

Cruising medical kit

(version 1.7.5)

by
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Introduction

I wrote this to help out a man who expected to sail from the Caribbean, through the ditch and up the west coast to Baja. He ended up not making the trip, but this kit has grown and evolved over the past several months. This article covers material that I have thought about for some time and the info here may form the basis for a book that I'm slowly writing. The info here may go beyond your needs or you may have special needs. I don't attempt here to teach you the judgement as to when to use the materials and drugs mentioned here. That's the goal of the rest of the book. You use the info here at your own risk. I assume no responsibility or liability.

You may also want to check out available books on being your own medical practitioner either sailing or elsewhere that you don't have access to professional medical care. If your need is only in the first aid realm only a short distance to port or within ready availability of a medical evaluation, The Boater's Medical Companion by Robert S. Gould, M.D. is pretty good. I've looked at and/or read several of the available books and in general have major objections to all of them, but until I get back to finishing the book I've started I guess they'll have to do. My major objections are re inadequate info on how to arrive at a tentative diagnosis and in particular lack of attention to physical examination. A basic CPR course is highly recommended. First aid knowledge is mandatory but where you may be going is grossly inadequate because I'm assuming you've got no other access to "second" aid. Remember that if your radio can reach someone you can be patched through to a physician or other clinician that can help you decide what to do. Safety and Survival at Sea by E.C.B. and Kenneth Lee list the following frequencies for the International Radio Medical Center: 4342 kHz, 6365 kHz, 8685 kHz, 12760 kHz, 12748 kHz, 17105 kHz and 22525 kHz. The 1st, 3rd and 4th are listed as continuous. Communication is in English, French and Italian. This is generally teletype, but I assume they have some voice capability. If not able to be contacted directly, use may be made of IRM through USCG, RCA and Globe radio stations of Manila and General Pacheco station at Buenos Aires. The US Public Health Service can be contacted through the USCG or a general call to ships in the area with medical staff on board may bring advice. But you need supplies. If you've got the international signal code notice that there is an extensive section on medical problems and you can cross language barriers and do a complete history and physical and relay that info. using just 2 and 3 letter codes that can be spoken over the radio to anyone else with the code. Also remember that 90% of the time the patient will get better even if you do nothing so first "Do no harm!"

On that line take this warning. Anything you do to or give to another individual beyond first aid can be considered practicing medicine without a license. Aside from being technically illegal even to help, you take on all the liability for what you do. Use the information here or elsewhere at YOUR OWN RISK! I'm certainly not going to assume the liability for your actions. That said, we both know that there are times when the humane thing to do is to help within the limits of your knowledge and even take risks. This self-dependence is one of the attractions of cruising. Besides, out in international waters, for all I know, your actions may not be illegal. Certainly if you do have access to medical attention or can reach higher level medical advice by radio, take advantage of it.

Back to supplies. My kit is intended for long distance cruising and intended to be simple but versatile. Aside from just going out and buying them, e.g. from a surgical supply house or pharmacy, go to your local ER and talk to the head nurse. Explain what you want to do and see if you can get any outdated dressing supplies that were to be thrown out or even outdated, medicines such as Epinephrine, Xylocaine, Benadryl,

Compazine, Phenergan etc.. This may be a long shot if they don't know you but you may be lucky and I don't think these things immediately are "bad" if "outdated" officially. I can't tell you how long they will be "good" however. Often the only degradation is in potency. Also explain what you're doing to your regular doctor and see if he/she can supply any sample medicines. Samples are generally fairly new and expensive medicines and with some advice on what they're good for are a great deal. In general there are a lot of older and excellent medicines that are quite cheap and more and more are becoming over the counter (OTC). A general exception is antibiotics. Your doctor may also be willing to give you prescriptions for medicines listed here and may have other recommendations. Do get all legally required travel medicines and immunizations.. A gamma globulin shot would be useful but there's a current shortage of that. Are you going to a malarial area and need malaria prophylaxis? TashRobb on AOL says that there is a book entitled "How to buy almost any drug legally without a prescription" available and makes a good point that in other countries you can buy lots of stuff in any pharmacy without a Rx. You've just got to know what to ask for. Remember though that if you're on shore and someone needs medical attention, go to a doctor. Even if not up to your usual standards I'm sure you'd be better off than on your own and at least in developing countries medical care is a lot cheaper than in the US.

I'm now going to recommend what I think may be the basic general purpose stuff. This is somewhat off the cuff so there could be glaring gaps. If so, please let me know. My tendency on medicines is for general applicability, low cost, and preferably available OTC. Remember that many of these medicines have been prescription in the past and may be available OTC only in the lower dose form. In that case I'll often recommend the Rx dose which may considerably exceed the dose on the OTC bottle.

Tools

Metal tools may be sterilized by dropping in boiling water for 20 or so min. for usual bacteria. Thorough washing with soap and water will often be good enough however and I believe that the sterility extremes that modern medicine goes to are often in the realm of diminishing returns. E.g. some years ago a study showed that there were no more wound infections in laceration repairs when the suturer simply did a thorough 10-15 min. scrub of his own hands and worked with bare hands compared to wearing sterile latex gloves.)

- Scissors, (ideally about 3 in. blades for suture and 1 in. "iris" scissors for tissue but anything sharp will do)
- Disposable scalpels: No. 11 for lancing abscesses, no. 15 for other use. A razor blade is a good substitute.
- Hemostat: For clamping vessels and may double as a suture holder. Recommend the size with approx. 1 in. jaw sold as "Kelly's" as first choice, and for extras rec. the smaller "mosquitoes". Suture holder also if you want to splurge. Needle nose pliers in a pinch. Some ERs and perhaps offices use cheap disposable instruments that are adequate. Even Radio Shacks sell these (for use as a heat sink when soldering).
- Forceps (i.e. tweezers). Preferably small "Adson's" without teeth. Strong sharp "splinter" forceps occasionally useful but definitely a splurge. Be gentle holding tissue with forceps and don't use a clamp.
- Syringes. 1 cc insulin type with needle for subcutaneous (SQ) medicines. 10 cc otherwise most useful.
- Needles 1 1/2 in. 21 ga. and 5/8 in. 25 or 27 ga. most useful. The larger for IM injections and to draw from bottles and the smaller for SQ medicines and SQ injections of anesthetics.
- Suture materials: The most useful size for general suturing would be 4-0 Nylon with a PS-2 needle. If you buy several packs I'd also add 5-0 Nylon on a P-3 needle for delicate work. More fully equipped would include an absorbable suture for tying off small briskly bleeding vessels and for bringing lower layers together in deep gapping lacerations. To do either of these however requires much more judgement and knowledge and presents more risk of damage by suturing the wrong thing, e.g. putting a suture around a nerve. You can usually stop bleeding with sustained pressure and you can therefore probably get by with only skin sutures. A substitute suture would be light weight monofilament fishing line, e.g. 2-4 # test or fly fishing leader material. The problem is that using a small sewing needle may not work so well as the cross section is not triangular to poke through skin easily and they are not curved like the usual suture needle that is also swaged directly to the thread. I've known people to use dental floss but I don't recommend it because it may act like a wick to bring surface dirty water under the skin.

- Skin staples: These may be a reasonable option to suture material. They are easy to use with minimal skill but they are not as versatile as sutures because you can't vary the width or depth. They also may be uncomfortable to the patient and a nuisance because they may snag on clothes, etc.. You need a suture remover instead of scissors. The disposable kits are convenient but I'm sure much more expensive than a pack of sutures. You may only need a few sutures or staples and that leaves many unused. Do you throw them away or save for the next time and use the unsterile remaining staples. Overall I prefer sutures.
- Thermometer: optional, your fingers can tell you if you've got a significant deviation from normal.
- Latex examination gloves for general touching of yucky stuff, inserting suppositories, and for suturing if you don't also get the sterile kind.
- Lubafax or KY jelly for suppository lubricant.
- Stethoscope: Optional. Certainly you should use your ears and all your senses to diagnose but within this context the usefulness comes down to evaluating breath sounds, (extremely useful but something that needs to be taught aurally and can only be approximated in writing, and not here) and to determine the presence or absence of bowel sounds. Both of these functions can adequately be performed by the ear being placed against the chest or abdomen. By the way, the stethoscope was invented to preserve the female patient's modesty. Another use is to measure blood pressure and for that you need a:
- Sphygmomanometer: BP can be useful, but only if you are prepared to act on it and that requires specialized drugs to lower blood pressure or even more specialized IV drugs to raise it &/or IV fluids.
- IV fluids and infusion tubing, needles, etc. This could be lifesaving in a major trauma or severe dehydration situation, but the likelihood of needing these is small. A couple hundred dollars of fluids, etc. may be worth carrying if you have the skill to start IVs and want to go that step. In the old days fluids were given by sticking the needle just under the skin. This works but is necessarily slow and causes large swelling and pain. The need for IV's can usually be minimized by conscientiously taking frequent sips of some oral rehydration fluid and trying to control the vomiting.
- Oral Rehydration Fluid: The cheapest but hard to get in the US is the World Health Organization's packets of powder to be mixed with water. Easily available in the US is Pedialyte. You may substitute a combination of flat 7up, Gatorade, Ginger ale, apple juice etc. Any one alone is not ideal but a variety will generally average about right.
A reasonable approximation may be made as follows (Doc Andermar's oral rehydration formula):
 - 1/4 tsp salt,
 - 1/4 tsp "Lite salt, i.e. partially potassium chloride, if you don't have this, drink 1 oz. orange juice or 2 oz. grape or apple juice for every 3 oz. of formula.
 - 1/2 tsp baking soda, (especially important if there's been a lot of green bile vomit or you're using this for diarrhea)
 - 2 1/2 tbsp sugar, (preferably corn sugar) Dissolve in 1 qt. (or liter) water.
 Drink frequent small amounts, may need 3-4 quarts over a day if severely dehydrated.

Where do you stop in your quest to be prepared? Maybe you want to write software to display and interpret EKGs on your onboard computer, but lets get real and skip this bit.

Dressing materials

- Clean cotton rags can always double for this but otherwise get lots of:
 - Band-aids. Usual about 3/4 in. wide and large 1 1/2 - 2 in. wide.
 - Gauze pads: 2x2 and 4x4 and ABD pads. (Army Battle Dressing)
 - Gauze rolls 2 in.
 - Ace wraps 2 and 4 or 5 in.
 - Tape: 1 and 2 in. cloth for general strong use and paper tape if allergies. Know how to make a butterfly bandage especially if you don't buy :...
- Steristrips: 1/4 and 1/2 in. wide. Can close lots of wounds if there isn't too much tension but can be difficult to keep sticking to the skin, esp. if you don't first degrease the skin with alcohol wipes and then apply:...

- Benzoin: if available to make tape really stick.
- Alcohol wipes: Or use stove alcohol or rubbing alcohol and a bit of tissue.
- Betadine swabs: Excellent for cleaning skin and wounds prior to suturing but forcefully irrigation with water, e.g. squirting from a 10cc syringe and/or firm scrubbing with soapy water is an excellent substitute. Get all visible contamination out of the wound.
- Fiberglass splint packages: 3 and 5 in. and Webril cottonbatting for splint padding. Creativity can do wonders in the absence of purpose made material. Plaster splint material is also available and easier to use but can't stand exposure to water. Remember to pad well, especially over areas of bone with little overlying tissue.. Look at an old boyscout or first aid manual for ideas.
- Urinalysis: A jar of urine dipsticks would be useful to check for urine blood, infection, dehydration, and sugar to screen for diabetes. Shelf life is not that long however.
- Blood sugar strips: Some simple blood glucose test strips would be vital for monitoring anyone with diabetes. If there's a diabetic aboard, insist that he/she bring along the strips and testing equipment. Simple strips that require no device to read other than your eyeball are available, but trickier to use. They would be the choice for completeness if there's no diabetic aboard but you want to be prepared.

OTC Medications

- Aspirin: 1 a day keeps the heart attack or stroke away in the older individual if no allergy, bleeding, ulcers or other reason against it. One aspirin taken early in the course of a heart attack can reduce damage. 2 every 4 hrs. for fever or minor pain. (Don't use aspirin in kids without medical advice) (Substitute tylenol dose based on weight (10-15 mg./kg, i.e. approx. 4-6 mg./lbs) in kids) 2-3 pills of aspirin 4 times a day taken consistently gets an anti-inflammatory effect (after 3-5 days) for things like tendonitis or arthritis. Ringing of the ears means you've taken a bit too much, back off a bit. Take w/ food or antacid. It's the miracle drug. Can cause ulcers, bruising, heavy periods, and in the sensitive individual hives or asthma. Take with food &/or antacids if GI upset.
- Ibuprofen: Basically the same effects as aspirin though not usually given for the blood thinning effect. Perhaps better pain relief, fever control and anti-inflammatory effect than aspirin. Somewhat less stomach upset but still causes a lot of that. Also risk of bleeding, ulcers, allergy. occasional dose, 200 - 800 mg.(i.e. up to 4 OTC pills) every 6-8 hrs. Don't exceed 2400 mg./d. High dose for anti-inflammatory effect 600-800 mg. 3 x/d consistently. Take w/ food etc..
- Antacids (also see Stomach acid blockers): Liquid antacids such as Maalox or Mylanta or your personal preference are better than tabs for heartburn because they coat on the way down.
- Tylenol: (acetaminophen) Only good for fever and minor pain. No blood thinning effect or anti-inflammatory effect. But it rarely causes indigestion and never bleeding.
- Anti-histamines: General preference would be diphenhydramine (Benadryl) for it's reliability. Use for anything that itches or sneezes/hay fever, allergies. 25-50 mg. every 4 hrs. Rarely more. Unfortunately often causes drowsiness and may cause dry mouth, blurred vision, difficulty urinating. The same can be said for other anti-hist's. (2nd choice is chlortrimeton 2-4 mg. every 4-6 hrs. Benadryl also can treat side effects (shakes and spasms) from phenothiazines. Can be used for nausea and to treat/ prevent sea sickness. Injectable can even be used in place of xylocaine for local anesthetic. Should be injected, if possible, for serious allergic reactions.
- Dimenhydrinate (Dramamine): I mention in passing because it's well known for sea sickness but since it actually turns into diphenhydramine in the influence of stomach acid I think this is a duplicate.
- Pseudoephedrine (30-60 mg. every 4-6 hrs) for nasal congestion of a cold. Can combine with an antihistamine and you've essentially created something like Actifed. Has arousing effect like caffeine and can cause tremors, raise blood pressure etc.
- Afrin spray: For nasal congestion, especially if totally blocked. Lay with head back several min. after 2 sprays for max. effect. Your nose gets addicted to it if used more than 3-4 d. Can also be helpful to stop a nosebleed that doesn't stop w/ 15 min. sustained nose pinching. Spray twice every 15 min. up to 3 times.
- Meclizine 25 mg. for sea sickness prevention (1/2 - 1 daily) (Dramamine II and Bonine are brand names but it's much cheaper if you ask your pharmacist for a bottle of 100 generic.) Also can be taken 25 mg. 4x/d for vertigo.
- Imodium AD for diarrhea. 1 after each diarrheal stool, not more than 4/d. OTC and probably just as

good as Lomotil (Rx). Don't use if blood in diarrhea and there's always a risk of holding in the bad bug by stopping the diarrhea or overshooting and causing constipation so start with just replacing the fluid lost with lots of clear liquids.

- Dulcolax: For constipation but don't get paranoid that you have to have a stool every day. A change in bowel habits is common with a change of diet and activity. The suppositories usually work within an hour (be prepared) and the pills overnight. Try to prevent constipation by lots of fluid intake, lots of vegetables, fruits and other fiber and by staying active.
- If women in crew: Consider monistat or Gyne-lotrimin vaginal tabs for yeast infections. Sanitary napkins: Hopefully they didn't forget. Can also make good absorbent dressing for major bleeding.
- Toothache kit: This should include Oil of Cloves (Eugenol) that acts as an anesthetic when applied as a bit of soaked cotton into a cavity, dry socket, or where a filling has fallen out. Also the kit should include some zinc oxide powder that will form a temporary filling when mixed with the eugenol as a paste and packed into that cavity. This will treat many toothaches, at least when due to exposed nerve endings such as when a filling falls out, a tooth is cracked or deep cavity without swelling or redness of gums to point toward infection. One brand is called ZOE.

Skin Medicines

- White's A & D ointment or Desitin good for general skin protection, e.g. from salt water boils. Practical Sailor even documents that Desitin rubbed on your hull, prop etc. has excellent antifouling properties. If it's available, Penitin may be even better.
- Insect repellent of choice. Those w/ DEET are especially effective.
- Sunscreen. SPF over 15 is probably of little extra benefit.
- 1% cortisone cream applied 3 x/d for localized itchy rashes such as local contact allergy, which is what poison oak is.
- Lotrimin or clotrimazole, or tolnaftate cream applied 3x/d for fungal infections and taken until at least 14 d. after the rash disappears (to prevent recurrence). I.e. for ringworm, crotch rot, athlete's foot.
- Antibiotic ointment: e.g. bacitracin, polysporin, neosporin. (Note that allergy to neomycin (one of the ingredients in neosporin) is fairly common. An even better topical antibiotic is Bactroban, but it requires a prescription.

Prescription Medicines

- Epinephrine (1:1000) (adrenaline) The one medicine that may really save someone's life if a serious allergic reaction. 0.3-0.5cc SQ every 20 min. as needed. Also it's the old treatment for asthma. Available in ampules and set up for selfinjection in various bees-sting kits, e.g. EpiPen and Anakit. May use for any serious wheezing (with caution if elderly), or hives or serious swelling that threatens airway. May even dilute 1:10 and spray in nose for serious nosebleed. Also diluted 1:10 with sterile water and given IV it's given for cardiac arrest. End concentration is 1:10000.
- Xylocaine 1% for local anesthesia. That without epinephrine has more general use. Stings as it's injected. Should be used minimally or avoided in finger, toe, and nose tips because of minimal space for swelling and endangering blood supply. Inject just under cut skin edges. Don't use ore that 20cc total in an adult. If you know what you're doing it could be diluted 1:10 and given 4-7cc IV for life threatening heart irregularities. drop or two in the eye (will sting a lot) will give anesthesia for removing eye foreign bodies.
- Stronger pain pills: Recommend Vicodin type (hydrocodone 5-7.5 mg. with acetaminophen) as it's at least as effective as codeine and less likely to cause nausea. Either will affect your alertness, concentration, coordination, etc.. 1-2 pills every 4-6 hrs. for pain. Same if Tylenol #3. A half pill of either will suppress a cough.
- Strong anti-inflammatory pills: Prednisone 10 mg. Start w/ 40-60 mg. per day and taper off over a few days or a week or 2 depending on response for its great effect (though delayed 6-24 hrs.) with severe allergic reactions and asthma attacks and extensive itchy rashes, e.g. poison oak. Also causes GI upset (take w/ food) and possible ulcers/bleeding and rare mental effects. Given as a single 60 mg. dose in the first few hrs. after excessive sun exposure (that you know will cause a significant burn) it can lessen the burn.

- Phenothiazines: e.g. Compazine 5-10 mg oral or IM or 25 mg. rectal or Phenergan 25-50 mg. oral or IM or 25 mg. rectal every 4 hrs. Essentially the most effective medicines for vomiting. Definitely have suppositories on board (not to mention gloves and lubricant) for that suffering victim of mal de mer. (By the way, here's your trivia tip: The word nausea comes from the Latin nausea that means seasickness, and is derived from the Greek word for ship, naus.) Phenothiazines have the same risks as antihistamines with more drowsiness and occasional tremors and rare total body spasms, arching, eyes rolling back, feeling like swallowing tongue. These severe reactions are very frightening and incapacitating but not truly dangerous and can be cured with diphenhydramine 50 mg. Cured in seconds if given IV. These drugs can also be helpful with migraines. Other types of phenothiazines, e.g. thiorazine and others are given as major tranquilizers and your suppositories are probably the strongest edatives you're likely to have. Fortunately none wants to take them to get high. By the way, Lord Nelson reportedly had the perfect cure for Mal de Mer. If you're feeling seasick, sit underneath a tree. I wonder if that worked aboard the yacht I saw that had an inflatable palm tree on the stern?

Antibiotics

There are zillions but you can generally do well with only a few general cheap ones. Your doctor may have some excellent broad spectrum samples that can substitute.

- Amoxicillin (250-500 mg. 3x/d) : Good for lung, throat, nasal, ear, urinary and to lesser extent stomach infections. Also 3 1/2 gms all at once can cure gonorrhea usually.
- Dicloxacillin or Cephalexin (Keflex) (250-500 mg. 4 x/d): Generally best for skin infections, especially such as boils/abscesses. But more important than antibiotics for abscesses is heat and then lancing it when ripe.
- Doxycycline (100 mg. 2x/d, not for children under 10, or if pregnant): Good for nasal, throat, lung, urine, skin, diarrhea, VD. Use for "Montezuma's revenge"
- Erythromycin (250-500 mg. 4x/d): Good for ear, throat, nose, lung, skin, VD.
- Trimethoprim/Sulfa double strength (e.g., TMP/SMX DS, Bactrim DS, Septra DS) (1 pill 2x/d): Good for ear, nose, throat, lung, urine. Probably the most prescribed for urine) Also good for Monte's revenge.
- Metronidazole (Flagyl)(500 mg 2x/d): For some intestinal parasites (e.g. that cause chronic diarrhea) and serious intra-abdominal infections, i.e. those that should be hospitalized. Only common outpatient use is for Trichomonas, (1 type of VD) and for a common non-VD vaginal infection.

Other common antibiotics of general use, but more expensive, include Augmentin, Cipro, Floxin, Biaxin and others.

My top 3 for general use and cost effectiveness would be Amoxicillin, Doxycycline and TMP/SMX. Remember that the penicillins and sulfa's (SMX) are the ones that cause the most allergies. 10% of those allergic to a cillin will be allergic to a ceph. drug like cephalexin, up to 50% likely if there's a history of a serious allergy to penicillin with wheezing or the rapid development of throat swelling or shock.

More specialized drugs

These are far more limited but some could be life saving. I might carry these but you may not carry the prescription ones unless you feel likely to need them and can get a prescription. This may depend on your crew's needs. For example, if there's a heart history in them likelihood of need rises.

- Inhalers: Albuterol (Proventil, Ventolin) Use for wheezing e.g. with lifethreatening allergic reaction or asthma or emphysema. (I hope you have no smokers on board.) Not dangerous and can be given as 2 inhaled puffs every 3-4 hrs. or if serious every few minutes. Primatene mist is available OTC but, ironically, is quite dangerous if used frequently or with heart problems.
- Cardiac Medicines: I write this with trepidation because it is here that inappropriate use is most likely to get you in trouble. If at all possible, get professional medical advice by radio. Hence my instructions remain minimal. On the other hand, appropriate use when you have these available may be life saving

and certainly improve comfort and reduce risk of progression to even more serious problems. Here I repeat the usefulness of a CPR course. In the lack of follow-up intensive care however, CPR is most likely to be of lasting benefit in fewer circumstances, such as near drowning and electrocution and certain self-limited heart rhythm problems.

- Nitroglycerin tablets: For heart attacks and angina and esophageal spasm. Takes a lot of clinical judgement that you may not have but particularly if you've got people over 55 on board the risk of heart attack goes up. 1 tab under the tongue every 5 minutes up to 4 or 6 until heart pain goes away. Here is not the place to try to teach you to recognize heart pain but someone with a history of angina will usually recognize it. Keep tightly capped and preferably unopened if not used as potency declines over a few mos. once opened, esp. if not tightly capped and xposed to air. Sit down as this can cause dizziness by drop in BP and often causes headache. Both only last a few minutes. Lie down with feet up if very dizzy.
- Nitroglycerin paste: 1/2 to 2 inches applied to the chest every 12 hrs. Most commonly 1 in.. Used for persistent cardiac pain and extreme high blood pressure. Too much will drop BP too far. Headache is common side-effect.
- Digoxin: For heart rates over 150/min. and for heart failure (water on the lung) Again this takes more judgement than I can give you here. But it sure would be nice to have this if the need arises and you get medical advice to give it.
- Furosemide (Lasix): For the swelling and wet lungs of heart failure. Dose 20-160mg./day individualized to the patient.
- Norvasc: Calcium channel blocker. Useful in high BP and angina.

OK, so here's a brief description of "typical" heart pain.

It's a pressure, squeezing or dull ache felt in the center of the chest (i.e. not over the heart) that is usually brought on with exertion and relieved by rest. Often the individual will not call it a pain and may demonstrate it by holding a fist over their breast bone. It may radiate to the neck, teeth, arms, back or more infrequently upper mid stomach. It may only appear in those laces. The association with exertion, or fright/anger or after meals is important. Pain triggered by exertion is the most suspicious. Untreated angina (pain without damage) lasts less than 15 min. (assuming you stop and rest). The more the pain is associated with nausea, vomiting, shortness of breath, cold sweats, dizziness or palpitations and the longer it lasts, (over 30 min.) the more likely it has progressed to a heart attack (MI or myocardial infarction) with damage/death of heart muscle. Sometimes, particularly in women, the elderly and the diabetic there may be no pain but just the other associated symptoms or a sense of overwhelming weakness. Several other things may precisely mimic or be mimicked by heart pain such as esophageal pain or ulcer most commonly, but less commonly by acute lung problems (potentially fatal), rupturing or dissecting aneurysm (highly lethal), gall bladder attack, pericarditis (inflammation of the sack around the heart) and others.

- Heart failure: If new this is often triggered by a heart attack, that may be "silent". Otherwise it is a failure of the heart to be able to pump as much blood as is demanded of it and the blood backs up. Typical symptoms include: abnormal shortness of breath with exertion, worsening breathing if lying down so there's a desire to sleep seated or propped up on a few pillows, waking up at night short of breath, getting up at night to urinate more than once and as both sides of the heart progressively fail you get swelling in the legs. Sudden severe attacks have extreme trouble breathing, the victim wants to sit bolt upright and there may be pink frothy sputum.

Stomach acid blockers

- Stomach acid secretion blockers: Cimetidine (available OTC as Tagamet HB 100mg), Pepcid (available OTC 10mg.), Zantac (OTC 75mg.) These are a different type of anti-histamine and are the drugs of choice for things like ulcers. Consider these for sustained burning or gnawing pain in the upper mid stomach or below the breast bone that persists after liquid antacids. Full prescription dose is: Cimetidine 400 mg. 2x/d or 800 once a day. Pepcid: 20 mg. 2x/d or 40 mg. once a day, Zantac 150 mg. 2x/d or 300 mg. once a day. Cimetidine is more likely to have side effects such as confusion. Generally well tolerated. Can also reduce itching in combination with the other anti-histamines.
- Diabetes: This should generally only be needed if there's a diabetic on board, who should supply the necessary medicines. If however you want to be prepared for even more eventualities, and if you have the test strips mentioned earlier, you should have some method of treating the diabetes. Many oral

medicines are available, especially for the adult onset diabetic. Among these is Diabeta. For serious diabetic problems, insulin would be needed. Insulin is OTC, but the knowledge of how to use it must be gained elsewhere than here. The ability to closely monitor the blood glucose, (with the test strips) is mandatory. Inappropriate use can easily kill the patient. If you were to carry insulin, you should carry both the N and R types, plus plenty of insulin syringes. Get medical advice by radio. Hypoglycemia, (low blood sugar) is probably more commonly deadly than high blood sugar. High blood sugar isn't generally acutely deadly except in the uncommon event of diabetic ketoacidosis, to which insulin dependant diabetics are more prone to. Too much insulin and the patient gets hypoglycemia. The treatment of hypoglycemia is sugar, much preferably glucose. The symptoms are: rapid heart rate, tremors, sweating, weakness, and confusion or agitation that may progress to coma. Have the subject drink OJ or other natural fruit juice if alert enough, dissolve hard candy under the tongue or glucose paste if available. You can make a paste of sugar and water and put some under the tongue. Corn sugar would be better but less available.

Other injectable medicines

Due to expense and limited use I believe these are clearly second line. Nevertheless, the following could be considered.

- **Injectable pain medicines:** Injectable narcotics such as meperidine, (Demerol) would certainly be appreciated with serious injuries but remember that no one died of pain and too much pain relief from narcotics could drop blood pressure and precipitate shock. This is not to mention that the doped out individual may fall overboard. Another alternative could be Toradol, which is a non-narcotic anti-inflammatory pain medicine that can give relief equivalent to morphine in many cases. The down side is that in the elderly or those with kidney disease, it can shut down the kidneys and shouldn't be repeated very often. Duragesic skin patches that release a slow steady dose of Morphine could be considered in lieu of injectable narcotics, but are generally given only to those with terminal intractable pain, such as from cancer.
- **Injectable nausea medicines:** Phenergan is good and may be better than suppositories but at this point I'd consider the more potent Inapsine (Droperidol). Quite sedating but could stop the slide down into serious dehydration. Persistent sips of small amounts of fluid can usually get around this.
- **Injectable antibiotics:** With some of these you could really save a life, but the need for these statistically is low, they're usually expensive, several doses at least would be needed and for these serious infections I'd really have to recommend several to cover all the major possibilities and the choice between them, not to mention that their administration and choice, requires medical guidance. Hence, I'd not carry them and if their need arises, try really hard to arrange an evacuation. That said, if I carried only one, it would be Rocephin 1 gm. (Ceftriaxone) given once a day.

Individual needs

Any crew members that have some underlying medical condition should be sure to bring enough of their own medications to last for the entire cruise plus any reasonable delays. They owe it to the captain to inform him of their needs, where their medications are kept, any special instructions and in general try to educate the captain regarding their medical condition.

Location

The medical kit should be kept in a secure place and all medication use should be logged. Prescriptions to the kit in general, (as opposed to individual crew members) should be made out in the name of the vessel and these prescriptions should be kept under lock with the captain in possession of the key. I believe that this is needed in foreign countries to avoid potential charges of smuggling drugs and to give the skipper the

authority to dispense medicines.

I hope that this has been of help. If you've got questions about some other medical advice, etc. please contact me. I may have skipped something obvious and I'd appreciate the feed back. Let me know if there's something else you need to know and if I'm not overwhelmed with requests I'll see what I can do.

Have fun and may you need none of this,
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SLEEP DEPRIVATION

Dwight Odom, MD

CIRCADIAN RHYTHM

Specific genes control each individual: night vs day person. These genes are essentially the same in all mammals. In most people the maximum physical urge to sleep is 2-6 AM, and this is associated with a decrease in body temperature and blood pressure. There is also a mild sleep cycle from 1-4 PM, but much less than at night and not associated with the physical changes. Average nightly sleep has changed in humans with the inventions of electricity, TV, and alarm clocks. Before clocks, 10.3 hours was the average sleep (like the great apes), and before electricity, the average was 9 hours.

SLEEP DEPRIVATION

This is a very real entity that has real consequences in the work place—especially for those who work changing shifts, or continuous work activity such as physicians, the military, and **SINGLEHANDED SAILORS**. The best studies have been done by the Army and the Navy. Cognitive function activity decreases 25% after each 24 hours of sleep deprivation. **SLEEP LOSS IS CUMULATIVE AND THE ONLY CURE IS SLEEP**. It was recently discovered that different organ systems recover at different rates. The brain of a rat can recover in one light cycle, but the lungs and muscle require 6 cycles, and the liver requires 16 cycles. *Science Apr 28*

Sleep deprivation symptoms and effects:

- Cognitive function decrease 25% per 24 hours without sleep (> 2 shots of alcohol)
- Degrades the higher more complex mental process first
- Lose ability to integrate information
- Simple mental processes unaffected
- Significant increases in workplace and auto accidents
- Decreases initiative and productivity
- Daytime sleepiness and weariness

Sleep requirements—**6 hrs in 24 hrs is the minimum to prevent sleep deprivation**. This can be supplied by naps, but people vary in the length of a nap from which they can awake and be fully cognitive. **Naps of more than 20 but less than 90 minutes cause trouble in many people**. At 60 minutes you can wake up in REM sleep. Each individual has to experiment. At some time during each 24 hrs it is probably very good to sleep more than 90 minutes. Several studies have found that mental function decreases even with frequent naps without deep sleep.

THE CURE

Recovery during sleep is front loaded with the first 4 hours having the maximum effect

Frequent naps. Try to store sleep during the daytime

Sleep longer than 90 minutes at least once in a 24 hour period (better between 12-5 AM if possible)

Avoid small amounts of stimulants---small amounts of caffeine such as a cup of coffee or a soft drink

Avoid drugs that sedate—sea sickness types

Habits to stimulate sleep—eat protein 20 minutes before sleeping, wash face, brush teeth

Carbohydrates when awake

STIMULANTS

Caffeine 300-600mg dose works well. Returns mental function for 2-4 hours.

NoDos 200 mg pills—use 2-3 at one time

A cup of coffee only has 80-100 mg caffeine

MEDICAL THOUGHTS AND SUPPLIES FOR A SINGLEHANDED PASSAGE

Dwight Odom, MD May, 2000

Tetanus toxoid current—less than 5 years

Know the side effects of all the medicines you take with you —prescription and over the counter

Scopolamine---dry mouth in 2/3 people, blurred vision, severe urinary retention in middle aged or older men, drowsiness, confusion, hallucinations. If taken for more than three days, when discontinued, may experience dizziness, vomiting, headache, and disturbance in equilibrium.

Multivitamin daily

Bleeding—ALL WILL STOP WITH PRESSURE for 15 minutes with fingers or the heel of the hand.

DO NOT LOOK AT FIVE MINUTES!!! It will require another 15 minutes. The scalp may take longer.

Blow to the head---lie down immediately where you are with your face turned to the side, if you feel, even slightly, like you might pass out.

Skin rash develops during the passage — probably an allergic reaction to some medicine

COMMON HEALTH RISKS—

Mal de Mer —use medications quickly or before if you know it is a problem for you. Start with small doses but quickly take large doses if symptoms worse or vomiting occurs. Have suppositories if you are prone to this malady.

Constipation—very common. Prevent with forced fluids in the first few days and use laxatives early. Metamucil is good preventative. Possibly have Ducolax suppositories.

Dehydration—common when you get to the warm weather. You are dehydrated if you do not pee two good amounts in 24 hours. Remember we lose large amounts of fluids in our breath and through our skin in the tropics.

Injury—falls from sudden boat movements, lines wrapped around body parts, spinnaker poles hitting you, and large ships going bump-bump. Please hold on tightly, use harnesses, use radar detectors and/or use strobes at night when sleeping.

SUPPLIES:

Dial soap or other antibacterial	sterile gauze pads 4 x 4 inch
Band-Aids	SAM splint (padded aluminum) Campmore or REI
Adhesive tape-2 inch	Inflatable splint-possibly
Steri-strips or make with tape	Safety pins-large
Benzoin—to make tape stick	Betadine liquid and maybe gauze pads
Ace bandages- 4 inch	Superglue
Duct tape	Bandage scissors (West Marine stainless)
Hydrocortisone cream	Thermometer
Desitin cream	Imodium-AD
Triple Antibiotic ointment-large tube	For Women—Monistat cream and suppositories
Advil—generic ibuprofen often irritates stomach—as good as codeine for pain relief	
Visine eye drops	Tweezers
Dental kit—REI \$12.50 Campmore \$16—includes Cavit temporary filling material	

PRESCRIPTION ANTIBIOTICS:

Ampicillin 250mg q (every) 6 hrs x 7-10 days or

Amoxicillin 500 mg q 8 hrs x 7-10 days

Broad spectrum for skin, tissue, urinary, and ear infections, sinusitis, bronchitis

Avoid if allergic to penicillin and use one of next three

Erythromycin 500-mg q 6 hrs for 10 days with food (irritates stomach)—for those allergic to Pen

Keflex 250 mg q 6 hrs x 7-10 days—for allergic to Penicillin

Cipro 500 mg q 12 hrs x 7-10 days (expensive) excellent for saltwater contaminated infected wounds

Sepra DS or Bactrin DS q 12 hrs x 7-10 days for dysentery, urinary, ear, sinus, bronchitis (sulfa drug)

Sulamid ophthalmic ointment for eye infection—(sulfa drug)

Coatorade 1/2 dilution