Lesson 11

RESCUE PLANNING AND OPERATIONS

Overview

Introduction

When the search object has been located, the SMC (or OSC) must decide on the method of rescue to be followed. This lesson provides policies and guidelines for rescue operations and emergency medical assistance.

Objectives

After completing this lesson, you should be able to:

- **SELECT** the most appropriate rescue method
- **SELECT** the best SRU for the assigned rescue method
- **APPLY** the rescue procedures for persons trapped in capsized vessels
- **APPLY** the steps for emergency treatment for decompression sickness and air embolism
- **ANNOTATE** information required for prosecuting an emergency medical assistance request
- **APPLY** the cardiopulmonary resuscitation and hypothermia protocol

References

The information in this lesson can be found in the following references:

1. Coast Guard Addendum, Section 3.5, 4.7,5.8,6.3 and 6.6
2. IAMSAR Vol. II Section 6
3. Auxiliary Operations Policy Manual Chapter 4, Annex 1-H.5 & H.7

Rescue Planning and Operations

General

Rescue planning and operations will be conducted in accordance with the IAMSAR Manual and as augmented by the National SAR Supplement and the Coast Guard Addendum. IAMSAR Manual, Volume 2, is the primary source document. IAMSAR Manual, Volume 3, Section 2, "Rendering Assistance", provides further information on the rescue function from the viewpoint of assisting craft.

Rescue Planning

IAMSAR 6.1.1

When the search object has been located, the SMC (or the OSC or master or pilot-in-command of the SAR facility as the case may be) must decide on the method of rescue to be followed and the facilities to be used. The following factors should be considered:

- action taken by the sighting craft and the SAR action which can be taken by other craft on-scene;
- location and disposition of the survivors;
- condition of survivors and medical considerations;
- number of persons reported to be on board the distressed craft and the number who have been located;
- environmental conditions, observed and forecasted;
- available SAR facilities and their state of readiness (to reduce delay, the SAR facilities which are likely to be used should be alerted and deployed to a suitable location while the search is in progress);
- effect of weather conditions on SAR operations;
- time of day (remaining daylight) and other factors relating to visibility; and
- any risks to SAR personnel, such as hazardous materials.

Delivery of Rescue Personnel and Equipment

IAMSAR 6.3

Maritime SRUs are a reliable means of delivering supplies, equipment, and personnel to the scene of a distress. Equipment may include bilge pumps, towing equipment, fire-fighting equipment, and medical supplies. Personnel delivery is usually limited to medical personnel or repair parties.

Air delivery of supplies, equipment, or personnel to the scene is the most expeditious method. Helicopters are particularly suitable for this purpose and are usually the primary means for delivering personnel.

Personnel delivery by fixed-wing aircraft is limited to para-rescue personnel.

Delivery of Rescue Personnel and Equipment (continued)

SRUs should carry a variety of rescue equipment at all times, but SAR boats and helicopters are limited due to their size. An SRU should be provided with rescue equipment suitable for individual operations. A supply of commonly required

equipment should be maintained at the permanent bases of SRUs. This includes equipment designed for supply-dropping by aircraft.

Illumination of the scene of operation is required at night. All SRUs should be capable of providing this. Illumination could involve the use of parachute flares or high-intensity searchlights.

Supplies and Survival Equipment

IAMSAR 6.4.1

Supplies and survival equipment are carried by air and maritime SAR facilities to aid survivors, and facilitate their rescue. The type and number to be carried depend on the circumstances on-scene. Maritime facilities and helicopters generally can deliver this equipment directly to survivors. Fixed-wing aircraft can deliver supplies to survivors if suitable landing areas exist nearby or if the supplies can be dropped at the scene. The packing of supplies and survival equipment should be adapted to the manner of delivery.

Air SAR Facilities

IAMSAR 6.4.5

(a) All fixed-wing search aircraft should carry supplies and survival equipment for dropping to survivors as soon as they have been found. This will be important when survivors are found to be in a weakened condition, or, after being located, must sustain themselves for extended periods.
(b) Liferafts packed for dropping should be available for use when: survival craft have not been launched successfully or have been damaged in launching;

- survival craft have become unserviceable;
- survivors are overcrowded in the survival craft in use; or
- survivors are in the water.

Liferafts, supplies, and equipment may be dropped together in a chain (ideally with liferafts at each end).

(c) An airborne droppable lifeboat may contribute to the rescue, but the need for a particular type of aircraft, handling, and dropping procedures makes it an item which can only be used by specialized SRUs.

Auxiliary Aviation Restrictions

AUXOP Manual
Appendix A H.5&7

The Coast Guard Auxiliary has additional restrictions place upon them that limit the scope of what they may actually do for safety reasons. While these restrictions are noted this does not negate the benefit they provide. An Auxiliary Aircraft that locates a marine causality or survivors are still in a position to vector a surface vessel or regular Coast Guard Aircraft to assist. They are able to provide a communications platform or act as a safety observer during a rescue evolution.

Generally Auxiliary Aircraft are not allowed to Fly beyond the gliding distance from shore is an offshore operation. Single-engine aircraft may not proceed more than 25 miles offshore unless authorized by the Air Station Commanding officer. When working with a surface facility, helicopter, or other recovery asset with which a communications guard is maintained, the shore effectively extends to the location of the communications guard. However, in no case may a single-engine aircraft operate more than 50 miles from shore. In addition, both single- and multi-engine aircraft must follow the PPE guidelines in Section D of this annex when operating offshore.

Additionally Auxiliary air crew must not drop any equipment of any type from an Auxiliary aircraft for any purpose, except when the Air Station Commanding officer specifically grants in writing such authority for the aircraft. The Air Station Commanding officer must base such authority on a demonstration of deployment technique and aircraft suitability during an operational flight check.

Maritime SAR facilities
IAMSAR 6.4.6

(a) The supplies and survival equipment carried on rescue boats and other inshore craft need not be extensive when medical attention, blankets, clothing, hot drinks, etc., are available ashore. Additional equipment should be taken if the rescue boats are limited in number or the climate is severe. Hot liquids, covering for survivors, and insulating blankets for hypothermic survivors should always be carried.

(b) Rescue vessels likely to operate some distance offshore should carry an adequate quantity of the items referred to above, including equipment for artificial respiration, first aid, and advanced life support to the extent of the crew's training.

Rescue by Aircraft
IAMSAR 6.7

In some cases aircraft may be used for rescue. Each aircraft has operational and technical limitations and should not be used on operations for which it is not suitable. When possible, a rescue operation by aircraft should be backed up by a surface facility, particularly for a large number of survivors.

Fixed-wing aircraft may drop equipment to survivors and direct rescue facilities. They can mark the position as long as they can remain on-scene, by serving as a radio and radar beacon, showing lights, dropping flares, and providing radio signals for direction finding and homing by other rescue facilities.

Helicopters can be used to rescue survivors by winching or by landing on a ship if a suitable location exists. Water landings are possible when amphibious helicopters are used. Due to their unique flying capabilities, they should be used whenever possible. They are particularly suitable for rescues in heavy seas or at locations where surface facilities are unable to operate. However, there are special concerns of which the SMC must be aware:
(a) Operations by surface parties may be hampered by the noise and rotor wash produced by helicopters. To facilitate the co-ordination between helicopters and surface rescue facilities and to minimize the risk of collision associated with helicopters operating in a confined space, their operations should be coordinated by a facility in communication with them, and preferably by the OSC.

Rescue by Aircraft (continued)

(b) The number of survivors that a helicopter may take aboard each trip is limited. Therefore, it may be necessary to reduce its weight by removal of non-essential equipment or fuel. Fuel loads at the scene may be reduced by use of advance bases with fuelling capabilities.
(c) The route followed by the helicopter as well as the location where the survivors are to disembark should be known to the SMC.
(d) Due to the generally limited fuel reserves of helicopters, and their susceptibility to icing in some locations, it may be advantageous to dispatch a fixed-wing aircraft in advance to confirm the suitability of en route weather, and ensure that the craft requiring assistance is properly briefed in advance on helicopter hoisting procedures.
(e) Recovery by landing of the helicopter creates additional concerns. Factors like turbulence, level terrain, clearing, loose debris, altitude, and landing and take-off paths must be considered when selecting a landing site. Operations in a high-altitude environment will reduce helicopter performance and severely affect hovering capability. When conditions are marginal, landings should be carried out only as a last resort.
(f) A typical recovery is carried out by hovering over the survivors and taking them aboard using a winch with a sling, rescue basket, rescue net, rescue seat, or rescue stretcher. Selection of the site is the same as for recovery by landing. However, the cable and rescue device being lowered may have a large static electricity charge. No one should touch the cable or rescue device until it has made contact with the surroundings.

Rescue by Maritime Facilities

IAMSAR 6.8.1

When both maritime rescue facilities and helicopters are dispatched to the scene, it may be advisable to transfer survivors to the helicopters for a more rapid delivery to medical facilities. All surface SRUs should be equipped to lift survivors from the water without help from the survivors, as they may be injured, exhausted, or suffering from hypothermia. When hoisting a person suffering from hypothermia, especially after immersion in water, a rescue basket or stretcher should be used to hoist the person in a horizontal position since the hoisting of such persons in a vertical position may cause severe shock or even cardiac arrest.

MEDEVACS / MEDICOS Overview

The Following is an overview of the decision making matrix faced by Flight Surgeons when weighing various options when deciding to conduct a MEDEVAC. It is important to remember that MEDEVACS are "HIGH" risk evolutions for both the resources and the patient.

CAPT Pennington, Coast Guard Headquarters Flight Surgeon passes the following information at the 2007 Command Center Stan Team Summit. The information is the thought process only and it is important to remember decisions are made by the Flight Surgeon on a case by case basis.

- Commercial air ambulances are better than our helicopters. Any time a MEDEVAC is required these should be used if availability and time permit.
- SAR Controllers need to consider what the best asset actually is (helo v. boat) and discuss this with the flight surgeon.
- When flight surgeons are called they consider first 1 question: What is the gain? If it's to save a life or limb, they'll probably recommend. If it's to alleviate pain they'll consider recommending if there's no risk to the crew involved, but it may be better just to have the boat come in to port.
- If there's a request for a MEDEVAC of someone who has an infection then controllers need to find out as much information as they can about the type of infection as not to expose the helo crew to the infection. Discuss with the flight surgeon what type of PPE will be needed. It is probably better to error on the side of caution when dealing with infections.
- CPR: Every 1 minute that goes by that a person doesn't get CPR who needs it lessens their chance of survivability by 30%. If the person hasn't responded to CPR after 10 minutes, their survivability chances are 0 even though the CG uses the 30 minute rule – this is what the medical field uses.

- Guidelines that flight surgeons use: Chest pains – if you can't get something there in less than 4 hrs, not worth it. Stroke – if you can't get something there in less than 3 hrs, not worth it. Seizure – if it's not the 1st time, it's not an emergency. Abdominal pain – wait 12hrs, if still there, then consider medevac. Trauma/fractures – closed or open they can wait a week (now I don't know about you guys, but if I get a call and a guy broke his leg and has a bone sticking out, I'm going to send something to get him if they're not close to shore). Amputations – if can't get something there in less than 6 hrs, not worth it (again, see previous sentence). Burns – needs to be over 20% of their body before they are sent to a burn center. These are just their guidelines according to CAPT Pennington, and as you all know, a flight surgeon just gives a recommendation.

CPR Protocol

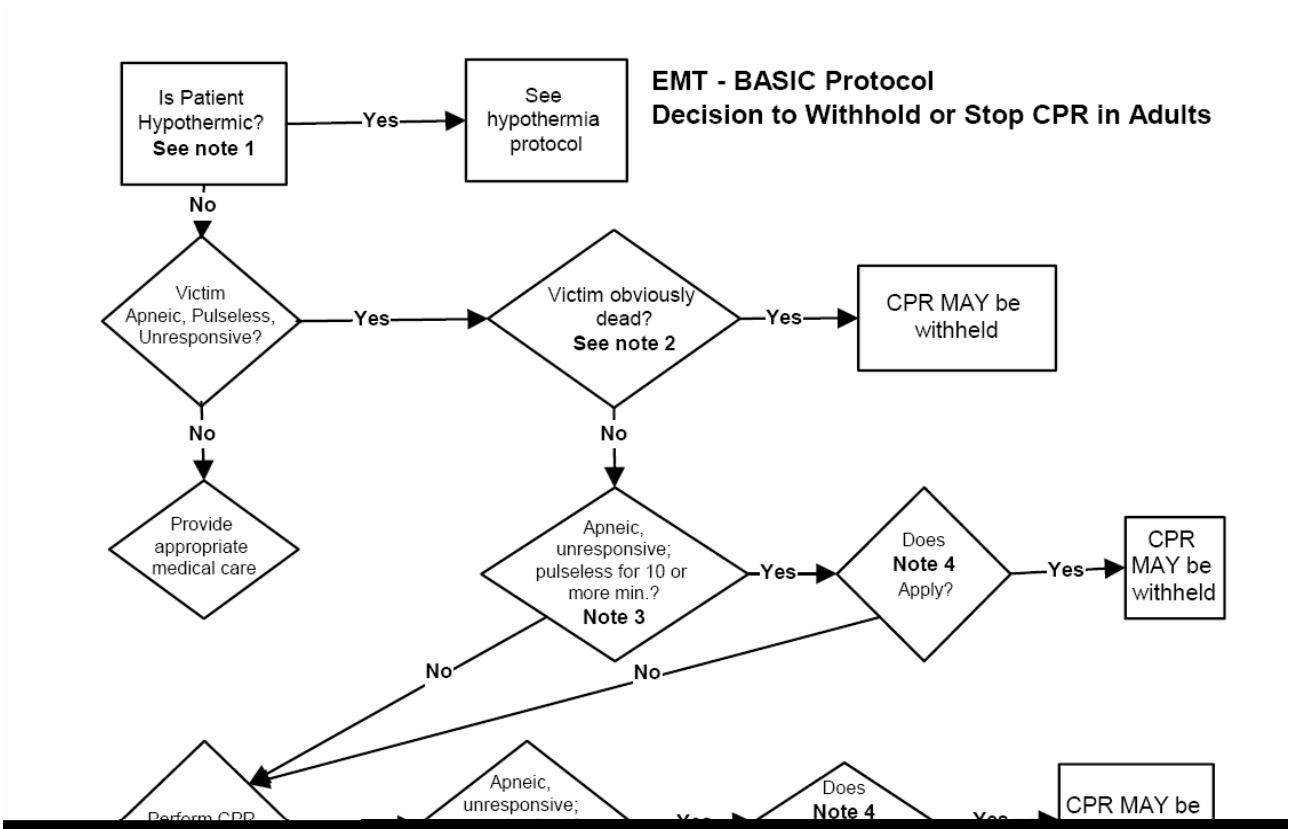
HQ website

PURPOSE: The purpose of this protocol is to establish service wide policy for SAR operational commanders and Coast Guard emergency medical services responders (Lifesavers and Emergency Medical Technicians) and medical officers on not starting and or not continuing cardiopulmonary resuscitation (CPR).

BACKGROUND: During search and rescue missions or MEDEVACs Coast Guard SAR responders often recover victims of injury or medical emergencies who are in cardiopulmonary arrest (not breathing and do not have a pulse). The standard protocols of civilian EMS systems usually require starting CPR in the field and rapidly transporting these patients to a hospital for continued resuscitation efforts. Recent medical research on emergency cardiac resuscitation conducted by national healthcare organizations, including the American Heart Association, has made new recommendations regarding “Do Not Start CPR” and “Stop CPR” guidelines. The focus of these guidelines is to prevent nonbeneficial and ineffectual interventions, which pose risks to rescuers and unethical futile efforts, defined as less than one percent survival probability. Medical ethicists and EMS experts have agreed that physicians may withhold futile interventions deemed unlikely to benefit patients even when requested by patients or families. These policies have been clearly established and endorsed for EMS services, which have wilderness or remote locations with prolonged response and patient transport times. Coast Guard’s maritime SAR operations usually involve prolonged response intervals, which exceed the accepted response intervals for successful resuscitation. In addition, the Coast Guard has increased operational risks for boat and aircrew SAR responders, which must also be weighed with the probability of patient benefit when making operational risk management decisions. Risks include aircraft and vessel mishaps, personal injury, and blood borne pathogen exposures. There are also the emotional risks to rescuers and families associated with futile resuscitation efforts. These unique risks require modification of civilian protocols and take precedence over local, regional, and state EMS protocols. Analysis of numerous operational mishaps and near misses during futile rescue attempts has shown that a service wide policy is needed to prevent recurrences.

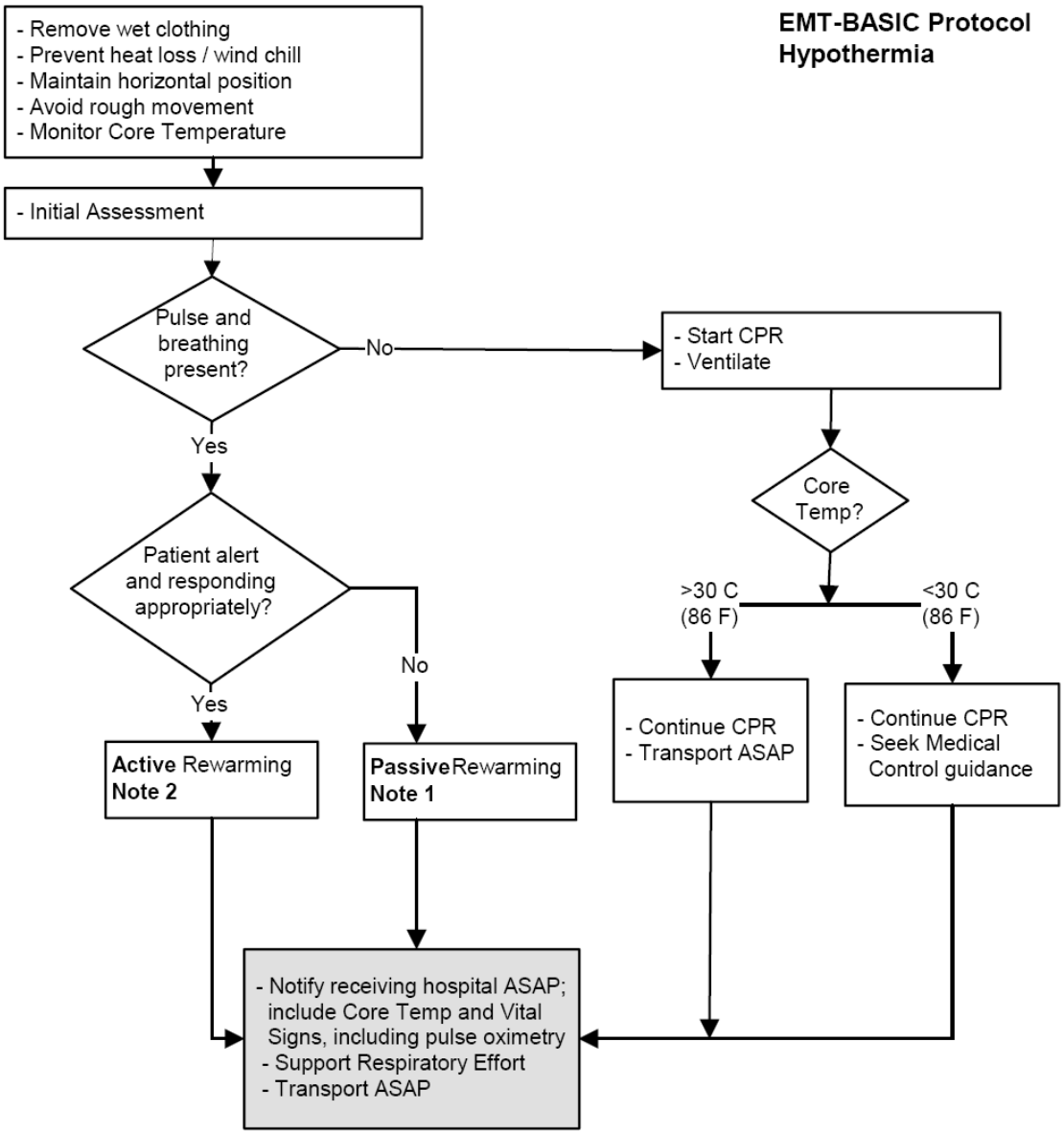
ACTION: A Coast Guard Emergency Medical Services protocol with criteria for not starting and or not continuing CPR has been developed and is posted on this web site. Operational commanders with SAR responsibilities should ensure that all potential SAR EMS responders and SAR OPCEN watch standers are familiar with this protocol. MLC(k) should ensure that all medical officers are familiar with the protocol.

From:
www.uscg.mil/hq/g-w/g-wk/wkh/pdf/Coast_Guard_PrtclWthldCPR.pdf


EMT - BASIC Protocol
Decision to Withhold or Stop CPR in Adults
Is Patient Hypothermic? See note 1
Yes
See hypothermia protocol
No
Victim Apneic, Pulseless, Unresponsive?
Yes
Victim obviously dead? See note 2
Yes
CPR MAY be withheld
No
No
Provide appropriate medical care
Apneic, unresponsive; pulseless for 10 or more min.? Note 3
Yes
Does Note 4 Apply?
Yes
CPR MAY be withheld
No
No
Perform CPR
Apneic, unresponsive;
Does Note 4
CPR MAY be

[redacted]

EMT-BASIC Protocol
Hypothermia



Document:
- Signs and Symptoms
- Vital Signs
- Pulse oximetry % (SpO2)
- Core Temp
- Mechanism of Injury
- Treatment
- Response to Treatment
- Submersion time
- Wind Speed
- Water Temperature

Note 1. Active methods include: electrical or charcoal warming devices, hot water baths, heating pads, radiant heat sources and warming beds.

Note 2. Passive methods include: use of insulating blankets and Thermal Recovery Capsules (TRCs).