical conditions
- Ask about medications taken, and the last time any medication was taken
- Determine the best cause of action
- If needed, call 911 and request an ambulance

Taking Action

Emergency Action Steps—CCC—CHECK-CALL-CARE

The 3 Cs for emergency action steps stand for **CHECK-CALL-CARE**

- **CHECK**—The rescuer will check the situation for any unsafe conditions, such as fire, traffic or other hazards. The rescuer will also check the victim for breathing and pulse. If the victim is conscious, the rescuer will obtain consent. The rescuer will also check if there are other victims, and if so, how many?

- **CALL**—911 and alert emergency medical services of the situation. Be sure to give complete information, such as the exact location of the victim, name, call back number, situation details.
- **CARE**—for the victim, administering rescue breathing or CPR as needed if the victim is not breathing or does not have a pulse. If the victim has any other type of emergency, the rescuer should treat it appropriately. The rescuer should always treat life-threatening emergencies before treating any non life-threatening emergencies.

911—CCC—CHECK-CALL-CARE

When Emergency Medical Services EMS arrives on the scene, they will **CHECK-CALL-CARE**

- **CHECK**—EMS will check the victim thoroughly to determine whether the victim requires advanced medical personnel or can be treated on-site by the EMS professionals. If there are multiple victims, EMS will check to see how many, and what condition all victims are in.
- **CALL**—If advanced medical care is required, EMS will call for assistance. This assistance may be other medical professionals who will be arriving to the victim's location, or other advanced assistance off-site.
- **CARE**—If EMS determines that the victim can be treated on-site by the EMS professionals, they will care for the victim. If EMS is waiting for advanced medical assistance, they will provide care until their arrival[3].

Responder's Role

In the case of a medical emergency, the rescuer is responsible to:

- Activate the Emergency Action Plan—which includes notifying Emergency Medical Services (EMS)
- If needed, rescue the victim
- Provide emergency care to the standard of care
- Document/report the incident afterwards

Other rescuers responding to the Emergency Action Plan will direct other guests to clear the area, assist the EMS to bring them quickly to the victim, and help retrieve emergency equipment, as is stated in the facilities Emergency Action Plan.

Overcoming Barriers

Common Barriers to Action

Often a rescuer is faced with a barrier preventing effective action. Such barriers can include:

- A distraught or argumentative victim
- Interference from others

- Physical barriers at the location—such as distance or separation
- The victim being located in an unsafe location
- Language and understanding barriers
- Weather-related interference
- Personal feelings of embarrassment
- A feeling of being unsure of the person's illness or condition
- Fear of catching a disease
- Fear of being sued
- Fear of not knowing what to do
- Feeling unsure as to when to call 911.

Sometimes help from a second rescuer—or even a helpful bystander—in giving the victim the medical care they need can be of great assistance in overcoming barriers.

If the issue is a difficult or unsafe location, the rescuer could ask for assistance in securing the area to give the focus to the victim. Common fears - such as the fear of catching a disease or being sued - will be alleviated with thorough training. Over time, the rescuer will feel more comfortable addressing such barriers on their own.

Bystanders—Ways to Assist at the Scene

Bystanders can range from difficult and interfering to needed and helpful. In a situation with bystanders, it is important for the rescuer to take control of the scene from the outset, both for crowd control as well as to gain assistance if needed[4].

- Ask the crowd for space for the victim, so that the victim is not crowded by the presence of others.
- Such space can even be an established perimeter, such as announcing "Please stand behind that line."
- If the rescuer is the only rescuer present, they should direct a bystander to call EMS if needed.
- Have the person calling stand nearby if possible, so that the rescuer can give or get directives from EMS.

Other ways that a helpful bystander can be of assistance include:

- Waiting at the entrance for EMS to arrive.
- Retrieving medical supplies from the first aid station.

- Getting towels, making cold compresses, getting ice, or other necessary errands.
- Helping to keep the crowd at a distance from the victim.
- In most states, if any bystander is a first responder or trained it First Aid, the rescuer may ask them to assist and the bystander will be protected under the Good Samaritan Law

(Check your local state regulations for more information about the Good Samaritan Law)

EMS—Onsite Emergency Response Plan (ERP)

Emergency Medical Services are called when a medical emergency arises including breathing and cardiac emergencies. It is imperative that the person contacting EMS quickly and clearly describes:

- The exact location of the facility, including the street address
- The type of incident which has occurred
- A callback number where you can be reached
- Additional information concerning quick access, such as which door/entrance to enter, and that someone would be there to meet them

A person should then wait at the entrance for the Emergency Medical Services to arrive, and guide them quickly to the victim.

If the incident is a non-medical emergency such as:

- Fire
- Explosion
- Hazardous materials nearby
- Weather-related emergency

Then the rescuers must follow their facility's EAP and local regulations.
Rescuers at a facility must know the EAP and their responsibilities[5].

Review

What would be an appropriate location for a first-aid station? What would be a poor location? Why?

What does CCC stand for? Describe each step in the process.

C

C

C

What makes something a life-threatening situation?

Name some ways a bystander can assist a rescuer.

Before Giving Care

Preventing the Spread of Disease

While the rescuer is administering first aid and/or cardiac care, preventing the transmission and spread of disease is of paramount importance. Disease can be spread through bodily substances, such as blood, vomit, and fecal matter, as well as through physical contact with a victim's mouth and wounds. In addition to wearing personal protective equipment while administering first aid, rescuers must also be aware of bodily fluids both on the pool deck and in the water and act accordingly. All bodily fluid and/or fecal matter must be cleaned immediately, and a pool area should have a procedure in place for clean-up and evacuation of the pool area in the case of a contamination[6].

There are several things that rescuers should always do when treating a victim in order to avoid contact with bodily fluids and prevent the spread of disease. These include:

- Washing Hands
- Cleaning all equipment after use
- Disposing of used equipment properly
- Wearing personal protection (gloves, etc.)

Hand Washing

The rescuer should be sure to have clean hands at all times. This means that the rescuer should wash their hands whenever they come into contact with bodily fluids of any kind as well as after close/skin contact with another person, before and after eating, and after using the bathroom. To wash hands properly, do the following[7]:

- Wet the hands with warm water.
- Rub hands with soap for at least 15 seconds. Be sure to clean the fingernails and any jewelry which may be worn.
- Rinse hands thoroughly with warm water.
- Dry hands with a disposable towel.
- Using the towel, turn the faucet off.

If the hands are not visibly dirty and water/soap is not readily available, hand sanitizer can be used.

- Apply hand sanitizer to one hand.
- Rub the hands together, spreading the hand sanitizer to all areas of the hands and fingernails until it dries.

Cleaning All Equipment After Use

All equipment should be properly cleaned after each use.

- Protective gloves should carefully be removed and disposed of after use.

- If there is a spill or spread of bodily fluids, it must be contained and cleaned—contained so that others are not walking through the area—potentially spreading fluids. Clean with liquid chlorine bleach (use 10% bleach to 90% water and allow it to stand on the area for 10 minutes before cleaning)
- All equipment and surfaces must be cleaned and disinfected after each use.
- All cleaning supplies should be disposed of safely and quickly.
- Exterior clothing—including shoes—must be removed and properly cleaned.

Disposing of Used Equipment Properly

It is important to dispose of used equipment properly after use, including:

- All sharp items should be disposed of properly.
- All soiled clothing/bandages/gloves should be disposed of properly and quickly after use.

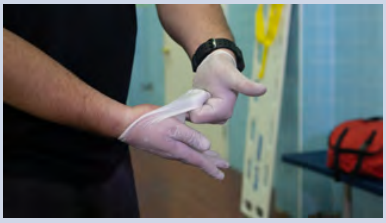
Wearing Personal Protection

When the rescuer will be administering first aid of any type, personal protective gear should be worn, including protective gloves and a barrier resuscitation mask for rescue breathing. While cleaning up a contaminated area, protective eyewear and footwear will shield the rescuer from bodily fluids.

Protective Gloves

Protective gloves are worn whenever a rescuer will be administering first aid[8]. As many people are allergic to latex, rescuers should wear non-latex, non-powdered gloves. Gloves protect the rescuer from coming into contact with blood or other fluids while administering aid. After administering aid, the gloves should be discarded into a biohazard disposal bag. The rescuer should remove the gloves carefully for disposal, turning them inside-out in the process so that not personal contact is made with the outside of the glove. After removing and disposing of the gloves, the rescuer should wash their hands thoroughly with soap or antibacterial cleanser.
To properly remove protective gloves:

- Grasp the outside of the glove near the wrist with the thumb and pointer of the other hand.
- Pull down on the glove, turning it inside out as it peels off the hand.
- Holding the inside of the removed glove in the bare hand, slide the bare thumb beneath the remaining glove at the wrist.
- Pull down on the glove, turning it inside out as it peels off the hand.
- Both inside-out gloves can now be disposed of properly.

 Grasp the outside of the glove near the wrist with the thumb and pointer of the other hand.	 Pull down on the glove, turning it inside out as it peels off the hand.	 Pull down on the glove, turning it inside out as it peels off the hand.
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 Pull down on the glove, turning it inside out as it peels off the hand.	 Both inside-out gloves can now be disposed of properly.	

Barrier Resuscitation Mask

A Barrier Resuscitation Mask should be used when administering rescue breathing or CPR. A rescuer should have a resuscitation mask at all times, in the case that rescue breathing must be started while performing a rescue, before reaching the land/pool deck. CPR and rescue breathing should be practiced while using a resuscitation mask so that the rescuer can become familiar with the workings of the particular mask.

Protective Eyewear and Footwear

Protective eyewear and footwear should be worn along with protective gloves when cleaning up bodily fluids from an area. Any time a rescuer will be in close contact with bodily fluids—even when also using cleaning towels or other containers—personal protection is paramount. If a rescuer should come into contact with bodily fluids without the use of personal protective equipment, they will need to follow the protocols for exposure, which may include follow-up with a medical professional and blood testing.

Hepatitis/HIV

Hepatitis and HIV are blood-borne illnesses which can be transmitted from one person to another through the exchange of bodily fluid.

Hepatitis is a viral infection that affects a person's liver. There is a vaccination for Hepatitis A and Hepatitis B, but not for Hepatitis C. Hepatitis B[9] and C[10] can be transmitted through blood or bodily fluids, so a professional rescuer must take every precaution so that their body does not come into contact with the bodily fluids of another person. If a rescuer suspects that they come into contact with a person's bodily fluids, the rescuer should seek immediate medical attention.

HIV—or human immunodeficiency virus[11]—is a virus that weakens a person's immune system. It can be transmitted through contact with an infected person's bodily fluids, and generally enters broken skin or damaged tissue. A rescuer must wear protective gloves and take care to dispose of used needles properly.

In any case that a rescuer comes into contact with the blood or other bodily fluids of another, they should seek medical attention immediately.

OSHA and the Needlestick Safety and Prevention Act

OSHA—the Federal Occupational Safety and Health Administration—issues regulations and guidelines developed to keep employees safe on their jobs. There are OSHA regulations which pertain specifically to the possibility that an employee may come into direct contact with blood or another bodily substance, and OSHA is closely included with laws and guidelines on all levels of government. The Needlestick Presentation and Safety Act was enacted in 2000, and it was developed in order to clarify and expand OSHA's Bloodborne Pathogen Standard.

The Needlestick Safety and Prevention Act imposes additional safety requirements upon employers to reduce an employee's exposure to bloodbourne pathogens, including requiring employers to:

- Consider and utilize new technology for safety as it becomes available
- Redefine the controls put in place for safety, as well as the equipment used by employees, including needless systems and I jury protection systems
- Maintain a log of needle and 'sharps' injuries
- Solicit employee input in evaluating and improving the equipment and procedure utilized for employee safety

Lifeguards and other staff members who will be potentially exposed to such risks should be aware of the safety measures put in place by their employers, and report any incidents promptly, as well areas for safety improvements.

Bodily Substance	Vomit, blood or fecal material	Vomit	Fecal Material	Diarrhea
Location	Pool deck	In water	In water	In water
Removal	Pick up or scoop using paper towels and plastic garbage bags for disposal	Use net, bucket or scoop to remove as much as possible from water and plastic garbage bags for disposal	Use net, bucket or scoop to remove as much as possible from water and plastic garbage bags for disposal	Use net, bucket or scoop to remove as much as possible from water and plastic garbage bags for disposal
Disinfection	Bleach solution or commercial disinfectant	Raise the free chlorine to 2 parts per million (ppm) if less than 2 ppm, and ensure pH 7.5 or less and a temperature of 77°F (25°C) or higher.	Raise the free chlorine to 2 parts per million (ppm) if less than 2 ppm, and ensure pH 7.5 or less and a temperature of 77°F (25°C) or higher.	Raise the free chlorine concentration to 20 ppm and maintain pH 7.5 or less and a temperature at 77°F (25°C) or higher.
Restriction	The area should be closed off for 20 minutes	Close the pool and maintain free chlorine concentration at 2 ppm and pH 7.5 or less for at least 25 minutes before reopening. That includes all pools and water fed by the same filtration system.	Close the pool and maintain free chlorine concentration at 2 ppm and pH 7.5 or less for at least 25 minutes before reopening. That includes all pools and water fed by the same filtration system.	Close the pool including all pools and water fed by the same filtration system. The free chlorine and pH should remain at these levels for at least 12.75 hours to achieve the CT inactivation value of 15,300. Backwash the filter or replace cartridge or DE media after reaching the CT inactivation value. Allow patrons back into the water only after the required CT inactivation value has been achieved and the free chlorine and pH levels have been returned to the normal operating range (0.6–5.0 ppm when pH is 7.2–7.8).

Review

What are 3 items a rescuer should use/wear in order to prevent contamination?

Body Systems

Cavities and Major Structures

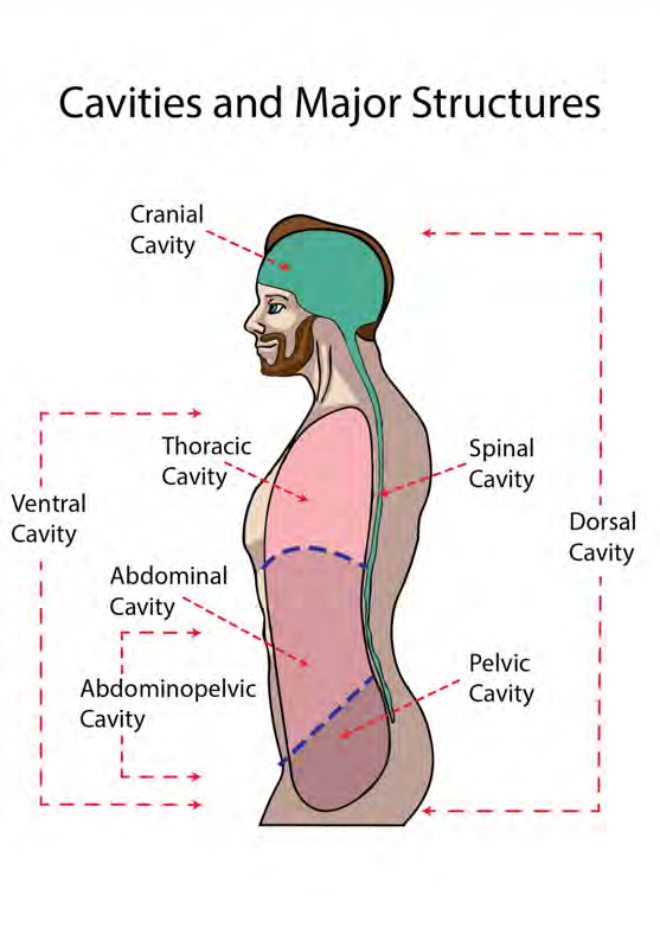
The human body is arranged with the major organs residing in different cavities—or separate spaces—within the body. These areas or body cavities are separated from each other by location, as well as by membranes which keep the organs in place[12].

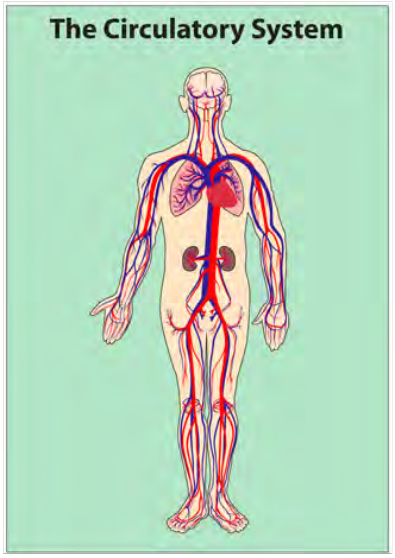
Cranial Cavity

The cranial cavity encloses the brain. In an adult, the bones of the skull are hard in order to protect the brain tissue. However, even with such a solid protective covering, the brain tissue can be damaged.

Spinal Cavity

The spinal cavity runs the length of the back and encloses and protects the spinal cord. The spinal cavity is constructed of the vertebra—or back bones—which enclose the spinal cord. The cranial cavity and spinal cavity are connected at the base of the skull, and form one continuous protective shield for the brain and spinal cord.





Thoracic Body Cavity

The thoracic cavity encloses the heart and lungs. It is located in the upper half of the torso, and is separated from the abdominal cavity by a structure called the diaphragm. The diaphragm is a muscle which forms the 'floor' of the thoracic body cavity. The heart and lungs in the thoracic cavity are also protected by the rib cage.

Abdominal Body Cavity

The abdominal body cavity is located in the lower half of the torso. It encloses the digestive organs and kidneys.

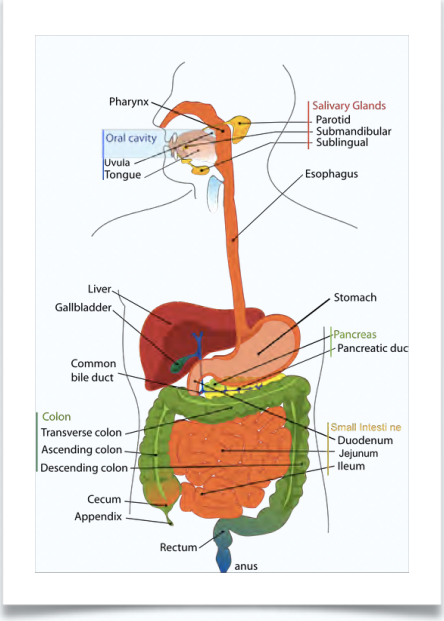
Pelvic Cavity

The pelvic cavity is located below and behind the abdominal cavity, and it encloses the urinary and reproductive organs.

Body Systems

The systems of the body work together in a variety of functions—from pumping blood to all of the organs to processing food. Each body system has a particular function, and the organs of

that system work together seamlessly to complete the necessary function in a healthy human body.



Major Structures

Circulatory System

The function of the circulatory system is to pump blood throughout the body, carrying fresh oxygen (which is in the blood) to the brain and other major organs of the body. Without oxygen, the brain and other organs will shut down. If the brain is without oxygen, then the brain—and thus the victim—will die. That is the reason why keeping—or restoring—a heartbeat in a victim is so critical. The major structures of the circulatory system are the heart—which is located in the thoracic cavity—and blood vessels running throughout the body.

- The heart is composed of 4 chambers—or sections—which work together to pump blood throughout the body. This blood will carry nutrients and oxygen throughout the body, and return with carbon dioxide and waste products.
- The arteries are shown in red on the image of the circulatory system, and they are the blood vessels which carry the nutrient and oxygen rich blood away from the heart and towards the body cells.
- The veins are shown in blue on the image of the circulatory system, and they are the blood vessels which carry the carbon dioxide and waste products back from the body cells.

Digestive System

The digestive system functions to break down the food consumed into smaller molecules which are absorbed into the body to function and grow. The major organs of the digestive system include:

- The organs of the **digestive tract,** starting from the **mouth** and **esophagus** down through the **stomach**, **small intestine** and **large intestine.**

- The **digestive glands**, most importantly the **liver**, **pancreas** and **gall bladder**, which produce enzymes to break down the food into usable nutrients.

Endocrine System

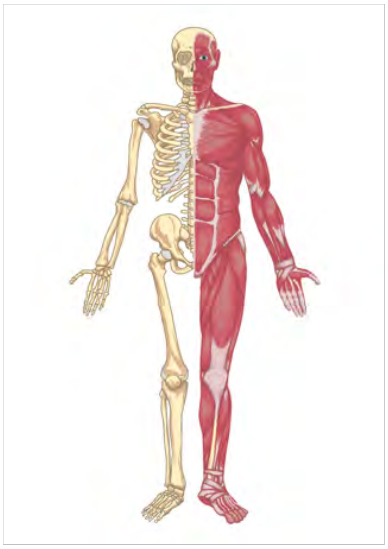
The endocrine system is made up of different glands located throughout the body, each with different functions. The major glands of the endocrine system include:

- The **pituitary gland** is the 'master' gland of the system. It located in the center of the cranial cavity, and it communicates instructions to the other glands of the body. It is responsible for controlling growth.
- The **thyroid glands** are located near the neck, and they control metabolism, which affects heart rate and weight gain, as well as blood pressure, digestion and other regulated functions.
- The **pancreas** secretes digestive enzymes which help to break down food into usable nutrients. It also secretes insulin, which regulates the level of sugar in a person's blood.

Excretory System

The excretory system functions to remove wastes from the body systems, including sweat and urine. The primary organs of the excretory system are:

- The **kidneys** filter the waste products out of the bloodstream and form urine to carry the waste products out of the body. The blood stream is directed through the kidneys, which acts as a filter, removing the waste products from the bloodstream.
- The **sweat glands** in the skin carry nitrogenous wastes, salt and water out of the skin and to the surface as sweat. This helps to rid the body of wastes, as well as to help to regulate body temperature—sweating when the temperature is hot.



Muscular System

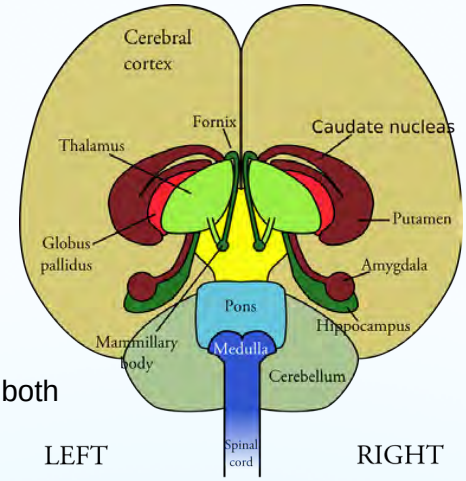
The muscular system functions to assist the body in movement, as well as maintain posture (standing upright) and stabilizing the joints. Without a functioning muscular system, a person would be a motionless blob on the ground. The three types of muscle tissue are:

•**Cardiac muscle** tissue is located in the heart, which is essentially an organ created by muscle. The cardiac muscles are involuntary, which means that the person has no control over their function.

- **Smooth muscle** cells are located within the major organs of the body, providing movement and function. These muscles are also involuntary, and a person cannot control their function.
- **Skeletal muscles**—such as biceps and triceps—are attached to the bones of the skeleton. They provide movement to the person, and are voluntary muscles, so a healthy person has control over their skeletal muscles.

Nervous System

The nervous system is made up of the brain, spinal cord, sensory organs (organs of smell, taste, touch, etc.) and the nerve cells located throughout the body. These organs function to control the body and communicate among the other systems of the body. The nervous system controls everything from heartbeat to emotions, like the master computer of the body. The nerve cells making up the nervous system do not generally heal or regenerate if damaged, so an injury to the nervous system is a very serious injury. The major organs of the nervous system are:



- The **brain** is the control center of the body, regulating both involuntary actions—such as digestion—as well as voluntary actions—such as running or swimming. The brain is located in the cranial cavity—or head.
- The **spinal cord** extends from the base of the brain, connecting nerve cells from the rest of the body to the brain. Because the spinal cord connects the nerve cells from the rest of the body to the brain, a spinal cord injury will often result in paralysis—or not being able to move or feel anything on the body—below the level of the injury.
- The **sensory organs**—which are the nerve cells located in the skin, nose, eyes, tongue and ears—give a person the ability to experience the five senses, which are touch, smell, sight, taste and sound.

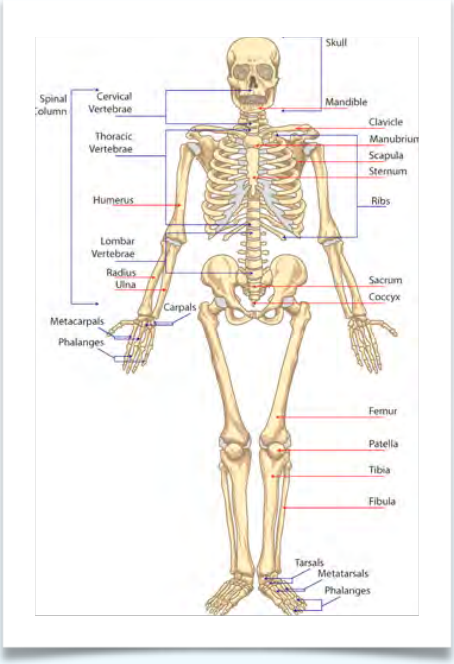
Respiratory System

The respiratory system is responsible for breathing, which involves bringing oxygen to the body cells and removing carbon dioxide. The major organs of the respiratory system are:

- The **mouth and nose/nasal cavity** are where air enters the body.
- The **trachea** carries the air from the mouth and nose down to the lungs. If there is an obstruction blocking a person's trachea or back of the throat, no air will pass to the lungs.

- The **lungs** expand and contract when a person inhales and exhales. When a person inhales, air is carried down the trachea to the lungs where it enters the bronchial tubes and goes into one of the lungs. There are two lungs, one located on each side of the thoracic cavity. The oxygen from the air passes through the alveoli—or air sacs—located at the end of the tubes, and into the bloodstream.

Skeletal System



The skeletal system includes the 206 bones making up the body, as well as the tendons, cartilage and ligaments connecting and supporting those bones. The function of the skeletal system is to provide support and movement to the body, as well as protection for major body systems. The main parts of the skeletal system are:

- The **bones** are hard tissues, which provide support to the body—so that a person can stand up straight—as well as movement. The bones of the skull and backbone also provide protection for the brain and spinal cord of the nervous system.
- **Cartilage** is softer than bone, and acts as a 'shock absorber' at the ends of bones, as well as functioning in areas where softer tissue is needed, such as in the nose and ears.
- **Joints** occur where two bones meet—such as the hip joint or elbow joint. Joints make movement possible, as they work in a variety of different motions, such as a hinge movement—like a knee joint, or a rotation movement—such as the shoulder or hip joint.

Inter-function of Systems

While the systems of the body each have their own functions and organs, there is much overlap—or introduction—of the systems. In many ways, when one system fails, other systems follow, as they are reliant upon each other. Some important examples of this inter-function are:

- The circulatory system brings oxygen-rich blood to the organs of the body. Without oxygen-rich blood, the organs will fail.
- The respiratory system brings oxygen to the circulatory system. Without the respiratory system, there will be no oxygen-rich blood for the circulatory system to bring to the organs, and the organs will fail.

- The nervous system is the control center for the body and for all of the systems of the body. Without the nervous system, the body will cease to function.

In case of an emergency situation, it is important for a rescuer to work quickly to restore function to the major body systems before they negatively impact the other systems of the body.

Emergency Care Conditions

When an emergency occurs, the rescuer will prioritize breathing and cardiac conditions over ailments to other organs and body parts, such as legs and arms, as restoring and maintaining breathing and a heartbeat are vital to all of the systems of the body.

Performing an Assessment

There are two types of assessments[13].

1. Primary assessment
2. Secondary assessment

Primary Assessment

During the Primary Assessment, the rescuer will check the victim's LOC (Level of Consciousness) by asking the victim “Are you OK?”
The rescuer will then be able to determine where the victim falls on the “AVPU” scale:

- Alert—Responds to questions correctly
- Verbal—Is able to talk but does not make sense
- Pain—The rescuers provides painful stimulus such as squeezing the trapezius muscle (behind the shoulders) and check for a response (such as the victim’s eyes opening, or verbal such as moaning)
- Unresponsive—If the victim is not Alert, Verbal, or does not Respond to Pain, then the victim is considered to be unresponsive

After checking the “LOC” and “AVPU,” the rescuer should have someone call 911 if needed. Then the rescuer will look for and address all life-threatening conditions. These life-threatening conditions include but not excluded to:

- Victim does not have a pulse
- Victim is not breathing
- Victim has major bleeding

If the victim has a life-threatening condition, the rescuer should treat it accordingly[14].

Secondary Assessment

If the victim does not have a life-threatening condition, then the rescuer will start a secondary assessment. If, while conducting the secondary assessment, a life-threatening condition suddenly occurs, the rescuer must immediately address the life-threatening condition before continuing the secondary assessment[15].
During the secondary assessment the rescuer should get a **SAMPLE** history. The **SAMPLE** history will be able to give the rescuer more information about the incident and history of the victim[16].
SAMPLE history:

- **S** = Signs and symptoms—Signs are things that a person can measure, such as heart rate or respiratory rate. Symptoms are things that the victim is complaining about, such as chest pain or a fever.
- **A** = Allergies—Ask the victim if they are allergic to anything.
- **M** = Medications—Ask if the victim takes any medications.
- **P** = Past medical history—Ask if this has ever happened to the victim before.
- **L** = Last oral intake—Find out what was the last thing the victim ate or drank.
- **E** = Events leading up to the incident—Find out what happened right before this issue occurred.

If the victim is unresponsive, or not able to respond, the rescuer should try to get a SAMPLE history from family or bystanders.

Conscious Victim Assessment

Initial Assessment

Once a victim has been moved to safety, a rescuer will perform an initial assessment before proceeding with care. The initial assessment may take place during the rescue as well, especially if the distance to a safe location will take more than a few seconds.

Adult vs child assessment

When doing a physical assessment on an adult who is injured, the rescuer will do a **head-to-toe** assessment.

When doing a physical assessment on a child or infant who is injured, the rescuer will do a **toe-to-head** assessment.

Observing Symptoms

If the victim is conscious, the rescuer must obtain consent prior to treating the victim[17]. The rescuer can assess the symptoms by asking questions of the victim, including:

- Are you in pain? If so, where?
- Are you having difficulty breathing?
- Can you see clearly?
- Do you feel nauseous?

Inquiring about Medications, Past Medical History, Allergies and Last Oral Intake

After observing and noting medical symptoms, the rescuer will ask questions about the following:

- Do you have any medical issues I should know about?
- Have you ever had this (particular incident) occur before?
- Do you have any allergies to food? Medicines? Other allergies?
- Have you taken any medication today? When, and how much?

Learn About Events Leading Up to the Incident

After observing and noting medical symptoms, the rescuer will ask questions about the following:

- What happened to cause the incident at hand?
- Are there are other victims involved?
- If there are other victims involved, how many were involved?

Eyewitnesses can be helpful in describing what transpired, so that the rescuer can quickly and effectively determine the best course of action.

Unconscious Victim Assessment

If the victim is unconscious, or the victim is a child and there is no parent or guardian around, the rescuer has implied consent and may treat the victim[18].

Observing Symptoms/Ventilations

If the victim is unresponsive, then the rescuer should point and tell a bystander to call 911, get an AED, and report back to the rescuer.

- After the rescuer has someone call 911, he should Look, Listen and Feel for 5-10 seconds. He should Look at the victim's chest to see if it goes up and down, Listen for breathing by putting their ears right above the victim's mouth, and Feel for a pulse. For an adult the rescuer should feel by the carotid artery and for the infant by the brachial artery.
- If the victim has no pulse, the rescuer should start CPR.
- If the victim has a pulse but is not breathing, the rescuer should start ventilations.
- If the victim is unresponsive but has clear life signs (breathing and heartbeat), then the rescuer can move on to examine the victim for signs of trauma or injury.

If the victim is unconscious, eyewitnesses can be especially helpful in describing what transpired, so that the rescuer can quickly and effectively determine the best course of action.

LOOK at the victim's chest to see if it goes up and down.

LISTEN for breathing by putting their ear right above the victim's mouth.

FEEL for a pulse.

Positioning Victim

Recovery Position

When caring for an unresponsive person who is breathing normally, and in the absence of major trauma such as to the spine or pelvis, placing the person into a recovery position may improve airway mechanics[19].

To place a victim into the recovery position, follow these steps:

- Kneel alongside the victim, placing the closest arm at a right angle with the victim's body.

- Tuck the victim's other hand under the side of their head, with the back of the hand touching the cheek.
- Bend the victim's farthest knee at a right angle.
- Carefully roll the victim onto their side by pulling on the bent knee. In this position, the top arm should be supporting the victim's head.
- Open the victim's airway by gently tilting the head back and lifting the chin, and be sure that nothing is blocking the airway.

If needed, the best recovery position for a victim in respiratory distress is with the victim on their back with the victim's head tilted back and chin lifted to create an open airway. With a head, neck or back injury, the jaw-thrust maneuver is used to open the airway without moving the head. If the victim begins to vomit, turn the victim on their side so that they do not choke on the vomit. With a suspected spinal injury, do not turn the victim on their side, but instead, quickly remove any vomit with a gloved hand to prevent a blockage.

ABC—Monitoring Airway, Breath and Circulation

These are the times a rescuer should check the victim ABC's:

- During the primary assessment
- After every 2 minutes of CPR or ventilations
- While doing CPR the rescuer sees obvious signs of life
- After moving a victim

When checking the ABC's the rescuer should make sure:

- **Airway**: The airway is clear and unobstructed
- **Breathing**: The victim's chest goes up and down
- **Circulation:** The victim has a pulse

While the rescuer checks the ABC's, they will Look, Listen and Feel for 5-10 seconds[20].

This is the way the rescuer will check the ABC's:

- The rescuer will open the victim's mouth to open the Airway, and tilt the head back. If the victim has a head neck or back injury, the rescuer will do a modified jaw thrust. Then the rescuer will place their ears over the victim's mouth to Listen for breathing.
- The rescuer checks for Breathing by Looking closely and observing the movements of the chest to make sure it goes up and down.
- Circulation is checked by Feeling for a pulse. The rescuer places their middle and index fingers on the side of the neck near the carotid artery that's closest to the rescuer. With an infant, the rescuer should check for a pulse on the inside of the upper arm near the brachial artery that's closest to the rescuer.

Special Considerations

When assessing a victim, there are some special considerations which the rescuer may need to consider:

- Children—When working with a child, it would be best to have a parent/guardian present, who will help to calm and control the child, as well as provide consent if needed.
- Elderly—Rescuers may have difficulty assessing seniors, as they may be especially anxious, physically inflexible, and often hard of hearing.
- Disabled Persons—When performing an assessment of a person with disabilities, it is important for the rescuer to recognize the symptoms/issues that the victim is experiencing at that moment, as separate from those issues that the victim may deal with more regularly as a result of a disability. This can be especially difficult in the case of a hearing impairment, blindness, etc.
- Dangerous Situation—A rescuer may enter a dangerous situation in order to assist a victim. Such situations may include a crime scene or hostile situation. The rescuer must take care of personal safety first, as they won't be of use to anyone if they are personally harmed.
- Witnessing a dangerous situation—Sometimes a rescuer may witness a person who has been abused, such as a child or domestic abuse situation. In such scenarios, the rescuer has a moral obligation to get help for a victim in need if they are unable to help themselves.

Additional Items

Do No Further Harm

The rescuer must address life-threatening issues first, followed by those secondary issues, without causing further harm to the victim. Medical assistance should help—and not hurt—the victim.

Monitor

In the case of a medical emergency that requires EMS, the victim should be monitored closely until EMS has arrived. In situations where EMS is not required, the victim should be monitored until they are well enough to be able to take care of themselves. For a minor, whose parents are not around, the rescuer must monitor the victim until the victim's parents or guardians arrive.

Give Specific Care

The rescuer should learn to recognize the signs and symptoms of different illnesses, injuries and medical emergencies to be able to provide care specific to the particular need. Additionally, the rescuer must prioritize care, so that the most urgent, life-threatening issues are dealt with first, before addressing wounds and other non-threatening issues.

Review

Where are the following body cavities? What organs/types of organs does each contain?

Cranial Cavity

Spinal Cavity

Thoracic Body Cavity

Abdominal Body Cavity

Pelvic Cavity

Fill in the chart below

Body System	Function	Major Organs/Parts
Circulatory System		
Digestive System		
Endocrine System		
Excretory System		
Muscular System		
Nervous System		
Respiratory System		

Skeletal System		

Describe a victim assessment, including observations and questions.

What does ABC stand for?

A

B

C

Common Illnesses and Injuries

Breathing Emergencies

Respiratory Distress

Respiratory distress characterizes any condition where the victim experiences difficulty breathing. Possible issues causing respiratory distress are listed below.

Anaphylactic Shock

A victim may experience difficulty breathing or respiratory distress due to anaphylactic shock, which is a severe allergic reaction which can cause the victim's air passages to swell which will restrict airflow[21]. The sign of anaphylactic shock—also known as anaphylaxis, include:

- The victim has difficulty breathing
- There is swelling in the head region, such as the tongue, neck, face or lips
- A victim can experience a skin reaction, such as hives, redness or a rash
- A victim may feel dizzy or even lose consciousness
- Nausea, stomach cramps or vomiting may accompany anaphylaxis
- A victim may appear to go into shock

A rescuer should look at both the symptoms of anaphylaxis as well as the particular situation, including:

- Is the victim wearing a medical tag indicating the allergy?
- Does the victim carry an injectable epinephrine pen for a possible allergic reaction?
- Has the victim been exposed to an allergen?

If a rescuer suspects that a victim is experiencing anaphylactic shock, the rescuer will:

- Summon Emergency Medical Services EMS
- Assist the victim to administer Epinephrine if they are able
- Administer Epinephrine if the victim is unable
- Administer or assist in administering a second dose in 5-10 minutes if the symptoms persist and the EMS has not yet arrived.

Injectable Epinephrine

Epinephrine is available as a single use medication which must be discarded after use[22]. The steps to administer an injectable epinephrine pen are as follows:

1. Be sure to check the label and expiration date of the injectable epinephrine pen. If you can see the liquid through the tube, be sure that the liquid is clear and not cloudy. Do NOT use if the expiration date has passed or if the liquid medicine appears cloudy.
2. Check to be sure that the victim has not already received a dose of Epinephrine. If they have, then find out how long it has been, summon EMS if they have not yet been summoned, and administer a second dose only 5-10 minutes after the first dose if the symptoms persist and EMS has not yet arrived.
3. Epinephrine will be administered in the outer-middle area of the victim's thigh. Locate the injection site on the victim, and be sure there is a clear path. While an injectable epinephrine pen can be administered through clothing, be sure there are no seams or other items blocking the injection site.

4. Hold the injectable epinephrine pen with the orange tip pointed downward and remove the blue safety cap by pulling it straight up. Do not twist or bend—simply pull it straight up.
5. Place the orange tip against the injection site, which is the middle of the outer thigh. Swing and then push the injectable epinephrine pen quickly and firmly into the thigh until it “clicks.”
   Hold the injectable epinephrine pen firmly in place for 10 seconds, and then remove it from the victim’s thigh.
6. Massage—or have the victim massage—the victim’s thigh for several seconds after administering the injectable epinephrine pen. Be sure to wear gloves.
7. Administer or assist in administering a second dose in 5-10 minutes if the symptoms persist and the EMS has not yet arrived.

Ability to assist victim

If the victim has used an injectable epinephrine pen previously, they may prefer to administer the injection themselves. In such cases, the rescuer should remain with the victim in case they require assistance, and remain there to monitor whether the injectable epinephrine pen use was effective.

Emphysema

Emphysema is a chronic condition where the air sacs of a person are damaged and enlarged. This will cause the person to feel breathless. It is a disease characterized as a COPD—or Chronic Obstructive Pulmonary Disease. If a person has already been diagnosed with emphysema, they may have medication and/or instructions on what they should do when experiencing respiratory distress. Emphysema puts a person at risk of heart failure, so if a person with emphysema experiences respiratory distress, EMS should be contacted immediately[23].

Injury

A serious injury can cause respiratory distress, either temporarily as the ‘wind is knocked out’ of a person, or more extensively, as if the injury is to a person’s respiratory system itself. If a person is in respiratory distress from a serious injury, a rescuer should call EMS while tending to the victim with rescue breathing if necessary.

Illness

Sudden illness can cause respiratory distress, and it is an indicator of the seriousness of the illness. The rescuer should call EMS while tending to the victim with rescue breathing if necessary.

Hyperventilation

Hyperventilation can occur when a person is anxious, nervous or stressed. It occurs when a person inhales much deeper than normal, and takes much faster breaths than normal[24].
Sometimes hyperventilation can be caused by:

- Anxiety or a panic attack
- Stress or worry
- Exercise
- A head injury
- High altitudes
- Drug use
- Shock
- Emphysema or lung disease

In some cases, hyperventilation can be controlled by encouraging the victim to take controlled breaths, breathing slowly in through the nose and out through a small opening in the lips like blowing out candles. If the victim is able to get past the hyperventilation through controlled breathing, then no further medical intervention may be required. However, if the hyperventilation persists, it may be due to an injury or illness for which advanced medical care is required.

Asthma

Asthma is a chronic disease where a person's airways constrict and fill with mucus, making breathing difficult. An asthma attack may occur when the airways become especially inflamed, and without intervention, a serious asthma attack can be fatal[25].

Signs of an Asthma Attack

Indicators of an asthma attack may include the following:

- very rapid breathing
- difficulty talking
- severe wheezing—this can occur both when inhaling as well as exhaling
- uncontrollable coughing that won't stop
- pressure or tightness in the chest or neck
- pale and sweaty appearance, especially in the face
- a feeling of panic or anxiety

If a victim has diagnosed asthma and carries a treatment—such as an inhaler—at all times, using the treatment may be enough to ward off the asthma attack. An inhaler is a handheld device which can assist a person with asthma by delivering drugs directly to the lungs. The person will breathe in the drugs from the inhaler. The rescuer can assist the victim in retrieving or using the inhaler; however, there are different types of inhalers with different usage directions, so be sure that the victim knows how to use their own inhaler properly.
EMS should be called immediately if:

- The victim has never experienced an asthma attack before.
- The victim doesn't carry asthma medication.
- The asthma medication doesn't work.
- The attack is beyond help without medical intervention.

A rescuer should never borrow an inhaler, if the victim does not have an inhaler, the rescuer should call 911.

Obstructions

A victim may have an airway obstruction due to the presence of a foreign object—such as food or gum—in the throat. In airway obstruction in a conscious victim (choking), the victim is unable to speak or cry. If the object does not dislodge from the victim's throat, the victim will start to turn blue[26].

- Adult and child choking: The universal sign of an adult and child choking is when they are clutching their throat and not breathing.
- Infant choking: A baby who is choking will be unable to cry, cough, make any noise or breathe.
- If the victim is coughing, the rescuer should encourage the victim to continue to cough.
- In an unconscious victim, you may observe a victim unable to breathe, and if the condition continues, a blue-grey coloring of the skin.

In order to clear an airway obstruction, abdominal thrusts and back blows will be utilized. If the victim is conscious, it is important to first **Get Consent** before beginning abdominal thrusts and back blows. The steps to perform abdominal thrusts and back blows on a conscious adult or child are as follows:

Give 5 back blows.

1. Stand behind the adult victim who is choking. With a child, kneel down behind the child. Place one arm across the person's chest for support. Bend the person over at the waist so that the upper body is parallel with the ground.
2. Deliver five separate back blows between the person's shoulder blades with the heel of your hand.

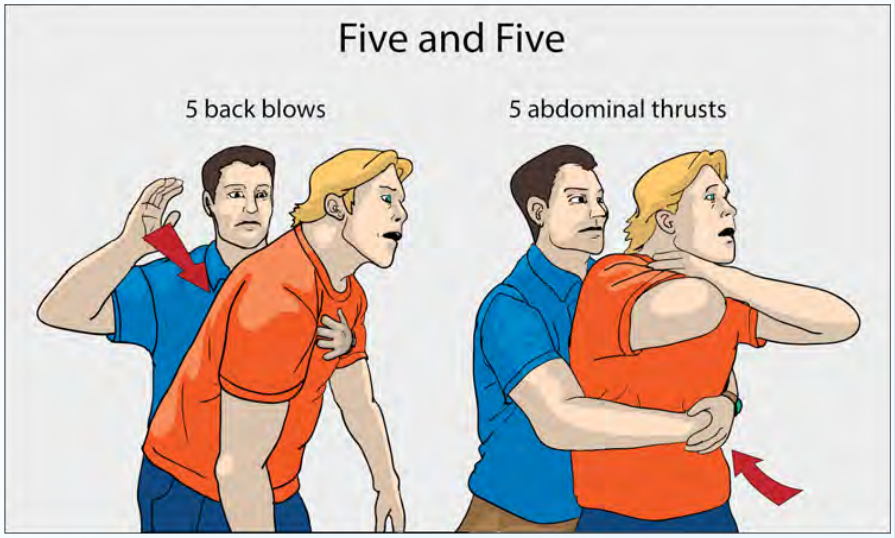
Give 5 abdominal thrusts.

1. Stand behind the victim with arms around the victim's abdomen, placing your fist against the victim's stomach just above the navel with the thumb facing inward

2. Grab your fist with your other hand, and with both hands together press against the victim's abdomen with quick, down and upward thrusts in a "J" motion.

Alternate between 5 blows and 5 thrusts until the blockage is dislodged or the victim goes unconscious.

If the victim is pregnant or obese and the rescuer is not able to reach their hands around the victim, the rescuer will use a modified version of the rescue.
The rescuer will do the usual five back blows. When performing the abdominal thrusts, the rescuer should position his hands a little bit higher than he would with the normal place while doing abdominal thrusts. The knuckle of the thumb should be positioned and pressed at the base of the breastbone, just above the joining of the lowest ribs.



With an infant, the steps are as follows:

1. Lay the infant face down on your forearm with your fingers cradling around the chin and cheek area. Make sure not to block the victim's airway. Then rest your forearm on your upper leg. Be sure to support the infant's head and neck in this position. Be sure that the infant's head is lower than the body.
2. Using the heel of your hand, administer 5 back blows to the infant between the shoulder blades.
3. Roll the infant face up onto the other arm—being sure to support the head and neck during the roll.

4. Using the fingers, give 5 chest thrusts on the infant's breast bone, between the nipples.
5. Repeat these steps until the object is expelled or the victim goes unconscious.

If the victim is unconscious—or becomes unresponsive while administering abdominal thrusts and back blows, the rescuer must lower the victim to the ground and begin chest compressions immediately.

1. Perform 30 chest compressions at a rate of 100-120 per minute.
2. Open the airway and check for a foreign object.
3. Remove the foreign object with a gloved-hand finger sweep, or by scooping it out with the fingers. With an infant, be sure to pluck—not sweep—out the object. The rescuer should not insert their fingers into the victim's mouth if they don't see anything.
4. Follow with 2 ventilations.
5. If the rescuer does not see the chest rise when giving ventilations, the rescuer should reposition the airway by bringing the victim's chin to the chest and re-tilt the head back, this should resolve the issue. If the airway is still obstructed, follow with 30 chest compressions.
6. Each time the airway is opened for ventilations, be sure to check for a foreign object.

Vomiting

Vomiting often occurs in a rescue situation, as the victim may have swallowed water in their distress[27].

- If the victim should begin vomiting, roll the victim on their side and then clear the victim's mouth with a gloved hand before continuing rescue breathing.
- If the victim has suffered a spinal, head or back injury, do not turn the victim on their side.
- If a manual suction device is available, it can be used to quickly and safely suction a victim's mouth of vomit.

Mask to Nose/Stoma

In some cases, it is preferable to perform **mask-to-nose** or **mask-to-stoma** rescue breathing. Mask-to-nose rescue breathing is conducted when an airtight seal of the mouth to the mask cannot be achieved. This can occur due to:

- Lockjaw, when the patient's mouth cannot be opened
- Extensive facial or dental injuries.

If the resuscitation mask/BVM can seal well to face covering both the mouth and nose of the victim, the air will proceed through the victim's nose[28].

However, if a facial injury prevents a proper seal, do the following:

1. Put the mask over just the victim's nose to create a tight seal against the victim's skin with the mask
2. Watch to be sure that the victim's chest rises and falls with each breath.

If the rescuer sees a stoma—or tube inserted in the victim's throat to help him/her to breathe—the rescuer will proceed with **Mask-to-stoma** rescue breathing. If the victim has had surgery to remove part of the windpipe, they will breathe through an opening in the front of the neck called a stoma.
To perform mask to stoma rescue breathing, the rescuer will:

1. Make an airtight seal with a round child/infant sized resuscitation mask/BVM around the stoma
2. Do not tilt the head back.
3. Watch to be sure that the victim's chest rises and falls with each breath.

Dentures

If the victim is wearing dentures, it is best to keep the dentures in place so that the best seal can be made with the BVM mask and the victim's face. Only remove the dentures should they become a problem[29].

Protecting the Victim during Care

In all emergencies, it is vital to protect the head, neck, and back of the victim during care.

Protecting the Head

The rescuer should be sure to put a towel or folded clothing under the victim's head while performing rescue functions to avoid causing further injury. If the victim has a suspected spinal injury, the victim's head should not be moved.

Protecting the Neck

If a rescuer suspects a spinal injury to the victim, the victim's head and neck should be stabilized to avoid further harm while administering first aid. A backboard with head stabilizer can be used for such an incident.

Protecting the Back

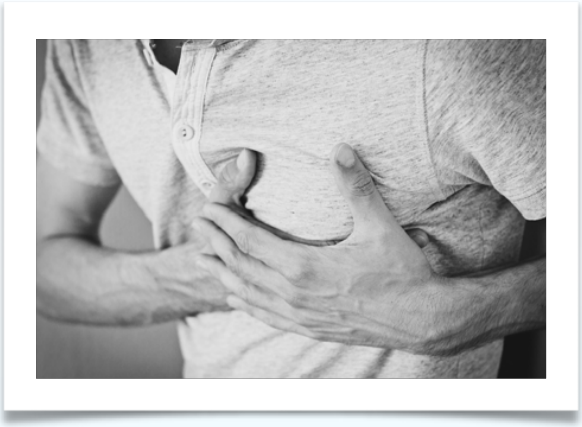
In the case of a suspected spinal injury, the victim's head, neck and back should be kept in alignment. If there is no suspected spinal injury, the victim should be kept comfortable, with towels or clothing beneath him/her during first aid.

Cardiac Emergencies and Unconscious Choking

When a person experiences cardiac arrest, the heart stops beating and blood is no longer pumping through the body. If breathing and heart function are not restored, the brain will be damaged, organs will shut down, and the victim will die. The signs of cardiac arrest include:

- The victim may suddenly collapse and become unresponsive.
- There may be abnormal breathing or no breathing at all.
- The victim will not have a pulse.

Seconds count when a victim is in cardiac arrest.



Chest Discomfort

Always Assume Cardiac Event

If a person is experiencing chest discomfort indicating a possible cardiac event, the rescuer should always presume that a cardiac event is occurring and treat the victim accordingly. While chest discomfort could potentially be caused by other issues—including heartburn, a muscle strain or an infection, the rescuer should treat for cardiac arrest, as every moment counts in such a scenario.

Heart Attack Signs

The signs and symptoms of a heart attack include:

- Chest pain, which the victim may describe as severe pain, discomfort or pressure, or even a crushing sensation in the chest.
- This chest pain is not relieved by medication, change of position or even rest. If it goes away after a few minutes, it comes back.
- The chest pain could possibly spread up to the victim’s neck or jaw, out to the left shoulder or arm, or even down to the stomach and back. Since the heart is located on the left side of the body the pain is "referred pain" and the victim will experience left side pain.
- Difficulty breathing, including shortness of breath. You may sometimes find the victim to be leaning forward (The tripod position)

- The victim may feel lightheaded or dizzy, and possibly lose consciousness.
- Profuse sweating, with pale, sweaty skin or even a grey, ashen look to the skin
- Nausea and vomiting
- A feeling of fatigue or even anxiety

The symptoms can vary greatly between men and women, so it is important to be aware of all possible symptoms[31].

Male Signs of a Heart Attack

Men are more likely to experience pain and pressure as common signs of a heart attack, with the pain radiating throughout the upper body. In some men, this chest pain is confused with severe heartburn. If a man is feeling any of the signs of heart attack, he should seek medical care immediately.

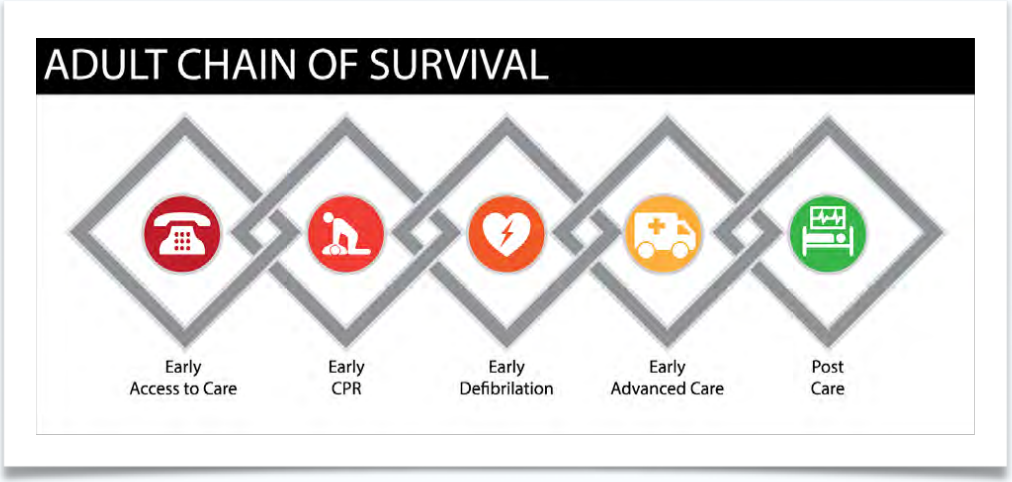
- Chest pain/pressure—it could feel like “an elephant” is sitting on the chest, or a squeezing sensation that may come and go or remain constant
- Intense pain or discomfort in the upper body, including arms, left shoulder, back, neck, jaw, or stomach
- Experiencing a rapid or irregular heartbeat
- A feeling of stomach discomfort that feels like indigestion
- Shortness of breath
- Dizziness or lightheadedness
- Breaking out in a cold sweat

Female Signs of a Heart Attack

Women often experience heart-attack symptoms in a very different way, and are thus less likely than men to seek immediate medical assistance. In fact, many women experience no chest pain at all when having a heart attack, so it is vital to be aware of the other symptoms which a woman may experience[32]. These symptoms include:

- A feeling of nausea or indigestion
- Weakness and fatigue
- Pain in the arm (generally the left arm), back, neck, throat or shoulder blades
- Feeling lightheaded
- Sweating
- Shortness of breath
- Unusual fatigue lasting for several days or sudden severe fatigue
- Sleep disturbances in the middle of the night
- A feeling of anxiety
- Indigestion or gas-like pain
- Pressure or pain in the center of the chest, which may spread to the arm

Cardiac Chain of Survival for Adults—CPR



The Cardiac Chain of Survival for adults consists of the five links of care to effectively respond to a cardiac emergency[33]. They are:

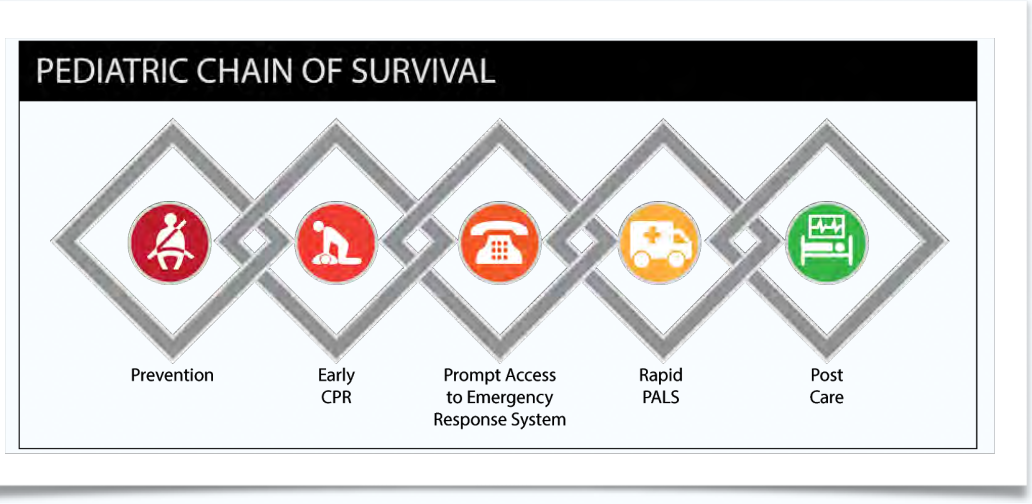
1. **Early Access to Care**—recognizing the sign of a cardiac emergency, activating the Emergency Action Plan and summoning Emergency Medical Services.
2. **Early CPR**—chest compressions to manually keep the heart pumping and the blood flowing to the brain
3. **Early Defibrillation**—shocking the heart to help to restore heart rhythm and increase the chance of survival
4. **Early Advanced Care**—medical professionals who can continue the necessary care for the cardiac patient, including advanced respiration and medications.
5. **Post Care**—including medical personnel, physical therapists, dietitians and other professionals committed to post-cardiac emergency care.

With a cardiac emergency, every moment counts, from the first recognition of symptoms through summoning EMS, administering CPR, defibrillation and beyond.

Cardiac Chain of Survival for Infants/Pediatric—CPR

The Cardiac Chain of Survival for infants (Pediatric Cardiac Chain of Survival) consists of the five links of care to effectively respond to a cardiac emergency[34]. They are:

1. **Prevention of respiratory/cardiac arrest**—The primary cause of cardiac and respiratory arrest in children are airway and breathing problems. For lifeguards, example



of drowning prevention at a pool would include enforcing pool rules, insuring that children are in shallow water or wearing a life jacket, and properly supervising all pool areas. Accidents, traumatic injuries and blows to the chest are also leading causes of respiratory and cardiac arrest, so injury prevention in general is important in reducing cardiac arrest in children.

2. **Early high-quality CPR**—CPR is most effective when given immediately
3. **Activation of the Emergency Response System**—so that trained professionals are notified and on the scene quickly
4. **Early advanced life support**—prepared specifically for a child's needs
5. **Comprehensive post-cardiac arrest care**—geared to the specific needs of the patient

The primary difference between the adult chain of survival and the pediatric chain of survival is that the
Cardiac Chain of Survival for infants includes prevention as the first step, as the primary causes of cardiac and respiratory arrest in children are airway and breathing problems, accidents, traumatic injuries and blows to the chest, so injury prevention is the best way to keep children from cardiac arrest.
Additionally, the adult chain of survival includes the use of defibrillation, since the primary cause of cardiac arrest in adults are cardiac issues, whereas in infants and children, the cause is generally respiratory failure. Thus the rapid use of defibrillation in adults saves lives.

Aspirin

Aspirin slows blood clotting, and many studies have shown that a person given aspirin while experiencing a heart attack can limit the damage caused by the heart attack. A rescuer may be able to administer aspirin if local protocols allow. Be sure to observe the following:

- Call EMS first. Do not delay the call by looking for an aspirin.
- After calling EMS, if the victim is exhibiting signs of a heart attack, and is alert and can swallow, the rescuer should ask the following:
  - Are you allergic to aspirin?
  - Are you currently taking any blood-thinner medication?
  - Do you have a stomach ulcer or other stomach disease?
- If the victim replies “No” to all 3 questions and local protocols allow, the victim can be given 2 low-dose aspirin (81 mg each) or one 325mg dose.
- The aspirin should be chewed before swallowing to increase its effectiveness.

Review

What is anaphylaxis? What should a rescuer do in a case of anaphylaxis?

What are the signs of a heart attack in a man?

What are the signs of a heart attack in a woman?

Name the steps in the Cardiac Chain of Survival

1.
2.
3.
4.
5.

Name the steps in the Cardiac Chain of Survival for Infants/Pediatric

1.
2.
3.
4.
5.

Shock

Any time a person is seriously injured or has a sudden illness, their body may go into a state of shock. Shock may be an indicator of the seriousness of the injury if it is not apparent externally. Shock is life-threatening, in that it occurs when the body and organs are not receiving ample blood flow, oxygen and nutrients. Organs that do not receive proper oxygen and nutrients from ample blood flow can be damaged. If a person in shock is not treated immediately, they can worsen rapidly, and 1 in 5 people who suffer from shock will die, so immediate treatment for this life-threatening condition is vital[38].

Causes of Shock

Shock is caused by a reduction in blood flow, such as from:

- Heavy bleeding from a serious injury (internal or external bleeding) (hypovolemic shock—which is caused by low blood volume)
- A heart attack or heart failure (cardiogenic shock—or shock due to issues with the heart)
- An infection—such as Toxic Shock Syndrome (septic shock—shock due to infection)
- An allergic reaction causing the blood vessels to constrict (anaphylactic shock—shock due to allergic reaction)
- A medication which negatively affects blood pressure or heart function
- A spinal injury can also cause shock (neurogenic shock—shock due to damage to the nervous system)

Signs of Shock

When a person is in a state of shock, they may exhibit some or all of the following signs:

- A person looks pale—or even grey
- The skin may be cool and moist
- There may be vomiting or nausea
- The person's consciousness is altered—from conscious to unconscious or even back and forth
- A person may have a rapid heartbeat and breathing
- If the person is conscious, they may feel very thirsty
- If conscious, a person may be very irritable or even restless

Care for Shock

When a person is in a state of shock, EMS must be summoned immediately. Shock is an indicator of a serious illness or injury, and so advanced medical care is necessary. While waiting for EMS to arrive, the rescuer should:

- Check the victim's ABCs—airway, breathing and circulation.
- If necessary, rescue breathing and/or CPR must be started immediately is the victim is not breathing or does not have a pulse.
- If the victim is breathing and does NOT have a head, neck or back injury, help the victim to lie down on their back, and elevate the person's feet about 12 inches.
- Cover the victim with a blanket, as chills may occur, and to prevent the loss of body heat.
- Monitor the victim's condition, especially consciousness, breathing and pulse.
- If there is any external bleeding, the rescuer should stop the bleeding.
- Do not give any food or water to a victim in shock.
- If the victim should vomit or drool, turn the head to one side to prevent choking. However, if there is a suspected spine/head/neck injury, "log roll" the victim onto their side instead, keeping the head, neck and back aligned and rolling the body as one unit.

Soft Tissue Injuries

The soft tissue includes the skin, muscles and fat beneath the skin. Soft tissue injuries which break the skin cause a wound which can allow germs to enter the body through the wound. With a soft tissue injury, the rescuer will stop the bleeding, clean and then dress the wound, all while wearing non-latex gloves for protection[39].

Tissue Structures

The soft tissue of the body contains many structures serving various functions to the body. They include:

- **Skin** covers the entire body—over 20 square feet of skin in the average adult. The skin includes the outer layer—called the epidermis, which protects the body, the dermis—including sweat glands and hair follicles, and the hypodermis—the deepest layer made of fat and connective tissue.
- **Blood vessels** travel in the soft tissue. An injury to the soft tissue included bleeding if the soft tissue is damaged.
- **Nerve cells** are also in the soft tissue, which is why a soft tissue injury causes pain.
- **Muscles, tendons and ligaments** are all in the soft tissue, so a soft tissue injury can result in damage to the muscular system.

Wounds—Major/Minor

Treatment of wounds can range from administering band-aids for small cuts and scrapes through major injuries involving the loss of large amounts of blood. With all wounds, the rescuer will want to stop the bleeding, clean the wound and prevent infection. **Minor wounds** are those which basic first aid treatment will suffice, while **major wounds** may require additional professional medical care[40].

Open Wounds

Open wounds include all those where the skin is broken and external bleeding occurs. The types of open wounds include:

- A **puncture** wound occurs when a sharp item enters the body—such as a nail. A puncture wound may not cause much bleeding at all, but the risk of internal damage and infection is high with a puncture wound.

- An **abrasion** wound is an open, surface wound where the skin is scraped. Often an abrasion wound has dirt or other particles in the wound as well.

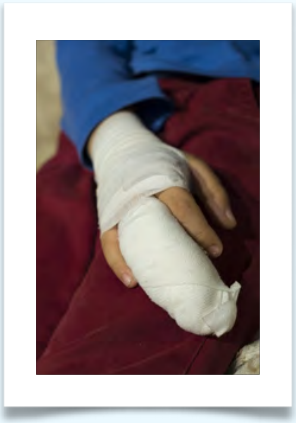
•A **laceration** occurs when the skin is cut sharply, and sometimes deeply. A deep laceration wound may damage much more than just the skin, as soft tissue—including nerves and muscles—may be cut as well.

•An **incision** is generally a cut through the skin made during surgery. Such a cut may be reopened accidentally and require medical attention.

•An **avulsion** is a surface wound where a piece of skin or other tissue is torn loose—sometimes still attached to the body on one side, and other times, completely torn off.

To care for a minor open wound, the rescuer should:

- Stop the bleeding by applying external pressure, using a sterile gauze and wearing non-latex gloves.
- If the blood seeps through, add another sterile gauze on top of the first one.
- After the bleeding stops, remove the gauze and wash the wound to remove any dirt, particles and unseen germs and bacteria.
- Apply antibiotic ointment. (Check first with the victim for any known allergies to the antibiotic ointment.)
- Cover the wound with a sterile dressing to keep it clean and prevent infection.
- Remove the protective gloves and wash hands thoroughly.



If the victim has a major open wound, the rescuer will:

- Call EMS

- Stop the bleeding by applying external pressure, using a sterile gauze and wearing non-latex gloves.
- If the blood seeps through, add another sterile gauze on top of the first one.
- If the bleeding is from an area with an open fracture, do not apply direct pressure. Instead, pad the area with sterile gauze to stop the bleeding.
- Keep the victim in place, and treat for shock if necessary while waiting for advanced medical care to arrive.

Closed Wounds

Many closed wounds—such as bruises—are minor and do not require advanced medical assistance. If the closed wound is minor, a rescuer may treat it in the following manner:

- Apply an ice pack to the area which will constrict the blood vessels below the skin's surface and help control the bleeding.
- Ice should not be applied directly to the skin. Instead, and ice pack—or plastic bag with a mixture of ice and water—should be used with a towel or gauze protecting the skin.
- Do not use an ice pack for more than 20 minutes. After 20 minutes, remove it and chill it if necessary to reapply.

In some cases, a closed wound could have just as much—if not more—damage than an open wound if the victim has suffered a severe trauma which has injured internal layers of soft tissue, as well as internal organs. While the rescuer is not concerned with stopping the bleeding or dressing the wound, the rescuer should be aware of signs of internal bleeding, including:

- Severe pain
- Coughing or vomiting blood
- Inability to move a body part without causing severe pain
- Feeling pain to the touch
- An accident with such force that the injury may have caused serious damage
- Fainting, confusion or unresponsiveness
- The skin looks bruised, or pale or even bluish

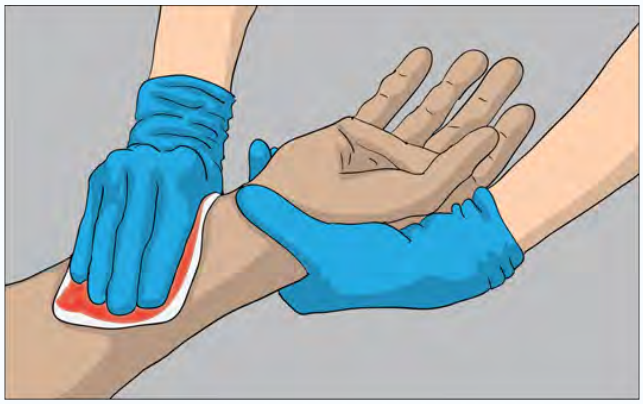
Additionally, if the victim displays signs of going into shock, EMS must be alerted immediately, and steps taken to keep the victim warm lying down while awaiting medical professionals. Consciousness, breathing and heart rate should be monitored closely.

Bleeding

Bleeding occurs when a person's blood vessels are broken due to an accident or illness. Bleeding can occur externally—as in a wound on the surface of the skin, or internally—such as a bruise below the skin's surface.

External Bleeding

If a person is bleeding externally, the rescuer will want to stop the bleeding. The best way to stop bleeding for most wounds is by applying direct pressure.



Direct Pressure Control

To apply direct pressure to stop external bleeding, the rescuer should:

- First, put on latex-free disposable gloves.
- Next, place a sterile dressing over the bleeding wound.
- Apply direct pressure to the wound to stop the bleeding.
- A rescuer may use the flat part of the fingers for a smaller wound, or even the full hand for a larger wound.
- If the victim bleeds through the sterile dressing, add another sterile dressing on top of the first—do not remove the first sterile dressing.

After the bleeding has stopped, the rescuer will continue on to clean and dress the wound, all while wearing non-latex gloves for protection.

If the rescuer is not able to stop the bleeding or a lot of blood has been lost, the rescuer should call 911.

Internal Bleeding

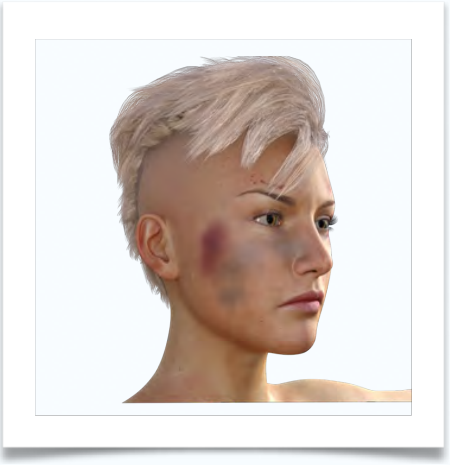
Internal bleeding can be seen on the surface of the skin as an area of darkness or discoloration—like a bruise. This happens because the blood vessels below the surface of the skin are broken, causing the discoloration. Some types of internal bleeding—such as basic

bruising—are common and do not require additional professional care, while serious internal bleeding may be accompanied by other injuries and may cause shock.

Signs of Internal Bleeding

While some signs of internal bleeding can be seen on the surface—like a visible bruise—others may be much more difficult to detect[41]. The signs of internal bleeding include:

- Severe pain
- Coughing or vomiting blood
- Inability to move a body part without causing severe pain
- Feeling pain to the touch
- An accident with such force that the injury may have caused serious damage
- Fainting, confusion or unresponsiveness
- The skin looks bruised, or pale or even bluish



Care for Internal Bleeding

If a rescuer suspects that internal bleeding is occurring, EMS should be summoned to administer medical care. A person with internal bleeding may also go into shock, so while waiting for EMS, a rescuer should:

- Keep the victim comfortable and warm
- Monitor the victim for breathing and consciousness
- If the victim is in shock, have the victim lie down, and care for other symptoms—such as vomiting and chills—while waiting for help to arrive.

Preventing Infection

It is important to prevent infections when a person has suffered a soft-tissue injury. In order to best prevent infection, the rescuer should:

- Clean abrasions or other minor wounds where possible of debris and other particles.

- Apply an antibiotic ointment to surface wounds.
- Cover surface wounds with sterile gauze for protection.
- Alert EMS in the case of a major wound, amputation, deep puncture, impaled object, or other major wounds.

All rescuers should wear non-latex gloves when working with a victim with a wound, and remove and dispose of the gloves properly when done.

Amputations

An amputation—or severed body part—is a very serious injury[42]. In order to best care for the victim, as well as attempt to retrieve the severed body part for possible reattachment surgery, the rescuer should follow the following steps:

- Alert EMS immediately.
- The victim may experience heavy bleeding. In order to control the bleeding, a rescuer should use direct pressure with sterile gauzes while wearing non-latex gloves.
- If the bleeding is severe, uncontrollable or life-threatening, the rescuer may need to use a tourniquet. A medical tourniquet with directions for use should be in the medical supply kit. A tourniquet should be tied 2 inches above the wound, tightened until the blood stops, and left in place until EMS arrives. When using a tourniquet, always make sure to write down the time and date it was placed.
- If possible, the severed body part should be wrapped in sterile gauze and placed in a sealed plastic bag. That bag should then be placed in another plastic bag containing ice and water. The severed body part should not be in contact with the ice/water—it should be protected by its own bag, and given to EMS when they arrive.
- The victim should be monitored for shock, as well as consciousness, breathing and heart rate until EMS arrives.

Impaled Object

If a foreign object enters a body and remains there, it is called an impaled object. An example is a nail in the foot of a victim[43]. If a victim has an impaled object, the rescuer must:

- Call EMS immediately.
- Do not remove the object.
- Instead, place dressings around the object to keep it from moving.
- Keep the victim steady until EMS arrives.

Dressings

When dressing a wound, it is important to use sterile gauze to keep the wound clean and help prevent infection. It is important to leave a dressing in place for severe wounds where EMS

has been called—removing the sterile gauze used to control bleeding and such could have a negative effect on the victim.
Dressings in all widths and sizes should be available in the first aid kit.

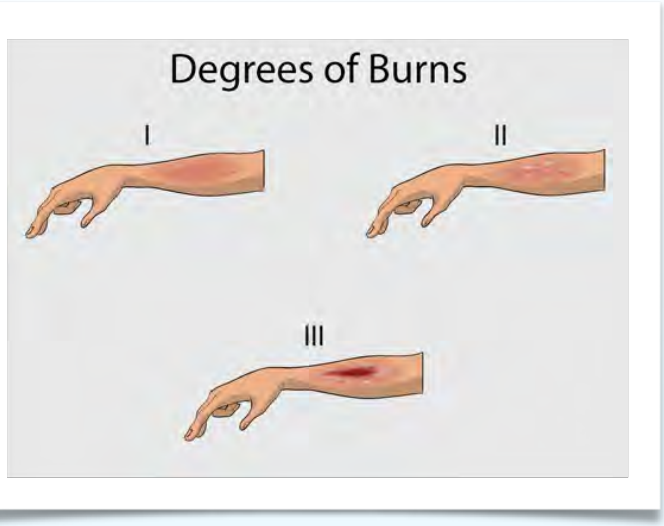
Burns

Burns can damage both the surface of the skin, as well as an underlying layer. Burns can be caused by a variety of different sources, and can range from minor to life-threatening[44].

Assessing Severity, Classification and Care

Burns can be classified by their depth as follows:

- **1st Degree Burns** affect only the outer layer—or epidermis—or the skin. They cause pain and redness of the skin.
- **2nd Degree Burns** affect the outer and lower layer of the skin—the epidermis and dermis. They cause pain, redness, swelling and blistering of the skin.
- **3rd Degree Burns** affect the upper and lower layers of the skin, as well as the deeper tissue. The skin may appear charred—either blackened or whitened.



All 3rd degree burns require EMS for advanced medical attention. Additionally, serious 2nd degree burns or those causing extreme pain or leading to shock also require advanced medical attention.
If a person suffering a burn experiences any of the following, EMS should be called:

- The burn is to the victim's airway.
- The victim has difficulty breathing.
- The burns cover a large or very vulnerable surface area, such as the head, neck, abdomen or genitals.
- The victim is elderly or very young.
- The burn is caused by chemicals, electricity or an explosion.
- The victim is going into shock.

With minor burns, a rescuer can treat the burn by cooling down the burned area with cool water or a cold compress.

Primary Treatments for All Burns

After making sure the scene is safe, fix and treat all life-threatening conditions, then treat secondary injuries. The rescuer should:

- Remove the victim from the source of the burn and stop the burning process
- Cool the burned area
- Apply a sterile dressing loosely on the skin
- Monitor and treat for shock

Thermal Burns

A thermal burn is caused by the skin's contact with fire or a direct heat source—such as a hot stove. A thermal burn which does not penetrate the skin's surface can be treated with a cool compress and covered loosely with a sterile gauze. If the burn goes beyond the skin's surface or otherwise requires emergency medical care, the rescuer should call EMS. In all cases, check the area for safety issues/exposed heat sources, as the cause of the burn may claim other victims.

Chemical Burns

Chemical burns are caused when a person comes into contact with dangerous chemicals. These could be pool fluids, cleaning fluids or other dangerous chemicals. All chemical burns require the attention of EMS, so the rescuer should summon EMS as soon as they are aware of a chemical burn. While waiting for EMS to arrive, the chemicals need to be removed from the victim's skin as quickly as possible, so the rescuer should:

- Wear gloves to remain protected from the chemicals
- Flush the affected area of the victim with water for 20 minutes (or until EMS arrives) to remove the chemicals.
- If flushing the eye, be sure to angle the affected eye downward, so that the chemicals don't get flushed from the affected eye into the "good" eye.
- If there are chemicals on the victim's clothing, have the victim remove the clothing if possible.
- The rescuer should be careful not to get chemicals on him/herself while assisting.

Electrical Burns

Electrical burns are caused by power lines, outlets or other sources of electrical currents. The rescuer should check the area for safety issues, as the cause of the burn may claim other victims. All electrical burns require the attention of EMS, so the rescuer should summon EMS as soon as they are aware of an electrical burn. While waiting for EMS to arrive, the rescuer should:

- Cool the burn with cold tap water and cover with a loose sterile gauze.

- Monitor the victim for consciousness, breathing and heart rate, and perform CPR if necessary.

Electrical burns—or electrocutions—can often lead to breathing difficulties or cardiac emergencies, so the rescuer should evaluate the victim for such difficulties.

Radiation Burns

Radiation burns are very common in a pool setting, as they are caused by the sun. Sunburn can be painful, so the rescuer should:

- Move the victim out of the sun
- Cool the affected area with a cool compress or cool water.

Musculoskeletal Injuries

Musculoskeletal injuries are all too common in recreation locations where people are prone to fall or otherwise become injured[45].

Assessment and Care

It is difficult to know exactly what type of injury a victim has suffered if the issue lies below the skin's surface. However, EMS should always be called if:

- The victim is unable to move the afflicted area.
- The victim goes into shock.
- There is a visible fracture or break.

As with all injuries, it is important to learn:

- The details of the injury-causing incident.
- The amount/place of pain that the victim is feeling.
- Any other symptoms, such as vomiting, heart racing, etc., which could be affecting the victim.

Types of Injuries

The most common types of musculoskeletal injuries are:

- **Fractures** occur when the victim suffers a bone break. A fracture can be closed—when the damage is unseen—or open—when there is an open wound over the fracture.
- **Dislocations** occur when a bone is separated from its usual location in a joint. A dislocation—while beneath the skin—can generally be seen, as the affected joint will be visibly bent in an unnatural manner.
- **Sprains** occur when the ligaments are torn at the joint, as in a sprained ankle.
- **Strains** are when the muscles or tendons are stretched or even torn.

Signs of Serious Injury

While there may be some musculoskeletal injuries that are minor and don't require professional medical attention, EMS should always be called if:

- The victim is unable to move the afflicted area.
- The victim goes into shock.
- There is a visible fracture or break.
- The victim is in serious pain.
- The incident was such that a serious injury is likely.

Care and Immobilization

While it is impossible to tell the type of injury from looking at the surface, the care for musculoskeletal injuries is the same for all.

For all musculoskeletal injuries, the rescuer should follow the acronym **PRICE: Protection, Rest, Immobilize, Cold** and **Elevate**[46].

- **Protection**—The rescuer should protect the injured person and area being treated, but also protect themselves.
- **Rest**—The victim should rest the injured area and should avoid movements.
- **Ice** - Put an ice pack, gel pack, or package of frozen vegetables, wrapped in a cloth, on the injured area every 3 to 4 hours for up to 20 minutes at a time to avoid swelling. Never put ice directly on the skin.
- **Compression** - Compression helps limit swelling of the injured area. It also gives some additional support to the injured area. If it's too tight, it can cut off the blood supply to the injured area.
- **Elevate**—Elevate the area above the heart (if it does not cause further pain) to slow the blood flow to the area and control swelling.

Injuries to Extremities

While musculoskeletal injuries can happen to any part of the body (such as a broken rib), injuries to the extremities are much more likely, due to activity and accidents. The extremities are the person's arms and legs, including the fingers and toes.

Strains/Sprains/Fractures/Dislocations

Regardless of whether a victim has suffered a strain, sprain, fracture or dislocation to their extremity, a rescuer will call EMS and keep the victim motionless and immobilized if possible until their arrival. If a victim must be moved, splinting of the extremity should be done to prevent further injury.

Splinting and Immobilization

After an injury, a splint may be used to immobilize the area of injury so that the injury can heal properly. A splint can be a solid object fastened to an injured body part to keep it steady, or it may even involve using another body part to brace the injured body part[47]. There are several types of splints which can help with an injury, such as:

Anatomic splint

This is created when the injured body part is attached to a non-injured body part. A common example is when an injured finger is splinted by attaching it to an adjoining healthy finger.

Soft splint

This is created with blankets, towels or other soft material supporting the injury. A common example is an arm sling, where the victim's injured arm is supported by fabric.

Rigid splint

When an injured body part—such as a leg or arm—is attached to a board or other hard surface, a rigid splint is formed.

Injuries to the Head, Neck and Back

The largest risk to injuries of the head, neck and back is that any movement of the victim may cause additional damage if there is a spinal injury. For this reason, EMS must be called and the victim kept with the head aligned and stabilized while awaiting EMS.

Recognition and Care

If a victim has suffered a spinal injury, the following physical indications may be observed:

1. There may be blood or yellow fluids coming out of the ears
2. The lifeguard may observe a condition known as "Raccoon eyes," which refers to bruises around both eyes. These bruises look like the dark patches around the eyes that are characteristic of raccoons. Raccoon eyes signal a serious condition related to a skull or brain injury.
3. A condition known as "Battle's sign," also known as mastoid ecchymosis, is an indication of a fracture of middle cranial fossa of the skull. These fractures may be associated with underlying brain trauma. Battle's sign consists of bruising over the mastoid process as a result of extravasation of blood along the path of the posterior auricular artery. The sign is named after William Henry Battle.
4. Impaired movement of the victim is an indicator of a head, neck or back injury.

Manual Stabilization

If a victim has an injury to the head, neck or back, stabilization of the area is necessary to preserve the head-neck-spine alignment. This can be accomplished manually with a head-splint manual procedure, especially if the victim needs to be moved for any reason.
The head-splint technique involves stabilizing the victim's head by bracing it between their arms, which will be placed overhead and squeezed together.

In a Pool:

To initiate the head-splint technique when the victim is face-up:

1. The rescuer will position themselves on the side of the victim facing the victim.
2. The rescuer's right hand will grasp the victim's right biceps and the rescuer's left hand will grasp the victim's left bicep.
3. The rescuer should make sure to squeeze the arms with the victim's head in-between.
4. The rescuer will need to continue to provide pressure keeping the victim's arms together throughout any movement, such as to a backboard or out of harm's way.
5. If rescuer is not a lifeguard then the rescuer should keep the victim in the head splint position till EMS or a lifeguard arrives. If the victim stops breathing and/or loses their pulse, the rescuer should remove the victim from the pool.

Standing Up on the Land

1. If the victim is standing up, the rescuer will approach the victim from the front and perform manual stabilization of the victim's head and neck by placing one hand on each side of the head, with the rescuer's forearms against the victim's chest to keep the rescuer's arms stable.
2. A second rescuer will stand up a backboard behind the victim.

3. While being careful to maintain stabilization of the victim's head/neck, the victim will be secured to the backboard, along with the head immobilizer and straps.
4. Then both rescuers will slowly lower the victim to the ground

Risk Factors

There is always a risk with a head-neck-spine injury that the rescuer can cause additional damage moving the victim to safety or administering first aid. The rescuer should be careful to provide manual stabilization to the victim, keeping all movements to a minimum until EMS arrives.

TBI (Traumatic Brain Injury)

TBI—or traumatic brain injury—generally occurs when there has been a serious jolt or hit to the head or body. It can also be the result of an object piercing the brain in a traumatic accident. TBIs can range from a mild, temporary brain injury to a more serious, permanent and life-threatening injury[48]. Signs of a traumatic brain injury include:

- Loss of consciousness
- Headache or dizziness
- Confusion or agitation
- Slurred speech
- Dilation of pupils
- Loss of coordination or balance

Medical help should be sought with any suspected traumatic brain injury.

Concussion

The most common type of traumatic brain injury is a concussion. A concussion is often caused by falls and accidents, sports and direct blows to the head. A concussion occurs when the soft tissue of the brain is jolted against the skull, causing injury to the brain tissue, blood vessels and nerves. Signs of a concussion may occur immediately after an accident or head blow, or they can occur days or even weeks after the injury. There are different grades—or levels—of concussions, and a medical professional should examine the victim to determine the extent of the concussion and the appropriate course of action.

Lower Back Injuries

Muscle sprains and strains are the most common type of lower back injury. Such muscle strains can be caused by a sudden injury or from repeated overuse. If a victim is feeling pain in the lower back, rest and anti-inflammatory medication for pain are generally recommended by a doctor.

Dental Injuries

Avulsed Tooth

If a tooth is avulsed—or knocked out of the victim's mouth—the rescuer will want to stop the bleeding and attempt to preserve the tooth for reimplantation[49].

Stop Bleeding

To stop the bleeding from an avulsed tooth, the victim should bite down on a rolled up sterile dressing in the empty place left from the tooth. The direct pressure to the afflicted area should stop the bleeding.

Tooth Preservation

If possible, the tooth should be retrieved and preserved for reimplantation. For the best chance at reimplantation, remember the following:

- When touching the tooth, it should be handled by the crown, not the root of the tooth.
- Do not clean the tooth or remove any fragments.
- If possible, place the tooth in a balanced salt solution sold for such a purpose.
- If this is not available, the tooth should be placed in an egg white, coconut water or whole milk. If none of those are available, the tooth can be placed in the victim's saliva—but not in the victim's mouth.

Dental Care

The best chance of reimplantation is within 30-60 minutes, so the victim should take the tooth to an emergency room or dentist immediately.

Aspiration of Teeth/Blood

When a victim suffers a mouth injury, it is important to prevent the aspiration/swallowing of any loose teeth or blood, which make cause choking and the blockage of the airway. With a mouth injury, the rescuer should be sure that the:

- The victim's mouth is clear of loose teeth or other materials
- If the victim is bleeding from the mouth, the victim should not lie on their back, but rather, remain upright or on their side so that fluids can safely flow out of the victim's mouth
- If appropriate, the victim can be provided with a bag or container for removing excess fluid from their mouth

Additional Head Injuries

These are some other possible head injuries which may occur, independent of a possible spinal injury.

Scalp

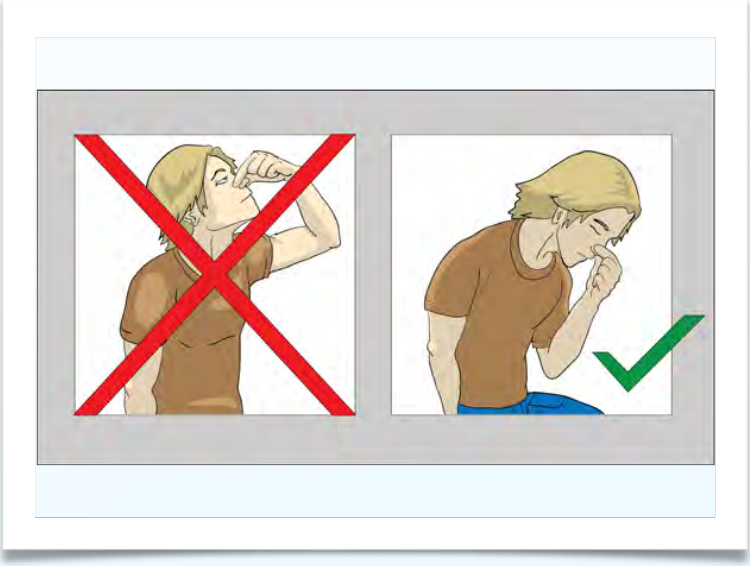
When a person has a scalp injury, they often have a lot of bleeding. Direct pressure to the wound (with non-latex gloves and a sterile dressing), should stop the bleeding. EMS should be called if:

- A fractured skull is suspected.
- A spinal injury is suspected.

Cheek

If a victim has an injury to the cheek—whether it is on the inside or outside of the cheek—applying direct pressure with a sterile gauze should control the bleeding. After the bleeding has stopped, the victim should (if possible) rinse their mouth with water.

Nose



The most common nasal injury is a nosebleed[50]. If a victim experiences a nosebleed:

- Have the victim lean slightly forward so that the blood does not go down the victim's throat.
- Tell the victim to breath from their mouth and then firmly pinch the soft part of your nose, just above your nostrils for 5 to 10 minutes until the bleeding stops.
- If the bleeding does not stop, the rescuer can place an ice pack or bag of frozen vegetables covered by a towel on the bridge of your nose

If the victim loses consciousness or the bleeding persists, EMS should be summoned.

Eye

An eye injury can range from a victim having small particles in the eye through much more serious injuries involving chemicals and impalements[51].

- If the victim has small particles in the eye, have the victim first try 'blinking' the object out. If that doesn't work, the rescuer can flush out the afflicted eye with water. If the object can't be removed using such measures, EMS should be called.
- If a victim has chemicals in the eye, the rescuer should flush the eye out (flush away from the uninjured eye) until EMS arrives.

For a larger foreign object or if something becomes impaled in a victim's eye:

- Call EMS immediately.
- Keep the victim from moving at all if possible.
- Do not put pressure on the eye or on the object. Instead, sterile gauzes rolled up and placed around the impaled object may help to stabilize it without putting pressure on the eye until EMS arrives.
- Bandage both eyes. Covering both eyes helps prevent eye movement.

Ear

Ear injuries generally include cuts, scrapes and lacerations, which can be treated like other soft tissue injuries[52]. If a piece of the earlobe is severed:

- The severed body part should be wrapped in sterile gauze and placed in a sealed plastic bag. That bag should then be placed in another plastic bag containing ice and water.
- The severed body part should not be in contact with the ice/water—it should be protected by its own bag, and given to EMS when they arrive.
- The victim should be monitored for shock, as well as consciousness, breathing and heart rate until EMS arrives.

If a victim has an injury to the inner ear—like a protrusion into the ear—medical assistance should be sought.

Mouth

Mouth injuries often produce a lot of blood relative to the size of the injury. The most common mouth injuries are those to the teeth or cheeks—as described previously. For any type of mouth injury, the bleeding can generally be stopped with direct pressure to the afflicted area using a sterile gauze.

Jaw

Jaw injuries can include fractures and dislocations. If a victim suffered a fractured or dislocated jaw, EMS should be notified, and the victim kept still and calm until EMS arrives.

Fainting/Syncope

A person has fainted if a person suddenly loses consciousness but then regains it a short time later. In such a case, the rescuer should help the victim to lie down on their side. Do not administer food or drinks. After a few moments, the victim should begin to feel better. If the victim does not regain consciousness or cannot stand up after a period of rest, EMS should be called[53].

Seizure

A seizure occurs when a person loses control of their body, which may suddenly experience muscle spasms or rigidity. A seizure may occur at any time—on land or in the water. A seizure can be caused by a chronic medical condition, by a medication reaction, or even by environmental conditions. Some people experience seizures fairly regularly, while for others it may be a more serious medical event[54].

What to Do for a Seizure

When a person experiences a seizure, the rescuer will want to:

- Prevent the victim from getting hurt by moving nearby objects away.
- Do not restrain the victim, as that may cause harm.
- Remain with the victim until the seizure has passed and they are feeling better.

If the person has experienced seizures before, they will know if this seizure is “typical,” in which case EMS need not be summoned. However, the rescuer should contact EMS if:

- It appears that the victim is injured.
- The seizure lasts for more than 2 minutes, or the person has repeated seizures with no break.
- The victim has never had a seizure before.
- The victim is elderly, and the seizure may be a sign of a stroke.
- The person has another medical condition, such as pregnancy or diabetes.

If a person experiences a seizure while in the water or swimming, the lifeguard should:

- Summon EMS.
- Remain in the water with the victim, while supporting their head out of the water to keep the airway clear.
- After the seizure has passed, remove the victim from the water and check for ABC—airway clear, breathing normally and circulation (pulse) normal[55].

TIA

A TIA is a temporary blockage of blood flow to the brain. A person may exhibit signs of a stroke, but these last for only 5 minutes or so. A TIA is akin to a ‘mini-stroke,’ but is also a warning sign that a major stroke may occur. A person experiencing a TIA should seek medical care, as more than 30% of the people experiencing a TIA have a full-blown stroke within a year.

Diabetic Emergency

A diabetic person may experience hypoglycemia—or low blood sugar—or hyperglycemia—or high blood sugar. If the person is conscious and able to speak, the rescuer should ask if the victim carries glucose tablets, or if there is some sugar-source they would prefer. Glucose tablets can be administered to regulate the blood sugar level. If none are available, sugary candy, orange juice or glucose paste can be given. If the victim is unconscious or unresponsive, EMS must be called immediately. The rescuer should never give any medication to an unconscious victim[56].

Signs and Symptoms of a victim having a diabetic emergency

- Changes in the Level of Consciousness, such as a victim suddenly becoming unconscious
- Changes in mood, such as a sudden flare of anger, anxiety, or extreme sadness
- Rapid breathing and pulse
- Feeling and looking ill
- Dizziness and headache
- Sudden confusion
- Thirst
- Fruity-scented breath

If the rescuer is not sure if the victim has hypoglycemia—or low blood sugar—or hyperglycemia—or high blood sugar, the rescuer may still treat the victim with glucose since giving the victim sugar will not cause any immediate harm

Stroke

A person experiencing a stroke will have a sudden change in how their body functions, generally on just one side of the body. Signs of a stroke include:

- Weakness or numbness on one side of the body, such as the face, arm or leg.
- Difficulty speaking or slurred speech.
- A sudden headache, confusion, dizziness or loss of balance.

- Ringing in the ears or blurred vision.

If a person is experiencing a stroke, EMS should be alerted immediately, as time is critical in possible stroke treatment methods[57].

F.A.S.T.E.R. Recognition

F.A.S.T.E.R. is an acronym to help the rescuer to remember the primary symptoms and signs of a stroke, so that they can recognize a stroke victim and seek medical attention FASTER[58].

- **F stands for Face.** Ask the person to smile. If you see one side of the face drooping, the person could be experiencing a stroke.
- **A stands for Arms.** Ask the person to raise both arms. If you see one arm drifting downward or the person complains that one arm is weaker or more numb than the other, this could be a sign of a stroke.
- **S stands for Stability.** This refers to steadiness on your feet. Sometimes an individual experiencing a stroke will fall, feel off balance or be unable to stand without assistance.
- **T stands for Talking difficulty.** Ask the person to repeat simple phrase such as, "The sky is blue." If they slur, are unable to speak or they do not seem to understand the words you've spoken to them, they could be experiencing a stroke.
- **E stands for Eyes.** Is there a sudden onset of double vision or vision loss in one or both eyes?
- **R stands for React.** Call 9-1-1. If a person is experiencing one or more of any of the symptoms that were just described—even if the symptoms go away—it is important to call 911 immediately.

Injuries to the Abdomen and Pelvic Area

Abdominal Injuries

An abdominal injury can range from a blow to the abdomen causing temporary pain to a more serious open injury where abdominal organs are actually pushed to the outside of the body.

With an external abdominal injury, the rescuer should check the victim for additional injuries and symptoms[59].

If an open wound to the abdomen causes organs to protrude or push outside the body, EMS must be called immediately. While waiting for EMS, keep the following points in mind:

- The rescuer should not try to put the organs back into the body. Instead, cover the area/organs with a moist sterile dressing, plastic wrap and a towel to keep them warm and moist.
- The rescuer should monitor the victim and watch for signs of shock, loss of consciousness or breathing, and heart rate, and treat as necessary as they await the arrival of EMS.
- Remain with the victim to keep them calm and keep bystanders away.

Pelvic Injuries

Pelvic injuries can occur during rough play, sports or in an accident. As many delicate organs are located in the pelvic region relatively unprotected, EMS should be summoned immediately. While awaiting EMS, keep the victim comfortable lying down, and treat for shock if necessary.

Pregnancy Complications

A woman suffering from a pregnancy complication may experience abdominal pain, bleeding, a sudden drop in blood pressure/fainting or other related symptoms. If such symptoms are present and the victim is pregnant, specialized medical help should be sought. While awaiting specialized care, the rescuer should monitor the victim and watch for signs of shock, loss of consciousness or breathing, and heart rate, and treat as necessary as they await the arrival of EMS. The victim should be kept comfortable and calm, and the rescuer will want to keep bystanders away.

Poisoning

A poison can be ingested by liquid into the body, inhaled through poisonous fumes, or absorbed through the skin by touching a poisonous object. A poisonous object can be a liquid, powder, gas or solid object that secretes poisons—such as a poisonous plant—or has been exposed to poisons[60].
If all cases, if a person shows signs of poisoning, the Poison Control Center should be contacted at 800-222-1222.

If a person has ingested (eaten/drunk) a poisonous liquid:
- Do NOT administer milk/water or activated charcoal unless advised by Medical Personnel or The American Association of Poison Control Centers.
- If the victim is unresponsive or has other life-threatening symptoms such as breathing difficulty or erratic heart rate, EMS should be contacted immediately.

If the poison has been inhaled from noxious fumes:
- The victim should be moved to fresh air quickly
- The victim should be monitored for conditions/symptoms which may develop due to the noxious fumes, including vomiting, shortness of breath or circulatory issues.
- If the victim is unresponsive or has other life-threatening symptoms such as breathing difficulty or erratic heart rate, EMS should be contacted immediately.

If a victim has come into contact with a poisonous substance on the skin—either by touching a poisonous object or having one rub/spill against the victim's skin—the rescuer should:
- Remove any exposed clothing that may still carry the toxin
- Rinse the exposed area with water for 20 minutes.
- If a rash or blisters develop, the victim should seek medical assistance.

Rescuers should have a working knowledge of all of the different chemicals used on-site, as well as the treatment for each, whether it is ingested or inhaled. Such information regarding on-site chemical usage and treatment should be reviewed regularly and updated as needed if additional chemicals are introduced to the worksite.

Working or conducting a rescue in a confined spaces carries additional dangers, and required the rescuer to wear appropriate respiratory protection. If such rescues in a confined space will be carried out in the future, additional training and equipment is required for rescue personnel.

Animal Related Injuries

Animal related injuries—such as bites and stings—can occur in the water, on land, or even indoors. A bite or sting may be serious both in the breaking of the skin and risk of infection, as well as any poisons or toxins passed to the victim through the bite.

Insects

With billions of different insect species in the world, insect bites are quite common, but they can be very painful. Routine insect bites can be treated with basic first aid, but if a victim has an allergic reaction to the insect bite, additional medical assistance may be needed[61].

To treat an insect bite:

- Examine the area of the insect bite and remove the stinger if it is still present in the skin. The stinger may look like a tiny splinter sticking out from the skin. The stinger can usually be removed by scraping the area with a credit card or with tweezers.
- Wash the wound thoroughly with soap and water.
- Cover the area with a sterile dressing, band aid or gauze.
- Apply an ice pack to reduce any swelling or pain.

In some cases, the victim has a severe allergic reaction to the sting, and the insect bite can cause a breathing emergency. If the victim has an allergic reaction, the victim may:

- Have difficulty breathing
- Develop a rash or hives across the skin
- Experience swelling of the tongue, neck or face which can cause an obstruction to breathing

- Feel a tightness across the chest

In case of a severe allergic reaction, the rescuer should:
- Summon EMS immediately
- Monitoring the victim's breathing and heart rate while waiting for EMS to arrive
- Administer rescue breathing and/or CPR if it becomes necessary.

Spider

While many people are afraid of spiders, most spiders are completely harmless, and can hurt a person only by giving them a fright[62]. However, there are 2 spiders whose bite can be fatal to a human due to the spider's venomous poison—the black widow spider and the brown recluse spider. If a person is thought to have been bitten by a black widow spider, symptoms they may develop include:

- difficulty breathing—this is caused by a paralysis of the diaphragm
- chills and/or sweating
- feeling nauseous
- a headache
- sudden high blood pressure
- a fever

The bite of a brown recluse spider is often accompanied by:
- fever and chills
- pain and redness at the location of the bite
- a deep sore forming at the location of the bite
- feeling nauseous
- pains in the joints

If a person develops such symptoms after being bitten by a spider, or if such a spider is seen in the area at the time of the bite, a rescuer should:
- Call EMS immediately.
- Wash the wound thoroughly with soap and water.
- Apply an antibiotic ointment and a sterile dressing/gauze.
- Use a cold pack to reduce the swelling and pain.

- Monitor the victim for consciousness, breathing and heart rate. If these change, administer rescue breathing and/or CPR as needed while awaiting EMS.

Scorpion

In some parts of the country scorpions are fairly common, and there are some scorpions in this country whose sting can be fatal[63]. The venom from a scorpion may cause the following symptoms:

- Difficulty breathing
- Sudden high blood pressure
- Involuntary movements—such as twitching or spasms—of the head, neck and eyes
- Feeling nauseous and vomiting
- Sweating

With a non venomous scorpion, the sting can be treated with an ice pack to reduce swelling and pain. However, if a victim is stung by a venomous scorpion or develops any of the symptoms listed above,
a rescuer should:

- Call EMS immediately.
- Wash the wound thoroughly with soap and water.
- Apply an antibiotic ointment and a sterile dressing/gauze.
- Use a cold pack to reduce the swelling and pain.
- Monitor the victim for consciousness, breathing and heart rate. If these change, administer rescue breathing and/or CPR as needed while awaiting EMS.

Ticks

If a person is bitten by a tick, a rescuer should[64]:

- Recover the tick with tweezers by pulling straight out without twisting.
- Place the tick into a plastic bag in the freezer to show to the doctor if symptoms develop.
- Wash the wound with soap and water and cover with a sterile dressing.

EMS should be contacted if the victim develops symptoms such as:

- A severe headache
- Difficulty breathing
- Paralysis
- Heart palpitations

The victim should visit their doctor if:

- The tick wasn't removed completely.

- The person develops flu-like symptoms, such as fever, body aches and chills.
- The bite site appears to be infected.
- The victim should bring along the tick in the plastic bag if possible for examination.

Snakes

There are several species of venomous snakes in this country, so snakebites should be treated with care[65].

If a victim is bitten by a snake, the following symptoms may be seen:

- There will be two puncture wounds on the skin, as a snake has 2 fangs
- There will be pain, swelling and redness in the area of the bite
- A victim may experience difficulty breathing.
- There may be numbness in the arms, legs and/or face
- The victim may experience blurry vision
- The victim may have nausea and vomiting

If a person is bitten by a snake:

- Call EMS immediately.
- The victim should remain still with the bitten area lower than the level of the heart. This is to slow the ability for the venom to travel throughout the bloodstream and body.
- Wash the wound, taking care to minimize movement.
- Wrap the afflicted area with an elastic bandage, gently stretching the bandage while applying for a snug fit. The wrap should be started at the place furthest from the heart, and wrapped in overlapping turns to slow the spread of venom.
- Check the area above and below the bandage for changes, such as numbness, tingling or color change. The area should be checked both before and after bandaging, so that the rescuer would know if the change was brought on by the bandage,
- Do not apply ice or a tourniquet. Also, do not cut the wound to suck or suction out the venom.

Marine Life

In open water, swimmers run the risk of being bitten or stung by a variety of marine life, from jellyfish and crabs to sea urchins and anemones. Generally, the specific region will have information on the types of marine life

present in the water, and what steps should be taken to care for the victim.
Open water swimmers should be aware of:

- Crabs, in the shallower waters or near the beach
- Jellyfish, which often appear at certain times of the year or following a particular weather event
- Sting Rays, who often frequent the shallower waters, and may sing a victim with their tail barbs
- Sharks, in certain parts of the country they may be common in shallow water, so be aware of where it is considered safe to swim

In all cases, if a victim is bitten or stung in the water, the following steps should be followed:

- The victim should be safely removed from the water.
- The rescuer should try to remove any remaining stingers/tentacles manually while wearing protective non-latex gloves or a towel.
- Flush the injured area with salt water for at least 30 seconds to offset the toxin.
- Hot-water immersion—or hot-packs—can relieve the pain if used for 20 minutes.
- If hot water/hot packs are unavailable, a cold pack may assist in relieving the pain.

Be aware that you should not use fresh water, alcohol, vinegar or baking soda to flush the area of a sting or bite, and do not rub the wound.
Contact EMS immediately for all shark bites and other bites which cause a loss of blood, as well as any bite or sting which causes difficulty breathing or great pain[66].

Animals

If it is suspected that the animal may have rabies, or if the animal is a wild animal, EMS must be summoned to treat the victim for possible rabies exposure. Even with a ‘known’ animal, if the bite is severe, EMS should be notified. In the case of a severe bite, bleeding should be controlled through direct pressure while awaiting EMS[67].
If the wound is small or bleeding is minimal, the rescuer should:

- Control the bleeding with direct pressure.
- Wash the wound with soap and water.
- Apply an antibiotic ointment.
- Cover the wound with a sterile dressing.

Humans

As with an animal bite, the rescuer will want to contact EMS in the case of a severe bite or a bite from an unfamiliar person[68]. If the wound is small or bleeding is minimal, the rescuer should:

- Control the bleeding with direct pressure.
- Wash the wound with soap and water.
- Apply an antibiotic ointment.
- Cover the wound with a sterile dressing.

Pressure and Immobilization Bandages

With all bites and stings, the rescuer should apply direct pressure using a sterile gauze while wearing non-latex gloves, immobilize the area if it relieves pain, and cover the affected area with antibiotic ointment and a sterile dressing.

Substance Misuse/Abuse

Substance abuse can often give the appearance of sudden illness. When performing an initial assessment of the victim, it is important to ask about drug/alcohol use, as well as to view the situation and surrounding people to see if such use is a probable cause of the medical emergency[69].

Alcohol

Alcohol poisoning can lead to serious complications and even death from drinking large amounts of alcohol in a short period of time. If alcohol poisoning is suspected—due to symptoms or circumstance—immediate medical attention is required.

Stimulants

Stimulants—or ‘uppers’—are drugs which increase the levels of physiological activity in the body. Common

stimulants include cocaine/crack and amphetamines. A stimulant will give a person a feeling of a short term ‘high,’ followed by a drop including exhaustion and depression.

Depressants

Depressants—or ‘downers’—are drugs which depress or slow down the nervous system. They can be used to encourage people to sleep—like sleeping pills—or calm hyperactive children. They lower a person’s blood pressure and slow the pulse, so an overdose can lead to a cardiac emergency. Common depressants include sleeping pills, barbiturates and Xanax.

Hallucinogens

Hallucinogens cause a user to hallucinate, or have an altered perception of reality. LSD and PCP are common hallucinogens. A person taking a hallucinogenic drug is at grave danger to themselves, as the person’s sense of reality is altered, so the person will often do dangerous things—such as jump from a high place—without fully realizing the consequences of the action.

Narcotics

Narcotics are drugs which affect the mood or behavior of a user. Common narcotics include heroin, fentanyl and opioid drugs, such as codeine. Narcotics have become a major issue, as they are often prescribed as a pain reliever, but then become addicting to the user.

Inhalants

Inhalants can include substances such as spray paint, cleaning fluid and other volatile substances which are inhaled to produce a mind-altering effect in the user. Use of inhalants can damage a person’s respiratory tract as well as their brain cells.

Cannabis

Cannabis—or marijuana—is a psychoactive drug produced by the cannabis plant. It can be smoked, as well as turned into other forms for use. Cannabis can also be used for medicinal purposes, especially in dealing with chronic pain and other long-term illnesses.

Designer Drugs

Designer drugs are psychoactive narcotics synthetically created by chemicals developed to bypass drug laws by avoiding detection in drug tests. Synthetically created drugs can be especially dangerous, as they are created in an unregulated environment, and there is no way of knowing exactly what chemicals are in a particular batch.

Anabolic Steroids

Anabolic steroids promote the growth of muscle, being a synthetic hormone which resembles testosterone. Anabolic steroids are used (illegally) by athletes wishing to give themselves an unfair advantage over their competitors, and are also used as a weight-loss agent.

Over-the-Counter Substances

Over-the-counter substances include drug store items which do not require a prescription. The most commonly abused over-the-counter substances include cough medicines, cold medicines, motion sickness pills and pain relievers.

Temperature Related Emergencies

Heat-Related Emergencies

When a person is over-exposed to heat, they can develop symptoms of a heat-related illness. At its earliest stages, these symptoms can be reversed, but at a later stage, permanent damage may occur[70].

Body Temperature Maintenance

Heat-related illnesses occur when a person's body is unable to maintain the correct body temperature, and a person's internal body temperature begins to rise. This can lead to heat cramps, heat exhaustion and eventually heat stroke.

Heat Cramps

Heat cramps are muscle spasms or pain in a person's legs or abdomen resulting from heat exposure.

Heat Exhaustion

When a person experiences heat exhaustion, the body has become overwhelmed by the heat, and they will appear to have:

- heavy sweating
- ashen or flushed skin
- headache or dizziness
- exhaustion or weakness
- nausea

Heat Stroke

Heat stroke is a life-threatening condition, as it causes the body systems to shut down. Symptoms include:

- Vomiting
- Seizures
- Loss of consciousness
- Rapid breathing—often gasping
- A weak, racing pulse
- Lack of sweating, as the body is unable to self-regulate its temperature through sweating
- Hot skin, either pale or red

With **any heat related illness**, a rescuer should:

- Move the victim to a cool location
- Loosen tight clothing and remove anything constricting or filled with sweat
- Cool the victim with fanning, water sprays and/or cool towels and compresses
- Encourage the victim to drink liquids, preferably a drink such as a sports drink or coconut water, but plain water if those are unavailable.

If the victim is confused, unconscious or has a seizure:

- Contact EMS immediately
- Cool the victim quickly—immersing the victim in a cold bath if possible. If not, ice packs and cool, wet towels should be applied over the body, changing them frequently to keep them cool.
- Continue cooling the victim until EMS arrives.

Cold-Related Emergencies

Cold-related emergencies generally occur in extremely cold situations, but can also occur at higher temperatures if the victim is wet or if it is very windy[71].

Frostbite

Frostbite occurs when a person's extremities—fingers or toes—are exposed to the cold. Symptoms of frostbite include:

- The afflicted area is turning white and hard to the touch.
- In extreme cases, the afflicted area will turn black, as the soft tissue has died.
- The victim has no feeling in the afflicted area.

If a person experiences frostbite, EMS should be contacted immediately. While awaiting EMS, the rescuer should:

- Move the victim to a warm place. The victim should NOT walk on frostbitten feet or toes unless absolutely necessary.
- Remove any wet clothing.
- Do not rewarm the skin unless it can be kept warm, as warming/cooling of the skin can cause worse damage.
- Do not use direct heat from a radiator or fire to warm the afflicted area.
- Do not rub the afflicted area.
- Apply a loose, sterile dressing to the area.

Hypothermia

A victim experiences hypothermia when their body temperature drops as the body is unable to maintain a healthy internal temperature. This can occur when a victim has exposure to the cold, or becomes wet in a cold situation. A victim with hypothermia may shiver at first, but then stop shivering as the body can no longer regulate its internal temperature. A victim may become unresponsive or confused, and eventually the body may stiffen and the breathing slow or stop.

A rescuer should:

- Call EMS
- Move the victim to a warm place slowly and gently so as not to shock the system.
- Remove any wet clothing.
- Wrap the victim in blankets—including the head, as much body heat escapes through the head.
- The body temperature should rise slowly—do NOT immerse the victim in warm water.
- If the victim is alert, they can drink warm (but not hot) liquids, preferably without alcohol or caffeine.
- Hot packs or warm water bottles may be used over blankets or towels to warm the victim.
- Check for breathing and heart rate and treat for any medical emergencies.

Special Considerations

Certain population groups and situations require special consideration when dealing with a medical emergency, and the rescuer will want to be patient and professional in such situations.

Infants

Infants with medical emergencies are especially vulnerable. Care must be taken with infants to always support the head/neck when handling an infant, and the infant's parents included in all medical proceedings. The skull of an infant is not yet fully formed, so infants are especially vulnerable to injury and trauma.

Children

Children can be unpredictable in stressful situations, and become easily frightened or anxious when dealing with an unknown emergency situation. It is best to involve the child's parent as much as possible, as they will be able to calm or even distract the child if needed, and will be able to answer any questions or concerns which arise. If the parents or guardians are nearby, obtain their consent prior to treatment.

Elderly

The elderly are a particularly vulnerable segment of the population, as they are most likely to have pre-existing medical conditions and are especially susceptible to illness and injury. They may also become easily confused or forgetful, so your questions may be best asked of a caregiver if available.

People with Disabilities

People with disabilities already have a pre-existing medical condition and are especially susceptible to illness and injury. Rescuers may also find performing certain activities difficult, as the person with disabilities is unable to move or position in certain ways. The rescuer must take the disability into consideration when working with the victim, and tailor the steps to their particular situation.

Speech Impairment

When a person has a speech impairment, they will be unable to communicate their pain and symptoms effectively. A rescuer dealing with a person with a speech impairment must be conscious of this limitation, perhaps providing the victim with a pad and pen to answer questions, voice their concerns and express changes in well-being.

Language Issues

Language issues are especially difficult in communicating symptoms, events leading up to the injury/illness, pre-existing conditions and possible allergies. If a bystander is available who can act as a translator for both the rescuer and the victim, that would be ideal, as the rescuer wants to be sure that they are receiving—and communicating—accurate information.

Hearing Impairment

Like speech and language impairments, hearing impairments can negatively affect the rescuer's ability to communicate effectively with the victim. Writing questions and concerns on a pad for the victim to read and write a response may be an effective way to improve communication drastically.

Mental Impairment

Mental impairment in a victim poses a unique set of challenges for the rescuer, as not only is the ability to communicate effectively hampered, but the victim may also act erratically during medical procedures and interventions, even to the point of causing more harm. As with a child, if a caregiver responsible for the victim is present, it would be best to include them, so that they could calm or distract the victim, give clear directives, and assist in getting the victim the medical assistance they require.

Review

How should a rescuer stop bleeding in a victim?

What are the signs of shock in a victim?

Briefly describe each of these wounds:

Puncture

Amputation

Laceration

Avulsion

Impaled Object

Fill out the chart below.

Burn Type	Cause	Treatment
Thermal Burn		
Chemical Burn		
Electrical Burn		
Radiation Burn		

What is TBI? What are the signs/symptoms?

What should a rescuer do for an avulsed tooth?

In assessing a potential stroke victim, describe each step in F.A.S.T.E.R. recognition.

What should a rescuer do if a victim is bitten by a tick? By a snake?

How should a person who has hypothermia be warmed-up?

How should a person be cooled down who has heat exhaustion?

Describe a technique a rescuer can use to effectively communicate with a person with a speech or hearing impairment.

Unit 6—CPR and Cardiac Emergencies

The Professional Rescuer

Any time a victim is unresponsive, unable to breathe, has major bleeding, and/or doesn't have a pulse, the EAP should be activated and advanced medical personnel should be called immediately.

Rescuer Responsibilities

In the case of a medical emergency, the rescuer is responsible to:

- Activate the Emergency Action Plan—which includes notifying Emergency Medical Services (EMS)
- Provide emergency care to the standard of care
- Document/report the incident afterward

Other rescuers responding to the Emergency Action Plan will direct other guests to clear the area, assist the EMS to bring them quickly to the victim, and help retrieve emergency equipment, as is stated in the Emergency Action Plan[1].

The Emergency Medical Services System (EMS)

Emergency Medical Services are called when a medical emergency arises including breathing and cardiac emergencies. It is imperative that the person contacting EMS quickly and clearly describes:

- The exact location of the facility, including the street address
- The type of incident that has occurred
- A callback number where you can be reached
- Additional information concerning quick access, such as which door/entrance to enter, and that someone would be there to meet them

A person should then wait at the entrance for the Emergency Medical Services to arrive and guide them quickly to the victim.

Review

What are the 3 responsibilities of a rescuer?

1—

2—

3—

When calling EMS:

- **Be sure to give _____.**
- **Describe the type of _____ that occurred.**
- **In case they call back leave a _____.**

Performing an Assessment

Initial Assessment

Assessing the Scene

- The first thing the rescuer will do when he comes to a scene is to make sure the scene is safe. If the scene is not safe, the rescuer should call 911[2].
- The rescuer should put on his non-latex gloves (PPE). The gloves protect both the rescuer and the victim.
- Then rescuer can identify the mechanism of injury or nature of the illness (MOI, NOI) as well as whether there are other victims involved, and if there are other victims involved, how many were involved?
- Are there any immediate life-threatening injuries such as major bleeding?
- The rescuer should also consider additional resources such as calling an ambulance for additional assistance.
- Eyewitnesses can also be helpful in describing what transpired so that the rescuer can quickly and effectively determine the best course of action[3].

Assessing the Victim(s)

The rescuer will want to assess the victim for responsiveness/consciousness, breathing and pulse.

- The rescuer should check responsiveness by tapping and shouting to the victim “Are you okay?” If the victim is able to respond, then they are responsive. If the victim does not respond to tapping and shouting, "Are you okay?” then they are said to be unresponsive. If the victim is an infant the rescuer should tap and tickle the foot. If the infant cries or kicks, they are responsive.
- Agonal breathing can sound like gasping or snorting. It is NOT 'normal' breathing.
- If the victim is unresponsive, then the rescuer should point and tell a bystander to call 911, get an AED, and report back to the rescuer.

- After the rescuer has someone call 911, the rescuer should place the head in the correct position, if the victim is suspected of having a head, neck or back injury, then the rescuer will do a modified jaw thrust.

Head position for:

1. Adult = Tilt head back
2. Child = Tilt head to slightly past neutral position
3. Infant = Neutral position

- After placing the head in the correct position, the rescuer should Look, Listen and Feel for 5-10 seconds. The rescuer should Look at the victim's chest to see if it goes up and down, Listen for breathing by putting his ears right above the victim's mouth, and Feel for a pulse. For an adult the rescuer should feel by the carotid artery and for the infant by the brachial artery.
- If the victim has no pulse, the rescuer should start CPR.
- If the victim has a pulse but is not breathing, the rescuer should start ventilations.

The Nature of the Emergency

The nature of the emergency will depend upon the rescuer's initial assessment.

- If the victim is unresponsive, the EAP (Emergency Action Plan) should be activated immediately, and an AED retrieved.
- If the victim is not breathing but has a pulse, rescue breathing must be initiated immediately.
- If the victim does not have a pulse, the rescuer will begin CPR right away.

Time is critical, and every second counts when a victim has a breathing and/or cardiac emergency, so quick action is very important[4].

Recognizing Cardiac Arrest

Cardiac arrest is a sudden, unexpected loss of heart function (pulse), breathing, and consciousness. Once the heart stops beating, the blood stops circulating through the body, and the oxygen supply is cut off to the brain and other organs. The signs of cardiac arrest are unresponsiveness and cessation of normal breathing (the victim may still gasp for air in cardiac arrest). Since the victim also does not have a pulse, CPR and rescue breathing must be started immediately[5].

Summoning Advanced Medical Personnel for Life-Threatening Conditions

Any time a victim is unresponsive, unable to breathe and/or doesn't have a pulse, the EAP should be activated and advanced medical personnel should be called immediately[6].
Additionally, the following medical conditions require advanced medical care:

- the victim is experiencing a seizure, breathing problems, chest pain or a stroke
- the victim has severe external bleeding, is vomiting blood or has a severe burn
- the victim has suspected poisoning, or a suspected or obvious injury to the head, neck or spine
- the victim is unconscious, confused or in an altered state

Moving a Victim

If an emergency occurs in the water, then the rescuer must remove the victim immediately using the appropriate rescue. If the victim is on land, then it's not ideal to move the victim. Sometimes the rescuer has to move a victim due to the scene not being safe, or to get into a better position for doing better CPR. When moving a victim, always try to get assistance from another rescuer or a bystander. If the victim has suffered a head, neck or back injury, in such cases, movement would be detrimental to the victim, so they must be kept aligned during the movement.
If a victim has suffered a spinal injury, the following physical indications may be observed:

1. There may be blood or yellow fluids coming out of the ears.
2. The rescuer may observe a condition known as "Raccoon eyes," which refers to bruises around both eyes. These bruises look like the dark patches around the eyes that are characteristic of raccoons. Raccoon eyes is a signal there is a serious condition related to a skull or brain injury.
3. A condition known as "Battle's sign," also known as mastoid ecchymosis, is an indication of a fracture of the middle cranial fossa of the skull. Battle's sign appears as a large bruise that extends across the entire backside of the victim's ear, and it may also extend out to the upper part of the victim's neck.
4. Impaired movement of the victim is an indicator of a head, neck or back injury.

Certainly, all victims should be moved at least 6 feet from the water's edge for easy access and so electronic equipment (such as an AED) can be safely used.

Using the Shoulder Pull

When moving a victim, the safest method is the shoulder pull, because using the shoulder pull supports the victim's head. To move a victim with the shoulder pull:
1. First grasp the victim by their clothing under the shoulders.

2. The rescuer should be sure to keep their arms on both sides of the victim's head.
3. The rescuer should support the victim's head with their arms.
4. Pull the victim while walking backwards, keeping the pull as straight as possible.

Recovery Position

When caring for an unresponsive person who is breathing normally, and in the absence of major trauma such as to the spine or pelvis, placing the person into a recovery position may improve airway mechanics.
To place a victim into the recovery position, follow these steps:

- Kneel alongside the victim, placing the closest arm at a right angle with the victim's body.
- Tuck the victim's other hand under the side of their head, with the back of the hand touching the cheek.
- Bend the victim's farthest knee at a right angle.
- Carefully roll the victim onto their side by pulling on the bent knee. In this position, the top arm should be supporting the victim's head.
- Open the victim's airway by gently tilting the head back and lifting the chin, and be sure that nothing is blocking the airway.

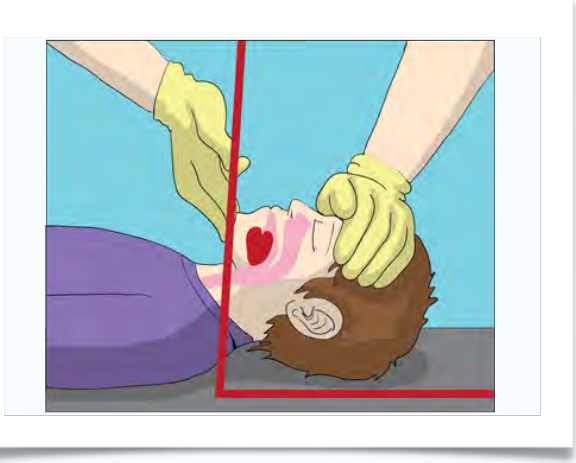
ABC—Monitoring Airway, Breath and Circulation

These are the times a rescuer should check the victim's ABC's:

- During the primary assessment
- After every 2 minutes of CPR or ventilations
- While doing CPR the rescuer sees obvious signs of life
- After moving a victim

When checking the **ABC**'s the rescuer should make sure:

- **Airway:** The airway is clear and unobstructed
- **Breathing:** The victim's chest goes up and down
- **Circulation:** the victim has a pulse



While the rescuer checks the **ABC**'s, they will **Look, Listen** and **Feel** for 5-10 seconds[7]. This is the way the rescuer will check the **ABC**'s:

- The rescuer will open the victim's mouth to open the **Airway**, and tilt the head back. If the victim has a head neck or back injury, the rescuer will do a modified jaw thrust. Then the rescuer will place their ears over the victim's mouth to Listen for breathing.
- The rescuer checks for **Breathing** by looking closely and observing the movements of the chest to make sure it goes up and down.
- **Circulation** is checked by feeling for a pulse. The rescuer places their middle and index fingers on the side of the neck near the carotid artery that's closest to the rescuer. With an infant, the rescuer should check for a pulse on the inside of the upper arm near the brachial artery that's closest to the rescuer.

It is critical that a rescuer has the proper respiratory protection and specialized training to perform a rescue. This is critical both for the safety of the rescuer as well as for the victim in need of assistance.
Additionally, a confined space should be established for such intervention. If the victim cannot be moved, than a separation or barrier must be created between the rescuer/victim and other bystanders. This separation is for the safety of all bystanders, as well as that of the rescuer and victim.

Review

Describe the 3 stages of performing an assessment:

Assessing the Scene	
Assessing the Victim(s)	
The Nature of the Emergency	

What special allowances must a rescuer take when dealing with a suspected head, neck or back injury?

Describe Monitoring the ABC's

A

B

C

Breathing Emergencies

Respiratory Distress/Arrest

If a rescuer has conducted an assessment and discovered that a victim is not breathing but definitely has a pulse, the victim is in respiratory arrest. If the victim has a hard time breathing (e.g., nasal flaring, grunting, wheezing, tripoding) and has a pulse, then the victim is in respiratory distress. A victim may sometimes experience agonal breathing. Agonal breathing can sound like gasping or snorting. It is NOT 'normal' breathing. Respiratory distress or respiratory arrest differs from cardiac arrest in that the victim's respiration has stopped or is labored, yet the victim's heart and cardiac function continues. If the victim is in respiratory distress or respiratory arrest, always call 911 before starting treatment[8].

Respiratory Distress/Arrest Due to Anaphylaxis/Injectable epinephrine pen

A victim may experience difficulty breathing or respiratory distress due to anaphylactic shock, which is a severe allergic reaction which can cause the victim's air passages to swell which will restrict airflow. The signs and symptoms of anaphylactic shock—also known as anaphylaxis, include:

- The victim has difficulty breathing
- There is swelling in the head region, such as the tongue, neck, face or lips
- A victim can experience a skin reaction, such as hives, redness or a rash
- A victim may feel dizzy or even lose consciousness
- Nausea, stomach cramps or vomiting may accompany anaphylaxis
- A victim may appear to go into shock

A rescuer should look at both the signs and symptoms of anaphylaxis as well as the particular situation, including:

- Is the victim wearing a medical tag indicating the allergy?
- Does the victim carry an injectable epinephrine pen for a possible allergic reaction?
- Has the victim been exposed to an allergen?

If a rescuer suspects that a victim is experiencing anaphylactic shock, the rescuer will:

- Summon Emergency Medical Services EMS
- Assist the victim to administer Epinephrine if they are able
- Administer Epinephrine if the victim is unable
- Administer or assist in administering a second dose in 5-10 minutes if the symptoms persist and the EMS has not yet arrived.

Resuscitation Mask

Equipment

A resuscitation mask is used when administering rescue breathing for a victim in respiratory distress/arrest and also when a rescuer does CPR. The purpose of a resuscitation mask is to provide a barrier between the rescuer's mouth and the victim's mouth/nose, so that the rescuer is protected from coming into contact with bodily fluids such as saliva, blood or vomit, as well as the air which a victim will exhale. A resuscitation mask should be with a rescuer at all times in a hip pack or fastened to a rescue tube, so that the rescuer can administer safe and immediate treatment in a life-threatening situation[9].

There are adult, child and infant resuscitation masks. The rescuer should use the appropriately-sized resuscitation mask while resuscitating the victim. If the victim is an infant and the rescuer only has an adult-sized mask, they should turn the mask around so the nose part of the mask is facing the victim's chin.

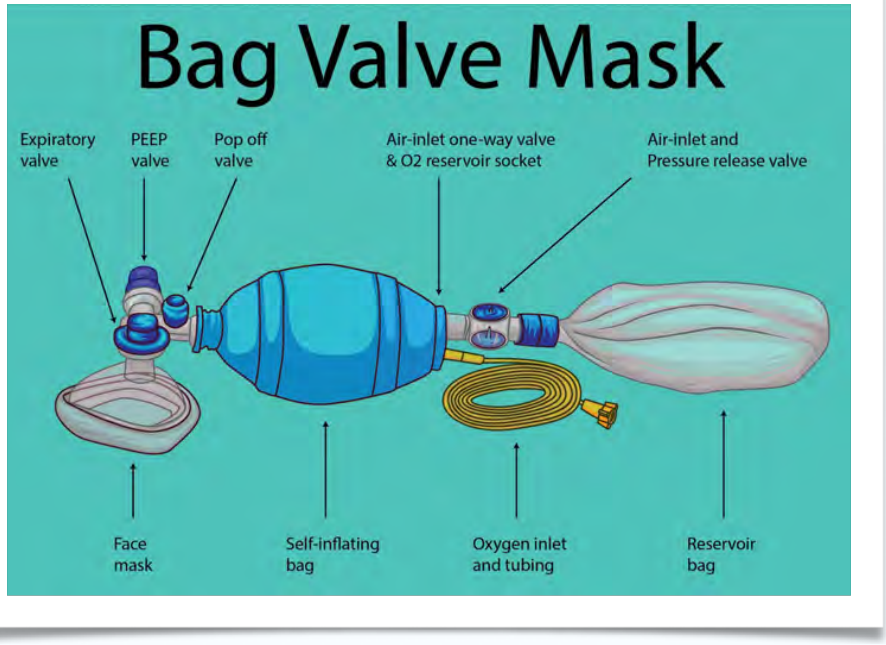
There are different types of resuscitation masks available, some with the mask and valve attached and some requiring the valve to be attached to the mask. A rescuer should become familiar with the resuscitation mask they will be using before an emergency occurs, so that the rescuer can quickly assemble and use the resuscitation mask in a rescue situation[10].

BVM

Equipment

A BVM—or Bag Valve Mask—includes a self-inflating bag and valve. After placing the face mask of the BVM on the victim, the rescuer will use their hand to squeeze the bag and deliver air to the victim. With 2 rescuers, one can hold the face mask securely on the victim to insure a proper seal while the other manually squeezes the bag to deliver air to the victim.

There are adult, child and infant BVM'S. The rescuer should use the appropriately sized BVM while resuscitating the victim. If the victim is an infant and the rescuer only has an adult sized



mask, they should turn the mask around so the nose part of the mask is facing the victim's chin[11].

Technique

The technique for using a BVM will vary depending upon the particular model used. The key points regarding equipment and rescue breathing technique are that:

- Some masks may need to be assembled, so the rescuer will need to attach the one-way valve to the mask.
- Examine it to be sure that it is inflated enough to provide a good seal on the victim's face.

See the steps below for the techniques used for rescue breathing on an adult, child and infant[12].

Rescue Breathing

If a rescuer has conducted an assessment and discovered that a victim is not breathing but definitely has a pulse, the rescuer will administer rescue breathing. The steps are very similar for adults, children and infants, with some variations accounting for the relative sizes of the victims[13].

Rescue Breathing for Adults

To use a resuscitation mask/BVM to administer rescue breathing on an adult, the rescuer will do a “Head Tilt Chin Lift” for a non-spinal victim and a jaw thrust for a victim with a spinal injury.

1. Assemble the mask if needed, and examine it to be sure that it is inflated enough to provide a good seal on the victim's face.
2. Place the mask on the victim’s face, covering both the victim’s mouth and nose.
3. The rescuer will then take both hands, cover the mask while making a seal, and tilt the head back.
4. If the victim has suffered a spinal, head or back injury, do not tilt the head back.
5. Be sure that the mask is sealed to the victim’s face, and then the rescuer will inhale and then breathe into the one-way valve on the resuscitation mask. If a BVM is being used, the second rescuer should squeeze the bag.
6. With an adult victim, the rescuer will give one breath every 5 to 6 seconds, with each breath lasting about 1 second. The rescuer should see the victim’s chest rise with each breath and fall before giving the next breath.

Keep in mind the following:

- If the rescuer does not see the chest rise with each breath, there may be an airway obstruction. The rescuer should check for a possible obstruction and remove one if discovered, then the rescuer should bring the victim's chin to their chest and then re-tilt the victim’s head back into the same position as before and give another breath. If the second breath does not go in, the rescuer should start CPR. After 2 minutes the rescuer should give another 2 breaths.
- Be sure that the seal is intact between the victim’s face and the mask, and that the airway is open with the head tilted back.
- After 2 minutes of rescue breathing, check the victim for breathing and a pulse.

Rescue Breathing for Children

To use a resuscitation mask/BVM to administer rescue breathing on a child, the following steps are used[14]:

1. If possible, use a mask sized for a child.
2. Assemble the mask if needed, and examine it to be sure that it is inflated enough to provide a good seal on the victim's face.
3. Place the mask on the victim’s face, covering both the victim’s mouth and nose.
4. The rescuer will then take both hands, cover the mask while making a seal, and tilt the head back.
5. If the victim has suffered a spinal, head or back injury, do not tilt the head back.
6. Be sure that the mask is sealed to the victim’s face, and then the rescuer will inhale and then breathe into the one-way valve on the resuscitation mask. If a BVM is being used, the second rescuer should squeeze the bag.

7. With a child, the rescuer will give one breath every 3 seconds, with each breath lasting about 1 second. The rescuer should see the victim's chest rise with each breath and fall before giving the next breath.

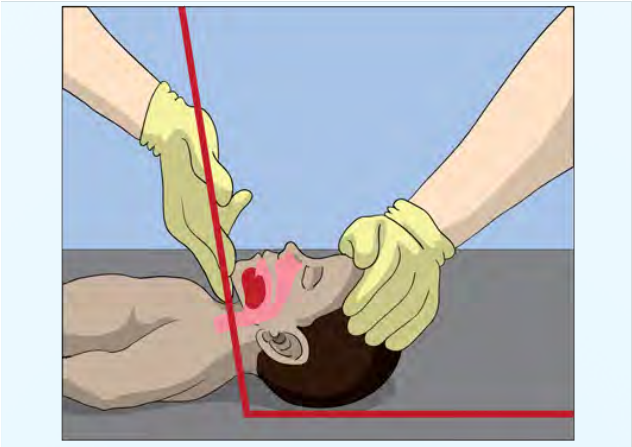
Keep in mind the following:

- If the rescuer does not see the chest rise with each breath, there may be an airway obstruction. The rescuer should check for a possible obstruction and remove one if discovered, then the rescuer should bring the victim's chin to their chest and then re-tilt the victim's head back into the same position as before and give another breath. If the second breath does not go in, the rescuer should start CPR. After 2 minutes the rescuer should give another 2 breaths.
- Be sure that the seal is intact between the victim's face and the mask, and that the airway is open with the head tilted back.
- After 2 minutes of rescue breathing, check the victim for breathing and pulse.

Rescue Breathing for Infants

To use a resuscitation mask/BVM to administer rescue breathing on an infant, the following steps are used[15]:

1. Use a size specifically for an infant. If the rescuer does not have an infant mask, he/she can take an adult mask, turn it around and put it on the victim's face
2. Assemble the mask if needed, and examine it to be sure that it is inflated enough to place the mask on the victim's face, covering both the victim's mouth and nose.
3. The rescuer will then take both hands, cover the mask while making a seal, and put the head in a neutral position.
4. If the victim has suffered a spinal, head or back injury, do not move the head.
5. Be sure that the mask is sealed to the victim's face, and then the rescuer will inhale and then breathe into the one-way valve on the resuscitation mask. If a BVM is being used, the second rescuer should squeeze the bag.
6. With an infant, the rescuer will give one breath every 3 seconds, with each breath lasting about 1 second. The rescuer should see the victim's chest rise with each breath and fall before giving the next breath.



Keep in mind the following:

- If the rescuer does not see the chest rise with each breath, there may be an airway obstruction. The

rescuer should check for a possible obstruction and remove one if discovered, then the rescuer should bring the victim's chin to their chest and then re-tilt the victim's head back into the same position as before and give another breath. If the second breath does not go in, the rescuer should start CPR. After 2 minutes the rescuer should give another 2 breaths.

- Be sure that the seal is intact between the victim's face and the mask, and that the airway is open with the head tilted back.
- After 2 minutes of rescue breathing, check the victim for breathing and pulse.

Special Situations

Air in Stomach

Air can be pushed into a victim's stomach during rescue breathing if the air goes down the victim's esophagus instead of the victim's trachea. This sometimes occurs if too much air is delivered during rescue breathing.

- When performing rescue breathing on a victim, the rescuer must be sure to breath in naturally and exhale a regular breath into the BVM for the victim. Do not give huge breaths to the victim, but instead, natural breaths.
- With an adult victim, the rescuer will give one breath every 5 to 6 seconds, with each breath lasting about 1 second, and with a child or infant, the rescuer will give one breath every 3 seconds, with each breath lasting about 1 second.
- The rescuer should see the victim's chest rise with each breath and fall before giving the next breath.
- If the rescuer should observe gastric distention in the victim caused by air in the stomach, turn the victim on their side and compress the stomach gently to expel the air which is bloating the stomach.
- Do not turn a victim who has suffered a spinal, head or back injury on their side.

Vomiting

Vomiting often occurs in a rescue situation, as the victim may have swallowed water in their distress[16].

- If the victim should begin vomiting, roll the victim on their side and then clear the victim's mouth with a gloved hand before continuing rescue breathing.
- If the victim has suffered a spinal, head or back injury, do not turn the victim on their side.
- If a manual suction device is available, it can be used to quickly and safely suction a victim's mouth of vomit.

Drowning

By definition of The World Health Organization (WHO), **"**Drowning is the process of experiencing respiratory impairment from submersion/immersion in liquid." A victim who has experienced drowning resulting in respiratory impairment will require rescue breathing immediately to restore respiratory function. In the case of a drowning victim, when the victim is removed from the water, the rescuer should do the following:

- Open the victim's airway
- Check to see if the victim is breathing
- If the victim is not breathing, the rescuer should give 2 rescue breaths to make the chest rise
- Check the victim's pulse

If after the 2 rescue breaths a pulse is not felt, the rescuer should begin chest compressions and ventilations according to the guidelines outlined in this chapter.
If the victim is out of the water, has no pulse, is unresponsive and is not breathing after 2 rescue breaths, if an AED is accessible, it should be attached to attempt defibrillation. Be sure to dry the chest area before applying an AED to attempt defibrillation. [17].

Dentures

If the victim is wearing dentures, it is best to keep the dentures in place so that the best seal can be made with the BVM and resuscitation mask and the victim's face. Only remove the dentures should they become a problem[18].

Injury of the Head/Neck/Chest/Back

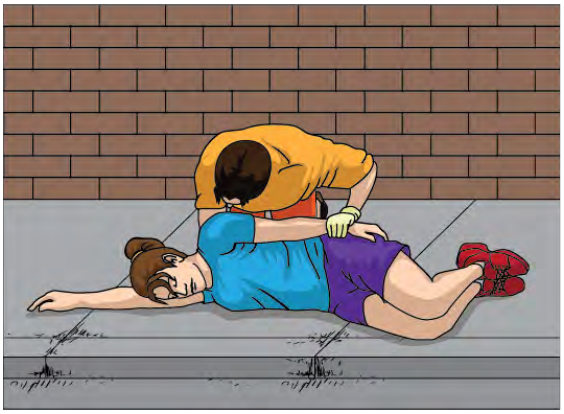
When there is a potential head, neck or back injury, the rescuer must take care to preserve in-line alignment of the head-spine[19]. When such a potential occurs, remember that:

- The jaw-thrust method should be used in rescue breathing, so that the rescuer doesn't need to tilt the victim's head back to produce and open airway for rescue breathing.
- If the victim begins to vomit, it would be best to use a manual suction so that the victim can remain stabilized with in-line alignment of the head and spine.
- The H.A.I.N.E.S Position (see below) was developed especially for victims with a suspected head, neck or back injury.

H.A.I.N.E.S. Position

HAINES is an acronym for High Arm IN Endangered Spine. This position was developed by John Haines in 1989, and has been clinically proven to reduce lateral cervical flexion (sideways movement of the head and neck).
The modified H.A.I.N.E.S. position differs in that:

- The arm closest to the ground is fully outstretched and lies under the head
- Both legs are flexed at the hip and the knee resulting in one lying on top of the other.



The modified HAINES position results in a more neutral position of the spine making it preferable to the lateral recovery position in the management of patients in whom cervical spine injury may have occurred[20].

Mask to Nose/Mask to Stoma

In some cases, it is preferable to perform mask-to-nose or mask-to-stoma rescue breathing. **Mask to Nose** rescue breathing is conducted when an airtight seal of the mouth to the mask cannot be achieved[21]. This can occur due to:

- Lockjaw, when the patient's mouth cannot be opened.
- Extensive facial or dental injuries.

If the resuscitation mask/BVM can seal well to face covering both the mouth and nose of the victim, the air will proceed through the victim's nose.
However, if a facial injury prevents a proper seal, do the following:

1. Put the mask over just the victim's nose to create a tight seal against the victim's skin with the mask
2. Watch to be sure that the victim's chest rises and falls with each breath.

If the rescuer sees a stoma—or tube inserted in the victim's throat to help him/her to breathe—the rescuer will proceed with **Mask to Stoma** rescue breathing. If the victim has had surgery to remove part of the windpipe, they will breathe through an opening in the front of the neck called a stoma.
To perform mask to stoma rescue breathing, the rescuer will:

1. Make an airtight seal with a round child/infant sized resuscitation mask/BVM around the stoma
2. Do not tilt the head back.
3. Watch to be sure that the victim's chest rises and falls with each breath.

Airway Obstruction and Choking

A victim may have an airway obstruction due to the presence of a foreign object—such as food or gum—in the throat. In airway obstruction in a conscious victim (choking), the victim is unable to speak or cry. If the object does not dislodge from the victim's throat, the victim will start to turn blue[22].
Adult and child choking: The universal sign of an adult and child choking is when they are clutching their throat and not breathing.
Infant choking: A baby who is choking will be unable to cry, cough, make any noise or breathe.

Assisting an Adult, Child and Infant

If the victim is coughing, the rescuer should identify themselves and encourage the victim to continue to cough. Since the airway is only partly blocked, the victim will usually be able to speak, cry, cough or breathe. The victims are usually able to clear the blockage themselves.

If the victim cannot cough, breath or the victim's cough is ineffective, then the rescuer should activate the EAP, have someone call 911, get consent and begin administering abdominal thrusts and back blows.

Conscious Choking—Assisting an Adult or Child

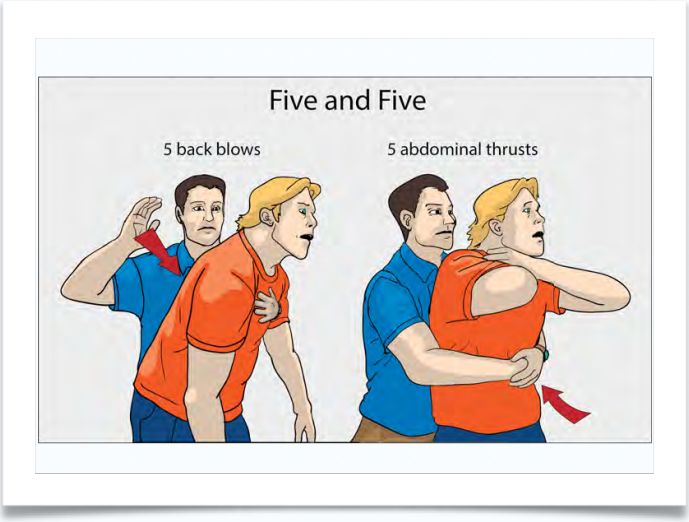
In order to clear an airway obstruction, abdominal thrusts and back blows will be utilized[23]. The steps for a conscious adult or child are as follows:

Give 5 back blows.

1. Stand behind the adult victim who is choking. With a child, kneel down behind the child. Place one arm across the person's chest for support. Bend the person over at the waist so that the upper body is parallel with the ground.
2. Deliver five separate back blows between the person's shoulder blades with the heel of your hand.

Give 5 abdominal thrusts.

1. Stand behind the victim with arms around the victim’s abdomen, placing your fist against the victim’s stomach just above the navel with the thumb facing inward.



2. Grab your fist with your other hand, and with both hands together press against the victim's abdomen with quick, down and upward thrusts in a "J" motion.

Alternate between 5 back blows and 5 abdominal thrusts until the blockage is dislodged or the victim goes unconscious.

If the victim is pregnant or obese and the rescuer is not able to reach their hands around the victim, the rescuer will use a modified version of the rescue.

The rescuer will do the usual five back blows. When performing the abdominal thrusts, the rescuer should position their hands a little bit higher than normal place while doing abdominal thrusts. The knuckle of the thumb should be positioned and pressed at the base of the breastbone, just above the joining of the lowest ribs.

Conscious Choking—Assisting an Infant

With an infant, the steps are as follows:

1. Lay the infant face down on your forearm with your fingers cradling around the chin and cheek area. Make sure not to block the victim's airway. Then rest your forearm on your upper leg. Be sure to support the infant's head and neck in this position. Be sure that the infant's head is lower than the body.
2. Using the heel of your hand, administer 5 back blows to the infant between the shoulder blades.

3. Roll the infant face up onto the other arm—being sure to support the head and neck during the roll.
4. Using the fingers, give 5 chest thrusts on the infant's breast bone, between the nipples.

Alternate between 5 back blows and 5 chest thrusts until the blockage is dislodged or the victim goes unconscious[24].

Unconscious Choking—Assisting an Adult, Child and Infant

If the victim (Adult, Child or Infant) is unconscious—or becomes unresponsive while administering abdominal thrusts and back blows, the rescuer must lower the victim to the ground and begin CPR immediately[25].

1. Perform 30 chest compressions at a rate of 100-120 per minute.
2. Open the airway and check for a foreign object.
3. Remove the foreign object with a gloved-hand finger sweep, or by scooping it out with the fingers. With an infant, be sure to pluck—not sweep—out the object. The rescuer should not insert their fingers into the victim's mouth if they don't see anything.
4. Follow with 2 ventilations.
5. If the rescuer does not see the victim's chest rise when giving ventilations, the rescuer should reposition the airway by bringing the victim's chin to the chest and tilt the head back, this should resolve the issue. If the airway is still obstructed, follow with 30 chest compressions.
6. Each time the airway is opened for ventilations, be sure to check for a foreign object.

Emergency Oxygen

When a person doesn't receive enough oxygen due to a breathing or cardiac emergency, the heart and brain will suffer from the depleted oxygen supply, and the result could be cardiac arrest and possibly death. Even if a victim is conscious and breathing lightly, they may not be getting enough oxygen into their system to maintain a healthy supply. In such cases, emergency oxygen may be needed.

Also, if a person is breathing very rapidly or not enough, emergency oxygen could be administered. For example:

- An infant who is breathing fewer than 25 breaths per minute or more than 50 breaths per minute could benefit from emergency oxygen.
- A child who is breathing fewer than 15 breaths per minute or more than 30 breaths per minute could benefit from emergency oxygen.
- An adult who is breathing fewer than 12 breaths per minute or more than 20 breaths per minute could benefit from emergency oxygen.

-

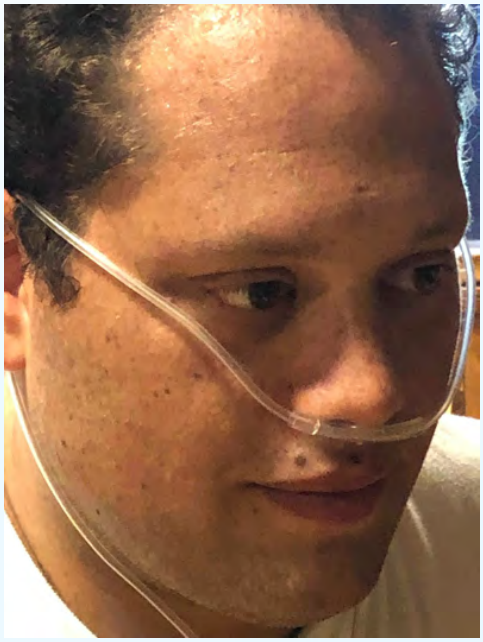
Emergency oxygen is available without a prescription at a drugstore or medical supply store. It is important to use precautions when administering emergency oxygen, including:

- Do not use oxygen near flames or sparks—including cigarettes
- Do not put an oxygen mask over a person's face until the oxygen is flowing
- Do not dog or roll cylinders
- Be sure to read the packaging as to safe positioning of emergency oxygen tanks, as well as storage and transportation
- Checking for cylinder leaks, bulges, or broken valves.
- Checking for rust or corrosion anywhere on a cylinder device.

Emergency oxygen may be given to a person in several different ways.

- A BVM or resuscitation mask may be used to deliver emergency oxygen, whether or not the victim is breathing.

- A nasal cannula is a tube delivering emergency oxygen directly into a victim's nose.



- A non-rebreather mask is a mask with an attached oxygen reservoir bag in which the victim inhales oxygen from the bag, and exhaled air escapes through the side of the mask.

- With an infant or child who is frightened of wearing a mask, the rescuer can hold the mask about 2 inches from the face and wave it slowly from side to side so that the infant/child will inhale the oxygen

Using an Oxygen System

Assembling the System

The oxygen cylinder must be checked before use. Make sure it is labeled “U.S.P.” and marked with a yellow diamond that reads “Oxygen.”

- While clearing the valve, remove its protective covering, remove and save the O-ring gasket, if needed, and open the valve away from you and others for 1 second to clear it of debris.
- To attach the regulator, first check to see that the pin matches an oxygen cylinder, secure the regulator by placing the two metal prongs into the valve, then tighten the screw by hand until the regulator is in place securely.
- Open the cylinder counterclockwise one full turn and check the pressure gauge. Make sure the pressure exceeds 200 psi. If the pressure is lower than 200 psi DO NOT use.
- Attach the plastic tubing between the flowmeter and the delivery device.

Oxygen Tank

Regulator

Administering Emergency Oxygen

Follow the instructions on the oxygen cylinder before use, checking for the correct labels, and making sure the gauges are properly functioning.

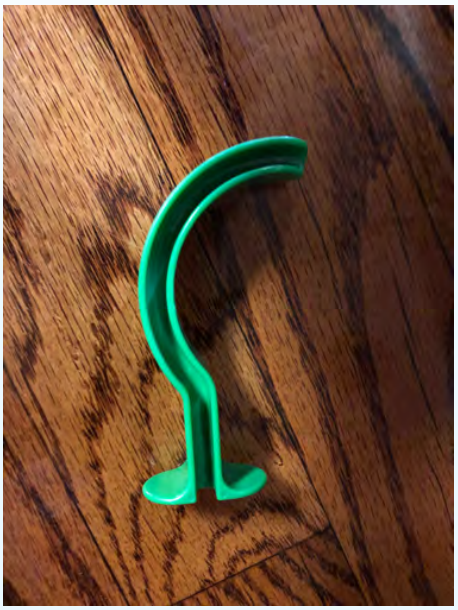
- Turn the flowmeter on and to the desired rate depending on the device being used.
- Listen for a hissing sound and feel for oxygen flow through the device.
- Place the delivery device on the victim and provide desired care.

Airway Devices

The tongue is the most common obstruction to airflow in an unconscious person. Making sure the tongue is clear from the victim's airway is most important. Oropharyngeal airways (OPAs) and nasopharyngeal airways (NPAs) can help keep the airflow clear.

Oropharyngeal Airways (OPAs)

OPAs are used on unconscious and unresponsive victims with no gag reflex only. OPAs are inserted through the mouth, but should not be used if the victim has suffered oral trauma, such as broken teeth. Be sure to use a resuscitation mask or bag-valve-mask (BVM) to ventilate the non-breathing victim before inserting the OPA.



Inserting an OPA

Make sure the victim is completely unresponsive before inserting the OPA. Be sure to use an appropriately sized OPA for the victim being treated by measuring the device from the victim's earlobe to the corner of the mouth. Open the victim's mouth using the cross-finger technique. For adults, grasp the victim's lower jaw and tongue and lift upward, inserting the OPA's curved end along the roof of the mouth. Rotate the OPA 180 degrees as the tip approaches the back of the victim's throat. For children, insert the OPA sideways then rotate it 90 degrees. If the victim gags, remove the device immediately. If the victim vomits, remove and suction the device, ensuring it is cleared out completely of debris. Clean the device thoroughly and reinsert if the victim is still unconscious and does not have a gag reflex.

Nasopharyngeal Airways (NPAs)

NPAs may be used on both a conscious or unconscious victim. NPAs are inserted through the nose and do not cause the victim to gag, unlike the OPAs. Do not use NPAs on victims who have suffered head trauma.

Inserting an NPA

To select the proper NPA size, measure the device from the victim's earlobe to the tip of the nostril, and make sure the diameter of the NPA is smaller than the nostril. Prior to insertion, use a water-soluble lubricant on the device, then insert with the angle toward the center of the nose, advance the NPA straight in, gently, following the floor to the nose. If resistance is felt, do not force, and if you are experiencing problems, try the other nostril.

Suctioning

Suctioning is the process of removing mucus, fluids, or blood from a victim's upper airway. The two suctioning devices are manual and mechanical.

Manual Suctioning Devices

Manual suctioning devices are operated by hand without an energy source. This avoids some complications caused by mechanical units. Before using the device, roll the victim onto one side and open the mouth, clearing out any large debris with a gloved finger. Measure from the victim's earlobe to the corner of the mouth, noting the distance as to prevent inserting the suction tip too deeply. Check to see if the suction is working by placing a finger of the suction tip while squeezing the handle of the device. Insert the suction tip into the back of the mouth and squeeze the handle repeatedly to provide suction to the victim. Apply suction using a sweeping motion as you withdraw the tip. Suction no more than 15 seconds for an adult, 10 seconds for a child, and 5 seconds for an infant.

Mechanical Suctioning Devices

Mechanical suctioning devices are powered electrically and produce a vacuum that is able to suction substances and debris from the throat. Mechanical devices are powered by batteries, so they must be checked for full charge every time before use, o have fully charged batteries

on hand. Roll the victim onto one side and open the mouth, clearing out any large debris with a gloved finger. Measure from the victim's earlobe to the corner of the mouth, noting the distance as to prevent inserting the suction tip too deeply. Follow the manufacturer's instructions on the machine before turning on the machine. Insert the suction tip into the back of the mouth, and withdraw the tip using a sweeping motion. Suction no more than 15 seconds for an adult, 10 seconds for a child, and 5 seconds for an infant.

Review

What are some signs that a victim is in anaphylactic shock and needs the administration of an injectable epinephrine pen?

Fill in the blanks:

- **Before using an injectable epinephrine pen, check the _____ date.**
- **Don't use it if the liquid is _____ .**
- **Remove the _____ before using.**
- **Insert the injectable epinephrine pen in the victim's _____ with the _____ tip.**

If a victim has an airway obstruction, what are the steps a rescuer should take to clear the obstruction?

A BVM is an important part of rescue breathing. Outline its use in rescue breathing.

Steps to use a BVM

How to administer rescue breathing

Signs to watch for when rescue breathing

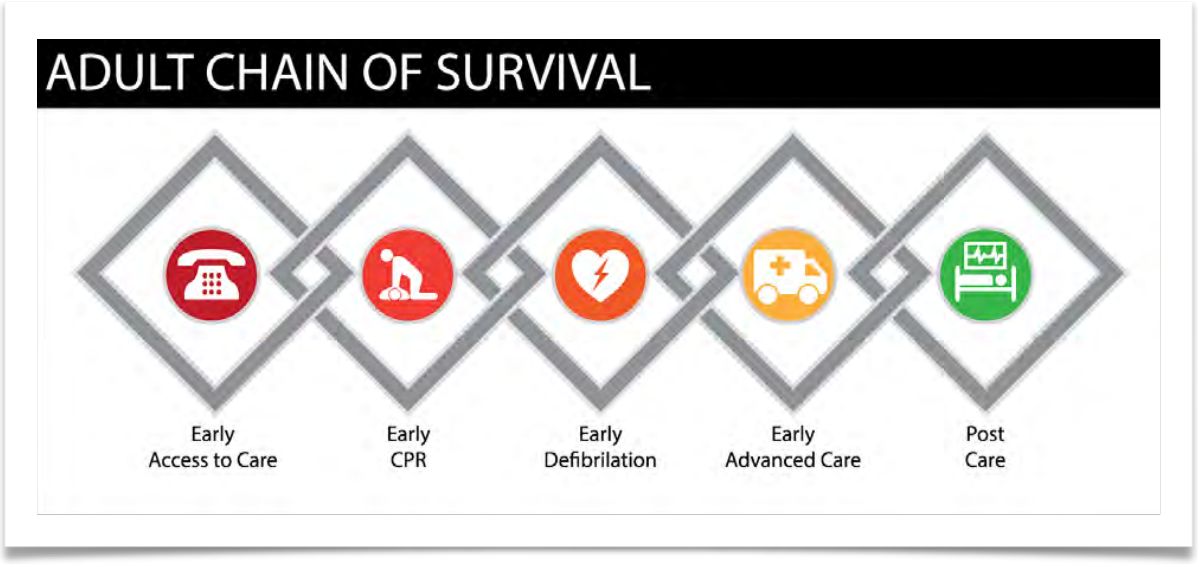
What should the rescuer do about the following situations when rescue breathing?

Air in the victim's stomach	
Vomiting	
Injury of the head, neck or back	
Mask-to-nose/ Mask-to-stoma rescue breathing	
Airway obstruction	

Cardiac Emergencies

Cardiac Chain of Survival

Cardiac Chain of Survival for Adults—CPR

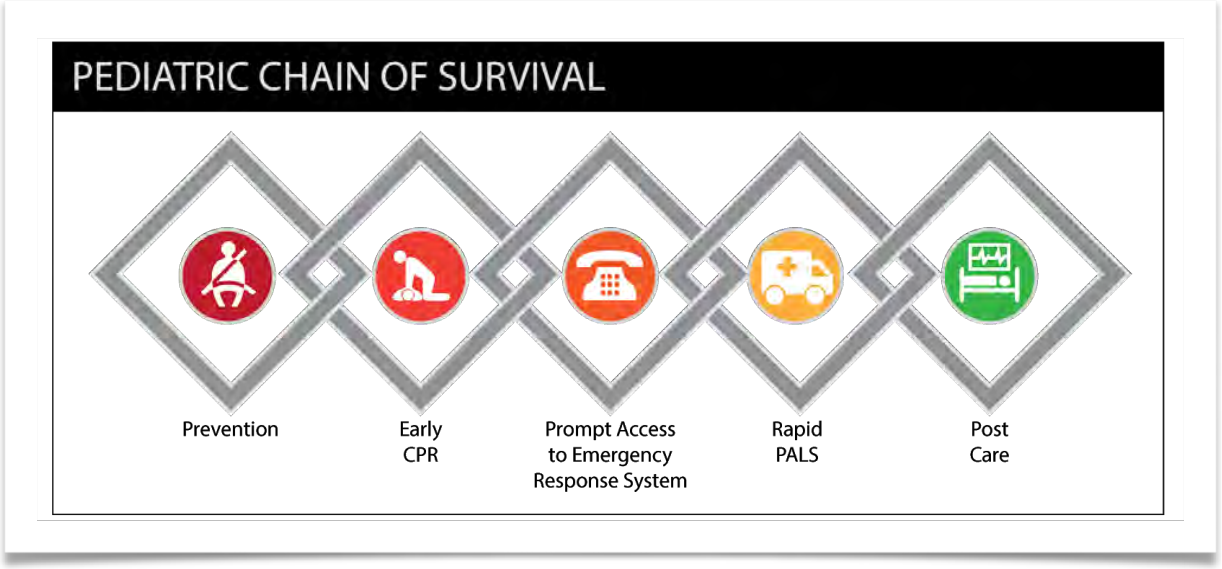


The Cardiac Chain of Survival for adults consists of the five links of care to effectively respond to a cardiac emergency[26]. They are:

1. **Early recognition and activation of EMS—**recognizing the sign of a cardiac emergency, activating the Emergency Action Plan and summoning Emergency Medical Services.
2. **Early CPR**—chest compressions to manually keep the heart pumping and the blood flowing to the brain
3. **Early Defibrillation**—shocking the heart to help to restore heart rhythm and increase the chance of survival
4. **Early Advanced Care**—contacting medical professionals who can continue the necessary care for the cardiac patient, including advanced respiration and medications.
5. **Post Care**—including medical personnel, physical therapists, dietitians and other professionals committed to post-cardiac emergency care.

With a cardiac emergency, every moment counts, from the first recognition of symptoms through summoning EMS, administering CPR, defibrillation and beyond.

Cardiac Chain of Survival for Infants/Pediatric CPR



The Cardiac Chain of Survival for infants (Pediatric Cardiac Chain of Survival) consists of the five links of care to effectively respond to a cardiac emergency[27]. They are:

1. **Injury prevention**—preventing injuries saves lives, as accidents and unintended injuries are the number one killer of children in America.
2. **Early high-quality CPR**—CPR is most effective when given immediately
3. **Activation of the Emergency Response System**—so the trained professionals are notified and on the scene quickly
4. **Early advanced care**—medical professionals who can continue the necessary care for the cardiac patient, including advanced respiration and medications.
5. **Comprehensive post-cardiac arrest care**—including medical personnel, physical therapists, dietitians and other professionals committed to post-cardiac emergency care.

The major difference between the Adult Cardiac Chain of Survival and the Pediatric Cardiac Chain of Survival is that the Pediatric Cardiac Chain of Survival begins with prevention. Injury prevention saves lives, as accidents and unintended injuries are the number one killer of children in America, and are the most common cause of respiratory and cardiac arrest.

Signs and Symptoms of a Heart Attack

The signs and symptoms of a heart attack include:

- Chest pain, which the victim may describe as severe pain, discomfort or pressure, or even a crushing sensation in the chest.
- This chest pain is not relieved by medication, change of position or even rest. If it goes away after a few minutes, it comes back.
- The chest pain could possibly spread up to the victim's neck or jaw, out to the left shoulder or arm, or even down to the stomach and back. Since the heart is located on the left side of the body, the victim will experience left side pain. This type of pain is commonly known as "referred pain".
- Difficulty breathing, including shortness of breath, you may sometimes find the victim to be leaning forward (The tripod position)
- Lightheadedness, dizziness and possibly loss of consciousness
- Profuse sweating, with pale, sweaty skin or even a grey, ashen look to the skin
- Nausea and vomiting
- A feeling of fatigue or even anxiety

The symptoms can vary greatly between men and women, so it is important to be aware of all possible symptoms[28].

Male Signs of a Heart Attack

Men are more likely to experience pain and pressure as common signs of a heart attack, with the pain radiating throughout the upper body. In some men, this chest pain is confused for severe heartburn. If a man is feeling any of the signs of heart attack, he should seek medical care immediately[29].

- Chest pain/pressure—it could feel like "an elephant" is sitting on the chest, or a squeezing sensation that may come and go or remain constant
- Intense pain or discomfort in the upper body, including arms, left shoulder, back, neck, jaw, or stomach
- Experiencing a rapid or irregular heartbeat
- A feeling of stomach discomfort that feels like indigestion
- Shortness of breath
- Dizziness or lightheadedness
- Breaking out in a cold sweat

Female Signs of a Heart Attack

Women often experience heart-attack symptoms in a very different way, and are thus less likely than men to seek immediate medical assistance. In fact, many women experience no chest pain at all when having a heart attack, so it is vital to be aware of the other symptoms which a woman may experience[30]. These symptoms include:

- A feeling of nausea or indigestion
- Weakness and fatigue
- Pain in the arm (generally the left arm), back, neck, throat or shoulder blades
- Feeling lightheaded
- Sweating
- Shortness of breath
- Unusual fatigue lasting for several days or sudden severe fatigue
- Sleep disturbances in the middle of the night
- A feeling of anxiety
- Indigestion or gas-like pain
- Pressure or pain in the center of her chest, which may spread to her arm

Cardiac Arrest

When a person experiences cardiac arrest, the heart stops beating and blood is no longer pumping through the body. If breathing and heart function are not restored, the brain will be damaged, organs will shut down[31]. The signs of cardiac arrest include:

- The victim may suddenly collapse and become unresponsive.
- There may be abnormal breathing or no breathing at all.
- The victim will not have a pulse.

Seconds count when a victim is in cardiac arrest.

When to Start CPR

The following are the times a rescuer should start CPR[32]:

1. Victim has no pulse
2. Victim was choking and went unconscious
3. Victim has agonal breathing. Agonal breathing can sound like gasping, snorting. It is NOT 'normal' breathing.
4. Victim is unconscious, has a pulse or doesn't have a pulse. The rescuer gives a ventilation (rescue breath) to this victim. If the chest does not rise, the rescuer re-tilts the head. If the ventilation still did not go in, then the rescuer starts CPR.

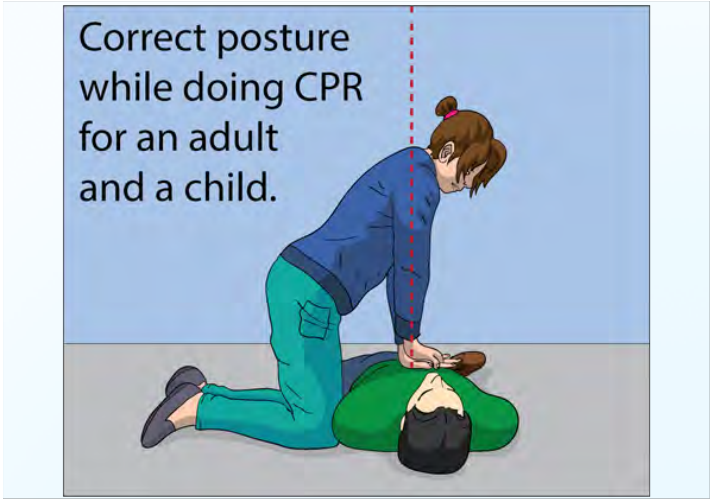
CPR Treatment Protocols

A victim who is in cardiac arrest requires immediate CPR. CPR—or Cardiopulmonary resuscitation—is a lifesaving technique where a rescuer will use chest compressions to keep the victim's heart beating and blood circulating through the body. The techniques are similar for different ages, as well as for when there are one or two rescuers present. Some things that are the same for all include:

- The victim should be on a firm, flat surface so that the chest compressions are most effective.
- The victim's chest is exposed so that the rescuer has proper hand placement.
- When the rescuer does CPR, he must push hard and fast on the victim's chest and allow the chest to fully recoil between compressions to allow the blood flow back into the heart.
- The compressions must continue uninterrupted.
- The rate of compressions should be between 100 and 120 compressions per minute.

1-Person CPR for Adults

1. The rescuer will kneel next to the victim, who is on their back.
2. The rescuer will place their two hands—one on top of the other and interlock their fingers—on the victim's chest.
3. The hand position for administering CPR on an adult is with the heel of one hand in the center of the chest on the lower half of the sternum (breastbone), with the other hand on top.
4. The rescuer's shoulder should be aligned above the wrist.
5. The rescuer will compress the chest 2-2.4 inches on each chest compression.
6. The rescuer will perform 30 chest compressions at the rate of 100 and 120 compressions per minute, followed by 2 ventilations.
7. Each ventilation will be about 1 second—until the chest is seen to begin to rise.
8. When giving each ventilation, the rescuer should make sure the victim's head is tilted all the way back.
9. The cycles will continue—30 chest compressions followed by 2 ventilations—until EMS arrives or until an AED is available and ready to use[33].



The rescuer will place their two hands—one on top of the other and interlock their fingers—on the victim’s chest.

The rescuer will perform 30 chest compressions at the rate of 100 and 120 compressions per minute

The chest compressions will be followed by 2 ventilations. Each ventilation will be about 1 second —until the chest is seen to begin to rise.

When giving each ventilation, the rescuer should make sure the victim's head is tilted all the way back.

1-Person CPR for Children

1. The rescuer will kneel next to the victim, who is on their back.
2. The rescuer will place their two hands—one on top of the other and interlock their fingers—on the victim's chest.
3. The hand position for administering CPR on a child is with the heel of one hand in the center of the chest on the lower half of the sternum (breastbone), with the other hand on top.
4. The rescuer's shoulder should be aligned above the wrist.
5. The rescuer will compress the chest about 2 inches on each chest compression.
6. The rescuer will perform 30 chest compressions at the rate of 100 and 120 compressions per minute, followed by 2 ventilations.
7. Each ventilation will be about 1 second—until the chest is seen to begin to rise.
8. When giving each ventilation, the rescuer should make sure the victim's head is tilted all the way back.
9. The cycles will continue—30 chest compressions followed by 2 ventilations—until EMS arrives or until an AED is available and ready to use[34].

1-Person CPR for Infants

1. The rescuer will kneel next to the victim, who is on their back.
2. The rescuer will place 2 fingers in the center of the victim's chest while the other hand on the victim's head. The rescuer will also tilt the victim's head into a neutral position.
3. The rescuers 2 fingers should be placed just below the nipple line.
4. The rescuer will compress the chest 1.5 inches on each chest compression. While the rescuer does CPR, the rescuer's other hand will be on the victim's forehead keeping the head in a neutral position.

5. The rescuer will perform 30 chest compressions at the rate of 100 and 120 compressions per minute, followed by 2 ventilations.
6. Each ventilation will be about 1 second—until the chest is seen to begin to rise.
7. The cycles will continue—30 chest compressions followed by 2 ventilations—until EMS arrives or until an AED is available and ready to use[35].

	
Tickling the foot on the infant to check for responsiveness	1 hand on the head and 1 hand on the chest while doing 1-person infant CPR
	
Move the infant's head into the neutral position	Give a breath lasting no more than 1 second

Two-Rescuer CPR

If a second rescuer arrives while CPR is in progress, the second rescuer should confirm first that EMS has been summoned and an AED retrieved. If EMS has already been called and an AED is on route (or unavailable), then the second rescuer should assist the first rescuer in two-rescuer CPR.
In two-rescuer CPR, one rescuer will give the chest compressions while the other rescuer gives the ventilations. The rescuers should change positions every 5 cycles or every 2 minutes to prevent rescuer fatigue, but be sure that the change of positions is accomplished within seconds[36].

Two-Rescuer CPR for Adults

1. The rescuers will kneel next to the victim, who is on their back. One will be at chest level, and the other at the victim's head.
2. The first rescuer will place their two hands—one on top of the other—on the victim's chest.
3. The hand position for administering CPR on an adult is with the heel of one hand in the center of the chest on the lower half of the sternum (breastbone), with the other hand on top.
4. The rescuer's shoulder should be aligned above the wrist.
5. The rescuer will compress the chest 2-2.4 inches on each chest compression.
6. The rescuer will perform 30 chest compressions at the rate of 100 and 120 compressions per minute, followed by 2 ventilations from the second rescuer.
7. Each ventilation will be about 1 second—until the chest is seen to begin to rise.
8. When giving each ventilation, the rescuer should make sure the victim's head is tilted all the way back.
9. The cycles will continue—30 chest compressions followed by 2 ventilations—until EMS arrives or until an AED is available and ready to use.
10. The rescuers should switch places every 2 minutes or 5 cycles to prevent rescuer fatigue[37].

Two-Rescuer CPR for Children

1. The rescuers will kneel next to the victim, who is on their back. One will be at chest level, and the other at the victim’s head.
2. The first rescuer will place their two hands—one on top of the other—on the victim’s chest.
3. The hand position for administering CPR on a child is with the heel of one hand in the center of the chest on the lower half of the sternum (breastbone), with the other hand on top.
4. The rescuer’s shoulder should be aligned above the wrist.
5. The rescuer will compress the chest about 2 inches on each chest compression. While the first rescuer does CPR, the second rescuer’s hand should be on the victim's forehead keeping the head in a neutral position.
6. The rescuer will perform 15 chest compressions at the rate of 100 and 120 compressions per minute, followed by 2 ventilations from the second rescuer.
7. Each ventilation will be about 1 second—until the chest is seen to begin to rise.
8. When giving each ventilation, the rescuer should make sure the victim's head is tilted all the way back.
9. The cycles will continue—15 chest compressions followed by 2 ventilations—until EMS arrives or until an AED is available and ready to use.
10. The rescuers should switch places every 2 minutes or 5 cycles to prevent rescuer fatigue[38].

Two-Rescuer CPR for Infants

1. The rescuers will kneel next to the victim, who is on their back. One will be at chest level, and the other at the victim’s head. The second rescuer should tilt the victim's head into a neutral position.
2. The first rescuer will place both thumbs in the center of the victim’s chest and their fingers under the victim's back.
3. The 2 thumbs should be placed just below the nipple line.
4. The rescuer will compress the chest about 1 1/2 inches on each chest compression.
5. The rescuer will perform 15 chest compressions at the rate of 100 and 120 compressions per minute, followed by 2 ventilations by the second rescuer.
6. Each ventilation will be about 1 second—until the chest is seen to begin to rise.
7. The cycles will continue—15 chest compressions followed by 2 ventilations—until EMS arrives or until an AED is available and ready to use.
8. The rescuers should switch places every 2 minutes or 5 cycles to prevent rescuer fatigue[39].

When to Stop CPR

These are the 7 times a rescuer may stop CPR[40]:

1. The victim begins to breath on his or her own
2. The scene becomes unsafe to continue
3. The rescuer is too tired to continue CPR
4. Someone trained at the same level of the rescuer or higher arrived on the scene e.g., EMS
5. Someone hands over a DNR (Do Not Resuscitate) form to the rescuer
6. The victim begins to vomit (roll the victim on their side so that the victim does not choke on the vomit)
7. An AED arrived and begins to analyze the victim

Automated External Defibrillator (AED)

The availability of an AED—or automated external defibrillator—has saved thousands of lives by shocking the heart of a victim to help to restore heart rhythm and increase the chance of survival. It is important that rescuers know the location of an AED, and are familiar with its function and use before there is an emergency situation at hand[41].

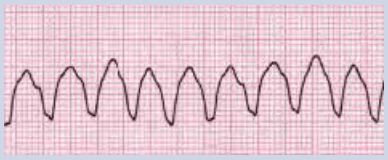
When to use an AED
An AED is used on all victims in cardiac arrest where an AED is available.
There are 4 rhythms of a victim in cardiac arrest (no pulse). Only 2 rhythms will an AED shock.

The 4 rhythms for a person with no pulse are:
Ventricular Tachycardia (V-Tach)—In Ventricular Tachycardia (V-Tach), abnormal electrical signals in the ventricles cause the heart to beat faster than normal, usually 100 or more beats a minute, out of sync with the upper chambers. When that happens, your heart may not be able to pump enough blood to your body and lungs because the chambers are beating so fast or out of sync with each other that they don't have time to fill properly.

Ventricular Fibrillation (V-Fib)—When the two lower chambers beat irregularly and flutter, the patient has Ventricular Fibrillation (V-Fib).

Pulseless Electrical Activity (PEA)—Pulseless Electrical Activity (PEA), refers to cardiac arrest in which the electrocardiogram shows a heart rhythm that should produce a pulse, but does not. Pulseless electrical activity is found initially in about 55% of people in cardiac arrest

Asystole—Asystole is the most serious form of cardiac arrest and is usually irreversible. A cardiac flatline is the state of total cessation of electrical activity from the heart, which means no tissue contraction from the heart muscle and therefore no blood flow to the rest of the body.

		
V-Tach	V-Fib	Asystole

The 2 rhythms an AED will shock are:
Ventricular Tachycardia (V-Tach)
Ventricular Fibrillation (V-Fib)
In both arrhythmias, the heart acts erratically and cannot adequately pump blood to the brain and extremities of the body. If the heart is in any other state, even not beating, the AED will not produce a shock.

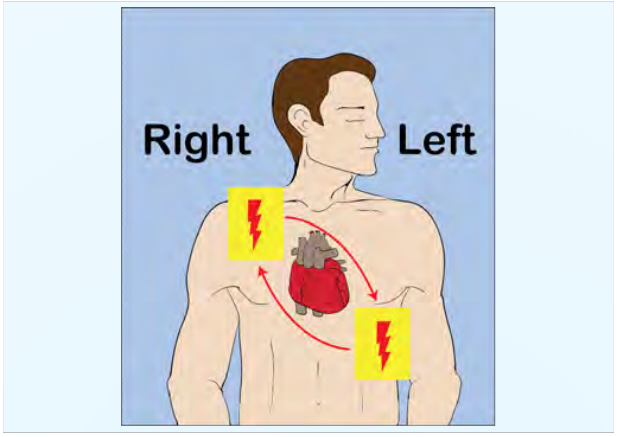
This shock depolarizes the heart muscle and eliminates the fatal arrhythmia by completely stopping the heart altogether. After the heart has stopped, it has the amazing ability to reset its natural pacemaker and begin beating normally again.

Since the rescuer won't know what heart rhythm the victim is in, AED pads are put on all victims in cardiac arrest. The AED will analyze and tell the rescuer if and when to shock the victim.

Using an AED on an Adult

The steps to use an AED are as follows[42]:

1. Turn on the AED—either through the power button or by opening the lid.
2. Once you turn on the device, a voice will begin to deliver instructions to follow.
3. Apply the pads to the victim's chest —connect the cables and place the chest pads on the victim's dry, bare skin.
4. One pad will be placed to the right of



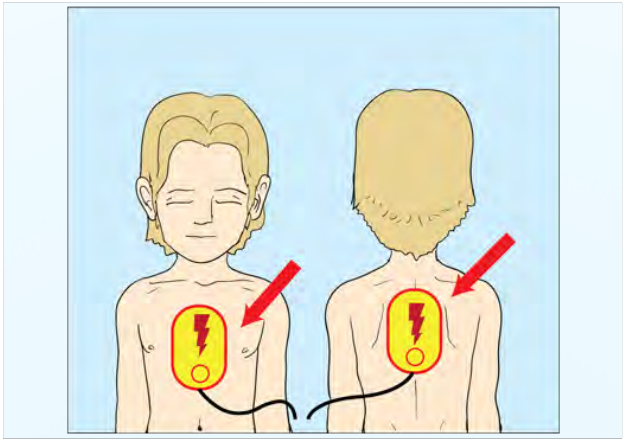
the breastbone—below the collarbone and above the right nipple.

5. The other pad will be places on the left side of the chest, to the left of the nipple and above the lower rib margin.
6. Stand clear and do not touch the victim while the AED performs an analysis of the victim and heart rate.
7. Follow the prompts of the AED—it will indicate when and if to deliver a shock. Stand clear so that no one is touching the AED or victim during the shock.
8. After the shock (or if no shock is advised), immediately perform 2 minutes of CPR on the victim.
9. Allow the AED to reanalyze the heart rhythm, and if indicated, perform a shock on the victim, or if needed continue CPR.
10. Continue this cycle until you notice an obvious sign of life—such as the victim breathing normally—or the arrival of EMS.
11. If a rescuer is doing CPR, they may stop for no more than 2 seconds to attach the AED pads.

Using an AED on a Child/Infant

There are pads specifically designed for use on a child or infant. However, if you do not have such pads, adult-sized pads may be used on the front and back of a child or infant as follows[43]:

1. Turn on the AED—either through the power button or by opening the lid.
2. Once you turn on the device, a voice will begin to deliver instructions to follow.
3. Apply the pads to the victim's skin — connect the cables and place the chest pads on the victim's dry, bare skin.
4. One pad will be placed on the chest
5. The other pad will be placed covering the victim's back
6. Stand clear and do not touch the victim while the AED performs an analysis of the victim and heart rate.



7. Follow the prompts of the AED—it will indicate when and if to deliver a shock. Stand clear so that no one is touching the AED or victim during the shock.
8. After the shock (or if no shock is advised), immediately perform 2 minutes of CPR on the victim.

9. Allow the AED to reanalyze the heart rhythm, and if indicated, perform a shock on the victim, or if needed, continue CPR.
10. Continue this cycle until you notice an obvious sign of life—such as the victim breathing normally—or the arrival of EMS.
11. If a rescuer is doing CPR, they may stop for no more than 2 seconds to attach the AED pads.

Rules of an AED

The rescuer must abide by the following rules for safe and effective use of an AED[44]:

1. If the rescuer pulls the victim out of water, the rescuer must dry the victim
2. If the victim has hair on the chest, the rescuer must shave it off. If there are no shavers accessible, the rescuer should attach the AED pads on the victim and rip it off and then use the second set of pads on the victim
3. If the victim has a medication patch, the rescuer should remove it with gloved hands
4. If the victim has jewelry, the rescuer should make sure not to place the pads on the jewelry and place the pads at least 1 inch away
5. If the victim has a pacemaker, the rescuer should make sure not to place the pads over it
6. If the rescuer only has adult pads but the victim is an infant, he should place on pad on the front and one pad on the back
7. If the pads are too big for the victim the rescuer should place one pad on the front and one pad on the victim's back
8. Always make sure that when the rescuer applies the AED pads neither the victim or the rescuer is touching anything metal
9. No one should be touching the victim when the AED is analyzing or shocking the victim

Maintaining an AED

It is important that an AED be available and maintained for use in an emergency situation[45]. To be sure that the AED is always ready for use, be sure that:

- The AED should be in a visible and unobstructed location
- Check the status / service indicator light
- Inspect it regularly for cracks
- There should always be two sets of sealed AED pads that have not expired
- It is vital to keep accurate records and replace the AED battery as recommended for the particular device
- Be sure to refer to the manufacturer manual for more information and proper maintenance procedures for the particular device

CPR with a BVM

A BVM or bag mask makes it possible for a rescuer to continue giving lifesaving ventilations and provide the victim with needed oxygen. Some important points to remember when performing CPR with a BVM are:

- Using a BVM during CPR is only recommended during 2-rescuer CPR.
- The rescuer must seal the mask to the patient's face.
- Proper sizing and fit are very important.
- A properly sized BVM should cover both the nose and mouth.

CPR/AED with a BVM

Just as with CPR with a BVM, CPR/AED can be performed a BVM or bag mask. Some important points to remember when performing CPR/AED with a BVM are:

- Using a BVM during CPR/AED is only recommended during 2-rescuer CPR.
- The rescuer must seal the mask to the patient's face.
- Proper sizing and fit are very important.
- A properly sized BVM should cover both the nose and mouth.
- All rules for an AED must be followed, and the rescuers must follow the prompts given by the AED unit.

Review

The links in the adult cardiac chain of survival are:

1.

2.

3.

4.

5.

The links in the infant/pediatric cardiac chain of survival are:

1.

2.

3.

4.

5.

Describe the symptoms of a heart attack in a man.

Describe the symptoms of a heart attack in a woman.

Fill out the following chart with the differences between CPR techniques in one-rescuer CPR for adults, children and infants.

	Adult	Child	Infant
Hand Position			
Compression Depth			
Number of Compressions in a Cycle			
Number of Ventilations in a Cycle			

An AED is a lifesaving device, restoring heart rhythm to a victim. Answer the following:

Where should a rescuer place the AED pads on a victim? On an adult?

What is the cycle of CPR/AED for a victim?

What are some ways to maintain an AED for proper use?

Unit 7—Waterfront Lifeguarding

Program Goals and Objectives

The **goal** of the waterfront lifeguarding course material is to instruct potential lifeguards in the particular issues facing lifeguards working in an open water environment.
The **objectives** of the waterfront training program include:

- **Swim and rescue skills**—the lifeguard trainee will learn swim and rescue skills particular to an open water environment, from the proper ways to enter the water through waves or riptides to conducting an underwater search and rescue.
- **First Aid**—including the special needs in waterfront locations, such as dealing with injuries caused by marine life.

In order to pass the class and qualify for certification, the student must receive an 80% or higher on the written exam and pass all of the required skills assessments.

Open water and waterfront swimming areas have their own unique circumstances which can alter the methods used in various rescue techniques. This section includes the areas that merit special consideration to consider in open water situations.

Waterfront Areas

Waterfront areas include any open water non-surf environment such as Lakes, Rivers, Bays, Dams, and Reservoirs. Open water can also include beach areas with active surf, waves and riptides.

Preparation

Prerequisites

In order to qualify to become a lifeguard, there are certain prerequisites to qualify. They are:

- A candidate must be at least 15 years old before the final scheduled session of the course.
- A candidate must be able to swim non-stop 500 yards continuously using the crawl or breaststroke. (Sidestroke and backstroke are not acceptable strokes)

- A candidate must be able to tread water for 5 minutes using only their feet. The candidate's hands must be crossed with hands in armpits during this exercise.
- A candidate must be able to:
  - complete a 25-yard freestyle swim in 20 seconds
  - swim 20 yards
  - surface dive to a depth of 7-10 feet
  - retrieve a 10-pound object from the bottom
  - return to the surface
  - swim 20 yards back to the starting point, while holding the object with both hands
  - exit the pool without using the ladder
  - This must be accomplished within 1 minute and 40 seconds.
- The waterfront lifeguarding course requires 5 total course hours for a pool-certified lifeguard. If the candidate has no prior lifeguard certification, the pool and open water certification course requirement is 31 total course hours.
- Swim 5 yards under water to the first of three rings. Continue to swim under water with the same initial breath andd pickup the remaining two rings that are 5 yards apart. The rescuer may use swimming goggles for this event.

Orientation

Lifeguards in open water situations need to become oriented to the particular issues of their work environment. Unlike a pool setting, open water settings have particular issues that may vary widely between locations, and the lifeguard needs an orientation to the particulars of the open water setting. Such areas to be discussed in orientation include:

- The general location of all staff members/lifeguards.
- The exact location of first aid supplies and AED.
- Placement of rescue equipment, including boats and ropes.
- Location of the facility—in order to be able to relay that information quickly to EMS.
- Particular water issues of the location, including depth of water, rocks and sandbars beneath the surface, the possibility of rip currents, types of marine life, weather patterns, etc.
- Emergency Action Plans.

In-Service Training

It is important for all lifeguards to receive in-service training on location, so that the lifeguard is ready to act in an emergency, and that the lifeguard’s skills and knowledge are maintained[1]. In-service training of 4 hours per month should be coordinated by the facility manager, head lifeguard or another supervisor, and include such topic areas as:

- emergency response drills
- rescue skills
- facility rules

- physical conditioning
- water surveillance
- first aid and CPR

Regular in-service training provides the lifeguard with the opportunity to refresh their skills and work together as a team with the other lifeguards, to be ready to act immediately in the case of an emergency.

Rescue Equipment

There is certain rescue equipment that every facility should have within arm's reach of the lifeguards, whether it is a pool or open water[2].

Lifeguard Stands

Lifeguard stands serve several purposes at a swimming facility, including:

- A set location for a lifeguard, ensuring that there is adequate coverage of the water.
- Aiding the lifeguard in visibility by lifting the lifeguard above the swimmers for a better view.
- A place for patrons to look for a lifeguard.

Lifeguard stands should be off-limits to guests[3].

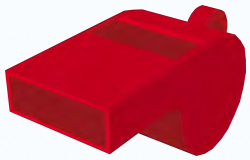
Lifelines

Lifelines are ropes tied to stationary objects or throwing objects—like buoys and life rings—which swimmers can cling to during a rescue. In an open water situation, lifelines may be much longer than in a pool setting[4].

Uniforms

A uniform will be issued to the new lifeguard, which is intended to make the lifeguard easily visible to the guests as well as to other lifeguards. A lifeguard should always be in uniform, and not wear any clothing over their uniform which would cover it from view[5].

Whistle



Each lifeguard will be issued a whistle, which should be kept accessible at all times. There may be certain signals—such as a short toot to catch someone's attention and a longer whistle for an emergency—that the lifeguard should know[6].

Sunglasses

Sunglasses serve both to protect the lifeguard's eyes from the sun as well as to improve the lifeguard's vision by cutting down on glare. Sunglasses should be considered an essential piece of equipment, as the lifeguard's vision will be compromised without them[7].

Binoculars

Binoculars are especially helpful in an open-water location, where the distance from the lifeguard to the swimmers may be quite far. The lifeguard should practice with their binoculars, learning how to focus the binoculars, scan the water, and zero in on possible issues.

Sunscreen

Since lifeguards spend so much time outdoors, sunscreen is essential. A lifeguard cannot wear clothing which would cover their uniform/swimsuit, so a thorough application of sunscreen to all exposed skin and re-application to remain protected during long shifts is critical to the lifeguard's health and well-being[8].

Buoys

A rescue buoy can have an oblong shape with handles for easier gripping around the sides or can be a traditional life ring. Buoys and life rings have a rope attached to them so that they can be thrown to a distressed swimmer, and then once the swimmer is holding onto the buoy or life ring, they can be pulled to safety. They are able to be thrown much farther than a shepherd's crook or rescue tube and are especially helpful in larger bodies of water[9].

Rescue Tube

A rescue tube should be available to the lifeguard at all times, as it is one of the most versatile pieces of lifesaving equipment. Whether the lifeguard is sitting and scanning or standing alongside the water, a rescue tube should be on their body, in hand, with the strap over one shoulder.
A rescue tube can be used in various types of rescues, from non-swimming rescues where the tube is extended from the lifeguard to the distressed swimmer, through rescues at the bottom of the pool.
A lifeguard should have a rescue tube at all times while on duty.

Poles

A shepherd's crook is a long pole with a single or double shepherd's hook on the end. A shepherd's crook can extend much further than a rescue tube, as rescue poles are typically 8-16 feet in length. The lifeguard can safely extend the rescue pole to a swimmer in need, who can hold onto the hook and be pulled to safety.

Rescue Board

A surfboard can be used by a lifeguard in a situation where the distressed swimmer is far away. The lifeguard will use the surfboard to approach the victim quickly, and then upon reaching the victim, the lifeguard will place the victim on top of the surfboard and paddle/kick the victim back to shore[10].

Back Board

A backboard is used to remove a victim from the water who has a suspected head, neck or spinal injury or removing an unconscious victim from the water. A lifeguard must learn to work together with others in keeping the victim's head and neck stabilized and in alignment while securing the victim to the backboard with the head brace and straps for safe transport out of the water. A backboard can also be used without the straps and head restraints in order to remove victims without head/neck/back injuries from the water easily[11].

Mask

A mask is helpful for visibility in murky water, and this extra visibility will be helpful in a search function in open water. It consists of flexible material—like silicon, tempered safety glass and a head strap which is adjustable. Proper fit is very important, so lifeguards should try on and choose a mask which fits properly. To check the fit, a lifeguard should:

- hold the mask against the face without using the head strap
- inhale through the nose, so that the mask suctions to the face
- adjust the head strap
- try wearing the mask in the water to be sure that it fits well with no leaking
- It is important to do this before needing to wear the mask in an emergency situation.

Preventing Fog

Often a mask will fog up, preventing clear vision. To prevent fogging, the lifeguard should spit into the mask, rub the saliva around on the safety glass, and rinse the mask with water before putting it on the face. There are also commercially accessible drops lifeguards can purchase to prevent fogging[12].

If the Mask Fills with Water

If the mask fills with water while submerged, the lifeguard should press a hand against the top of the mask, which will loosen the seal at the bottom of the mask. The lifeguard will then tilt their head forward to allow the water to drain while blowing air out of the nose.

Equalizing Pressure

When swimming deep under the water, the lifeguard may experience an increase in pressure causing pain in the ears and head. The lifeguard will need to equalize the pressure in their ears by squeezing the nose while wearing the mask and blowing out through the nose. The mask material on the nose should be flexible so that the lifeguard can squeeze the nose through the material.

- Using the thumb and pointer on either side of the nose, pinch the nose while keeping the mouth shut.
- Exhale gently through the nose while pinching the nose shut. This should relieve the pressure.

- Repeat as necessary. As the lifeguard ventures deeper in the water, they may need to equalize the pressure again.
- If the lifeguard's mask begins to squeeze the face due to the pressure, the lifeguard should exhale a bit of air through the nose into the mask.
- If the lifeguard is unable to equalize the pressure and relieve the ear pain, they should not go any deeper in the water until the pressure is relieved.
- Sometimes an illness/congestion prevents the lifeguard from equalizing the pressure. In this case, the lifeguard should return to the surface and not risk an ear injury.

Fins

Fins can help a lifeguard to swim much farther and faster in open water than usual, helping the lifeguard to reach a victim quickly in the water. It is important the fins are sized to fit the lifeguard, both in the size of the foot-part of the fin, as well as the length of the fin. Longer fins require stronger legs for use, so the lifeguard must find a pair of fins which work well before needing fins in a rescue situation.

It is generally easier to put wet fins onto wet feet, so the lifeguard should wet both fins and feet before putting them on. When putting on fins, be sure not to pull by the strap, as it can easily break. Instead, push the foot into the fin and then slide up the strap.

Fins work best with a modified flutter kick, and are easiest to use under the water rather than at the water's surface. The lifeguard should practice swimming with the fins on, to get the feeling of the slow kick speed that works best with fins. Wearing fins propels the swimmer much farther and faster, and generally, it is better to swim using only the feet/legs, keeping the hands at the sides or extended out, when wearing fins[13].

Entering the Water Using Mask and Fins

When entering the water with mask and fins, the lifeguard should enter using a stride jump, while one hand pushes the mask toward the face. This prevents the mask from falling off and water entering the mask during the entry.

Snorkel

A snorkel allows a person to breathe underwater just below the surface of the water. A snorkel is very helpful to a lifeguard in the case of a rescue mission, when the lifeguard will wish to remain below the surface of the water for an extended period of time[14].

Watercraft

A boat is useful in open-water situations where there is a large distance between the lifeguard and the victim. With a boat—whether it is a kayak, rowboat or inflatable—the lifeguard can reach the victim much quicker and safer than closing such a distance by hand, and upon reaching the victim, the lifeguard can place the victim into the boat for a rapid return to the shore and safety[15].

Unique Challenges of Open Water/ Waterfront

Environmental Challenges

A lifeguard must be alerted to changes in the environment and act quickly if conditions change or deteriorate such that they are a hazard to swimmers and guests.

Severe Weather Conditions

Storms can move in quickly during summer months, and a pool in no place for a person to be if lightning were to strike. A lifeguard should check the weather conditions—and anticipated forecast—before coming on duty, and if storms have been predicted, be prepared for an evacuation. Sometimes weather conditions change unexpectedly, and the lifeguard must be attuned to the sounds of thunder (as opposed to the sound of a train or other local sounds), the sight of a darkening sky, a drop in temperature or the first drops of rain and act immediately. If the lifeguard or anyone sees lighting while patrons are swimming, the lifeguard must clear the water.

Water Clarity

In an open water scenario, water clarity can be compromised due to silt or sand getting kicked up from swimmers, algae blooms or even seaweed. Depending upon the cause of the issue, the safety of the swimmers—including the clear visibility of the lifeguard—are the most important factors, and if the lifeguard cannot see the swimmers effectively, the water should be cleared.

Additional Issues

In addition to water clarity issues, open water has its own set of possible environmental issues, including:

- The development of riptides.
- Strong waves and undertows.
- Marine creatures—from jellyfish to sharks.
- Boats and jet skis coming in too close to swimmers.
- Underwater hazards invisible from the surface
- Docks and floating piers
- Depth issues, especially in that the depth of the water cannot be clearly marked for the safety of swimmers.
- Environmental conditions such as the changing sun and resulting glare at different times of the day, along with the possibility of rain or fog when outdoors.
- Cold water in outdoor locations.

Lifeguards attending to an open water swim area must learn about the different potential issues of that location, check before coming on duty as to any issues occurring that day, and communicate with other lifeguards about any unusual environmental activity so that others will be informed.

Rescue Techniques

Water Entry

The lifeguard must also take into account waves and rip currents while planning a rescue and water entry, along with whether the lifeguard is beach-side or on a higher edge—such as from a boat or platform[16].

Waves

Breaking waves can cause distress to swimmers, and impede the progress of a lifeguard entering the

water for a rescue. A lifeguard will want to be familiar with the typical wave patterns at their station, and the best technique for entering the water, whether it involves running, diving, or a combination of the two[17].

Rip Currents

Rip currents are formed when a waveless channel is created by the movement of water, which can entrap swimmers and tow them further out to sea. A rip current may appear waveless, but it is a strong jet of water which can suck a person almost 10 feet per second. Lifeguards need to be able to recognize rip currents visually in order to determine whether the water is safe for swimming in the first place. When swimmers are present, the lifeguard should be able to recognize riptides in the water and plan a rescue accordingly, as the victim's position will be moving along with the rip current[18].

Look for the following indications of a rip current:

- Meteorologists can tell when conditions are favorable for rip currents to form, so listen to weather forecasts.
- Look for gaps between the waves—a calm gap where it appears that waves aren't breaking. A small patch of calm water in otherwise choppy water is an indication of a rip current where the water is being pulled quickly out to sea.
- A line of sea foam or seaweed may form which is moving steadily out to sea in a rip current.
- Discoloration of the water near the shore is often an indicator of rip currents, as they pull a large amount of sediment with them. Also, a different color to the water beyond the wave break line can also be an indicator of a rip current at that location.
- A break in the pattern of waves as they crash on the shore.
- Rip currents often form near sandbars, piers and jetties, so be aware in such surroundings.

Beach Side/Zero Entry

- The lifeguard will be running into the water to perform the rescue[19].
- The lifeguard should be sure that their rescue tube is securely fastened before entering the water.
- Begin by running into the water using a high-knee action, so that the feet are not dragging in the waves.
- Once the lifeguard is hip/waist deep in the water, the lifeguard should release their rescue tube to trail behind and begin swimming.
- A head-first surface dive—especially into waves before they break—can be very useful in propelling the lifeguard forward quickly and avoiding the wave breaks.

Higher Edge/Platform of Boat

The lifeguard will be performing one of the other entry methods described earlier—the ease-in entry, the touch-and-go entry, compact-jump entry, the stride-jump entry or the shallow-dive entry[20].

- In open water, the lifeguard must take into account the visibility of the water and the possibility of underwater obstructions which may be invisible from the surface.
- If there is any doubt as to the depth or clarity of the water, a feet-first method—such as the ease-in method or the compact-jump—is preferable to a head-first method.

Approach Strokes

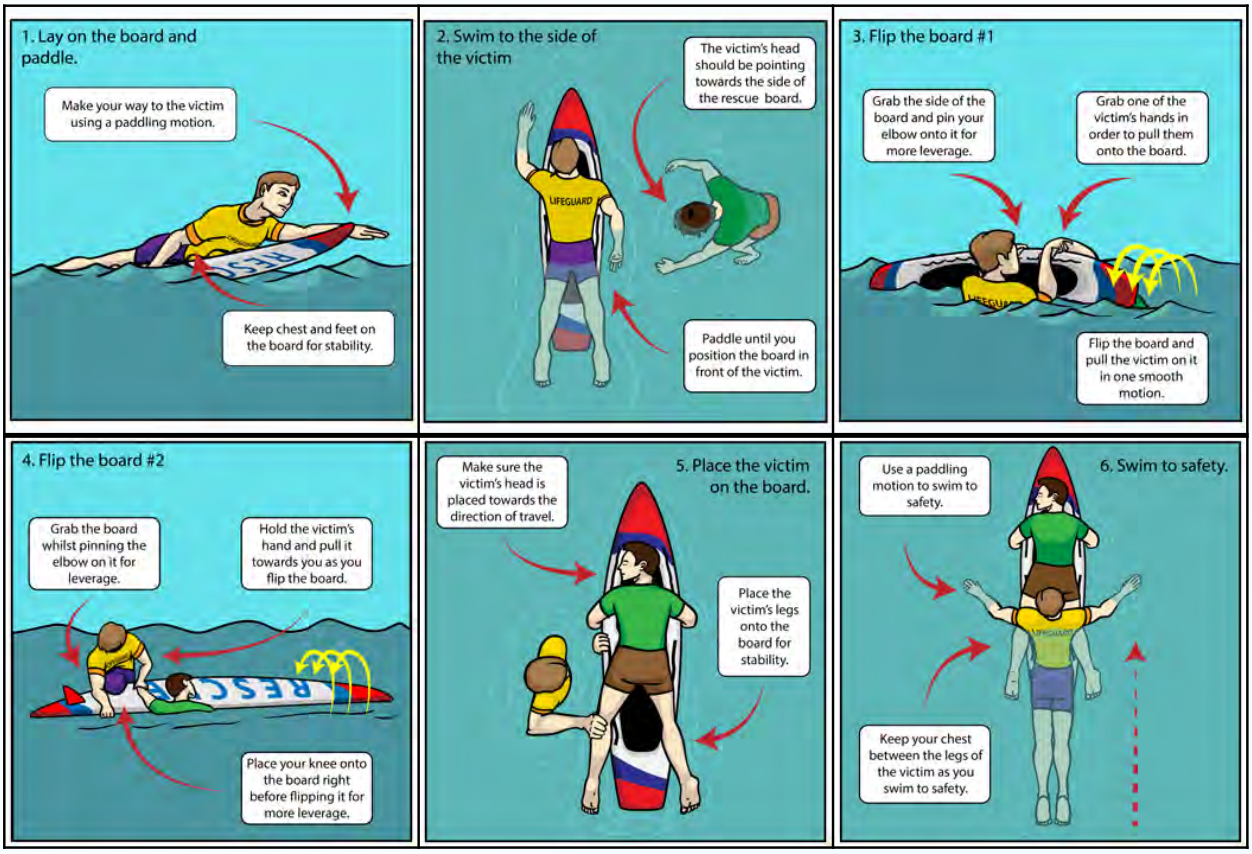
As distances in open water are often much greater than in a pool, the lifeguard's choice of approach strokes will vary to compensate for such distances[21].

- The crawl—with one hand or two—is generally a much faster stroke than the breaststroke.
- Underwater swimming in open water should generally be avoided due to visibility issues and possibly underwater protrusions.
- A rescue board is often used in open water by a lifeguard for a rescue. The lifeguard will hold the rescue board in their hands and kick behind for propulsion once in waist deep water. The lifeguard can then mount the board and use their hands for paddling in a butterfly or front crawl stroke.

Rescue Techniques

The rescue techniques for open water are similar to those in a pool, as the lifeguard will approach the victim from the front or rear, just as in a pool setting. The techniques will vary in the ways outlined above, in regard to water entry and approach strokes. If the lifeguard is using a rescue board or kayak in order to complete the rescue, they will dismount from the board or kayak to perform the rescue[22]. The following are steps for performing a rescue of a passive victim using a rescue board:

1. The lifeguard will approach the victim on their rescue board, and pull next to the victim.
2. The lifeguard will place the rescue board horizontally between the rescuer and the victim.
3. The lifeguard will grasp the wrists or hands of the victim, and while sliding off the rescue board on the opposite side, the lifeguard will flip the rescue board towards themselves.
4. The victim's chest should now be against the far side of the rescue board, with the rescue board flipped on its back.
5. While continuing to hold the victim, the lifeguard will grasp the far end of the rescue board (next to the victim), kneel on the near edge of the board, and flip the board and the victim towards themselves.
6. The victim will now be on top of the rescue board.
7. The lifeguard will pull the victim's legs onto the rescue board so that the victim is balanced lying on the rescue board with their head towards the front end.
8. The lifeguard will mount the rescue board behind the victim, between the victim's legs, keeping their own legs in the water.
9. The lifeguard will then paddle and kick to shore.



Carries/Tows

If the lifeguard is alone, the two types of rescue tow they may use are the rescue stroke and the armpit tow[23].

Rescue Stroke

While holding the victim onto the rescue device with one arm, the lifeguard will stroke with the other arm toward safety. The lifeguard will also kick their legs in breaststroke or rotary kick to propel them to safety[24].

Armpit Tow

In an armpit tow, the lifeguard is positioned behind the victim, and grasps the victim beneath the armpits. First the lifeguard should fasten the rescue tube around the victim, and then tow the victim to safety using the armpit tow, while using their legs to kick to safety.
If the original rescuer had been on a board or kayak due to distance, they may require assistance in getting the victim up onto the boat, or in towing the two to safety[25].

Search and Recovery

It is hoped that an underwater search is one where rescue will take place, but in cases where such time has passed that a recovery effort is underway, the lifeguards should keep in mind the following[26]:

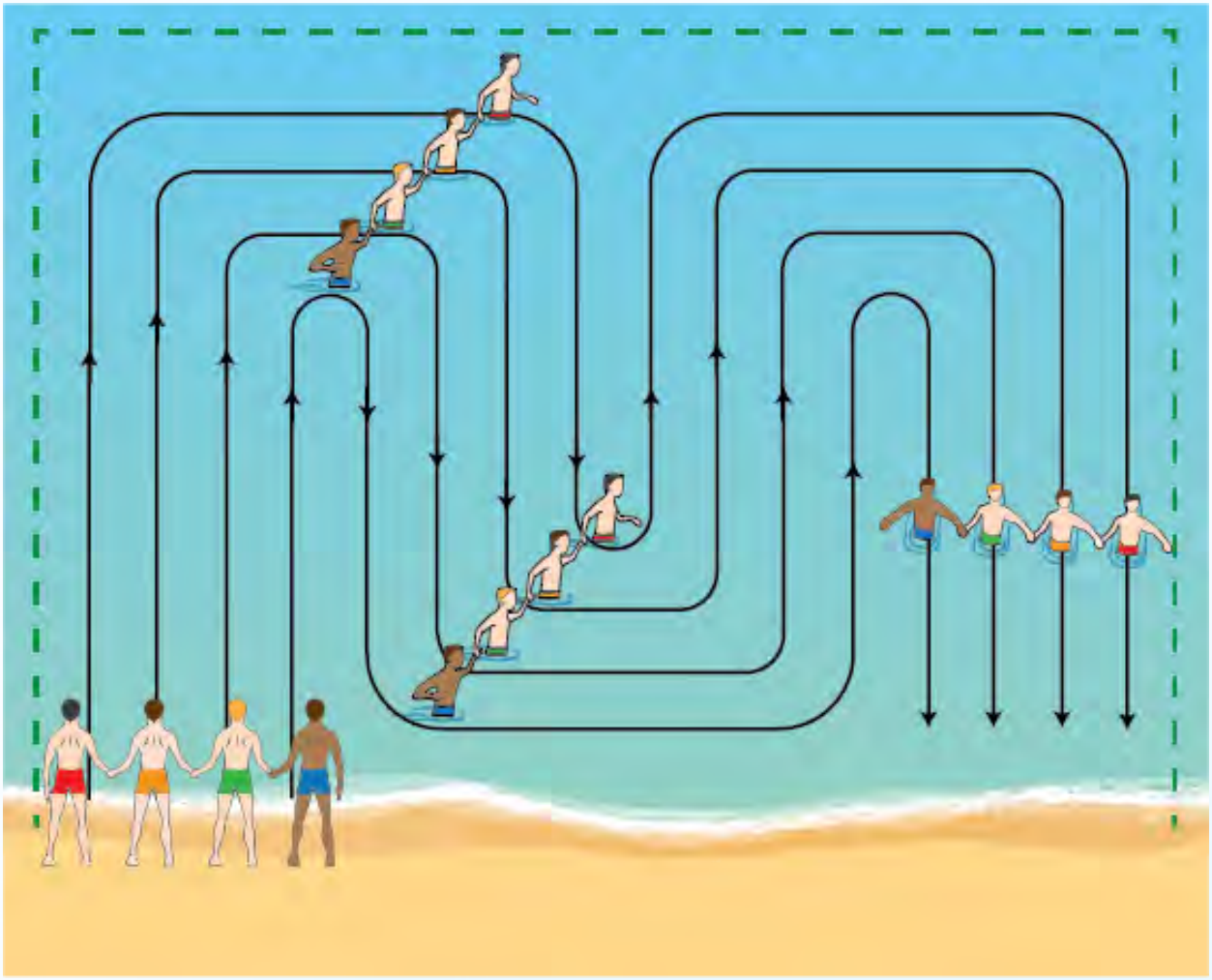
- Lifeguard safety is the most paramount issue.
- It is likely that the lifeguards will need to focus their efforts under the water or on the bottom of the water.
- Masks, fins and snorkels should be used by rescuers to ensure lifeguard safety and maximize the visibility.

Underwater Search

If it is suspected that a victim is submerged, the area should be evacuated immediately in order for a search to take place. The goal is to find the submerged victim quickly and bring them to safety. There are several methods to conducting such a search, depending upon the depth of the water and the number of rescuers present[27].

Walking Search

If the water is shallow and many rescuers are available, the searchers will form a line facing the water and hook elbows. Walking forward in a line, the rescuers will sweep through the water with their feet, searching each section before the line progresses forward[28].



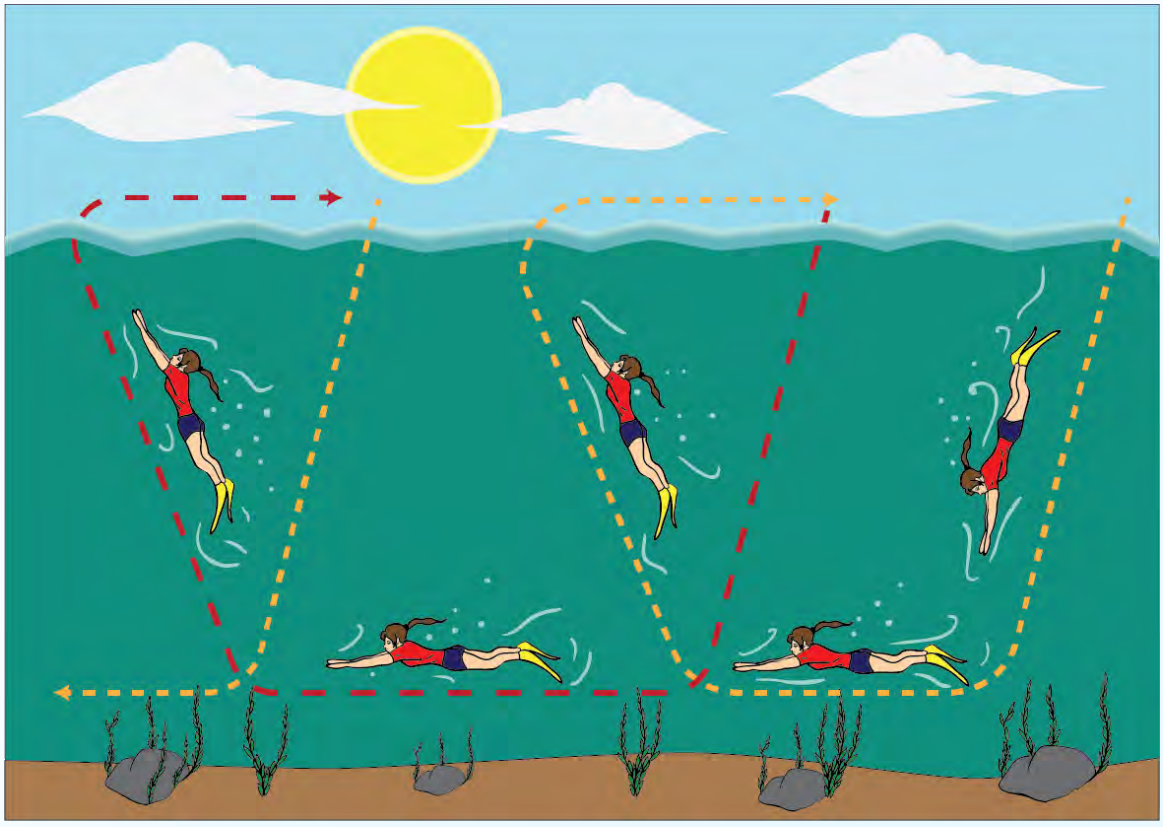
Net Search

A large search net is secured in the entire area, with the rescuers moving the net across the bottom of the swimming area. Be sure that the net is touching the ground while moving[29].

Search Lines/Grid Search

To cover a deep, large area thoroughly, a line search method with a group of lifeguards is used[30].

1. A group of lifeguards line up in the water. The lifeguards should be no more than arm's length from each other.
2. The lifeguards go down to the bottom head first, and swim 3 strokes underwater while searching for the victim with their hands on the ground before resurfacing.
3. When the lifeguards surface, they should make sure everyone is aligned with the person furthest back. Then all lifeguards should take a small step/stroke back and then continue the search. The reason for the step back is since when people swim up from the bottom



of the pool they never come up straight—they come up at an angle.

4. Before all the lifeguards go down for the next search, the head lifeguard does a 3-count.
5. The lifeguards submerge again, do a 3-stroke search, and come back up, before they go down again.

6. Each time the lifeguards surface, the head lifeguard makes sure all the lifeguards surfaced, then the whole team reforms their line and take a step back, then head lifeguard does a 3-count and the rescuers continue the search[31].

Staying Afloat

When working in open water, it is possible that the lifeguard will need to stay afloat for longer periods of time than in a pool setting. Ideally, the lifeguard will have a rescue tube to keep him/her afloat, but in cases where such a flotation device is not available, the lifeguard must stay afloat using other methods. The primary methods for staying afloat are treading water and the survival float[32].

Treading Water

This is best for shorter periods of time, as the swimmer will deplete their energy treading water.

- When treading water, the swimmer will move the arms in a wide in-and-out motion while kicking the legs in a scissor kick or in a rotator fashion.
- By keeping the arms and legs in motion, the swimmer is able to maintain a body position with the head out of the water.

Survival Float

If the swimmer will need to remain afloat for a longer period of time, their energy can be retained using a survival float.

- After taking a breath, the swimmer will allow their head to relax into the water, with the arms and legs hanging down into the water.
- When a breath is needed, the swimmer will press down on the water with their arms, which will bring the face-up and out of the water. The swimmer will take a breath, and then resume the resting position of the survival float with the face in the water.

Marine Life—First Aid

In open water, swimmers run the risk of being bitten or stung by a variety of marine life, from jellyfish and crabs to sea urchins and anemones. Generally, the specific region will have information on the types of marine life present in the water, and what steps should be taken to care for the victim[33]. In all cases, the following steps should be followed:

- The victim should be safely removed from the water.

- Remove any remaining stingers/tentacles while wearing protective non-latex gloves or a towel.
- Using salt water, flush the injured area for at least 30 seconds to offset the toxin.
- Do not use fresh water, alcohol, vinegar or baking soda.
- Do not rub the wound.
- Hot-water immersion—or hot-packs—can relieve the pain if used for 20 minutes.
- If hot water/hot packs are unavailable, a cold pack may assist in relieving the pain.

Review

Describe the use of each of the following pieces of rescue equipment:

Rescue Board:

Mask, Fins and Snorkel:

Kayak:

In open water, there are specific elements—such as waves and riptides—which don't exist in pools. Describe how each of these would affect a rescue—both before an accident occurs as well as during the rescue.

Is water clarity/visibility an issue in open water? What should a lifeguard be aware of concerning water visibility?

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Resources

The following important forms are found in the Resources section of the manual:

- CPR Chart

Notes/Resources

American Aquatics & Safety Training
"Class For Life"
Alast.org

	No pulse = CPR					
	Depth	**Compressions per min**	**1 person**	**2 people**	**AED**	**Has pulse but not breathing**
Adult	2-2.4 inches	100-120	30:2	30:2	Yes	1 ventilation every 5-6 seconds
Child	About 2 inches	100-120	30:2	15:2	Yes	1 ventilation every 3 seconds
Infant	1.5 inches	100-120	30:2	15:2	Yes	1 ventilation every 3 seconds

Steps before starting CPR

- Check the scene and make sure it's safe
- Put on gloves
- Check for responsiveness
- Call 911
- Look, listen and feel for 5-10 seconds
- No pulse, start CPR
- Has pulse but not breathing, being ventilations (Rescue breathing)

Legal

- The reason you can do CPR on an unconscious person is because of implied consent
- You can help someone when you are not getting paid, and be protected under the Good Samaritan Law
- If you are getting paid, you have a duty to act

AED rules

- If wet, dry them off
- If they have hair on their chest, shave it or remove it with the AED pads
- If they have piercings, place AED pads on the side of it
- If they have a medication patch, remove it with gloved hands
- If they have a pacemaker, put it on the side of it

BVM

- 2 people to operate it
- One person holds the mask, other squeezes the bag
- Broad end of the mask goes between the lips and the chin
- If you want to use an adult mask on an infant, reverse the mask, making it upside-down

Reminder

- No pulse = start CPR
- Pulse but not breathing = Ventilations
- When doing CPR, push hard and fast, and allow the chest to fully recoil between each compression.

FYI

- When you do CPR, you might break his/her ribs AND THAT'S OK.

DRk80PG2

Times you stop CPR

1. They have a pulse
2. EMS arrives and takes over
3. Victim begins to vomit (roll the victim on the side)
4. AED arrives and analyzes the victim
5. Someone hands you a "Do Not Resuscitate" form (DNR)
6. Scene becomes unsafe
7. You are too tired to continue

Head positions for victim

Adult: Tilt the head back

Child: Slightly tilted

Infant: Neutral

Ventilations

1. If you give a breath and the victims chest does not rise, re-tilt the victims head. If the second breath does not go in, give CPR.
2. If you remove a drowning victim from the pool or lake and the victim is not breathing or has a pulse, prior to starting CPR, give 2 initial ventilations.
3. When doing CPR and giving ventilations, you wait 1 second between each breath.

Checking for responsiveness

Adult + Child = Tap hard on the chest and ask loudly "Are you OK?".

Infant = Tickle or top on the baby's toe. You are looking for movement of the toes.

Look, Listen and Feel

Adult + Child = Checking for pulse at the Carotid Artery, looking at the check for rise and fall, putting the ears above the mouth to listen for breathing.

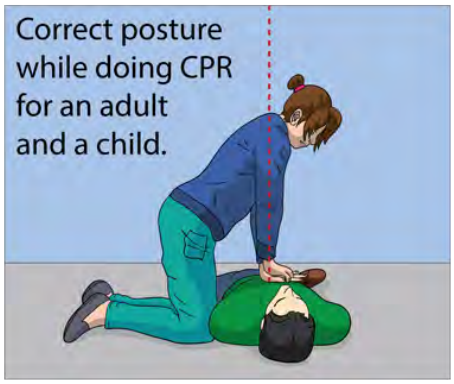
Infant = Checking for pulse at the Brachial Artery, looking at the check for rise and fall, putting the ears above the mouth to listen for breathing.

American Aquatics & Safety Training
"Class For Life"
Alast.org

Rescuers body placement when doing CPR

Adult + Child

Shoulders above the wrist, elbows locked. Interlocks the fingers and place the palm of the hand on the center of the breast bone slightly under the nipple line.

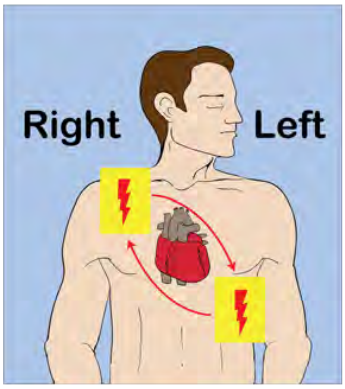


Infant

Shoulders above the wrist, elbows locked. Place 2 fingers on the center of the breast bone slightly under the nipple line. The second hand should be on the head holding the head in the neutral position.

AED pads placement

Adult + Child = Top right of the victims chest and under left armpit



Infant = Chest and back