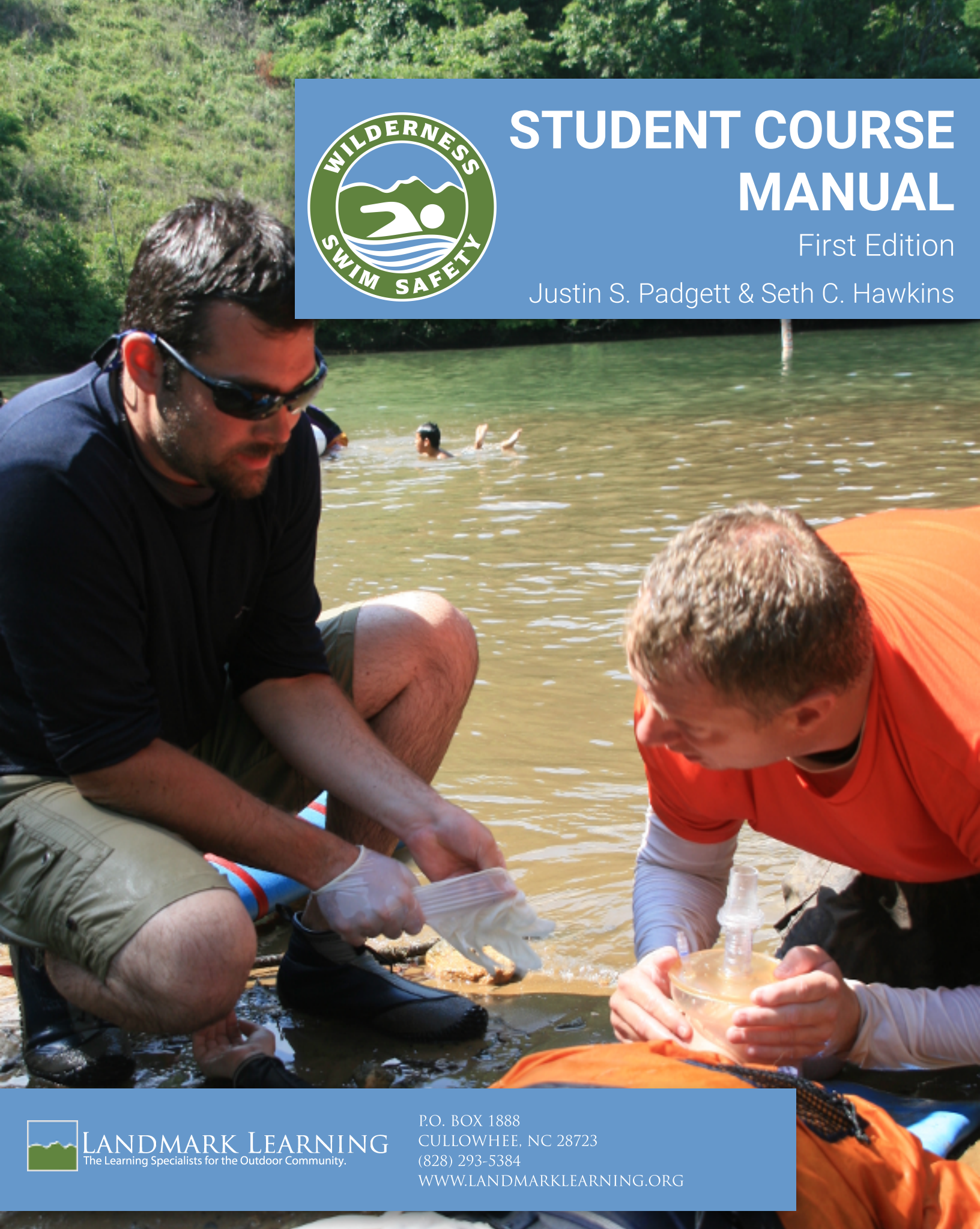

STUDENT COURSE MANUAL

First Edition

Justin S. Padgett & Seth C. Hawkins

LANDMARK LEARNING
The Learning Specialists for the Outdoor Community.

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Wilderness Swim Safety, 1e

Version 1.1

Landmark Learning, Justin S. Padgett & Seth C. Hawkins

Disclaimer

This manual is to be used as a reference for trained professionals. It is not a substitute for current training and experience, nor does it qualify anyone to perform the procedures described. Continued education and training is needed to keep skills sharp and to help make sounds decision.

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Photographer: Justin S. Padgett, unless otherwise noted. Photos on pages 3, 9, 11, and 14 Adobe Stock;

Wilderness Swim Safety. -- 1st edition.

LANDMARK LEARNING

The Learning Specialists for the Outdoor Community.

Landmark Learning conducted its first courses in the Fall of 1996, to fill the recognized need for professional development opportunities for outdoor professionals. Since then, it has established accreditation affiliations with many nationally recognized certifying bodies. We believe that the preservation of our industry's program sites and the safety of our clients are largely dependent on **guide/instructor knowledge, skills, attitudes, and experience.**

The Landmark Learning campus is located in Cullowhee, NC, nestled among the Great Smoky Mountains. Our classroom is settled on 40 acres of mountain- and creek-side wilderness, making for immediate hands-on application of outdoor skills. As a Steward Forest, Landmark has plans in motion to create a Living Classroom for further habitat management and enhancement prospects. We are surrounded by many natural resources, creating an extensive outdoor classroom in Western North Carolina.

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Contents

Wilderness Swim Safety

The Wilderness Swim Safety (WSS) curriculum evolved out of the Wilderness Lifeguarding course, an almost two-decade long collaboration between the Starfish Aquatics Institute (SAI) and Landmark Learning. Wilderness Lifeguard precursors were first developed in 1999 by SAI and Landmark Learning. In 2023 SAI and Landmark Learning amicably separated to pursue diverging goals in drowning prevention, with Landmark Learning taking the lead on development of the WSS curriculum in its evolution out of its Wilderness Lifeguard roots. Wilderness Swim Safety is geared for the leaders of wilderness trips, outdoor recreation programs, canoe and kayak expeditions, camps, adventure races, scout programs, international travel groups, rescue and aid workers, and anyone responsible for others in remote or wilderness aquatic environments.

This manual has been specifically designed for persons responsible for water safety or serving in remote areas of water that are non-surf and are not flowing, or are slowly moving. Fast moving swiftwater rescue and surf rescue are complementary skill sets outside the scope of this manual. In the United States, the American Canoe Association provides international guidelines for swiftwater rescue equipment and training requirements for organizations that provide this type of education for whitewater professionals.

Acknowledgments

This manual would not be possible without the guidance and support of professionals dedicated to outdoor education and safety.

The Wilderness Program Advisory Committee (PAC) was created in 2001, and led by Chair Justin S. Padgett, MS, Paramedic, WEMT, Landmark Learning, LLC. Members and external reviewers included: John David Early, Eastern Washington University; Mike Fischesser, The American Adventure Service Corps; John Gookin, National Outdoor Leadership School; Dave Hus, North Carolina Outward Bound School; Will Leverette, Affiliation of Risk Managers for Recreation; Dave Mason, American Canoe Association Dixie Division; Maurice Phipps PhD, Wilderness Education Association; Slim Ray, Rescue 3 International; and Steve Teixiera, Camp Woodson.

Special thanks to Jill and Lake White of Starfish Aquatics Institute and Landmark Learning faculty Nathan Nahikian and Neil Ketting for their tremendous amount of effort, patience, and dedication in teaching the early Wilderness StarGuard curriculum to many as we refined our course content, demonstrations, and course flow.

Additionally, we would like to recognize Justin Sempsrott, MD, FAAEM and Seth Collings Hawkins, MD, FACEP, FAEMS, MFAWM for their medical and operational contributions.

Chapter 1: Risk Awareness for the Wilderness Waterfront

Some common environments that could be considered wilderness waterfronts include lakes, ponds, pools in creeks (water holes), intracoastal waterways, streams, waterfall plunge pools, and slow moving rivers.

Defining the Wilderness Waterfront

For the context of this manual, a wilderness waterfront is defined by the following criteria:

- The aquatic area is typically not enclosed by lines, docks, or piers.
- Hazards have not been identified and risk managed prior to use, as they would be in a less remote location.
- Difficulty with contact and access to specialized rescue and emergency medical personnel.
- Significant travel time to the nearest hospital.

- Existence of uncontrollable or hazardous environmental conditions such as weather, temperatures, varying depths, turbid water, and rocks and other submerged hazards.
- Existence of uncontrollable or hazardous terrain for evacuation such as narrow trails, swamps, or wide bodies of water.
- Limitations that make having or using traditional equipment impractical, thus requiring improvisation and specialized equipment or techniques.

Unique Risks of the Wilderness Waterfront

The water and environment at a wilderness waterfront create unique risks that are not present during other land-based wilderness recreation activities. These include the following:

- Prolonged submersion under water can lead to suffocation and death can occur within a few minutes.
- Unanticipated shallow water can cause injury if a person strikes the bottom with the head or neck upon entry.
- Injury on shore from slips and falls on wet, rocky, or uneven surfaces at the entrance and areas surrounding a water source.
- Recognition and management of unexpected medical emergencies may be hindered if the person is in the water or submerged.
- Limited depth of visibility can hide a submerged person, conceal drop-offs, or hide hazards.
- Injury from lightning, insects and aquatic life, fish hooks, and other human debris.
- Injury from overexposure to the sun, as well as heat and cold illness from high or low temperatures.
- Other recreational users of a backcountry site such as camps, outing clubs, and local residents may put your group at risk.

High Risk Behaviors

Many known factors contribute to injury, drowning, and illness in an aquatic environment. Some risk factors are caused by the environment, but more often the risk comes from the behavior of people. The following are the most common behaviors that contribute to injury at an aquatic site:

- Running.
- Horseplay.
- Collision with another person.

- Diving into shallow water.
- Jumping or diving into water with unknown conditions under the surface.

The following are the most common behaviors that contribute to drowning.

- Lack of adult supervision for children and unsupervised group outings .
- Breath-holding contests.
- Bobbing or wading into deeper water, then being unable to lift the mouth or nose out of the water or choking on water.
- Being a non-swimmer in deep water without a personal flotation device.
- Slipping off a flotation device such as a noodle or raft .
- Having a seizure, heart attack, or other medical condition while in the water.
- Exhaustion.
- Being under the influence of alcohol or drugs.

The following are the most common behaviors that contribute to illness:

- Swallowing freshwater that contains contaminants such as wildlife feces, fertilizer runoff, or pesticides.
- Fecal accidents in the water.
- Inadequate fluid intake.
- Exposure to high or low water and/or air temperatures.

Drowning

Any body of water comes with the inherent risk of drowning. Drowning – whether fatal or non-fatal – is a “worst case” scenario and your risk reduction efforts should focus on preventing drowning as a priority. It is important to understand that drowning can happen quickly and usually silently, not anything like the yelling and thrashing portrayed in the movies. It’s also important for you to be aware of the correct terminology to use when discussing drowning, and what happens during the drowning process. Chapter 3 will provide information about what drowning looks like and strategies for providing surveillance.

Drowning Definitions

To understand drowning, it is important to know the correct definition and terminology.[1] Most misconceptions about drowning are based on inaccurate information about the physiology of drowning and an incorrect image of drowning as it has been portrayed in the media.

Before 2002, there were 33 different published definitions of drowning and near drowning. Some of these definitions and terms were confusing and made tracking of drowning patients very difficult. For example, if someone was rescued from the water and taken to the hospital as a "near drowning" and they died a few days later as a result of complications, cause of death may be listed as "respiratory failure" and not as drowning. From a medical and public health standpoint, the initial event that caused death was drowning, but the fatality was never listed as being caused by drowning.

To standardize our understanding and reporting of drowning, a new definition was proposed in 2002 at the World Congress on Drowning that year in Amsterdam. This definition was subsequently approved and accepted by the World Health Organization (WHO), American Heart Association (AHA), International Liaison Committee on Resuscitation (ILCOR) and many other lifesaving, lifeguarding, and medical organizations.

Drowning is now defined as "the PROCESS of experiencing respiratory impairment from submersion/immersion in a liquid. If someone has difficulty breathing as a result of being underwater, then they have drowned."

Drowning doesn't always end in death. Thousands of people, adults and children, drown every year and survive without any additional complications. There are also a significant number of people who suffer non-fatal drowning and as a result have severe, moderate or mild brain damage. You can think of this situation as similar to that of heart attacks or strokes. Some people who experience a heart attack will die, some will survive without complications, and some will survive with some amount of complications. The same is true with drowning.

Despite efforts to standardize definitions and clarify that drowning is a process, the use of incorrect and confusing drowning terminology continues. Stories regarding the dangers of "near", "dry", "delayed", and "secondary" drowning are frequently and widely circulated on social media and picked up by print and broadcast media as well.

These statements summarize important and correct information:

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[1] Starfish Aquatics Institute Position Statement 15-1, Use of the Terms Near, Dry, Delayed and Secondary Drowning". The full statement is available at http://bit.ly/drowningterms

1. *Any person - adult or child - who has been in or under the water and has symptoms of difficulty breathing, excessive cough, foam or froth in the mouth, or aren't acting right that occur immediately or within a few hours of being in the water had a non-fatal drowning and should seek care from a doctor. Symptoms usually appear immediately, but may be delayed by a few hours or get progressively worse. Onset or worsening of symptoms usually occurs within the first 8 hours of submersion.*
2. *There is no such thing as "dry" or "wet", "delayed", or "secondary" drowning. Anyone with respiratory impairment, not acting right, excessive cough, foam, or lethargy after being underwater, even briefly, should be taken to a hospital for further evaluation. Drowning is a spectrum ranging from mild to moderate to severe.*
3. *There is no such thing as "near" drowning. A person who does not die from a drowning incident has suffered a non-fatal drowning and survives with either no complications or brain or other organ damage ranging from mild to moderate to severe.*

One of the reasons it is so important that we (parents, doctors, researchers, lifeguard trainers, EMS, aquatic safety organizations and the media) speak the same language is that we can get a better understanding of the scope of the drowning problem and learn to better prevent and treat it.

To better understand the scope of the non-fatal drowning problem we must use correct terminology when speaking to clients, the media, each other, and through social media.

The Drowning Process

A person is drowning if the face and airway are covered with water, which can occur through either immersion or submersion. Immersion means that only the face and airway are covered with water. Submersion means that the entire body is underwater. Immersion can occur in relatively shallow water, such as a tide pool, a puddle, or a few inches of water at a beachfront or shoreline entry area. Both can lead to drowning.

When the mouth and nose are covered with water, once a person utilizes all the available oxygen from their last breath, they begin suffocating and the body quickly becomes hypoxic. Unless the drowning process is interrupted within a few minutes, lack of oxygen to the brain causes irritation to the heart, commonly leading to a lack of electrical pumping activity. At this point the heart has stopped, also called cardiac arrest, and this particular cause of heart stoppage does not respond to defibrillation. The brain is shutting down the entire central nervous, respiratory and circulatory systems at once because of its lack of oxygen. Brain death begins in minutes without adequate oxygenation. It becomes severe and irreversible as time progresses.

The continuous lack of oxygen also causes the person to have a repetitive swallowing reflex into the stomach. The swallowing reflex causes a significant amount of water to enter the upper airway, esophagus, and stomach.

Very little water actually enters the lungs of a drowning person. The amount inhaled is different for each person, commonly as little as 1 to 3 milliliters of water per kilogram of body weight. That is about 100 to 300 milliliters for someone who weighs 220 pounds (100kg). However, during resuscitation large amounts of fluid will appear in the upper airway. This fluid is also coming from the stomach. Some fluids are obviously vomit with food particles, other fluid is clearly water, and some of the fluid may be water and foam together. The foam is believed to be proteinaceous lubricant from the lungs mixed with small amounts of water. This foam will come from the person's mouth and nose passively. You will learn more about dealing with foam during resuscitation in Chapter 6.

Our opportunity for preventing drowning comes before the drowning process starts. It can be accomplished through site management, participant assessment, early recognition of drowning behaviors, and the development of rescue skills. Remember that one does not have to be submerged completely under the water for drowning to occur and can drown if the face is immersed in water. It is also important to understand that minimizing the amount of time that passes before interruption of the drowning process with oxygenation (rescue breaths) is crucial to the person's survival.

Chapter 2: Prevention Strategy and Managing Aquatic Risks

There are many hazards in the remote environment. Being in, on, or near the water increases risk. This chapter explains strategies to help prevent injury, illness and drowning at the wilderness waterfront.

Although prevention is at the heart of your job, accidents can happen despite your best reasonable efforts. If you see dangerous or risky behavior, you can intervene and reduce the chance of an accident, but you cannot watch everyone all the time. You also cannot prevent accidents if participants choose to disregard your warnings or do not use common sense, such as when a non-swimmer enters the water without a life jacket, or when a person dives into known shallow water. In these instances, the behaviors and actions of the participant can cause an emergency situation.

Rather than thinking that prevention is solely the job of the trip leader or the lifeguard, you and your employer should focus on your mutual responsibility for implementing prevention strategies. Having a strategy implies that several layers of protection are in place, all designed to help reduce the chance of injury, illness, or drowning. Participants will share in this responsibility as well. There are strategies that should be

put in place before your trip to a wilderness waterfront, before allowing anyone to get in or near the water, and during the time of aquatic recreation.

Before the Trip

Long before you leave for the trip, these important tasks should be completed:

- Establish policies to control high risk behaviors.
- Identify guidelines for rock slides and jumps.
- Identify guidelines for stream crossings.
- Create an Emergency Action Plan (EAP) and establish procedures.

Let's look at each in more detail.

Policies to Control High Risk Behaviors

Policy helps guide decisions. Well-designed policy that is strictly enforced can be one of the most effective layers of protection. Policy and guidelines for various circumstances should be determined long before taking groups to a wilderness waterfront setting so that expectations are known and procedure can be developed. Examples of policies include defining the types of areas where swimming will be allowed, establishing restrictions that are to be placed on non-swimmers, determining when lifeguards will be required, setting parameters for the use of life jackets, determining the use of natural play features, listing required apparel, and establishing general conduct rules. Because policy can help reduce the likelihood of high-risk participant behaviors, it is an effective layer of protection. Let's look at some of the policies you and your employer should consider implementing before a trip to a wilderness waterfront:

- Prohibit all headfirst entries (dives) into the water. If jumps are allowed, they should have a hands-above-the-head body position.
- Prohibit breath-holding contests, underwater swimming contests and unsupervised hypoxic training drills (breath holding while swimming) to help reduce the risk of swimmers passing out while underwater due to lack of oxygen.
- Require non-swimmers to stay in waist-deep water. "Deep water" is relative to the height of a swimmer and can be considered anything above waist level for that person. A policy that requires non-swimmers to stay in waist-deep water can reduce the risk of drowning.
- Require non-swimmers or weak swimmers to wear a lifejacket or personal flotation device when it is possible that they will enter water deeper than the height of their waist can reduce the risk of drowning because the life jacket will keep the person wearing it on the surface.

- Restrict use of recreational flotation devices such as noodles, rafts, and float toys to specific supervised activities or shallow water areas to reduce the risk of drowning due to a non-swimmer or weak swimmer falling off a device. Restricting the use of large float toys also helps you to have an unobstructed view of the water.
- Request a medical practitioner's approval[2] in writing before allowing participation in swimming or boating activities.
- Require a rest break by clearing the water on a prescribed schedule to help reduce the risk of swimmers, particularly children, becoming overtired.
- Prohibit alcohol and drug use at the site.
- To prevent injury, require that swimmers wear foot protection.
- To help prevent waterborne illness, require participants with active diarrhea to stay out of the recreational water area.

Guidelines for Backcountry Stream Crossings

On a backpack trip it is not uncommon to travel on trails where stream crossings are numerous. Make your crossing decisions based on the least physically able member of your group. It is best to choose crossing sites that offer minimal challenge and even keep boots dry. However, you may encounter situations that require crossing deeper water and establishing policy and safety guidelines ahead of your trip can help you know how to minimize risk. Some general guidelines include:

- Cross with backpacks unfastened (hip belts and sternum straps).
- Cross a log or series of rocks—stay low and plan for mishaps on slick terrain.
- Cross where the current is weakest.
- Cross where the water is less than knee deep; consider not crossing if the moving water is above knee deep.
- Cross while wearing boots/protective footwear, but remove socks and insoles.
- Cross with feet facing upstream.
- Consider a third or fourth point of contact such as a stick of trekking pole.
- Consider wading with a partner for stability—face each other and push forward on each other's shoulders.
- Consider setting up a hand line for group members—never tie a rope to anyone!

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[2] Medical practitioners include physicians (medical doctors [MDs] and osteopathic doctors [DOs]), advanced practice registered nurses (APRNs, such as nurse practitioners and midwives), and physician assistants (PAs).

• Beware of snow bridges and other false debris bridges in alpine areas.

Emergency Action Plans and Procedures

Before you can respond appropriately to an emergency, a plan must be in place so that you know what actions to take. Your site-specific emergency action plan is the blueprint that you will follow.

An Emergency Action Plan (EAP) is a written document detailing WHO does WHAT and WHEN in the event of an aquatic emergency. An EAP is:

• Specific to your site location and the season of the year.

• Written, with copies posted in key areas for quick reference.

• Simple and easy to follow.

• Practiced regularly, designed to integrate all individuals who will be involved, including emergency medical services (EMS) or Public Safety personnel that will respond to your recreation site.

• Developed for different types of emergencies, including life-threatening, non-life-threatening, and weather-related emergencies.

The duties to be assigned during an emergency at your recreation site may include responsibilities such as:

• Initiating a means to get help (messengers/runners, cell phone, vehicle).

• Calling EMS.

• Signaling for equipment and assistance.

• Clearing the water site of other swimmers or maintaining surveillance.

• Removing or controlling dangerous conditions (lightning, wildlife, minimizing exposure).

• Controlling or evacuating crowds or maintaining supervision of the water site.

• Bringing equipment to the scene.

• Attending to a person and providing care.

• Meeting EMS at trailhead or prearranged access.

• Obtaining and securing person’s personal belongings.

• Gathering data and writing reports.

• Notifying supervisors.

- Following your organization's policy for appointing spokespersons to deal with media relations.

Part of a strong prevention strategy is having a plan of action to manage unexpected situations and these plans must be in place and practiced before embarking on a trip.

Before the Swim

Before allowing participants in or near the water, these tasks are paramount:

- Conduct a site assessment.
- Conduct a safety briefing.
- Conduct a swimmer skill screening and comfort assessment.
- Identify participants.

Plan ahead so that you know who will be responsible for each of these important components of trip safety.

Site Assessment

Before conducting a site assessment, plan for who will watch and supervise the individual who is in the water physically inspecting the aquatic recreation site. The person supervising should be trained in Wilderness Swim Safety (WSS) and the surveillance of

the inspecting person will fall under all the guidelines of the WSS standard of care. The inspection of the site should accomplish the following:

- Look for glass, other man-made trash and debris. A potential site must have all such objects removed or the site should be avoided.
- Identify currents, underwater obstructions, and depth of water.
- Identify and avoid areas of questionable water quality.
- Judge the temperature of the water to determine activity exposure and duration.
- Select swimmer and non-swimmer areas and set appropriate boundaries for each. Boundaries may include shoreline, buoys and other natural objects such as rocks or trees.
- When feasible, place a float line across areas to identify a depth change.
- Establish zones of surveillance. More information on establishing zones is provided in Chapter 3.
- Identify other site users such as boaters, swimmers, and fishers, and determine their needs.
- Identify signs of animal traffic and dwelling areas, for example, snakes, beavers, frogs, and fish.
- Determine appropriate entrance and exits to program sites.
- Check security and maintenance of docks and platforms.

If a site has been deemed appropriate for water recreation, the areas for swimming established, and the surveillance plan identified, the risks and rules need to be explained to your group prior to use.

Pre-Activity Safety Briefing

Most companies in the United States and other countries that insure outdoor recreation businesses and organizations require that guides and trip leaders identify risks to the participants prior to the start of the activity. Once participants have had the opportunity to evaluate the activity risk, and willingly choose to participate, the participant has assumed some responsibility for their actions. As a trip leader you are deemed the expert, and it is your duty to warn. Figure 2.1 shows a sample safety briefing.

Sample Safety Briefing Outline

I. Introduction

Discuss the activity and duration. For example, “We are going to take a swim here for about 30 minutes.” Tell the participants to listen to what you tell them about the activity

and site and to think before taking action. Be sure to state that “the responsibility for safety is shared by all participants.”

II. Overview of Site Conditions

Discuss the general physical characteristics of the area and expected weather conditions.

III. Specifics

Provide the following information before beginning the activity:

- Define physical site boundaries for non-swimmer and swimmer areas.
- Explain appropriate equipment usage as necessary.
- Explain and demonstrate safety signals that will be used.
- Describe the known site-specific inherent dangers like cold water, dark water, obstructions in the water, etc.
- Demonstrate proper techniques with specific instruction, such as “Enter the water like this.”
- Explain what to do in case of an emergency.
- Identify the procedure to be used for swimmer skill screening and comfort assessment and the established buddy system or swimmer identification system.

IV. Rules

Explain situation-specific rules, which may include but not be limited to the following:

- Enter the water feet first.
- Wear foot protection at all times.
- Avoid running at the waterfront.
- Stay in designated areas.
- Use the established buddy system or swimmer identification system.
- Avoid drinking lake, river, or creek water without proper treatment.
- Avoid throwing rocks and other hard materials.
- Avoid swimming underwater.
- Follow safety signals.
- Follow specific policy for emergency lightning procedures.

- Follow specific policy for food and drink at the swimming site, with use of drugs or alcohol is prohibited prior to or during the activity.

V. Participant Responsibility

Ask participants to let you know if they see any hazards or safety concerns.

Explain the level of physical involvement, and that it is each person's responsibility to let the group leader know if they have any medical or physical conditions that limit their abilities. Consider using a statement such as, "We do not want to keep you from participating in the activity. Our concern is to be prepared to help you in the event you need assistance." Always provide a private time for disclosure.

VI. Closing

Give each person an opportunity to ask questions and do not patronize or dismiss any participant's concerns. Make participants feel valued and comfortable. Tell participants that they are welcome to approach you with additional questions or concerns at any time

Figure 2.1

Swimmer Skill Screening and Comfort Assessment

Swimmer screening is conducted prior to all water activities to be held in water that is more than waist deep and where participants are not wearing personal flotation devices (lifejackets). The purpose of skill screening is to verify swimming ability by having participants demonstrate their ability to swim a designated distance and tread water without use of the hands. When space and conditions are appropriate, consider a 50 yard or meter swim and a one-minute tread as the screening criteria.

In setting up an appropriate swimming distance screening area, find a location near shoreline or along a dock with water depth not to exceed waist deep of the person being assessed. The screening area must not have sudden drop-offs of the floor or contain submerged objects, an uneven bottom, or other debris. Swimmers who pass the distance screening are moved to deeper water for the treading activity. Swimmer skill screening should take place with one-on-one surveillance by a trip leader trained in Wilderness Swim Safety and prepared with flotation to enter the water as needed.

- Do not rely on a claim of swimming ability by any person prior to a swim skill screening test.
- Conduct a swim skill screening for one person at a time.
- The participant should wear foot protection and enter the water feet first.
- When possible conduct swimmer screening in water that is waist deep for the participant.

- Underwater swimming should be prohibited.
- When conducting the treading water activity, consider an endurance test by asking students to tread water and stay afloat while tying and untying their shoes or removing and replacing clothing.

Participants who are identified as non-swimmers or weak swimmers should be told that they must stay in the designated non-swimmer area and wear a lifejacket at all times if the water is above waist deep.

Document the swim tests that are conducted. Include the date, time, swimmer's name, age, site conditions, skills assessed and outcome. Follow documentation procedures required by your employer.

A water comfort assessment is different than a swimming assessment and is designed to evaluate the response of a person being immersed in water rather than swim skills. A comfort assessment may be the best method to use when participants will always have on lifejackets when in or on the water during a trip, yet could end up intentionally or unintentionally in the water. A water comfort assessment requires the participant to wear a personal flotation device and float or swim for 3-5 minutes in the same location where a swim skill assessment is conducted.

Any person who does not appear relaxed and comfortable in the water, or who cannot stand up from a horizontal position in the water without assistance while wearing a lifejacket, should be restricted to land-based activities or to wading in water that is knee-deep or less.

Your employer may require you to document comfort as well as swim skill assessments.

Identifying Participants in the Water

The buddy system may be helpful in effectively identifying participants in the water, and takes less than one minute to conduct a "buddy check". Buddy swimmers must be either paired by ability or the lowest ability in a pair defines their swim area. Buddy swimmers must stay within sight of each other at all times. When a buddy check is called, swimmers verify the buddy is close by, either using a verbal signal or raised hands. In addition to the buddy system, you can also employ one of the following methods to identify which individuals are swimming, and who has left the swim area:

- A "buddy board" or swimmer chart can be kept on a note pad. Buddy pairs must check in and check out with the specified staff person in charge of the chart.
- Two hats can be designated as "in and "out". Swimmers' names are placed in the hat designating their swimming status.
- An article of clothing or water bottle per swimmer can be left in a designated area to identify swimmers in and out of the water.

During the Swim

When swimmers enter the water, your responsibility shifts to surveillance duty where you will do the following:

- Watch for distress and drowning.
- Enforce rules and policy.
- Watch for threatening behaviors.
- Monitor weather conditions.

Surveillance should be the only task of the person assigned to provide surveillance. If the swimming activity will last several hours, it is important to clear the swimming area each hour for a few minutes so the rescuers can have a break and remain vigilant.

Chapter 3 is devoted to the most important and primary task of watching for distress and drowning and additional information will be covered there.

Enforcing Rules and Policy

First, you need to know the rules your employer has set and the reason for each rule. Make sure that you understand each rule and that your fellow rescuers and staff understand each rule as well. Then, you need to effectively enforce the rules. You will have the most success getting people to follow the rules at your site if you take a positive, professional approach. To be effective when enforcing a rule, follow these steps:

1. Signal to get a client's attention, using the method designated by your employer. If your site is crowded and noisy, you may need to blow a whistle or speak loudly to attract attention; if it is less crowded, you may be able to speak directly to the individual more discreetly.
2. Use verbal or nonverbal communication to indicate to a participant that what they are doing is not acceptable. If the person does not understand or does not respond, then ask the person to come talk to you.
3. Once the participant comes to you, keep watching the water and explain that you are required to keep your attention on the swimmers in the water while you are talking. That way the participant will not mistake your lack of eye contract for a lack of respect or poor customer service.
4. Be courteous and positive when you talk to the participant. Use phrases such as "Please walk" instead of "Don't run," or "Please enter the water feet first" instead of "You cannot dive here." Briefly explain that the reason for a rule is to keep people safe, not to restrict fun or enjoyment.

5. Use a “sandwich approach” when discussing a rule or policy infraction. Say something positive, state what you want the person to do, and then say something positive again. Here is an example: “We’re glad you are enjoying our swim today. I want to remind you that we have a policy requiring you to wear shoes while in the water. Thank you. We want everyone to be safe while having fun.”

Whenever you are guarding, be consistent; enforce the same rule or policy the same way for everyone, each time. If a client refuses to comply with a rule or policy, remove the participant from the aquatic activity and document your decision making if required by your employer.

Threatening Behaviors

Besides knowing how to reduce hazards and enforce rules, you also must watch for behaviors that may be harmful to others. Remote aquatic environments are open to the general public and although the aquatic playground setting attracts people who want to enjoy themselves, it can also attract people with other intentions. For example, child predators go where children go. The threat of gang violence, terrorism, sexual predation and other antisocial acts is present in any public location that attracts large crowds. If you notice suspicious behavior or activity, take the necessary actions to prevent encounters for your clients. Threatening behavior may include the following:

• Drug or alcohol use.

• Outwardly aggressive behavior, or displaying a weapon.

• Indecent exposure. Sexual activity, gestures, intimate contact or harassment.

• Uncontrolled pets roaming the water site.

Observations of this nature may require that you document and report them to your employer. Any time a behavior is suspicious enough for concern, remove your participants from the aquatic site.

Monitoring Weather Conditions

To prevent injury from lightning, high winds, or other severe weather, you should closely monitor weather warnings and conditions when storms are likely. In most locations in the United States, emergency weather radios are inexpensive and provide warning signals whenever “severe weather” statements are issued by the National Weather Service. Live satellite and radar images are also available on several weather information websites in addition to local forecasts. Know the weather forecast before you leave for the backcountry.

It is also important to be familiar with the conditions unique to your location. Knowledge about local weather patterns, such as the general formation and direction storms take, can be useful in making decisions about securing your site due to weather conditions. To determine if a storm is approaching your location, watch the movement of the

clouds as the storm may move in a direction different from the wind at the ground level. An abrupt change in wind direction and speed, as well as a sudden drop in temperature, may be a sign that you are in the direct path of a storm.

Clear the waterfront area whenever lightning can be seen or thunder can be heard. Seek shelter in a small stand of uniform-sized trees, spread group members out approximately fifty feet, minimize contact with the ground and take measures to prevent hypothermia. Stay clear of lightning prone areas until there is no longer a threat of lightning strike. As long as there is audible thunder, there is a chance of lightning strike.

Designated Waterfronts at Public Areas, Camps, or Parks

Designated waterfronts may have designated swim and watercraft areas, beach entrance, and marked or unmarked depths. There may be lifeguards on duty, but it is more likely you will find posted rules without designated lifeguards. You may find yourself providing surveillance for your group in one of these locations. The following guidelines will support your use of such sites:

- Follow the rules posted by the authority having jurisdiction.
- Conduct a site assessment just as you would at a remote site to identify hazards or inaccurately marked water depth.
- If there are lifeguards on site, communicate with them that you will additionally guard your group.
- If there are not lifeguards on site, you are in a similar setting to that requiring WSS rescuer skills. Treat the situation in the same way, starting with a site assessment.
- Know the emergency contact for the area and identify phone access.
- Monitor other users for inappropriate behavior and aggression and remove your group as needed

Events such as day-camp trips, group outings or parties, conducted at publicly designated waterfronts, can present supervision problems and create additional risk. The energy level of the participants is often high and peer pressure may encourage children to try activities beyond their normal interest. When other lifeguards or WSS rescuers are present, group leaders or party hosts frequently and inappropriately view the trip to the waterfront as a chance to relax and turn over responsibility to the lifeguards or WSS rescuers. They also may be unaware of the swimming ability of the children in attendance. It may be important for you to move your location or leave the site when other members of the public are present conducting risky activity. Your first responsibility is to your participants.

Chapter 3 – Surveillance Strategies to Recognize Distress and Drowning

To recognize distress or drowning, you must continuously perform an observation skill called scanning. To scan means to systematically watch the water while searching. This chapter will explain how to scan, along with observational skills and methods of setting up zones that support scanning.

Observation Skills and Scanning

The role of water safety professionals is extremely proactive, which involves constantly and exclusively watching the water and the clients in it. In the past, the role of a lifeguard was more reactive, which meant being available to make a rescue when notified that someone was in trouble.

A systematic method of observation and response will help you focus on what is important in saving lives at a wilderness waterfront. The following illustrates how you will use your observation skills:

- Constant visual contact with the **water**, as a dedicated and sole task, should be your primary responsibility while serving as a WSS rescuer.
- To scan means to **search the water** to identify anything unusual. Scanning is a combination of eye movement, head movement, body position and alertness strategies that allow you to watch every area of the water in the designated swim area.
- Look at **every area of water—**bottom, middle, surface, under outcroppings, below your feet.
- Your job is to "**scan the water, not just watch the people**".

Scanning Turbid Water

When water is turbid or murky, you will not be able to see the bottom when you scan. Some techniques that can help you keep track of swimmers in your zone include:

- Visually follow the path of clients swimming from one location to another.
- Visually group swimmers and count the number in each group as your eyes sweep across the zone.
- Do not allow underwater swimming.
- Allow only one jumper or slider to enter the water at a time and watch them return to the surface and exit the area.

Recognizing Distress and Drowning

There are common misconceptions about what behaviors are observable when a person gets in trouble in the water. Drowning happens quickly and usually silently, not anything like the yelling and thrashing portrayed in the movies. While scanning, you should target and assess any of the signs of distress or drowning described below.

Signs of Distress

Generally, a person in distress is still on the surface of the water and can breathe, but is struggling to stay afloat. Some behaviors that indicate that a person is in distress include the following:

- Head back and body low in the water.
- Arms extended from the sides and moving up and down.
- Eyes wide and fearful or squeezed shut.
- Minimal use of the legs with little support from a kick.

Often, a person in distress will try to remain upright and turn to face the nearest source of assistance; for example, toward a lifeguard or WSS rescuer, another swimmer, or the shore. If this is the case, and the person is relatively close, you may be able to recognize a fearful, wide-eyed look on their face. However, you cannot rely only on facial expression to indicate distress because a person may be facing away from you, or blocked from your view by other people.

Signs of Drowning

If distress continues, the person's mouth and nose will sink below the surface of the water, and they will begin to drown. How quickly a person progresses from distress to drowning varies depending on many circumstances. A person who cannot keep their mouth and nose out of the water and breathe will die unless someone intervenes or the situation changes to allow their airway to clear the water. The earlier the person receives help, the better the chance of keeping a distress situation from becoming a drowning.

If a person falls into the water and is not able to come to the surface to get a breath and they begin experiencing respiratory impairment, the drowning process has begun immediately, without any surface struggle or observable signs of distress. A drowning person may look like this in the water:

- Bobbing just at or under the surface.
- The appearance of "playing" underwater for more than a few seconds.
- Floating face down on the surface, just under the surface, or lower.
- Floating face up without apparent voluntary movement.
- Anything that is an unknown object or "shadow" under the water.

It is also a misconception that an unresponsive person underwater will appear to be still. Water movement can be created by other persons swimming nearby, currents, circulation and other factors. An unresponsive limp body will be moved by these forces, which can be misunderstood as voluntary swimming or playing actions.

Consider this example of how quickly, silently, and subtly the drowning process can begin. A 10-year-old client is playing in water that is waist deep. He and a friend decide to move out a bit, pushing off the bottom and bobbing. The water is just deep enough that when the child pushes up off the bottom to get to the surface for a breath, his mouth does not clear the water.

The child gulps a mouthful of water instead of air. In this situation, the child is not able to cry out for help because he is already underwater. He is just under the surface of the water and the drowning process has begun. The child's movements may make him appear to be bobbing or playing underwater, you may not notice anything ex-

traordinary during your scan. You may not be able to recognize the situation because there have been no signs of distress. When the child becomes unresponsive he may still look like he is simply floating.

This is why it is so important to constantly scan and be sure you can see “life”—heads above water with normal breathing and movement—in all participants. Anytime you believe that a person has not lifted the head above the surface to breathe for longer than 10 seconds, whether on, below, or near the surface, intervene and make a rescue. Anytime you see something and are not sure what you are looking at, quickly assess it to make sure it is not a drowning person. Lifeguards who have seen a submerged drowning person often describe what they saw as a “shadow” or a “smudge” or “a child playing underwater” or statements such as “I thought it was a towel on the bottom” or “I thought the person was just relaxing and floating” are common when describing why the lifeguard did not recognize a drowning person.

In some instances, a change in movement may cause you to target in on a situation. For example, if a participant has been swimming and her stroke pattern, tempo or body position changes, this could signal distress. A change in movement could also indicate that the person is having a medical emergency such as a seizure, stroke, low blood sugar, or heart attack in the water.

Protection Zones

A zone refers to the area of the water for which you are responsible when scanning. A zone is three-dimensional and includes the water surface, the bottom, and everything in between. No matter where swimmers are located or the number of participants in your zone, the physical area that you scan does not change.

You should be able to describe the exact boundaries of your zone. If your site area is large, you will need to work with several WSS rescuers, and the water area is divided into multiple zones with overlapping coverage. If you are the only WSS rescuer at your site, your zone is the entire area. The size of the zone you are responsible for may change with conditions and features. You also must be aware of transition zones and how to handle zone coverage during a rotation and during an aquatic emergency.

Zone Size and Boundaries

A zone should be of a size that allows you to respond to a person in distress or drowning within about 30 seconds.

Zone size in your location may change based on the number of participants, the nature of activities, the time of day, or other conditions. For example, as more swimmers enter your zone, it may take longer to scan or longer to swim across because of the crowded conditions. If the zone cannot be scanned in about 10 seconds, or if you do not think you can get to the farthest area of the zone within 20 seconds, the zone should be made smaller by adding another WSS rescuer and reassigning the zones.

Transition Zones

When more than one activity takes place at a site, the use a transition or safety zone may be helpful, such as an area between swimming and boating activities. Participants are not allowed in this zone. This area is still part of your zone, and you should scan it just as thoroughly as if swimmers were present.

Emergency Zone Coverage

Be prepared to cover another rescuer's zone if he or she enters the water to make a rescue. Follow the plan in place at your site.

When you scan during emergency coverage, watch for a signal for assistance from the rescuer making the rescue. If they need help, transfer emergency zone coverage to another WSS rescuer or clear the zone of swimmers according to the plan in place at your site.

Locations for Surveillance

The ideal location for scanning is a place where you can see your entire zone. This may be from an elevated position, or an alternate location may be better if there are blind spots or a glare problem from the sun during certain times of the day. If you cannot see the entire three-dimensional area of your zone from your position, it is your responsibility to move so that you can see. In some conditions, the only way you may be able to cover your zone is by roaming and scanning the water while you walk.

Now that you understand the concept of zones and the importance of location, let's look at methods for staying vigilant while scanning your zone.

Vigilance Methods: 5-minute Scanning and Proactive Rotations

While having constant visual contact with the water, there are some methods and strategies that can help you be alert and remain vigilant.

5-Minute Scanning Strategy[3]

This strategy keeps your scanning efforts organized and your attentiveness high:

Consistently scan your zone, sweeping your eyes and turning your head so that you can see every area of the zone every 10 seconds.

About every five minutes, change posture or position.

The goal of this change is to keep you alert through physical movement. Make significant position and posture changes by switching from sitting to standing then to

[3] Adapted from Tom Griffiths 5-Minute Scanning Strategy. Used with permission.

strolling. For example, during the first five minutes of your rotation, sit. During the next five minutes, stand. Then stroll for the next five minutes. When strolling is not practical, alternate between sitting and standing.

When multiple rescuers are assigned to surveillance duty, you should consider having a communication system in place so that you can signal to each other at the end of each five-minute scan that your zone is okay. Common signals used during the five-minute scan to indicate that the zone is OK include a raised “thumbs-up,” a raised rescue tube, or a short whistle blast. It is critical that any symbol-based communication system be established beforehand, and that the same signals not be used in different ways for different purposes.

You cannot provide constant and dedicated surveillance for one zone for an extended period; it becomes physically and mentally too difficult. To give you breaks away from surveillance responsibilities, you should have a system for frequently moving WSS rescuers from one location to another. When another WSS rescuer comes to take over your zone, this change is called a rotation.

Proactive Rotations

A rotation is a process for lifeguards or WSS rescuers moving into and out of an assigned position. Being relieved of scanning duty or just changing locations frequently can help you keep your attention level high. The shorter your time at a zone and the more frequent your rotations, the more attentive you are likely to be. Rotation timing varies according to the circumstance and number of available personnel, but it generally occurs every fifteen minutes to every hour. The WSS rescuer taking over a zone is known as the incoming WSS rescuer, and the WSS rescuer who has been scanning the zone is the outgoing WSS rescuer.

A well-executed proactive rotation occurs quickly, involves limited conversation, and provides a systematic transfer of responsibility. A proactive rotation begins the minute you begin to proceed to your zone. Depending upon the features present at your site, your station may be a specific shoreline location, an in-water location, or a roving position. Scan the water as you walk toward the zone so that you can get a feel for the activity level and begin to prepare yourself mentally for your scanning responsibility.

Scanning the zone before you take it over assures that you are becoming responsible for a “clean” zone—one that does not have a drowning person on the bottom that the previous rescuer missed. If you don not have your own rescue equipment (such as a rescue tube or improvised flotation device) as you rotate, the outgoing WSS rescuer will have to transfer it to you. The rescuer with the flotation during a rotation is responsible for scanning and would be the person to make a rescue, if needed. The most important concept during a rotation is to transfer the responsibility of the zone in a systematic way, using verbal confirmation to avoid any misunderstandings. For example:

- The incoming WSS rescuer performs a full sweep and scan of the zone and the bottom (if it is visible), then says “clear.”

- The outgoing WSS rescuer passes the rescue tube/flotation to the incoming WSS rescuer, and communicates any safety information or brief on possible high risk behavior.
- The incoming WSS rescuer positions the rescue tube/flotation, begins scanning, and assumes responsibility by saying, “I have the zone.”
- The outgoing WSS rescuer leaves the position.

A proactive rotation does not end when you leave the rescuer position. Scan the zone as you walk away. Remember that the eyes of the participants are on you any time you are in public view; maintain your professionalism.

Communication Signals

Clear communication signals are vital to the operation of an aquatic site. You need a system of communication signals that allow you to indicate that a rescue is in progress, call for help, request coverage of your zone, and activate the EAP.

Most communication signals are based on a combination of whistle and hand movements. At a minimum, you should have a whistle with you at all times. Know and practice the communication signals designed for your workplace.

In the WSS course, we will use just two whistle signals and one hand signal:

- One whistle blast = “look at me and give me your attention.”
- Multiple whistle blasts = “I am entering the water for rescue, cover my zone.”
- Raised fist = “I need help/backup.”

Surveillance from a Rescue Watercraft

Guarding the area from a watercraft in the water is another way to keep track of swimmers at a waterfront. You can use watercraft at a waterfront to patrol the perimeter of a swim area or to serve as an anchored surveillance position. Watercraft can be human-powered, such as a paddle board, kayak, canoe or rowboat, or motor powered, such as a jet ski, inflatable boat, or small motorboat. Your employer should provide you with orientation and instruction in safety practices for the specific watercraft you might use. You should also practice rescue scenarios using the watercraft.

For motor-powered watercraft, it is ideal to have two WSS rescuers on each craft: one serving as an operator and another providing surveillance. When this is not possible and the operator also provides surveillance, it is important to have a good communication device such as an air horn or radio. Rescue watercraft should carry the following equipment:

- Personal Flotation Devices (PFDs) for each occupant and at least one extra.
- Oars or paddles.
- Lines (ropes).
- Flotation devices that can be thrown.
- Rescue tube.
- Bailer (except for a paddleboard).
- Kit with CPR mask, gloves, and first aid supplies.
- Water or fluids for hydration and snacks.
- Communication devices, such as whistle, air horn, radio, signal flags.
- Motor craft should have an anchor and fire extinguisher on board.

Rescue of a Person Wearing a Personal Flotation Device

It is common for outdoor recreationalists to wear personal flotation devices (PFDs) in watercraft activities such as canoeing and sit-on-top kayaking as well as swimming. If worn improperly or if improperly fitted, these jackets may come off the client ,creating a false security. Always check the security and appropriate fit of PFDs worn in water activities. Expect that clients will loosen PFDs during activities when they are hot and or uncomfortable. Reassess fit and security periodically during activities where participants wear these devices.

In the event of a watercraft capsize, if the participant is still wearing a PFD, the device can be used to effect the rescue. These jackets can be used to tow a client by the lapel. If the jacket is fitted poorly, stop and adjust the jacket before continuing the tow. (Figure 3.1).

Figure 3.1

Conducting a Search for a Missing Swimmer

At a waterfront, enough rescuers and other rescuers should be available so that search and rescue is your initial protocol. Search the bottom of the swim area first because brain damage and death can occur within minutes of submersion; therefore, your window for performing search and rescue is relatively short. For this reason, it should take no more than five minutes to completely search the swim area. The specific conditions at your facility—including the number of staff, equipment, water depth, availability of bystanders and search techniques—determine how large an area you can search within this time frame.

Search and rescue efforts should begin near the place where the person was last seen. If possible, visually mark the spot where the person was known to have submerged by “sighting,” or lining up, the spot with a stationary object on the shore. Sighting from several positions and vantage points further helps pinpoint the area. If currents are present, begin the search downstream because it is likely that the person has drifted to a different location by the moving water.

Search and rescue efforts by rescuers and bystanders should continue until the person is found or until additional professional rescue workers such as an EMS, fire, or police search and rescue team arrive and provide other instructions.

Surface Dive

While swimming underwater keep your arms in front or in a relaxed position along your sides. If you are performing a bottom search, keep your hands forward and sweep them toward the sides to feel for the person. To surface dive do the following:

1. Tuck your chin to your chest and press your head and shoulders forward.
2. Bend your hips to roll into a pike or tuck position.
3. Lift your legs to extend your body; this movement allows you to descend headfirst. Move your hands in front of your body into the search position, which will also protect you from submerged hazards.

Search and Rescue/Search and Recovery

Search and rescue refers to situations in which it is likely that a missing person will be found quickly enough that survival is possible. Search and recover refers to situations in which so much time has passed that survival is unlikely. Search strategies for restricted waterfront areas may include those described below.

Dragnet Search

String a weighted net on a section of polyvinyl chloride (PVC) or hold at each end. Begin the search near the person's last known location and follow a predetermined pattern to quickly move the net across the bottom of the swimming area. You may walk or move the net while swimming as long as the net reaches the bottom.

Grid Search

Some waterfronts may have lines or markers anchored along the bottom to help when conducting an underwater search. The search team, wearing goggles or mask, snorkel, and fins (or scuba gear, if trained to use such equipment) lines up along each grid mark and moves forward along the designated path.

Swimming Search Line

This search method is similar to the grid system, but without the benefit of physical markings on the bottom. In shallow water where the bottom can be clearly seen, the search team should swim in a line, shoulder to shoulder. In deeper water, the search team should combine short surface dives to look and feel for a person on the bottom. Surface dive to the bottom, swim and sweep with the arms for 3 to 4.5 meters (10 to 15 feet), surface, back up approximately 1 to 1.5 meters (3 to 5 feet), and repeat the process.

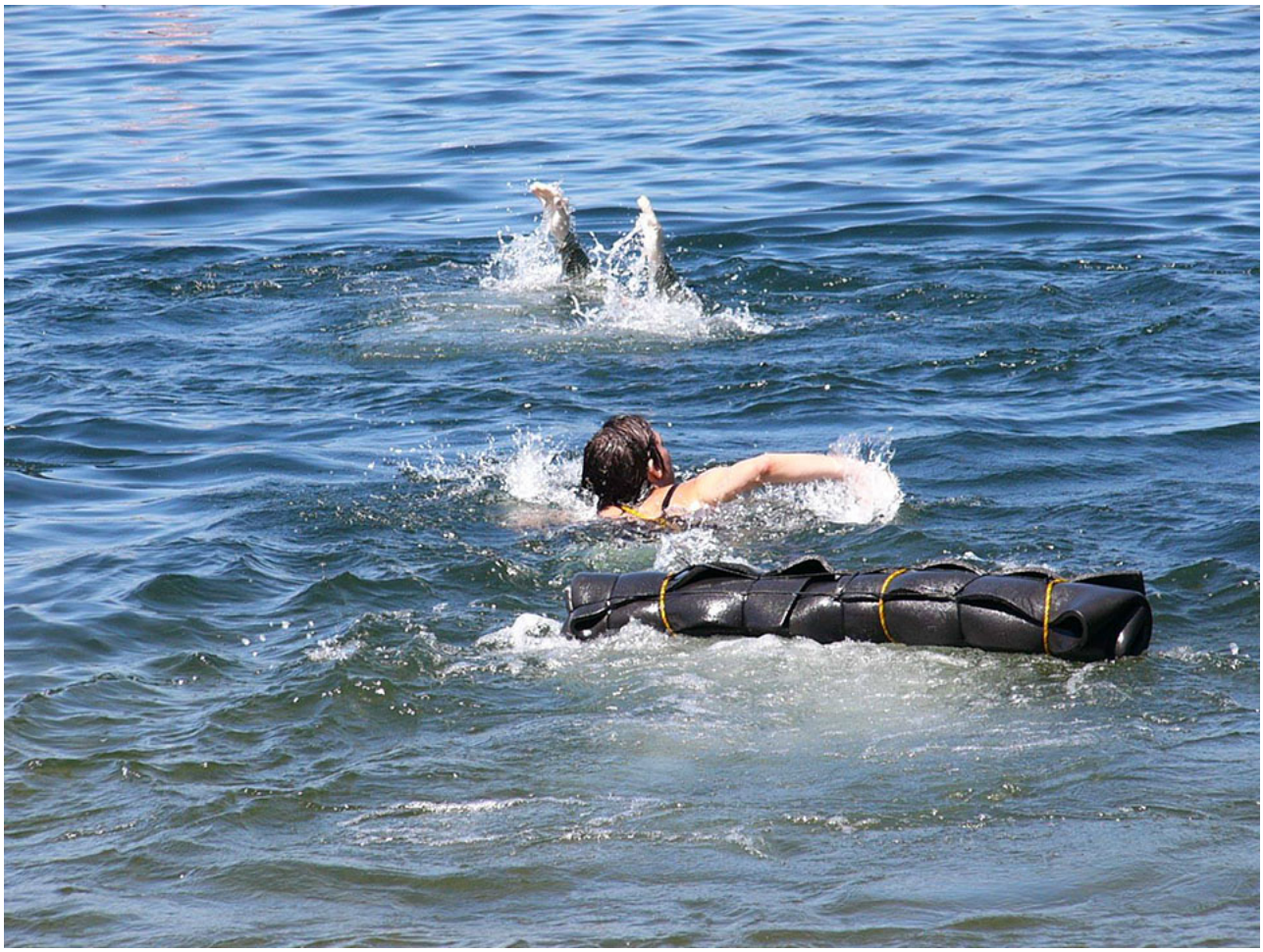
Walking Search Line

The search team forms a line, facing the direction in which the search will begin, and hooks elbows. The line of rescuers moves forward while rescuers sweep the area in front and to the side with the feet.

For all search strategies, if contact with the missing person is made, the rescuer immediately stops and signals to initiate the emergency action plan. Performing search and recovery in a wilderness setting may be more difficult than at a waterfront because of murky water and moving currents, which make a “point last seen” indistinguishable from the surrounding area. You and other rescuers must search the “point last seen” rapidly with quick dives. After these first few minutes have passed, the chances of a successful recovery and resuscitation decline significantly. However, drowning in cold water may be the exception to this case, so continue recovery attempts up to one hour or until the situation becomes unsafe for rescuers. When someone is reported missing in a wilderness setting, follow these steps:

1. Activate the EAP.
2. Ask people on shore to help fix the point last seen.
3. Pick out a landmark on an opposing shore in line with the point last seen to help.
4. Choose a search strategy appropriate to your site and resources.

Chapter 4 – Assists and Rescues



If you are able to recognize distress or drowning symptoms soon after they begin, it is likely that the majority of the people you rescue will be responsive and breathing. In this chapter we discuss how to rescue these persons, using improvised equipment when necessary. The topics include activating the EAP, water entry and approach, and rescues from the front, rear, and when a person is submerged. Next, we talk about how to manage special circumstances such as if a person is wearing a lifejacket, is having a seizure, grabs on to you and you need to escape, or if you suspect a spinal injury.

Rescue Equipment

In the wilderness environment, we need to bring our equipment into the field or be prepared to improvise. The purpose of rescue equipment is to:

- Provide for your safety.
- Extend your reach or flotation capability.
- Improve the likelihood of a successful rescue.

Rescue Tubes

Rescue tubes have revolutionized the ability of aquatic rescuers, WSS rescuers, and lifeguards to make safe and effective rescues in a wide range of conditions. A rescue tube is a rectangular piece of waterproof specialized foam attached to a strap. The loop of the strap is worn diagonally across the chest so that the rescue tube is readily available in any conditions. The width of the rescue tube is narrow enough to be easily grasped.

Rescue tubes provide a high level of flotation and can support several people at one time. Rescue tubes “level the playing field” and make it possible for a small rescuer to

more safely manage a large person or for rescuers to manage more than one person at a time. The flotation capability also makes it possible for individuals with relatively weak swimming skills to more safely make an in-water rescue. As long as you maintain contact with the tube and it is kept *between* you and the person, the risks usually associated with in-water rescues are greatly minimized.

Rescue Cans

A rescue can is a hard piece of molded plastic in the shape of a torpedo with hand grips around all sides. Rescue cans are usually found on surf beaches and are not as effective for managing an unresponsive drowning person in the water. In fact, many beaches are switching from rescue cans to rescue tubes, as cans provide some degree of flotation but not nearly as much as a rescue tube. When a rescue can is all that is available it should be used, but given a choice between a rescue tube and rescue can, the rescue tube (commercial or improvised) will provide the best flotation and be more appropriate for use at a wilderness waterfront.

Basic Water Rescue Equipment for the Wilderness Waterfront

Standard equipment at any WSS rescuer-staffed aquatic site should include the following:

- Commercial or improvised rescue tube or rescue can with strap/leash.
- 9 meter (30 foot) foot polypropylene throw rope.
- Whistle.
- Cell phone or satellite phone, which may be useful as a communication device with previous knowledge of tower/satellite access.

In addition to the rescue equipment listed above, the following should be provided by your employer to help you protect yourself while you manage an aquatic emergency:

- Disposable gloves.
- Eye protection or a face shield/sunglasses.
- CPR pocket mask that can make an effective seal in the water.
- First aid kit with supplies.
- Biohazard clean-up supplies.

Figure 4.1

You will usually have items that you can adapt for use as rescue equipment. Improvised/specialized equipment may include:

- Sticks or poles that can be used as reaching devices.
- Inflatable or non-inflatable sleeping mattresses and 7 m (23 feet) of 2.5 cm (1 inch) tubular webbing that can be rolled to make a flotation device similar to a rescue tube (Figure 4.1). Bright colors are best. We recommend orange coloring to follow international rescue standards for webbing color and length.[4]
- CO2 cartridge inflatable lifejackets or marking buoys that can be used as a flotation device.
- Compressed sleeping bag or clothes in a compression sack that can be used as a flotation device.
- Empty water bottles in a stuff sack that can be used as a flotation device.

[4] Smith WR. Technical Rescue Interface Introduction: Principles of Basic Technical Rescue, Packaging, and Patient Care Integration. In Hawkins SC, ed. *Wilderness Emergency Medicine 2e.* Cambridge: Cambridge University Press, 2024.

Land and Shore Based Assists

Figure 4.2

If a distressed swimmer is responsive and within reaching distance, it may be faster and just as effective to extend your rescue tube, a stick, or another object to the person and help from land, rather than to help from the water. A land-based assist or rescue will be effective only if the person is responsive, within reaching or throwing distance, can see and/or feel the device as it is brought within reach, can and will follow your directions, and has the strength to hold on to the device.

When extending an object to a person:

- Keep your weight low and shifted back to avoid being pulled in by the person.
- Be careful not to injure the person with the device as you place it within reach.
- If possible, lie down or sit before beginning to pull to person to safety. Being secure and low to the ground will make it more difficult to pull you in, especially if dealing with moving water or strong currents.

It is often difficult for a person to locate and maintain contact with a thrown object. Throwing a buoy, personal flotation device, or line is effective under limited conditions (Figure 4.2).

When throwing a rope to a person:

- Yell “rope” and make eye contact with the person as you throw.
- Aim directly at the person.
- Grip the rope with your thumbs towards your body, towing person to shore hand over hand to minimize slipping.

If you are unable to effectively assist from land, then you must enter the water.

Activating the Emergency Action Plan for a Water Rescue

When you activate the EAP for an aquatic rescue, you put into motion a system of backup and support. Your whistle signal or other site-specific communication device alerts others that you are entering the water and a rescue is taking place. In multi-WSS rescuer situations a rescue team will respond. Your rescue team’s ability to make a successful rescue is only as strong as your weakest rescue team member and is directly related to your team’s ability to work together. Therefore, you and your rescue team must simulate real-life situations when practicing the EAP. Rescue team members should be prepared to provide the following assistance:

- Cover your zone while you make the rescue or clear the zone.
- Enter the water and assist with the rescue if you signal for help.
- Bring equipment to the water’s edge, beach entry, or other designated point.
- Call EMS if necessary and when available. There is a further discussion of when to call 911 and what to expect during that call in Chapter 5.
- Provide crowd management.
- Help remove the person from the water and assist basic life support (BLS) on the shore.

If you are the only WSS rescuer available to manage an emergency, your EAP task becomes more difficult. You must be prepared to solicit help from bystanders. Bystanders become your rescue team members, and you must tell them specifically and clearly what to do.

When you have identified a distressed swimmer or drowning person, you must first determine whether you can help from land. If not, then you must enter the water and perform a water rescue.

Water Entry and Approach

Entering the water to make a rescue is often the most effective way to manage a responsive distressed swimmer or drowning person quickly.

Always use a rescue tube or improvised rescue flotation when making an in-water rescue. Keep the flotation between you and the person in the water at all times when making a water rescue. If you have a rescue tube, wear the strap diagonally across your chest. To begin a rescue, enter the water using either a compact jump or protected water entry and then swim toward the person with an approach stroke.

Compact-Jump Entry

Figure 4.3

A compact-jump entry is useful in a wide range of water depths and circumstances (Figure 4.3). Because you enter the water in a compact position, your risk of back, leg, or foot injury is lower than with other techniques.

A compact jump is best performed into water that is at least as deep as the distance from the take off point to the surface of the water where you will enter. To perform a compact jump, do the following:

- Keep yourself in the compact position until you enter the water. You may submerge momentarily, but the rescue tube will bring you to the surface quickly.
- Hold the rescue tube tightly across the front of your body with the strap gathered in your hand or tucked behind the tube.
- Jump forward and pull your knees up. Lift your toes up so that your body is in a compact position, almost like a “cannonball.”

Protected Water Entry

Figure 4.4

Use a protected water entry when entering from water level (Figure 4.4). The protected water entry is a modified belly flop, which will help you stay on the surface and protect your face and neck from possible injury. To perform this entry, do the following:

- Enter the water quickly by foot, using a high step run.
- When you are about knee deep, push off with your legs, lean forward and drop your rescue tube to your side.
- Arch your back and cross your arms in front of your face.

Your chest and abdomen should enter the water first. The more you are able to stay on the surface, the better you will be able to maintain a constant view of the person's position in the water.

Approach Stroke

Figure 4.5

Once you are in the water, the objective is to use any combination of arm strokes and leg kicks to make rapid progress toward the person (Figure 4.5). For example, it may be faster for you to swim using a freestyle arm stroke and kick, or you might prefer a breaststroke, or a combination of the two strokes. Swim with your head up to maintain visual contact while you approach.

Keep the rescue tube under your arms and across your chest if the person is just a few yards or meters away. If you anticipate swimming more than a few meters, it might be faster to trail the tube behind you. When you are about 3 meters (10 feet) from the person, pull the rescue tube into position across your chest.

As you swim toward the person you are rescuing, assess the situation to determine which type of water rescue will be best. Depending on the location of and condition of the person, you may decide to use a front, rear, two-guard, or leg-wrap rescue technique. If more than one person needs assistance, you will manage a multi-person rescue.

Water Rescue

The first objective of a water rescue is to minimize body-to-body contact between you and the person being rescued. Other objectives include the following:

- Keep your head and the head of the person you are rescuing above water so that you both can breathe.
- Make progress toward a takeout point, such as shallow water or zero-depth beach entry area for removal.

• Provide safety instructions to a responsive swimmer to reduce the risk of the incident happening again.

A responsive person in distress or drowning will either be facing you or facing away from you, and will be either on the surface or submerged.

Flotation Assist

Figure 4.6

The easiest rescue is to extend flotation to the person, and keep it between you and them (Figure 4.6). An improvised rescue tube works well, but any item that provides adequate flotation for both you and the person in distress can be used. Maintain contact with the rescue tube and pull the person to shallow water or a safe point of takeout. A flotation assist only works if the person is responsive, can follow directions and will grab on to the flotation device.

Front Rescue

Figure 4.7

When making a front rescue you can see the other person's face, which provides you the ability to communicate with them. Also, when you push the rescue tube into the other person's chest, it drives the person backward, minimizing the risk of them grabbing you. To perform a front rescue, do the following (Figure 4.7):

- Swim to a position about arm's length in front of the struggling person.
- Push the rescue tube firmly and quickly into the person's chest by quickly extending your arms and locking your elbows. Encourage the person to grab the tube. Keep your arms straight and extended so that the other person is at least an arm's length away from you and on the other side of the rescue tube.
- Push or tow the person to shore. Keep kicking to continue your forward motion. When the person is calm and is maintaining contact with the rescue tube, change direction (if needed) toward the closest exit point.

Studies of actual rescues involving responsive people in distress or drowning persons show that once a person is holding onto the rescue tube and realizes that it provides flotation, they stop struggling and panic subsides. However, if a person refuses to grab the rescue tube, back away and try the rescue again. If the person still will not grab the rescue tube, swim to a position behind them and use the rear-rescue technique or signal for help from another rescuer and perform a two-guard rescue.

Rear Rescue

Figure 4.8

Approaching from behind minimizes the chance of the person grabbing you. To perform a rear rescue, do the following (Figure 4.8):

- Keep the rescue tube at your chest and move directly behind the person. Turn your head to the side so that the struggling person's head movements do not hit your face.
- Reach under the person's arms and around his or her chest, then pull the person slightly back onto the tube. Hold the person securely on the tube.
- Kick to make progress toward the takeout point. If the person is calm and secure on the rescue tube, consider maintaining your grasp around the tube and person with one arm and using your other arm to pull.

Two Guard Rescue

The two-guard rescue allows you to effectively and safely manage a large or uncontrollable person. This technique combines the front and rear rescues and requires two rescuers. To perform a two-guard rescue, do the following:

- If you are the initial rescuer and need assistance, back away from the person and signal for help by raising a clenched fist. When the other WSS responder arrives, one of you moves behind the struggling person, and the other moves in front.

- If you are behind, perform a rear rescue and make a “target” with your open hands.
- If you are in front, perform a front rescue, aiming for the “target.” Communicate with your co-rescuer so that you both perform the front rescue and rear rescue techniques at the same time.
- If you are performing the rear rescue, reach over the tube in front of the person, and pull in tight. If you are performing the front rescue, push forward with extended arms.

You may need to place the person in front of you, laying on your chest or seated on your knee, to effectively pull down and tighten PFD straps on the person’s jacket. Some of these devices have specific flotation designed to assist righting the user’s face upward when floating in the water. Do not depend on this design to protect your clients.

When rescuers are wearing one of these jackets, it can aid rescue with additional buoyancy. Some limitations to consider may be submerged rescues, escapes, and forward momentum when swimming.

We have discussed the various methods for using a rescue tube or flotation to rescue someone. But what should you do if you lose control of your rescue tube or a struggling person grabs you instead of the rescue tube for support? Let’s discuss techniques for escaping from someone’s grasp.

Emergency Escapes

A person who is struggling in the water and grabs you instead of a rescue tube or other means of flotation has one objective in mind: to stay on the surface. If you realize that you are about to be grabbed, try to get a quick breath of air and position your head so that you will not be choked if someone grabs your head. Your goal is first to prevent yourself from being in danger.

Suck, Tuck and Duck

Figure 4.9

Use the phrase “suck, tuck and duck” to remind you to suck in a breath of air, tuck your chin and try to duck away from the person’s grasp (Figure 4.9).

If a struggling person does grasp you around your head, submerge under the water, taking the person with you. Often, the action of being taken underwater will cause the person to release you, because his or her objective is to remain on the surface. If the person does not release you, follow these steps to perform an emergency escape:

1. Place your hands under the person’s upper arms and push firmly up and away.
2. If you are not released, place your hands on the person’s hips and press him or her away from you while you duck out from the grasp.
3. When you are free of the person’s grasp, quickly move backward out of reach.
4. Surface, reposition your rescue tube and attempt the rescue again.

Thumb Release

Figure 4.10

Another option is to use a method known as a thumb release. Place three or four of your fingers in the fleshy area just under the person's thumb (Figure 4.10). Squeeze to apply pressure, twist and shake until the person releases the grasp.

Seizures in the Water

If a swimmer experiences a seizure while in the water, he or she may not have the body control to be able to keep the head above water and breathe. The behaviors associated with seizures range from very subtle changes in responsiveness to obvious convulsions. A person having a convulsion may be jerking uncontrollably with random arm and leg movements. A seizure usually lasts only a minute or so, followed by several minutes of recovery when the person may still be somewhat unresponsive.

When a seizure occurs in the water, the primary goal is to keep the person's head above water to reduce the chance of swallowing water or allowing water to obstruct the airway. This goal is easily achieved by holding the seizing person's head above water. If possible, you may want to place a rescue tube under the person, but you do not want to try to grab around a person having a seizure such as you would in a rear rescue. Rather, hold the head in a position above the water first, and then place the rescue tube under the person if possible or if needed.

If the seizing person can be safely extricated while the convulsions are occurring, consider doing so and continue with care on shore. You should also extricate immedi-

ately if you cannot keep the person's head above water. Otherwise, remove the person from the water after the seizure stops.

Considerations for submersion incidents

Your goal in managing an unresponsive, non-breathing drowning person is to obtain an unobstructed, open airway as quickly as possible so that the drowning person can start spontaneous breathing or so that you can begin rescue breathing. You should be prepared to begin airway management and rescue breathing while you are still in the water so that you stop the drowning process as quickly as possible, rather than waiting the crucial time it takes to get the person out of the water and on to shore. Chapter 6 provides details about how to manage an unresponsive drowning person.

Managing Suspected Spinal Injuries in the Water

Improvised extrication techniques will be an important component in managing suspected spinal injuries that occur at the wilderness waterfront.

You should suspect a spinal injury if the person experiences a forceful trauma such as striking the head on the bottom. Most individuals with a suspected spinal injury will remain responsive, mobile and with some degree of pain and other symptoms. Those with severe injury may have paralysis and be unable to feel or move the legs.

Objectives for Spinal Cord Protection (SCP)

If a person with a suspected spinal injury is in the water:

- Minimize movement of the head, neck, and spine. In the past, water rescue curricula taught that patients needing spinal cord protection should be "immobilized", but this is no longer considered appropriate.[5] Currently, the most accepted mechanism for protecting the spinal cord in someone who may have injured their back or neck is "spinal motion restriction" (SMR).
- Passive spinal motion restriction (directing the person not to do any movement that causes pain) is preferred over active restriction (another person holding the head and neck still.)
- Keep the person's head above water so that they can breathe.

In shallow water, if there is a moving current, orient the person's body so that the head is upstream. This position will help minimize spine flexion.

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[5] Smith B, Bledsoe B, Nicolazzo P. 2024. General Management of Trauma in the Wilderness. In Hawkins SC, ed. Wilderness Emergency Medicine, 2e. Cambridge: Cambridge University Press.

- Move to shallow water or a takeout point and prepare to assist the injured person onto the shore.
- If the person is not breathing or is unresponsive, focus on airway management breathing over spinal motion restriction as you move to shallow water and assistance.

Active Spinal Motion Restriction

Figure 4.11

The vice grip is a technique you can use to restrict spinal motion in the water (Figure 4.11). Perform a vice grip if a person with a suspected spinal injury is face up or face down in either shallow or deep water. Follow these steps:

- Position your rescue tube centered on your chest and under your arms; in shallow water, the rescue tube may not be necessary.
- Reach over the person and place your forearms on his or her sternum and spine. Press your arms together making a sandwich holding the back of the person's head and the jaw.
- If the person is face down, hold this position while submerging under the person and rolling the person to a face up position.
- Make progress to a safe take out point. If you are in deep water, consider using an "egg-beater kick" to proceed to the takeout point, preferably in shallow water.

• Extricate the person from the water.

Body Elevation and Movement (BEAM) Technique

If the person cannot stand or walk out, move the person to dry land using the Body Elevation and Movement (BEAM) method you learned in Wilderness First Aid training (see photo on page 61.)

Look at your surroundings and choose the shortest, least obstructed route to your designated extrication point. You need a minimum of five to six rescuers to move the person no more than 15 meters (50 feet); a shorter distance is better. Place the lead rescuer at the head, with the others equally distributed to support the person's torso and hips. The lead rescuer will guide the other rescuers' movements.

Extricate the person. The rescuer at the head leads the extrication. Lift and lower the person as one unit, keeping the person's ears in line with his or her shoulders and the shoulders in line with the hips at all times. Avoid moving the person's head toward his or her chest.

The BEAM technique, when used effectively, can help rescuers remove the person from the water to shore and across land in an effort to continue emergency care and maintain the person's body temperature.

Remind the person to keep the head and neck still as much as possible and not to do any movements that cause pain. Treat the person for shock, keeping the person warm, monitoring airway, breathing, circulation and circulation and sensation and movement in all four extremities. Wait for EMS and or outside rescue teams as indicated and available.

Chapter 5 – Extrication Methods and Contacting Emergency Medical Services

This chapter will focus on how to remove an ill, injured, or unresponsive drowning person from the water as quickly as possible and in a way that minimizes the risk of injury to you or the drowning person. You also need to be aware of considerations for contacting 911 or other Emergency Medical Services (EMS) from the wilderness waterfront.

Extrication Methods

An injured, ill or unresponsive person will need to be removed from the water or moved to another location away from the water's edge. Factors that may affect the type of removal method you choose include the following:

- Size of the shoreline. Extrication is much easier if the water and shore are at nearly the same level.
- Obstructions, such as rocks and trees.
- Size of the drowning person. You may not need help to lift a small person out of the water.

- Whether or not you suspect a spinal injury.
- Available equipment.
- Number of people available to assist. Use several helpers if they are available, especially when removing a large or heavy person from the water.

Always lift with your legs, keeping your back straight and bending your knees. Keep your body's center of gravity low and the weight of the person close to your body. The following methods are effective to use at wilderness aquatic sites for people who are not suspected of having a spinal injury.

One Rescuer Assist

Figure 5.1

Use this method if a person is responsive and can walk. Place the person's arm around your shoulders and your arm around his or her waist (Figure 5.1). Provide support and assistance as needed as you walk out.

Two-Rescuer Assist

Figure 5.2

If a second rescuer is available, he or she should move to the other side of the injured person to provide additional support and assistance (Figure 5.2).

Two-person Extremity Lift and Carry

Figure 5.3

Two rescuers can use this extrication method on someone who is responsive or unresponsive. One rescuer gets behind the person and prepares to lift by grasping under the person's arms. The second rescuer stands at the person's feet, between the legs, facing away from the person. This rescuer prepares to lift by grasping the person's ankles and pulling them into his or her body for support. For a larger person, back up and hold under the knees. Both rescuers lift the person at the same time and walk forward. The rescuer at the feet leads the way (Figure 5.3).

Figure 5.4

The position of the rescuer near the feet may need to be changed to facing towards the person when navigating rocks or steep areas (Figure 5.4). This position provides for better communication and route strategy between the rescuers.

Beach Drag

Figure 5.5

One or more rescuers can use this extrication method if a person is unresponsive. When you get to shallow water, move behind the person and hold him or her under the armpits. Walk backward out of the water and up onto the beach (Figure 5.5).

Contacting Emergency Medical Services

Contacting EMS dispatch from a remote location may be difficult. Know the local medical and rescue resources for your area before taking groups into remote locations. Are specialized rescue services available in your areas? What is their response time?

In most U.S. locations, but not all, the number to dial is 9-1-1. Know the phone number and dialing instructions if other than 911, and confirm the number before your trip. Never assume that a cell phone or satellite phone will work from your location until you try it. Know the closest location to your aquatic recreation site where you can make a phone call to activate EMS.

Your wilderness first aid or medical training will help you identify times when you will need to contact EMS for assistance. Some common themes include a person who is unresponsive, has difficulty breathing at rest, or is immobile due to injury.

The timing of when in a resuscitation to call 911 will depend a little bit on the circumstances. As we discuss in the next section, you may want to wait to call until you

have some basic information. For example, a WSS rescuer entering the water may not be the best time—although it would be the earliest, you wouldn't have much to tell the 911 dispatcher, and it could be the subject just needed assistance and does not have a medical emergency requiring an ambulance. In general, the point at which you know there is a true medical emergency, and at least the basics of the patient condition, may be the best time to arrange for 911 to be called. Often this is immediately upon movement of a patient out of the water.

What to Expect When You Call EMS

Typically, a certified Emergency Medical Dispatcher (EMD) with specialized training to deal with crises over the phone will answer your call to 911 or other designated number. Be prepared to briefly and accurately explain your situation. Many dispatchers today are trained to provide real-time instruction in CPR and lifesaving first aid while simultaneously dispatching EMS personnel to your location. Listen to the dispatcher and follow the instructions.

Most public safety agencies have access to a variety of highly trained personnel and specialized equipment and vehicles. To ensure that the right people with the right equipment are sent to the correct location, the 911 dispatcher must ask you specific questions. Listen carefully and answer the questions directly. Expect the dispatcher to follow a prescribed pattern of questions that allow them to make situational decisions.

The dispatcher asks several universal questions in order to put their knowledge and experience to work for you quickly and effectively after they have verified the location and callback telephone number at the emergency site. Common questions include:

- What is the location of the incident?
- What phone number are you calling from?
- What has happened?
- Is the patient responsive?
- Is the patient breathing?

Getting this critical information from you typically takes less than 30 seconds. The dispatcher may have additional directions for patient care while you wait for emergency responders. In all cases, remember that the most important thing you can do when calling is to listen carefully. Always do whatever the dispatcher asks you to do to the best of your ability.

Verbal Reporting and Transfer of Care to EMS

When you communicate with outside rescuers that come to your aid, it will be important to speak clearly and directly. When you provide pertinent information, it will help them to continue the care you have initiated. Be prepared for questions and reply directly to the questions asked without giving additional information. Many times, the calmness and clarity in which you give your report helps the incoming rescuers maintain a sense of calmness as well. The following outline will help you to deliver a verbal report that helps the incoming rescuers become familiar with the situation they are entering and what they need to do next.

Hello my name is _____and I have been trained in _____.

Here is what has happened “ “ (brevity and key points are critical here)

The patient is a (male/female), aged_____.

The care that has been provided includes _____.

The patient (has/has not) responded to care (provide key details).

Then allow for questions and from the incoming rescuers.

Finish with “Now, how can I help you?”

Chapter 6 – Rescue Breathing and CPR for an Unresponsive Drowning Person

Fig 6.2: the Seal-Rite mask, an example of a mask appropriate for water rescue

Figure 6.1

Because drowning is a hypoxic event, drowning for an unresponsive person does not stop until the breaths go in—even if you have removed the person from the water. You should be prepared to begin airway management immediately

Having a rescue tube and barrier mask available to you in the water is critical to your success in rescuing an unresponsive drowning person. The mask should be capable of making a reasonable seal in the water, and the one-way valve should be made of plastic or a non-absorbent material (not paper or fiber) (Fig 6.1, 6.2). The mask must be easily accessible.

When you use a rescue tube or improvised flotation to perform a rescue on an unresponsive drowning person, you are in an excellent position to provide immediate rescue breathing. When you place a drowning person on the rescue tube, their head will fall back into an open-airway position.

From this position behind the person's head, you can place the mask and begin rescue breathing and still be able to swim and progress toward a takeout point. Providing ventilation immediately, while you're still in the water, can be crucial to a successful rescue outcome, especially when you are not sure how long a drowning person has been submerged and without oxygen. Let's look at how to perform this technique in more detail.

Rescue Breathing in the Water

Follow these steps to perform rescue breathing in the water:

1. **Position on flotation and check responsiveness and normal breathing**. When you reach the drowning person, place him or her on the rescue tube or improvised flotation, using either a rear rescue or leg-wrap rescue if the person is submerged.

2. **Signal for help.** If the drowning person does not begin to cough, move or show signs of breathing when you lift his or her face out of the water, raise your fist to signal that you need help.

3. **Open the airway**. Obtain and place your pocket mask. From a position behind the drowning person's head, place the pocket mask over the person's nose and mouth. Make a good seal.

4. **Give five (5) rescue breaths**. Take a normal breath. Place your mouth over the mask valve and breathe into the person with enough air to make the chest rise but no more.

5. **Move towards shore and continue rescue breathing** if the person is still unresponsive. Use a scissor kick or walk if you can touch the bottom with your feet. Provide rescue breaths at a rate of one breath every 5 seconds.

6. **Extricate from the water and continue care.** Once you have reached the shore, you must remove the person from the water and place them on land so that you can continue basic life support care until EMS arrives or basic life support is terminated (see "Wilderness Considerations" later in this chapter for discussion of when to terminate resuscitation efforts). Check for normal breathing and an obvious pulse for no more than 10 seconds. If there is an obvious pulse, continue rescue breathing. If there is no obvious pulse, begin CPR, giving 30 compressions at a rate of 100 to 120 compressions per minute, followed by 2 breaths. If available, an AED can be integrated early into CPR, but drowning patients less often have irregular heartbeats causing their cardiac arrest. A reminder of CPR and AED interventions is in Fig 6.3.

Cardiopulmonary Resuscitation Overview

30 compressions 2 breaths x 5 cycles in 2 minutes. 100-120 compressions per minute. Push hard push fast.

An AED will be most useful if applied in less than 10 minutes after arrest. The closer to the arrest time the better.

*Due to the "hypoxic nature" of cardiac arrest in drowning persons, we start our resuscitation with ABC and 5 stacked breaths before checking the pulse.

Considerations for a Drowning Person

When caring for an unresponsive drowning person, you will use the techniques you learned during your CPR training. However, you will need to modify these techniques somewhat because the person you are rescuing has been submerged in water and without air for (usually) an unknown amount of time. The following situations may occur when rescuing an unresponsive drowning person:

- The person may have swallowed large quantities of water, making a large swollen stomach common and vomiting highly likely. These circumstances may make it difficult for you to obtain or maintain an open airway. You should clear the mouth of vomit using the techniques you learned in your wilderness emergency care training.
- Foam is likely to come out of the mouth and nose of an unresponsive drowning person. Foam is different than vomit, and should not be cleared—,breathe through any foam. The lungs will keep producing foam. You can never remove it, so any attempt to remove it is delaying care.
- The person may make gasping or snoring sounds that you might mistake for attempts to breathe. However, these sounds are caused by changes occurring in the body and

are called agonal breathing. Unless the person is breathing normally, continue providing rescue breathing.

Because you and the drowning person will both be wet and possibly cold and you may be breathing heavily from executing the rescue, it will be difficult for you to effectively check the person's pulse. If possible, have another rescuer assist you, but take no longer than 10 seconds to quickly check for normal breathing and at the same time feel for a pulse. Unless an obvious pulse is felt, begin CPR.

In the absence of large amounts of blood or bodily fluids, do not delay rescue breathing or CPR to put on gloves. Your hands may be wet, and you need to continue care without interruption immediately after removing the drowning person from the water. If you do need to put latex or nitrile gloves on your wet hands, using the technique of filling the gloves with water first to save valuable time. Rescuers who come to assist should put on gloves while moving toward the scene so they don't delay care while putting on their gloves.

Focus on airway management and good ventilations. A rescue breath should be given with enough force over about one second to cause the person's chest to rise, but no more. Blowing in too hard or too fast can cause the breath to go into the stomach rather than the lungs.

If you do not have a mask, consider mouth to mouth rescue breathing. To perform mouth to mouth:

- Place the person on flotation so that the airway is open, and position yourself alongside of the person.
- With your hand closest to the person's head, pinch the person's nose closed. Use your forearm to press lightly against the person's forehead to keep the head in an open airway position.
- Take a normal breath. Cover the person's open mouth with your mouth to make a good seal. Provide a rescue breath.
- Remove your mouth just enough to take another normal breath and continue rescue breathing. For a small child, it may be necessary to cover both the child's nose and mouth with your mouth to get a good seal.

Wilderness Considerations for Cardiopulmonary Resuscitation

Here are additional considerations to take into account when working in a wilderness setting:

- Remote areas will likely have long EMS response times and specialized equipment like emergency oxygen and AEDs will not be available. Plan your emergency proce-

dures accordingly. Successful resuscitation from respiratory or cardiac arrest in remote settings is unlikely.

- Many CPR classes teach that CPR should only be stopped when the rescuers become exhausted, when pulses or activity return, or when care is handed over to someone of equal or more extensive medical training. However, when advanced life support (ALS) will be significantly delayed, consider terminating resuscitative efforts after 30 minutes if no signs of life appear. This decision is supported by current Wilderness Medical Society Clinical Practice Guidelines. If pulses do not return and there is nobody to transfer care to, performing CPR until exhaustion has both psychological and operational dangers. After 30 minutes of CPR without return of signs of life it is likely most appropriate to convert caregiving efforts and safety attention to those involved in the drowning and the rescue, and consider the patient deceased—exhausting everyone is unlikely to be the safest approach. However, this is very circumstantial, and is a decision that can only be made evaluating the specific contexts of the situation.

For drowning and asphyxial cardiac arrest incidents, we use an “ABC” approach during CPR: *Airway, Breathing, Circulation.*

	Adult	Child
Compression to Breath Rate		
1 Rescuer	30 Compressions to 2 Breaths	30 Compressions to 2 Breaths
2 Rescuers	30 Compressions to 2 Breaths	15 Compressions to 2 Breaths
Depth of Compression	2 Inches	1/12 Inches
Rescue Breathing Rate	1 Breath every 5 to 6 seconds	1 Breath every 3 to 5 seconds
Duration of Breath	1 Second per breath Watch for the chest to rise and fall. If chest does not rise repeat the head tilt-chin lift, then attempt another breath.	Only enough air to make the chest rise and fall. Watch for the chest to rise and fall. If chest does not rise repeat the head tilt-chin lift, then attempt another breath.
Ways of Delivering Breaths	Mouth-to-Mouth, Mouth-to-Barrier, Bag Valve Mask	Mouth-to-Mouth, Mouth-to-Barrier, Bag Valve Mask
FBA Obstruction: Conscious Patient	Abdominal Thrusts until object comes out or until patient becomes unresponsive	Abdominal Thrusts until object comes out or until patient becomes unresponsive
FBA Obstruction: Unresponsive Patie	Look for object in airway and begin CPR; Look in Airway for object each time you return to give breaths, remove if seen. Also try reopening airway with head tilt-chin lift.	Look for object in airway and Start CPR; Look in Airway for object each time you return to give breaths, remove if seen. Also try reopening airway with head tilt-chin lift.
Hand Position	Two hands, On the breastbone at the nipple line.	Two or One Hand, On the breastbone at the nipple line.
When to use an AED	Apply immediately for witnessed arrest and after 2 minutes of CPR if unwitnessed	After 2 minutes of CPR
Exceptions to Using an AED	When the patient is likely to be a victim of asphyxial arrest (e.g., drowning, obstructed airway)	

Chapter 7 - Professionalism and Self Care

Professionalism

As a trained Wilderness Swim Safety rescuer it's important to embody the image you are upholding. Your physical presence, posture, obvious attentiveness to surveillance, and direct communication ensures confidence in your participants and often aids in compliance with behavior guidelines and rules.

Projecting a Professional Image

- Professionalism is based on dress, behavior, and performance of your role.
- Professional behaviors include:
    - Location and demeanor distinguishes you from the crowd
    - Maintaining excellent posture.
    - Keeping focused and following lifeguarding best practices
    - Speaking clearly and politely to others.
    - Following the rules you set for others.

What You Should Expect From Your Employer

- Personal protection equipment, such as gloves and barrier mask
- Rescue equipment with specific training with unfamiliar or organization specific equipment
- Drinking water or the ability to create potable drinking water.
- Communication or signal device, such as a whistle.
- Emergency communication directions and emergency contact numbers.
- First aid equipment (in date and inspected).
- A break from scanning at least every hour.
- Ability to move and change position while providing surveillance so that you can .stay alert and can scan your zone with accuracy.
- Orientation to and practice of the organization's emergency action plan.
- Ongoing enrichment training.
- Ongoing performance assessment.
- Coverage under a liability insurance policy or immunity from liability.

What Your Employer Will Expect of You

- Provide proof of water safety training and competencies/skills, CPR, First Aid trainings.
- Provide proof, through in-service skills assessment, that you can perform rescue skills.
- Uphold employment agreements, whether written or verbal.
- Exhibit a high level of professionalism and follow your training.
- Documentation of rescue and medical responses.
- Maintenance of your water rescue skills while employed.
- Modeling of a professional image with participants and co-workers.
- Customer service for and protection of participants.

Self Care

Your employer is required by law to provide equipment and training to promote a safe working environment. But just as participants must share in the responsibility for their own safety, you must also share in the responsibility for your safety. Follow these tips to avoid work-related injury:

- Know and practice the EAPs at your sites for emergency evacuation, procedures for performing rescues, or first aid duties.

- Take care when assessing an aquatic site for participant use. Always have another guard provide surveillance for you.

- Walk, do not run, on the shoreline—even during emergencies. You cannot provide care to someone else if you are injured on the way to the scene.

- Keep aquatic site access cleared of obstructions.
- Follow all the rules and policies of your employer at all times.
- Consider comfort items to minimize distractions while guarding. Sun shade, insect repellent, sunglasses, etc.
- Obtain practical (hands-on) instruction for equipment you will be authorized to use.
- Consider abandoning your aquatic site if your clients are unable to follow directions and or other site users become disruptive or aggressive.
- Minimize your risk for injury by maintaining a reasonable physical condition. An effective physical fitness program should include at least 30 minutes of exercise (e.g., swimming, running, weight training, cycling) at least five times per week.

Methods to reduce work-related illness include the following:

- Minimize your risk of dehydration, heat exhaustion, or heatstroke by drinking lots of water. Keep a water bottle on the stand and make sure you have protection from the sun.
- Obtain a hepatitis B (HBV) vaccination and any other recommended immunizations if you have not been immunized.
- Do not swallow recreational water.
- Always use your personal protective equipment (PPE) when cleaning up bodily substances.
- Remove wet swimwear frequently to avoid skin chafing and urinary tract infections.
- Wear close-toed shoes to prevent exposure to fungus or bacteria and to protect feet from cuts.

Eye Care[6]

One of your most important lifeguarding tools is your eyes. Most of your time is spent using them to scan for visual indications of problems. Adequate eyesight is critical to your success. Follow these tips to protect your vision:

- Shield your eyes from the effects of the sun, wind, water and dust by wearing sunglasses that are both 100% ultraviolet protective and physically protective.
- Labels on sunglasses may be misleading. Look for the words “ANSI standards” or “UV protection up to 400nm” to be sure the lenses filter 100% of UV rays.
- Have your eyes tested at least once a year to screen for vision problems.

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[6] Information courtesy of Park District Risk Management Agency (PDRMA).

- If you wear glasses or contact lenses to correct your vision, wear them at all times when you are on duty.
- If you wear contact lenses, close your eyes briefly when you enter the water in order to avoid losing your lenses.
- If you know you will be swimming with lenses in or may have to get in the water during a rescue, consider wearing disposable lenses so that if the lenses do come out they are easily replaced.
- Keep your lenses clean and replace them as needed. Contaminants from the water may remain on contact lens and cause eye inflammation.

Skin Cancer Awareness[7]

The sun is the primary cause of skin cancer, and chronic exposure to the sun's ultraviolet rays is the most significant risk factor for developing all types of skin cancer. If you work outdoors, you are at risk. The good news is that skin cancer is preventable, but before we talk about protection and screening, here are some sobering facts from the Skin Cancer Foundation:

- More than a million people will be diagnosed with skin cancer this year.
- One in five Americans will get skin cancer in the course of a lifetime.
- One person dies every hour from skin cancer, primarily melanoma.
- Melanoma kills more young women than any other cancer.
- More than 90 percent of all skin cancers are caused by sun exposure, yet fewer than 33 percent of adults, adolescents, and children routinely use sun protection.
- The risk of developing melanoma, the most dangerous form of skin cancer, has more than doubled in the past decade.
- One in four people who develop skin cancer is younger than 40.
- The effects of skin aging caused by the sun can be seen as early as in one's 20s.
- Putting proven cancer prevention and early detection techniques into action could eliminate at least 100,000 cancer cases and 60,000 cancer deaths in the United States each year.

You must take personal responsibility to protect yourself, and the best way to accomplish this is to use skin protection products and to cover up.

- Always use sunscreen and lip coat rated at a sun protection factor (SPF) of 15 or higher. Apply sun-screen at least 30 minutes before exposure. A sunscreen log for

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[7] Information courtesy of The Skin Cancer Foundation, New York. www.skincancer.org.

documenting application should be used by the lifeguard staff. Sun protection factors are relative to the individual. An SPF of 30, for example, allows someone to remain in the sun thirty times longer without burning than they would be able to without the sunscreen. However, sunscreen does need to be reapplied, especially after sweating or being in water (unless particularly formulated to resist these liquid-based exposures). Usually sunscreen should be reapplied about every 4-6 hours. The reason extremely high SPF sunscreens are not useful is that the sun protection factor gained often falls beyond the time one would need to reapply the sunscreen anyway (in other words, an SPF that theoretically permits 10 hours of sun exposure is irrelevant if the sunscreen must be applied at the 4-6 hour mark).

- In addition to sunscreen, use sun shade. Have at least one physical barrier, such as a hat, shirt, or umbrella between you and the sun.
- Examine your skin regularly, and seek a healthcare practitioner's opinion if you have suspicious-looking moles or dark areas on your skin.

Preventing Blood-borne and Recreational Water Illness

Most bodily substances, especially blood, vomit and fecal matter can contain disease. The germs that can be transmitted through direct contact with blood and bodily fluids are called bloodborne pathogens, and they include Human Immunodeficiency Virus (HIV) and HBV among others. Vomit may contain noroviruses. Fecal matter can contain deadly disease-causing bacteria such as *E. coli* and parasites such as giardia and cryptosporidium as well as the hepatitis A virus.

Sometimes, pathogens enter the water due to environmental, animal or human contamination. When people ingest contaminated water during recreation and become sick, the term Recreational Water Illness (RWI) is used. To prevent RWI:

- Avoid aquatic sites with large amounts of waterfowl activity, especially with obvious large amounts of fecal matter in and around your site.
- Persons in your group with active diarrhea should refrain from swimming with the group.
- Avoid the use of an aquatic site that has significant human debris, dead animal carcasses or known animal activity upstream.

When a bodily substance such as vomit, fecal matter or blood are present, you can prevent transmission of disease isolating yourself and others from contact. The first step in isolating a bodily substance is to consider everything to be infected and to protect yourself from becoming exposed through the use of universal precautions and PPE.

Because you cannot look at a bodily substance and know if it is infected, assume that all bodily fluids and feces could contain pathogens. This approach to contact is

called universal precautions. The PPE available for your use should include protective gloves, a pocket mask or face shield, and protective eyewear and footwear.

Figure 7.2

If your hands are wet and you need to put on protective gloves quickly, use this technique (Figure 7.2): Fill the glove with water. Insert your hand. Lift your hand up to drain the water.

ON AND NEARSHORE

PLAN AHEAD AND PREPARE

- Know the regulations and permit requirements for your activities.
- Check charts, tides, and weather.
- Leave a float plan with your onshore contact and use only a well-maintained vessel.
- Wear a Coast Guard-approved and serviceable PFD if boating.
- Bring a communication device and know emergency numbers.
- Be aware of rip currents and submerged objects.
- Hydrate before and on the water.
- Protect against sunburn and insect bites using reef-friendly products.

TRAVEL AND CAMP ON DURABLE SURFACES

- Focus activity where vegetation is absent.
- Durable surfaces include rock, gravel, and sand.
- Be aware of sensitive habitats such as tide pools and vegetated dunes.
- Concentrate use on existing trails and campsites. Do not camp below the high tide mark.
- Where camping is permitted, select a campsite large enough for your group.
- In undeveloped areas, disperse your activities to prevent the creation of new campsites and trails.
- Leave campsites clean and natural looking.

DISPOSE OF WASTE PROPERLY

- Pack it in, Pack it out. Trash is one of the greatest threats to marine wildlife.
- Arrange to pack out your waste (and other collected debris) to avoid overwhelming existing trash receptacles or recycle bins.
- Avoid single-use plastics and styrofoam. Choose reusable items and use fewer disposable ones.
- Properly dispose of fishing line and tackle by using available trash cans or packing it out.
- Know if your waterfront location offers restroom facilities. Plan your day accordingly if restrooms are not present.
- If pets are permitted, be prepared to pick up after them and dispose of waste bags in a trash can.

LEAVE WHAT YOU FIND

- Leave historical artifacts where and how you find them.
- Take only pictures and leave only bubbles while diving or snorkeling.
- When shell collecting is permitted, make sure shells are empty. Otherwise, do not remove shells or natural objects from the shoreline.
- Clean watercraft, tents, fishing equipment, and other gear after every trip. Water, mud, and soil may contain harmful seeds, spores, or tiny plants and animals.
- Never discard or release live bait.
- Fill any holes, trenches, or canals dug into the sand, unstack rocks, level sandcastles and other structures that can hinder the movement of wildlife across the terrain.

MINIMIZE CAMPFIRE IMPACTS

- Minimize campfire impacts by using stoves.
- Where fires are permitted, use a fire pan or designated fire ring for open fires.
- Always have 2-4 gallons of water available to drown out your campfire.
- Elevate fire pans and use a fire blanket to catch embers.
- Use dead and downed wood no larger than an adult's wrist to keep the fire small.
- If bringing your firewood, purchase locally to avoid invasive species spread.
- Burn all wood and charcoal to ash. Carry out cold ashes with other garbage.
- Fill fire pit holes to prevent trapping or injuring wildlife.

RESPECT WILDLIFE

- Observe wildlife from a distance. Do not follow or approach them.
- Respect temporary barriers and/or markers indicating sensitive ecosystems (habitat restoration projects), nesting sites (shore birds/sea turtles), etc.
- Practice sustainable fishing methods and know the local regulations.
- Never feed wildlife; it damages their health, alters natural behaviors, and exposes them to predators and other dangers.
- Protect wildlife by securely storing food, trash, and anything with a scent.
- When pets are permitted, control them and keep them on a leash.

BE CONSIDERATE OF OTHERS

- Respect other visitors and protect the quality of their experience.
- Respect the experience of others by being mindful of your group's noise level.
- Move quickly off of boat ramps and launches to make space for others.
- 'Adopt' your favorite launch site or shoreline section and regularly visit to help clean up.
- Encourage others to join you in beach/shoreline clean-up events.

Water Safety Best Practices

Warn and inform your participants by providing an accurate safety briefing before water activities

Assess and know the hazards at your site before participants enter the water

Know your emergency action plan

Provide an appropriate swimming skill assessment for participants before swimming

Avoid distractions while providing surveillance

Take a break from surveillance at a minimum every hour, preferably every 30 minutes

Scan your protection zone completely every 10 secs with a focus on distressed behavior

Be prepared to reach the furthest area of your protection zone in 20 seconds

Know how to use your rescue and communication equipment effectively

Self care: be prepared for the weather with sun and wind protection as well as food and water

Discourage breath holding and underwater swimming where scanning is compromised

Uphold rules fairly and model the behavior you expect from participants

Practice your training regularly - be rescue ready

Emotional Health of the Rescuer

Although you encounter physical risks while lifeguarding, the risk to your emotional health caused by the stress of responding to emergencies may be even greater. The best way to remain emotionally healthy and able to manage the day-to-day stresses of lifeguarding is to use common sense, know established procedures and practice your skills often. However, if a traumatic incident does occur at your site, you may find it difficult to deal with the long-term psychological effects of this event.

If you witness a drowning, whether the drowning person was a survivor or a fatality, you must take care of yourself and your co-workers, both physically and emotionally, after the incident. The anxiety and stress associated with a drowning will continue for a long time, especially if a lawsuit is filed. It is likely that you will be questioned numerous times about the incident—by the police, representatives from the insurance company, attorneys, your employer, and others. The following are strategies to help you cope:

- As soon as possible after the incident, relieve the stress by getting physically active. Go for a swim, run or do another workout activity.
- Get back to your regular patterns of work, school, and social events. The familiarity of day-to-day activities will provide stability in your life.
- Consider taking advantage of debriefing sessions your employer may schedule to deal with critical incident stress. These sessions usually will be conducted for your benefit within a few days of the incident. Mental health care professionals trained to help emergency care workers deal with stress after a traumatic event will facilitate these group discussions. However, attendance at these events should not be compulsory. Integration of principles of Psychological First Aid (PFA) into both emergency response and recovery from emergency response can be helpful. See references and resources for more information about PFA.

When you start to feel overwhelmed, talk to friends or relatives close to you who will be supportive without being judgmental.

Cold Water Survival

Figure 7.3

In situations where you find yourself inadvertently in cold open water for extended periods of time, consider the following:

- Initially focus on controlling your breathing rate and keeping your face above the water.
- Move your arms and legs enough to keep peripheral circulation.
- The Heat Escape Lessening Position (HELP) maybe a useful tool.
- Draw your body into a ball and huddle.
- Minimize exposure and cover your head and neck with insulation.
- Work at staying mentally alert by reciting numbers, the alphabet or stories..
- Minimize large movement and focus on breathing slow and easy.
- Huddle together—get as close to others as possible, sharing and trapping body heat (Figure 7.3).
- Keep tabs on huddle members' alertness.
- Monitor morale.

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