

CCA Fleet Surgeon Memorandum for Offshore Passages

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This memorandum is informational only and is not intended to be a substitute for professional medical advice.

Medical skills, first aid equipment, and the ability to communicate, impact the outcome of an offshore medical emergency. In the Injury and Illness Survey of past Bermuda Races, the extremities, especially fingers and toes, were sites most at risk for injury. Sea sickness and sun burn were common. Infections, migraine, diabetic dehydration, and airway obstruction requiring a Heimlich maneuver were encountered. Offshore crew training should stress the importance of avoiding hypothermia, dehydration, fatigue, and sea sickness.

Conditions not encountered in these races must also be considered. The incidence of malignant melanoma, as well as other skin disorders directly related to excess sun exposure, has increased alarmingly among sailors, according to records of the US Coast Guard. Asthma, life-threatening allergic reactions, heart attacks, strokes, seizures, and surgical emergencies can be added to the long list of potentially treatable events one might have to deal with on an offshore passage. Anticoagulants (blood thinners), which are used to treat blood clots or cardiac conditions such as arterial fibrillation, can turn a minor knock on the head into an untreatable and fatal hemorrhage in the brain. Finally, while conditions such as falling overboard and drowning, or being hit on the head by the boom or mainsheet during an accidental jibe, have high mortality rates despite best rescue efforts, they are mostly preventable by using an inflatable harness and tether in the former case, and by a permanently installed and always engaged preventer, in the latter. *A culture of safety and incident prevention is the best way to minimize the risk of injury and illness.*

Acknowledging that not every medical situation can be managed safely and successfully at sea, a single person, the Medical Officer, not necessarily a medical professional, has the responsibility of caring for the ill or injured crew member offshore, preparing the vessel and the crew for any likely medical emergency, and being aware of the presence or absence of medical and rescue resources. Significant medical conditions of individual crew should be on record and known to the medical officer before departure. One or more crew members should have valid First Aid and CPR certificates.

Medical training to improve the skills of a lay person who has become a yacht's Medical Officer is available in a number of commercial programs ranging from first aid to medical wilderness courses. Medical training is important because on a small boat, whether coastal or offshore, there is no "911" as we have come to know and expect. CPR training is urged for *all* crew members.

The Medical Officer must make sure that the following are available onboard the vessel:

1. Information from each crew member about significant medical conditions, allergies and necessary medications, are known and accessible;
2. Medical and surgical skills appropriate to the voyage;

3. Appropriate medical supplies - reference books, a medical/surgical kit and medicines (addenda 1-3), appropriate to the level of medical training on board;
4. An appropriate emergency communication system and training of the entire crew as to the proper use of the equipment.

Another critical role is that of the Communications Officer who links the boat to outside medical help and rescue services. VHF and Single Sideband radios and a suitable satellite system for voice and/or email communication are usually found on an offshore yacht. More than one crewmember must know how to use the equipment and whom to call. If satellite communications are available, it is advised that emergency rescue phone numbers be readily available and programmed into the sat phone. During the Bermuda Races 2002 - 2022, competitors by pre-arrangement used the emergency department of the Beth Israel Deaconess Hospital in Boston. Similar services are available commercially.

RADIO PROCEDURE:

a) Coast Guard Emergency/Distress Frequencies:

VHF - Channel 16

Single Sideband – 4125, 6215, 8291, 12290 kHz

b) Radio broadcast protocol

1. Tune to correct frequency.
2. Say “PAN-PAN...PAN-PAN...PAN-PAN” (urgent)
or “MAYDAY...MAYDAY...MAYDAY” (life-threatening)
3. This is (yacht name) – three times.
4. Give call sign - twice.
5. Give latitude/longitude or other specific location.
6. State type of vessel.
7. State nature of emergency.

When to Call USCG directly using standard emergency procedure:

1. Unresponsive or minimally responsive patient – lethargic, obtunded, or confused
2. Obvious major trauma (amputation, severe head or facial injury, or severe fracture)
3. Respiratory distress – difficulty or unable to breath, rapid breathing, pale, ashen, sweaty
4. Cardiac distress – chest pain, pale, sweaty, difficulty breathing, elevated heart rate (HR > 130), low blood pressure (<80 if able to measure)
5. Severe or facial burns

6. Obvious stroke symptoms – facial weakness, arm or leg weakness, speech difficulty, confusion.

Incident Presentation: information needed by a remote physician or rescue organization:

1. Level of Consciousness – orientation to person, place, time and event (alertness and awareness)
2. Chief complaint – primary problem
3. History of present illness and mechanism of Injury – what happened and what are the patient's symptoms
4. Patient's medical history – problems, medications, and allergies
5. Physical findings – vital signs (heart rate, blood pressure, temperature, respiratory rate), then problem focused exam
6. Interventions – what have you done; medications given

Additional Emergency Data:

1. Distance from port or rescue (by sea or air)
2. Medication and medical equipment on board
3. Medical skill level of crew (MD, RN, EMT)

ADDENDUM 1: MEDICAL HANDBOOKS

Basic:

Advanced First Aid Afloat, by Peter F. Eastman, M.D., Fifth Edition: Cornell Maritime Press, Inc, Centreville, MD, 21617, 2002, ISBN 0 87033 524 3

Sailing and Yachting First Aid, by John Bergan, M.D. and Vincent Guzzetta, M.D., prepared for the United States Sailing Association, Portsmouth, RI

First Aid at Sea, by Douglas Justins and Colin Berry, Adlard Coles Nautical, A&C Black (Publishers) Ltd, 35 Bedford Row, London, WC1R 4JH, 2022, ISBN 0 7136 4922 4

A Comprehensive Guide to Marine Medicine, by Eric A. Weiss, M.D., and Michael Jacobs, M.D., Adventure Medical Kits, Oakland CA 94624, 2005 ISBN 0-9659768-2-3

Wilderness, first aid and emergency medicine texts are also available.

Advanced:

The Ship Captain's Medical Guide, 23rd edition. Crown Copyright 2020. Obtainable from His Majesty's Stationary Office, Email: book.orders@tso.co.uk, fax: 44 (0)870 600 5533, tel: 44 (0)870 600 5522.

International Medical Guide for Ships, Third Edition, World Health Organization, 1988, reprinted 2007 ISBN -10 92 4 154231 4 (go to publications at www.who.int)

The Ship's Medical Chest and Medical Aid at Sea, DHHS Publication (PHS) 84-2024 Government Bookstore, O'Neil Building, 10 Causeway, Boston, MA 02222 (telephone 617 565 6680) and www.fas.org/irp/doddir/milmed/ships.pdf. Comprehensive and contains an extensive list of medical references.

ADDENDUM 2: SAMPLE EQUIPMENT LIST:

Seek medical advice from a physician and see handbooks for a more complete list of equipment, as this is only a sample. The Medical Officer should be familiar with the indicated use of the contents in the medical kit.

Medical kits must meet the objectives of the intended voyage and the abilities of the ship's medical officer. Commercially available medical kits vary in complexity and if used their contents should be reviewed to be sure they meet the objectives of the voyage. The items below, or appropriate substitutes, are recommended. These recommendations however are not intended to be a substitute for proper consultation with a medical provider. Neither the publishers, nor the author will hold themselves responsible for errors, omissions, or alterations in this list.

Airway kit:

Oral airways (small, medium and large)

Ambu bag, CPR mask

Bandages/ Minor Trauma/ Burns:

Adhesive tape: ½", 1", and 2" (1.25, 2.5, and 5 cm.)

Sterile dressings: Gauze sponges 4"X4" (10X10 cm.); Roll Gauze 2" and 4" (5 cm. and 10 cm.); Band-aids

Non-adhesive dressings: Telfa, Xeroform gauze (Vaseline impregnated gauze)

Steri- strips: ¼" and ½" (0.6 and 1.2 cm.)

Ace bandages: 2", 4", and 6" (5, 10, and 15 cm.)

Sling and swath or Triangle bandages

Large abdominal/ trauma dressing: ABD Pad

Finger splinting material: tongue depressors, aluminum splint

Surgical Kit/ Major Trauma:

Laceration tray: 1% or 2% Lidocaine , syringes with needles 18, 21, and 25 gauge

Sterile Hemostat, needle driver, forceps, scissors, gauze sponges

Sterile gloves: Sizes 7, 7 1/2, 8

Sterile drapes and iodine prep sticks

Suture material: 5.0/ 4.0/ 3.0 nylon, 3.0 and 4.0 Vicryl or Dexon

Dermabond

Skin Stapler

Clozex (skin closures)

Suture and Staple removal kits

Scalpels: #11 and #15 blades

Irrigation: 14-gauge angiocath

ENT/ Eyes/ Dental:

Sterile irrigation fluid for eye wash

Nasal packing: Merocel nasal tampons 1 inch (2.5 cm.); Vaseline gauze

Temporary dental filling kit

Splints:

Splints for arms and legs (prefabricated or inflatable)

Finger splinting material: tongue depressors, aluminum splints ¼" and ½" (0.6 and 1.2 cm.)

Cervical spine collar

Urinary:

Bladder catheterization kit (prepackaged, sterile)

Examination tools – ancillary equipment:

Blood pressure cuff, Stethoscope, Thermometer, Fingertip pulse oximeter, N95 masks, Covid 19 rapid test kits

Intravenous fluid administration kit

ADDENDUM 3: SAMPLE MEDICATION LIST:

See handbooks for more complete lists. *Medications should be assembled and given with the advice of a physician.* Medicines available “over the counter” are in regular type. Prescription medications are in italics. Know about allergies or adverse reaction before giving any medication. Instructions must be strictly followed.

<u>ILLNESS or PROBLEM</u>	<u>MEDICATION</u>
Allergic Reactions:	Benadryl, <i>Epinephrine, Prednisone, EpiPen</i>
Antihistamines:	Benadryl, Claritin, Allegra; Zyrtec
Antiseptic Solutions:	Betadine, Alcohol, Hibiclens
Asthma:	<i>Albuterol inhaler</i>
Burns:	Bacitracin ointment, <i>Silvadene cream</i> , Vaseline
Cardiovascular:	<i>Epinephrine, Sub-lingual nitroglycerin, Aspirin</i>
Constipation:	Milk of Magnesia, Senna, Colace, Dulcolax suppository, Fleet enema
Cough:	Robitussin DX, <i>Tessalon Perles</i> , Mucinex
Diarrhea:	Imodium, Kaopectate, <i>Lomotil</i> , Oral rehydration solution
Diabetic Emergency:	<i>D50 IV</i> , oral sugar solution
ENT/Dental:	<i>Corticosporin Otic Suspension, Ciprofloxacin otic, Cepacol lozenges</i>
Nasal congestion:	Sudafed, <i>Afrin nasal spray, decongestants</i>
Eyes:	<i>Erythromycin ophthalmic ointment, Gentamicin ophthalmic</i> , Artificial Tears
Gastritis:	Maalox, <i>Prilosec (omeprazole), Pantoprazole (Protonix)</i>
Hemorrhoids:	Preparation H, Tucks pads (frozen), Anusol suppository
Skin/Rash:	Hydrocortisone ointment 1%, Desitin Cream, Clotrimazole cream, <i>triamcinolone acetonide 0.1%</i> , Desenex powder
Infection/oral antibiotics:	
Urinary Tract:	<i>Ciprofloxacin, Bactrim DS, Levofloxacin</i>

Respiratory:	<i>Azithromycin, Levofloxacin, Augmentin</i>
ENT/ Dental:	<i>Amoxicillin, Augmentin, Clindamycin</i>
Skin/soft tissue:	<i>Keflex, Augmentin, Dicloxicillin</i>
Gastrointestinal:	<i>Flagyl, Ciprofloxacin, IV Ceftriaxone, Metronidazol</i>
Covid 19 Infection :	<i>Paxlovid (antiviral)****</i>
Intravenous Fluids:	<i>Normal Saline (0.9% saline), D5 ½ NS (5% dextrose & 0.9% saline)</i>
Inflammation/ Pain:	<i>Tylenol, Ibuprofen</i>
Local Anesthetic** (injectable)	<i>Lidocaine 1% or 2% with and without epinephrine, Marcaine 0.25%</i>
Pain medication:	<i>Oxycodone, Vicodin, injectable Morphine, Acetaminophen, Ibuprofen, Aspirin</i>
Sea sickness: ***	<i>Scopolamine transdermal patches, Dramamine, Stugeron (Cinnarizine, OTC in UK, Spain, Bermuda, Ireland), Compazine or Phenergan (Promethazine) rectal suppositories</i>
Sleep/Anxiety:	<i>Benadryl, Lorazepam (Ativan), Ambien</i>
Sunburn:	<i>Topical aloe, Solarcaine</i>

*Special thanks to William Strassberg, M.D., Chair of CCA Safety and Seamanship Committee for his contribution to this Memo.

** Lidocaine with epinephrine should never be used for local anesthesia in fingers and toes due to possibility of digital vascular constriction and necrosis.

*** Due to potential side effects of sea sickness medications, these medications should be trialed on shore prior to use on board.

**** Covid 19 is a changing situation. Please refer to CDC guidelines for up-to-date recommendations.