

# MARINE MEDICAL KITS

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## Following this presentation, participants will be able to:

1. Select appropriate medical supplies for a personal and ship's medical kit.
2. Understand the specific use of these items.

## Medical Care At Sea

Ask Dr. Bill Forgey, an expert in wilderness medicine, to identify the most important component of a back country snake bite kit, and he'll quickly reply, "The car keys." Ask Viktor Yazykov, a sailor who circumnavigated the globe in the 1998-99 Around Alone Race, what he considers the most essential items in a marine medical kit, and he'll certainly respond: "A satellite telephone and computer." Indeed, he could not have drained a potentially life-threatening abscess in his elbow without a detailed, 14-step surgical procedure e-mailed to him from physicians at WorldClinic, a medical practice that uses phones, satellites, and the Internet to treat patients around the globe.

On land, access to definitive medical care for a critically sick or injured person involves rapid transport to a medical facility, hence Forgey's car keys. At sea, direct radio consultation with the medical facility may be the only way to obtain medical expertise; evacuation of crew may be too hazardous or impossible. In the South Atlantic, a satellite phone was Yazykov's best option.

Modem radio and satellite communications have fostered an over-dependence on search and rescue for mariners in times of peril. Paradoxically, a call for help during a medical emergency may actually facilitate self-reliance and eliminate the necessity for evacuating the patient.

In order to treat a broad range of medical problems at sea, a cruising sailor needs to focus on three key areas: basic medical skills, radio equipment for consultation, and appropriate medical supplies.

## Basic Medical Skills

The boat's medical officer should know how to treat common ailments as well as life threatening emergencies, and be able to stabilize a crewmember with traumatic injuries.

## Communications

The medical officer must also be well trained in patient assessment so he can transmit a precise and detailed report of the patient's medical condition when consultation with a medical advisory service is required. These companies provide the mariner with 24/7 access to physicians trained in the art of remote medical support (see list of telemedicine companies). Coastal cruisers therefore require at a minimum, a VHF radio, and offshore sailors need a single side band radio, satellite phone, or ham radio. Consider this equipment an integral component of the medical kit.

## Medical Supplies

The comprehensive list of medical supplies listed below is divided into two main groups: items that belong in the **crewmember's kit** and those that belong in the **ship's primary medical kit**. Thoughtful selection of medical supplies involves consideration of the following factors and how they specifically relate

to the crew and anticipated voyage:

- Common ailments at sea. For example: sunburn, skin infections, and seasickness.
- Common onboard traumatic injuries. Sailors frequently suffer head, chest, and hand injuries.
- Number of crew and duration of trip. This determines the quantity of medications and supplies.
- Environmental extremes on the trip. Remember, suppositories melt and liquids freeze.
- Endemic diseases in cruising areas.
- Medical problems associated with specific activities in the aquatic environment e.g., scuba diving, snorkeling
- Medical expertise of crew (surgical types love to stitch and start IVs; medical types favor glue and pills).
- Access to reliable and comprehensive medical care.

Don't expect to treat every medical or surgical emergency. However, don't omit items simply because you're going on a short coastal trip. The same medical problems may occur on a weekend cruise or month long trip. Drugs and supplies useful for a variety of medical problems should be selected.

## The Crewmember's Medical Kit

Each crew member needs a personal kit. Alternatively, the ship may stock a conveniently accessible crew medical kit for a variety of simple and common medical problems. Keeping this kit separate ensures that supplies in the ship's primary medical kit remain intact, organized and protected. Items should be grouped and packaged in zippered plastic freezer bags, and stored in a watertight container that floats. The following is a list of suggested supplies and non prescription medications. Brand name drugs (in Italics) can be substituted with other brands or less expensive generic preparations.

**Seasickness Medication:** *Bonine*, *Dramamine*, ginger capsules or other remedies that work for you and your crew. Add *Sudafed* or *No-doz* to counteract drowsiness from antihistamines.

**Anti-inflammatory and analgesic medications** for aches and pains: Ibuprofen (*Motrin*) or Naproxen sodium (*Aleve*), and enteric coated aspirin (*Ecotrin*); acetaminophen (*Tylenol*) for pain relief and fever. Many nonsteroidal anti-inflammatory drugs (NSAIDs) may increase sensitivity to the sun, so minimize sun exposure when using them,

**Sun Protection:** Waterproof sunscreen with SPF 25 that blocks both UVA and UVB, *Labiosan* lip balm, zinc oxide for covering the nose, 100% Aloe Vera gel and topical 1% hydrocortisone cream for serious sunburn. Special-purpose, high-grade polarized sunglasses that block 99% of UVB and 60% UVA.

**Minor wound care materials:** Waterproof adhesive bandages in a variety of sizes including finger and knuckle strips, *New-Skin* antiseptic liquid bandage, Benzalkonium (*BZK*) antiseptic wipes, antibacterial soap, and antibiotic ointment.

**Medical instruments** when indicated—e.g., blood sugar monitor for diabetics (with extra batteries), blood pressure monitoring device for people with hypertension.

**Non-prescription pharmaceuticals:** for common minor medical problems: *Visine* drops for sun-irritated eyes, sterile eye wash, *Blistex* for chapped lips, *Mylanta* and *Zantac* for heartburn and indigestion, *Milk of Magnesia* for constipation, *Imodium* and *Pepto-Bismol* for diarrhea, *Tinactin* powder and *Lamisil* cream for fungal skin irritations in the groin and feet (jock itch, athletes foot),

*Monistat* vaginal cream or suppositories for yeast infections, *Afrin* nasal spray and *Sudafed* for sinus, inner ear and nasal congestion, *Robitussin-DM* cough syrup, *Benadryl* antihistamine for allergies and insomnia, *Preparation H* for hemorrhoids, skin fissures and skin ulcers, *Eucerin* with PABA for dry skin and salt sores, *Otic Domeboro* for treating swimmer's ear, *Swim-EAR* to prevent swimmer's ear, and multivitamins.

**Insect repellent:** *Sawyer Controlled Release DEET Formula* (a 24-hour protection for adults and children formulated for minimal absorption of DEET).

**Rubbing alcohol or vinegar** for inactivating the stings of jellyfish, anemones, & other sea creatures.

**Personal medication** for existing medical problems and anticipated complications; review with your personal physician and the ship's medical officer.

## The Ship's Primary Medical Kit

There are two categories of ship's medical kits—coastal and offshore. Combined with the appropriate marine radio or phone for consultation, the kit can be designated for use in either nearshore (coastal) or offshore waters. The coastal medical kit is appropriate for cruising within the 20-mile range of a VHF radio, a distance within which shore-base assistance will likely be able to evacuate the patient within 24 hours. The coastal medical kit must have supplies to treat common problems as well as stabilize a more severely ill patient in the event that transfer to a hospital is delayed.

The offshore cruiser, with SSB (single-sideband) radio or satellite phone should be prepared to deliver more comprehensive and longer-term treatment. Professional medical care may be days to weeks away, or not available at all, and someone on board may have to provide definitive treatment.

In the list below, an asterisk \* denotes drugs or items that are optional for the coastal kit but necessary in the offshore kit.

The following medications require a prescription. They have been selected because they are easy to administer, have convenient dose schedules, show little to no incidence of sun sensitivity reactions, and are effective for a broad spectrum of applications for the sick crewmate.

### Antibiotics:

Cephalexin (*Keflex*) for infections involving teeth, ears, sinuses, skin, wounds, respiratory, and urinary tract.

Levofloxacin (*Levaquin*) for infections in the bowel, gallbladder, female pelvic organs, prostate, and urinary tract; excellent for skin, ear, sinus, and respiratory infections; slight risk of photosensitivity reactions, so cover up!

Azithromycin (*Zithromax*) for all infections in the upper and lower respiratory tract, including tonsillitis, ear infections, sinusitis bronchitis, and pneumonia. Dispensed in convenient blister pack for 5 days of treatment.

Ciprofloxacin (*Ciloxan*)—topical ophthalmic drops for eye and external ear canal infections.

Erythromycin ophthalmic ointment (*Ilotycin*) for eye infections and corneal abrasions.

\*Denavir cream for oral herpes

\*Valacyclovir HCL (*Valtrex*) for Herpes Zoster (shingles) and Herpes Simplex (fever blisters).

\*Fluconazole (*Diflucan*) for vaginal yeast.

\*Metronidazole (*Flagyl*)—Added to Levofloxacin for severe intra-abdominal infections e.g. peritoni-

tis, appendicitis, diverticulitis, uterine and fallopian tube infections; also dental infections.

\*Imipenem-cilastin sodium (*Primaxin*) administered intramuscularly (training required) for urgent treatment of appendicitis or bowel perforation while awaiting evacuation.

### **Seasickness:**

Transdermal Scopolamine (Transderm-Scop) patches.

Promethazine HCL (Phenergan) pills and suppositories for nausea and vomiting.

### **Narcotic Analgesics:**

Oxycodone with acetaminophen (*Percocet*)

\*Hydromorphone (*Dilaudid*) suppository

### **Psychiatric Medications:**

\*Risperidone (*Risperdal*) for psychotic behavior

\*Clonazepam (*Klonopin*) for severe anxiety

### **Cardiovascular Medications:**

Aspirin

Sublingual nitroglycerine (*Nitro stat*)

Nitroglycerine paste (*Nitro paste*)

Propranolol (*Inderdal*)

### **Trauma supplies:**

Full-size and finger-size SAM<sup>®</sup> Splints (2 of each)—waterproof, foam-padded, flexible aluminum splints.

High-compression elastic bandage with Velcro closure for sprains, and pressure dressing

Instant cold packs

14 G Angiocath for emergency thoracotomy, tracheotomy

Eye pad for corneal abrasions and injuries

\*Air cast or gel splint for sprained ankle

\**Ortho-Glass* padded fiberglass splint material

### **Surgical Supplies:**

Bandage scissors

Unsterile latex or nitrile gloves

Cotton-tipped sterile applicators and tongue blades

Tweezers and magnifier for foreign body removal

Topical anesthetic LET gel or 10% topical lidocaine

No. 11 scalpel blade and handle for drainage of an abscess

*Nu-Gauze* iodoform packing strips for draining wounds

Disposable Skin Stapler (*Ten Shot Precise*, 3M)

Staple remover

\*Sterile paper drapes and gloves

\*Suture kit—prepackaged kit with optimum assortment of equipment, supplies, anesthetic, and sutures

**Wound Care Materials:**

Silver sulfadiazine (*Silvadene*) cream for burns  
 20cc syringe with 18-gauge plastic catheter for high-pressure wound irrigation  
 Povidone Iodine solution 10% (*Betadine*)—use 1: 10 dilution with water for irrigation solution  
 Chlorhexidine (*Hibiclens*) germicide to clean open wounds  
 Skin super glue (*Dermabond*) for topical closure of easily approximated lacerations on face, trunk, and limbs  
 Wound closure forceps for use with tissue adhesive  
 Skin-closure strips (*Steri-strip*, 3M)  
 Benzoin swabs to increase adhesiveness of tape and skin closure strips  
 Waterproof adhesive tape  
 4" *Kling* or *Conform* roll gauze bandage  
*Tegaderm*—a transparent, occlusive dressing for abrasions, lets in air but not water  
*Adaptic* 3"x3" non-adhering wound dressing  
 Hydrogel occlusive dressing to absorb fluids from weeping burns and open wounds  
 Sterile gauze dressing pads—2"x2", 3"x3", and 4"x4"  
 Trauma Pads—8"x10" and 5"x9"

**Allergic Reactions:**

Epinephrine auto-injector (*Epi E•Z Pen*) for anaphylaxis  
 Prednisone for severe envenomation and allergic reactions  
 Betamethasone Valerate (*Valisone*) 0.1% topical cream for contact dermatitis  
 \*Loratadine/pseudoephedrine (*Claritin-D*), a non-sedating 24-hour antihistamine

**Airway Supplies:**

Albuterol (*Proventil*) metered inhaler  
 Oral airway kit with assorted adult and child sizes  
 Laerdal CPR Pocket-Mask™  
 \*Stethoscope

**Dental Kit:**

*Super-Dent* or *Cavit* dental mixture for temporary filling, loose crowns and broken teeth  
 Oil of Cloves (*Eugenol*) for topical dental analgesia  
 \*More extensive dental kit (with instructions)

**Gynecological Supplies:**

\*Urine pregnancy HCG kit  
 Norgestrel/Ethinyl Estradiol (*Ovral*) for dysfunctional uterine bleeding and emergency contraception

**Miscellaneous:**

Tetracaine anesthetic eye drops  
 Large safety pins (many uses)  
 Duct tape (many uses)  
 16 French Foley Catheter with sterile lubricant, bag, clamp, and plug for urinary retention (catheter also useful as improvised chest tube, and posterior nasal pack)  
 \*3cc syringes and assorted needles

\*hyper/hypothermia thermometer

### **Communication:**

Marine VHF Radio

\*Satellite Phone or Single-Sideband Radio

### **Optional Medical Equipment And Supplies:**

Blood pressure cuff

Digital thermometer

*Ice Tape* (cold compression bandage activated by evaporation or refrigeration; great for sprains)

Reusable hot water bottle

*Sawyer* extractor for evenomations and stings

\*Injectable analgesic

### **Nonprescription Pharmaceuticals for children:**

Oral rehydration salts for treatment of dehydration

*Desitin* diaper cream

*Ipecac* syrup and activated charcoal—for accidental poison ingestion

Pediatric strength decongestant and antipyretic

Antiseptic pads with added 2.5% lidocaine (a kinder way to clean wounds, especially abrasions)

*Auralgan* otic solution for ear pain

*Chloraseptic* throat spray

*Benadryl* chewable tablets for allergic reactions

E.N.T. pocket waterproof otoscope for oral, nasal, and ear exams.

### **Prescription medicine for children:**

Antibiotics may need to be in a liquid suspension or chewable tablet for ease of administration and dosage adjustment based on child's weight.

Amoxicillin Clavulinate (*Augmentin*) for ear, sinus, pharyngeal, respiratory, and urinary infections

*Americaine*—a potent topical anesthetic for otitis

Mupirocin (*Bactroban*) cream for wounds and impetigo

\*Cefprozil (*Cefzil*) for severe infections

Several items have not been recommended for the offshore kit for the following reasons:

- Intravenous solutions and supplies for administering them are of limited value to the untrained person, but trained medical professionals may consider adding them.
- Automatic external defibrillators are life-saving only if expert intensive care together with a full complement of drugs and equipment is immediately available. Non-fatal heart attacks can be treated with aspirin, oral and topical nitrates, and beta-blockers.

### **Prescription Safety**

Medications and antibiotics may cause serious adverse reactions, so review the suggested list of drugs with your physician to better understand the Indications for use, side effects, and dose schedules. Stock alternative drugs If crew have known allergies to specific medications. Update and replace pharmaceuticals in the kit according to expiration dates. Use extreme caution when administering drugs to Infants, small children, pregnant women, and nursing mothers. When a medical problem arises, it's always best to consult a physician or nurse practitioner to review the diagnosis and appropriate therapy.