Mike,
I see youve reposted the version 1.0 of the Med FAq find attached the new version, in two parts.

Medical FAQ version 2.0

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Thanks to Richard DeCastro, Diana and Alan Hagan and Pat Turner for comments and suggestions.

Any constructive comments and debate are welcome. I welcome correction in any errors of fact. I apologise for any errors of grammar or spelling they are entirely mine. I've tried to avoid detailing specific managements for various conditions as I do not consider this to be an appropriate forum. I will, however, respond to specific questions, with suitable references on request.

Disclaimer: The author accepts no responsibility for the use or misuse of this information. The practice of medicine is something that should only be practiced by trained professionals. If you start administering medical or surgical treatments without the appropriate skills you will kill someone. Even in emergency situations, often no action is better than uninformed and untrained action. Any practice of survival medicine should be backed up with appropriate training. This information is offered as my personal opinion and should not be taken to represent a professional opinion or to reflect any views widely held from the medical community.

CONTENTS

Part 1

Part 2

BEFORE I START, THE MOST IMPORTANT THING ABOUT MEDICINE, SURVIVAL OR OTHERWISE, IS ***WASH YOUR HANDS***.

1.0 Survival Medicine:

What is survival medicine? My definition is: "the practice of medicine in a environment or situation where standard medical care and facilities are unavailable, often by persons with no formal medical training". This includes medical care while trekking in third world countries, deep water ocean sailing, in some cases isolated tramping and trekking in a developed country and of course post-The End Of The World As We Know It (TEOTWAWKI).

The basic assumption is that trained doctors and hospital care will be unavailable for a prolonged period of time and that in addition to providing first aid, definitive medical care and rehabilitation (if required) will need to be provided. Also the basics of personal and public hygiene will also need to be considered.

As is the case with any aspects of preparedness you need to decide what you are preparing for and plan accordingly. For some it will only be a 72 hr crisis; For others it will be a major long term event. Your medical preparations will need to reflect your own risk assessments, in terms of what knowledge and skills you develop and what you store. This FAQ is more slanted to longer term preparedness, but much is applicable to shorter term situations.

2.0 What do you need to know?

The more the better. Keep reading and attend all the courses you can. In addition to an advanced EMT course the following skills are what I feel the person filling the role of "medic", should aim to be able to do:

* Use a medical dictionary and a basic medical textbook.
* Perform basic bandaging and dressings. Clean a wound, debride a burn.
* Use local anesthetic to numb a wound.
* Debride and suture a wound, but also know when not to suture a wound, and leave it open or perform delayed closure.

* Deliver a baby and afterbirth. Suture a tear, manage a post-partum bleed.
* Reduce and immobilise a short and long bone fracture/dislocation.
* Use basic counselling skills.
* Understand basic hygiene and preventive medicine practices.
* Recognise and treat common infections:
  - viral flu
  - pneumonia
  - urinary infection
  - wound or skin infection
  - common STD's
* Recognise and treat common medical and surgical problems:
  - asthma/respiratory distress
  - abdominal pain - renal stones/appendix/bilary stones
  - allergic reactions/anaphylaxis
* Look after some one who is bed bound, e.g. basic nursing care, managing the unconscious patient, catheterisation.
* Use basic dental skills, simple fillings, infections, extractions.
* Insert an IV and understand basic fluid resuscitation.
* Improvise medical equipment and supplies.

3.0 Training

The most important aspect of survival medicine is to obtain knowledge and the skills related to it. Medicine is dangerous and uninformed decisions and actions will kill people. But, having said that, a lot of medicine is common sense. Anyone with a bit of intelligence, a good anatomy and physiology book, and a good medical text can easily learn the basics. Although, I have to stress: There is no alternative to a trained health care professional; anything else is taking risks. Obviously in survival situation any informed medical care is better than no medical care. Notice I said informed, if you really don't have a clue what you are doing, you will be very dangerous.

3.1 Formal training

* Professional medical training: One option is undertaking college study in a medical area e.g. Medicine, Nursing, Physicians Assistant, Paramedic, Vet, etc. Obviously this is not an option for many, but it is the ideal situation.

* EMT/Wilderness EMT Course: The much more realistic option. These courses give an basic background in anatomy and physiology, medical terminology and the essentials of emergency medicine. It provides the basis for additional self-directed learning. Most community colleges offer these courses. The basics are well covered in the "first responder" courses, which, although very elementary, provide a good stepping stone to the more advanced courses, while not requiring the same time commitments as full EMT courses.

3.2 Informal Training

There are a variety of options here. Certainly, locally (New Zealand, and I realise the US may be different) it is possible to gain some experience in an ER. In our emergency department we regularly have a variety of people coming through for practical experience, from army medics, to off-shore island forest service staff, to fishing boat medics. If you can provide a good reason for wanting to gain skills in the emergency room such as "sailing your boat to the South

Pacific", then the potential to gain practical experience in suturing, inserting IV's, and burns management is there. Another option is befriending (or recruiting) a health care professional and arranging teaching through them. It is common for doctors to be asked to talk to various groups on different topics, so an invitation to talk to a "tramping club" about pain relief or treating a fracture in the bush would not be seen as unusual.

3.2 Volunteering

Many ambulances and fire services have volunteer sections or are completely run by volunteers. Through these services you may be able to obtain formal EMT training and at the same time gain valuable practical skills and experience, overcome fear of dealing with acutely sick people and also work with some great people.
Organisations such as the Red Cross or Search and Rescue units also offer basic first aid training as well as training in disaster relief and outdoor skills. It is also often possible to arrange " ride alongs" with ambulance and paramedic units, as the 3rd person on the crew.

4.0 Organisation

4.1 If you are alone or just a couple then organising your medical care is relatively straight-forward. However the larger the group the more formalised and structured your medical care should be. Someone within your group, ideally with a medical background, should be appointed medic. Their role is to build up their skill and knowledge base to be able to provide medical care to the group. There should also be a certain amount of cross-training to ensure that if the medic is the sick one, there is someone else with some advanced knowledge. The medic should also be responsible for the development and rotation of the medical stores and for issues relating to sanitation and hygiene. In regard to to medical matters and hygiene their decisions should be absolute.

4.2 Another important area is that of confidentiality and trust. This is a corner stone of any medical relationship. It may seem an odd thing to mention in regards to a survival situation, but all doctors, nurses, paramedics will tell you without trust you can't practice. You need to trust that what you tell your medic will go no further and personal problems won't become dinner-time conversations. Obviously, this has to be weighed against the "common good" of the group, but unless it would place the group in danger there should be an absolute rule of confidentiality.

4.3 Even in a survival situation documentation is important. You should keep a record of every patient you treat. What they complained of, your history and examination, what you diagnosed and how you managed them, a very clear note of any drugs you administer and a description of any surgical procedure you perform should all be recorded. Anyone with an ongoing problem should have a chronological record of their condition and treatment over time recorded. There are two reasons for this. First is that for the ongoing care of the patient, often it is only possible to make a diagnosis by looking over a course of events within retrospect and it is also important to have a record of objective findings to compare, to recognise any changes over time in the patient condition. Second is for legal reasons. If and when things return to normal it may be important to justify why certain decisions were made. Detailed notes from the time will make

this easier. It is also useful to have medical records on members of your group prior to any event, including things such as blood groups and any possible medical problems.

4.4 The persisting survival theme of how you deal with the "have not's" when they approach you, applies to medicine as much as to food and other supplies. Obviously complete isolation is one option, but this is unlikely to be that common. How do you deal with the stranger dumped on you with the gunshot wound or pneumonia? It's one thing to give them a meal, but do you give them them the last of your IV antibiotics or your one dose of IV anesthetic? You need to have thought about these things. People can often "live of the land" and forage for food, but they can not forage for penicillin. Its also worth realising that these people may be more likely to be in poor general health and also carriers of infectious diseases. This raises the question of isolation vs community involvement again. One possible option may be to quarenteen the refugees for a period before any contact with your group.

5.0 Reference Books

Good medical reference books are vital. The following is a list in two parts. First are books I think are a really solid starting point for a survival medicine library and then a selection of other useful medical books with varying strengths and weaknesses. What you prefer is to a great extent personal opinion. Most can be obtained from any university book shop, Paladin Press or from Amazom.com. There are titles and authors for all books, but only ISBN's and approximate prices (US$) for some.

5.1 Must haves:

1) Where There is No Doctor. By Werner. Hesperian Foundaton 1992 $20

If you buy no other medical book, you must have this one. This is the must-have of survival medicine; it WILL save lives. Although slanted to the third world (= TEOTW.... environment ?) and the tropics, it contains the essential basics of all aspects of medicine.

2) A good medical dictionary.
* Dorland's Illustrated Medical Dictionary. By Dorland 1994 $40
* Mosby's Medical Dictionary. By Anderson 1993 $30

3) An Anatomy and Physiology reference.
* Functional Anatomy and Physiology. By Yamamoto. 1996 $30
* Essentials of Anatomy and Physiology. By Scancon.
ISBN 0803677359
* An anatomy atlas such as Grays or Grants are also excellent for any do-it-yourself surgery. :-)

N.B there are a number of collectors editions of Grays anatomy, you should avoid these if possible and purchase a new edition.

4) Where There is No Dentist. By Dickson. Hesperian Foundation 1983 $9
The only book of its kind. Very good. Dental care is a very under estimated survival problem.

5) An emergency medicine reference
* Emergency Care in the Streets. By Caroline. 1995. $50
My choice, but both are good books. Textbooks of paramedic care.
* Mosby's Paramedic Textbook. By Sanders $50

6) A drug reference guide
* In USA - Physicians Desk reference
* In UK - British National Formulary
* In Aust - PIMS
* In NZ - New Ethicals catologue

7) Ditch Medicine. Coffee. Paladin press. ISBN 0873647173 $25
Vital for basic emergency surgical procedures and a stepping stone into more advanced stuff

8) A Herbal/Medicinal Plant guide to your area. The basis of most of the modern drugs is in plants and large numbers have potent medicinal properties. Also local indigenous peoples often have books about their traditional medicine. You need to be careful separating out what's useful and what's not, but it may be very valuable in a major long term event.

A good starting point :
* Medical Botany. W.H Lewis; John Wiley and sons. 1977
ISBN. 0471 53320 3

5.2 General Books (* = my recommendations)

* Oxford Handbook of Clinical Medicine. Hope. Oxford University Press.1995. $25 excellent coverage of basic medical principles aimed at the junior doctor level.

* Oxford Handbook of Clinical Specialties. Collier. Oxford University Press.1993 $25 as above except covers the specialties including OBGYN, pediatrics, orthopedics and anesthetics.

Current Medical Diagnosis and Treatment. Tierney. Lange. 1997
Up-to-date management of common medical problems, requires some advanced knowledge.

Oxford Handbook of Emergency Medicine in General Practice. Lawrence. Oxford University Press. 96. $30 good coverage of the basics of emergency medicine in easy to read format.

Merck Manual Vol 1: General Medicine. Berkow. MSD. 93. $15 Good reference, but can be complicated and verbose

Merck Manual Vol 2: Specialties. Berkow. MSD. 93. $15

Both volumes are also available as a combined text, for about $25. The entire Merck Manual is available for download from the "Virtual Hospital" site.

International Medical Guide for Ships. W.H.O. ISBN 9241542314

* Ships Captains Medical Guide. Her Majesty's Stationary Office. 1983
My personal favourite. I would recommend this book to everyone. It covers the management of most common problems in an excellent format, designed for ships isolated at sea. Also good description of drugs and when to use them. The new 22nd edition is in press.

The american equivelent is called " The Ships medicine chest and medical care at sea " and is published by the US office for public health.

Advanced First Aid Afloat. Eastman.

Onboard Medical Handbook. Gill. $15

Medical Emergencies at Sea. Kessler. ISBN. 0688043402

Medicine for Mountaineering. Wilkerson. $15

Wilderness Medical Society: Practice guidelines for Wilderness Emergency Care. Forgery. 1995 $10

* Wilderness Medicine: Management of Wilderness and Environmental Emergencies. Ed Auerbach $175. I recently bought this book, and can strongly recommend it. Given its price I would suggest only those who already have a good basic knowledge consider buying it.

* Book for Midwives : A Manual for Traditional Birth Attendants and Midwives. Klein. Hesperian Foundation. ISBN 0942364228 Best book of its kind. Safe childbirth in a low-tech environment with minimal backup.

Maye's Midwifery Textbook. Sweet. ISBN 070201236X

Survivalist Medicine Chest. Benson. Paladin Press. 1983 ISBN 0873642562 $10. A little dated. Some advise I consider a little suspect but, generally a good book.

Do-It-Yourself Medicine. Benson. Paladin Press 1996. ISBN 0873649184 $20. I have not seen this book, but understand it is the up dated version of Medicine Chest, and addresses some of that books problems. Recommended by many.

* US Special Forces Medical Handbook. Paladin Press. 1987. Again a little dated, but still an excellent book. Even the new edition is still not completely up to date. But its strengths overcome this. Good coverage all areas including surgery, dentistry and preventive medicine.

Wounds and Lacerations - Emergency Care and Closure. Trott. Pub Mosby.

Emergency War Surgery. Bowen. 1994 ISBN 0788102915 $60 Excellent book but, very technical.

* Emergency War Surgery: US revision of Nato Handbook. G.P.O 1988 $50 ISBN 9999814328. The do-it-yourself surgery guide. Designed for junior doctors with minimal trauma experience going into a war zone. Starting to be a little dated, but the basics don't change.

Field Surgery Pocket Book. Her Majesty's Stationary Office. British version of the above. I personally prefer this one to the NATO handbook, but each are equally good.

6.0 Medical Kits

6.1 What you stock up on should be related to what you know how to

use and what you can obtain. There are potentially thousands of drugs and different pieces of medical equipment and you can't stock everything. Fortunately, it is possible to manage 90% of medical problems with only a moderate amount of basic equipment and drugs. Obviously, sometimes the treatment may not be as such high quality as that provided by a proper hospital, but it may be life saving and reduce long term problems. For example, a broken tibia is usually managed by a general anesthetic, an operation for an internal tibial nail, followed by pain relief and physio. But it can be managed by manipulation with analgesia and immobilization with an external splint for 6-8 weeks and as a result the patient may be in pain for a few weeks and have a limp for life, but still have a functioning leg. Also, appendicitis has been treated with high dose antibiotics when surgery has been unavailable such as on a submarine or in the Antarctic. Although in both cases management is sub-optimal and may have some risk, in a survival situation it can be done and may be successful, with limited medication and equipment.

6.2 Obtaining medications can be difficult. The problem is two-fold. First is access and second is cost. Below are some suggestions for legally obtaining medicines for use in a survival medicine situation.

* Talk to your doctor. Be honest explain exactly why and what you want, that you want to be prepared for any disaster and have some important basic meds available, for if medical care isn't freely available. Demonstrate an understanding of what each drug is for and that you know how to safely use it. Most MD's would probably be very supportive. Although, I would suggest that you don't request narcotics the first time. Then return the meds when they have expired, this will confirm that you are not using them inappropriately.

* Discuss with your MD your plans for a trekking holiday. Most MDs recognise the importance of an adequate medical kit if you are travelling in the 3rd world or doing isolated backpacking. Most would prescribe antibiotics, rehydration fluid, simple pain killers, anti-diarrhoea meds, antibiotic and fungal creams, and if climbing steroids and frusemide for AMS.

* Buy a boat. Australia, New Zealand and the UK, require all boats sailing beyond coastal limits to carry a comprehensive medical kit. This includes antibiotics, strong narcotic analgesia and a variety of other meds. Although not a legal requirement in the US, I imagine most MD's would happily equip an ocean going yacht with a comprehensive medical kit, especially if you can demonstrate a basic medical knowledge. The US Public Health service offers suggested medications and equipment, depending on numbers and expected isolation.

* Prescription medicines are available over the counter in many third world countries. I am unsure of the legalities of purchasing these. I imagine a single course of antibiotics would be unlikely to be a problem, but that large amounts or narcotics would be illegal.

* Not for human use. Veterinary meds are widely available and relatively cheap. Several books discuss obtaining them (Benson's books, see book list), so I won't cover it in detail here. I personally don't recommend this, but obviously for some it is the only viable option. Generally speaking most veterinary drugs come from the same batches and factories as the human version, the only difference being in the labelling. This is the case for most common

single-component drugs such as antibiotics. If you are going to purchase veterinary medications I strongly suggest only purchasing antibiotics or topical preparations and with the following cautions: (1) Make sure you know exactly what drug you are buying, (2) avoid preparations which contain combinations of drugs and also obscure drugs for which you can find no identical human preparation and (3) avoid drug preparations for specific animal conditions for which there is no human equivalent. Buy drugs which are generically identical to their human counterparts, e.g. Amoxycillin 500mg (Vet) = Amoxycillin 500mg (Human), etc.

* Obtaining general medical supplies is often easier. Basic bandages and stethoscopes, etc. can be bought from any medical supply house. I understand there is no federal law prohibiting the purchase of things like sutures, syringes, needles, IV's etc., but some states can make it difficult. Try looking in the yellow pages for medical or emergency medical supply houses or veterinary supplies. A number of commercial survival outfitters offer first aid and medical supplies, however I would shop around before purchasing from these as their prices, in my experience, are higher than standard medical suppliers. The above approaches for obtaining medicines can also be used for obtaining medical equipment if you do have problems. The most important point is to be able to demonstrate an understanding of how to use what you are requesting.

6.3 I've included three kits. The first is designed for someone with some limited medical knowledge and a good book. A lot of common problems can be managed with it, minor trauma (cuts and minor fractures), simple infections and medical problems. The second is designed for someone with extensive medical training and should be able to cope with 90% of common medical problems, including some surgery, spinal and regional anesthesia, general anesthesia with ketamine, treating most common infections and medical problems, and moderate trauma. Obviously there is a vast middle ground between the two. The kits are designed for long-term care rather than to cover short (48 hrs) delays in getting to formal medical care. The third is a reprint of the medical scales for British flagged commercial vessels, to give you an idea of what the "experts" believe is required for isolated intermediate term survival medicine.

NOTE:

1) I've tried to use the international generic names for drugs. However, there are some differences between the British and the US pharmacopoeias and where possible I've tried to include both e.g. Lignocaine (UK & NZ) = Lidocaine (US)

2) I have not included any quantities. This is dependent on what you are planning for and what you can afford. Unfortunately most medications require rotation, with 1-5 year shelf lives, making this a costly exercise, as they are not like food you can rotate into the kitchen

3) Always store a supply of any medicines you take regularly. Blood pressure pills, allergy pills, contraceptive pills, asthma inhalers etc.

** Small Kit **

I have tried to include a description of each item and some uses.

Combat Dressings
Large gauze dressings
Small gauze squares
Roller Bandages elastic + cotton (2in/4in/6in)
Triangular Bandages
Bandaids -assorted sizes and shapes (ie finger tips)
Sleek Tape 1 in. (waterproof, plastic/elasticated tape)
cotton buds (q-tips, cotton tips)
thermometer (rectal or pacifier for children)

Chlorhexidine and cetrimide (antiseptic) or Povidone-Iodine
Antibacterial Soap

Lignocaine 1% (local anesthetic) (USA = Lidocaine)
Augmentin (antibiotic) (a broad spectrum antibiotic)
Acetominophen (mild analgesic)
Dicolphenic (mod analgesic) (a nonsteroidal anti-inflammatory)
Oral Rehydration powder
Loperamide (anti-diarrhoeal)
Benedryl &/or Claratyne (antihistamines, short + long acting)
Adrenaline autoinjector or Anakit (USA = epinephrine)
Morphine Sulphate (strong pain killer) if avaiable
Gamma Benzene Hexachloride (lice/scabies tx)
Clotimoxazole (anti-fungal)
Contraceptive pills/Condoms

Paramedic scissors
Surgical scissors (
Needle holder (Enough to do basic minor
Sm curved clamps (surgery - suturing, draining
Tissue forceps (abscesses, cleaning a wound
Scalpel blades (etc.

Emergency Obstetric Kit (includes bulb suction)

Vicryl 2/0 suture material
  Your choice of suture material is up to you. Vicryl is a synthetic dissolvable one, but takes up to 4-6 weeks to dissolve, so I think it is the ideal survival thread. But a variety of non-dissolvable sutures are available which will last forever.
5ml syringes
20g needles

Oil of cloves (tooth ache)
Emergency dental kit (commercial preparation)

A smaller kit for your bug-out bag could be made up from the above. Include some combined dressings, a couple of bandages, bandaids, tape, some tylenol, benedryl and some loperamide.

** Large Kit **

This list may seem extreme, but is designed for a well trained person in a worst case scenario. Even though it is a long list, it all packs down, mine which has a similar content packs into two medium size nylon multi-compartment bags and a Plano rigid 747 box. I haven't included descriptions of what specific items are, on the assumption that if you don't know what it is, you shouldn't have it or try to use it.

General

Large gauze dressings
Sm gauze squares
Combat dressings
Petroleum gauze
Plastic bags
Bandaids - assorted sizes and shapes
Elastoplast dressing
Steristrips - assorted sizes
Tincture of Benzoin
Roller (elasticated + cotton) bandages (2in/4in/6in)
Triangular bandages
Safety pins
Cotton buds
Paper tape (1/2 in/1in)
Sleek tape (1/2in/1in)
Oropharyngeal airways
Resuscitation face mask with one way valve
BP cuff
Stethoscope
Otoscope
Sm Torch (flash light)
Thermometer (rectal for children)
Heavy duty scissors
Space blanket
Air splints (arm/long-leg/short-leg)
SAM splints
Plaster of Paris (or fibreglass) roller bandages (4in/6in)
Multidip. urine test strips
Pregnancy test kits
Sterile and unsterile latex gloves
Scrub Suits
Fluroscene eye strips
Eye patches
Sm eye magnet (for FB's)
Snake bite kit (for those of you unlucky enough to have them :-))

- The Sayer suction kit is recommended. It is slightly more expensive, but I understand more effective in removing venom. I refer you here to the excellent rec.backcountry FAQ on Snake Bites

IV Kit

Normal Saline
Haemaccel or Pentaspan (a colloid resuscitation fluid)
IV giving sets - maxisets + standard sets
Blood collection bags + filter giving sets

Syringes 2/5/10/20 ml
Needles 20/22/24 g
IV cannulas 16/20/24g
Spinal needles 22g
Leur locks/Heparin locks
Tourniquet
Alcohol Wipes

Surgical Kit

Mayo scissors
Dissecting forceps
Sm curved clamps
Sm straight clamps
Lg curved clamps
Scalpel Handle + Blades (size 11,12,15) or disposable scalpels
Sm Bone Saw
LIft Out obstetric forceps
Emergency Obstetric Kit (includes cord clamps, bulb suction etc)
Suture Material Vicryl 0/,2/0
Chromic 0/,2/0
Dermalon 0/, 2/0
Surgical stapler and remover
Hemilich flutter valve
Penrose drains
Foley Urethral Catheters
Urine Bags
N-G tubes + spigots

Dental KIt

Oil of cloves
Zinc Oxide paste
Dental mirror
Sharp probe
Compactor
Extraction forceps

Medications

Povidone - Iodeine Prep and/or		antiseptic skin prep
Alcohol prep		antiseptic skin prep
Chlorhexidine and cetrimide		antiseptic handwash
Benalkium Chloride		antirabies skin wash
Antibacterial Soap		
Paracetamol	oral	mild analgesic
Aspirin	oral	wonder drug
Diclophenic	oral	mod analgesic (nsaid)
Morphine	iv/im/sc	strong analgesic
Narloxone	iv	antagonist to morphine
Ketamine	iv/im	iv anesthetic
Diazepam	iv	hypnotic/sedative
Atropine	iv	pre-med/poison anti
Lignocaine	top/spinal	local anesthetic
Metoclopramide	iv/im	anti-emetic

Augmentin oral/iv		penicillin antibiotic
Metronidazole oral		anaerobic antibiotic
Cefaclor oral		cephalsporin
Ceftriaxone iv		cephalsporin
Ciprofloxacin oral		quinolone antibiotic
Mebendazole oral		antiparasitic
Clotrimoxazole top		anti-fungal
Adrenaline iv/im		(USA = Epinephrine)
Salbutamol inhaler		asthma/anaphylaxis
Rehydration formula		dehydration
Benedryl &/or Claratyne oral		antihistamine (short + long acting)
OTC Cough surpressent		
Betnesol oral		steroid
Hydrocortisone iv/cream		steroid
Loperamide oral		antidiarrhoeal
Ergometrine &/or Oxytocin im/iv		ecbolic for PPH
Neomycin eye drop		antibiotic eye drops
Pilocaine eye drops		local anesthetic
Starr Otic Drops		antibiotic ear drops
Mupirocin (Bactroban) top		topical antibacterial cream
Gamma Benzene Hexchloride top		for scabies and lice

Water for injection/normal saline for injection

Oral Contraceptive Pills
Condoms/Cervical Caps/Diaphragms

** Ocean Kit **

British medical scales for ocean going ships, from the Marine safety agency, Merchant Shipping Notice No.M.1607. It is compatible with the medical treatments described in the "Ship's Captain Medical Guide", the new edition (22nd) of which will be published shortly. The amounts suggested are per 10 people.

Drugs

Cardiovascular

Adrenaline 1:1000	1ml amp	5
Glyceryl trinitrate 0.4mg	inhaler	1
Frusemide 40mg	tab	20
Frusemide 10mg/ml	2ml amp	2
Vitamin K 10mg/ml	1ml amp	1
Ergometrine 0.5mg.ml	1ml amp	2
Atenolol 50mg	tab	10
Aspirin 75mg	tab	25

Gastrointestinal :

Cimetidine 400mg	tab	30
Promethazine 25mg/ml	1ml amp	10
Prochlorperazine 3mg	tab (buccal)	30

Gylcerol suppository 4gms		supp	6
Codeine phos 30mg		tab	60
Analgesics :			
Paracetamol 500mg		tab	100
Diclofenac sodium 100mg	supp		3
Morphine sulphate 10mg/ml		1ml amp	10
(Codeine phos as above)			
Hyoscine 0.3mg		tab	20
Nervous :			
Diazepam 5mg/ml	2ml amp		5
Diazepam 10mg		tab	20
Chlorpromazine 25mg		tab	40
Chlorpromazine 25mg/ml		1ml amp	5
(Hyoscine as above)			
Diazepam rectal 10mg/2.5ml		rectal tube	4
Anti-allergics/Anti-anaphylactics :			
Astemizole 10mg		tab	30
Prednisolone 5mg		tab	10
Hydrocortisone 100mg/2ml		powder for inj	3
Respiratory :			
Salbutamol 100 microgms	inhaler		1
Beclometasone 50 microgms		inhaler	1
Anti-infection :			
Benzylpenicillin 600mg		powder for inj	10
Ciprofloxacillin 500mg		tab	10
Cefuroxime 750mg		powder for inj	20
Erythromycin 250mg		tab	40
Trimethoprim 200mg		tab	30
Medendazole 100mg		tab	6
Metronidazole 1gm		supp	12
Metronidazole 400mg		tab	14
Doxycycline 100mg		tab	10
Tetanus vaccine 0.5ml		amp	5
Tetanus immumoglobulin		amp	1
Rehydration :			
Oral Rehydration fluid		sachets = 1 L	10
External preparations :			
Chlorhexidine and Cetrimide		solution	
100mls			
Neomycin cream 15gm			1
Benzoic Acid 6% oint 50gm			1
Silversalazine cream 1% 50gms			2
Malathion 0.5% cream 200mls			3
Zinc ointment 25gms			2
Potassium permanganate crystals 10gm			1
Hydrocortisone cream 1% 15gm			2

Eye medications :

Framycetin sultphate 0.5% ointment 5gm 4
Betamethasone 0.1%/Neomycin 0.5% eyedrops 5mls 1
Amethocaine eyedrops 0.5% 0.5ml 5
Pilocarpine eyedrops 0.5% 0.5ml 1
Fluorescein eye test strips 1% 10

Nose/ear/throat :

Antibiotic ear drops 5mls
1
Neomycin/polymixin B/hydrocortisone ear drops 5ml 1
Ephedrine nose drops 0.5% 10ml 1
Chlorhexidine gluconate mouthwash 0.2% 300mls 1

Local anaesthetics :

Ethylchloride spray 50mg
1
Lignocaine 1% 20mg/2mls 2ml amp 2
Oil of cloves10mls 1
Lignocaine gel 2% 20g 1

General Medical Supplies

Resuscitation equipment :

Oxygen giving set - oxygen reservoir 1
- flow meter 1
- pressure regulator 1
- oxygen tubing
1
- 24% face masks 5
- 35% face masks 5

Suction aspirator
1
Laerdal pocket mask 1
Guedal airway size 3 1
Guedal airway size 4 1

Dressing and suturing equipment :

Suture and needle pack
- sterile non-absorbable 26mm half needle
3
- sterile non-absorbable 40mm half needle
3
- sterile absorbable 40mm half needle 26

- 75mm steri-strips 6

Crape bandage 7.5cm x 4.5 m 4
Elastic adhesive 7.5cm x 4m 4
Trianglular bandage 4
Tubular gauze finger size/ 20m
1

Conforming bandage	5cm x 5m	20
Conforming bandage	7.5cm x 5m	20
Paraffin gauze dressing	10cm x 10cm	40
No 13 BPC Dressings)		5
No 14 BPC Dressings) Varying size gauze pad with		5
No 15 BPC Dressings) attached rollar bandage		
4		
No 16 BPC Dressing (eye pads)		3
Gauze sterile cotton 30 x 90cm		6
Cotton wool 15gm sterile		6
100gm unsterile		
3		
Adhesive tape	2.5cm x 5m	1
Adhesive suture strips	pkt of 5	
2		
Bandaids	assorted	40
Zinc oxide plaster tape	2.5cm x 5 m	1
Gauze swabs	10cm x 10cm	100
Plastic Burns bags	46cm x 31 cm	5
Instruments		
- disposible scaples No 23		2
- scissors 18cm		1
- scissors 12.5cm		1
- dissecting forceps		1
- haemostatic clamps		1
- needle holder		1
- disposible razors		2

Examination and monitoring equipment :

Disposible tounge depressors		4
Reactive urine analysis test strips		
50		
Stethoscope		1
Sphygmomanomter	1	
Std clinical thermometer		
3		
Hypothermia thermometer	1	
Sputum cups		2
Specimen jars		2

Equipment for injection,perfusion and catheterisation :

Bladder drainage set (bag/spigots/tube)		
1		
Rectal drip set		1
Syringes and needles (2ml / 5ml / 10ml of each)		
6		
Foley ballon catheter 16fr		1
Nelaton catheter 16fr (no ballon)		
1		
Penile sheath set		1

General Medical equipment :

Bedpan	1
Hot water bottle	
1	
Magnifying glass	
1	

Urine container		1
Ice bag		1
Safety pins		6
Kidney dish (stainless steel)		1
Lotion bowl (stainless steel)		1
Waterproof sheeting	1m x 2m	2
Sterile plastic sheet	90cm x 120cm	1
Nail brush		1
Disposible paper towels		100
Plastic measuring jug	1/2 L	1
Disposible face masks		6
Disposible latex gloves		25
Disposible latex gloves sterile		5
Malleable finger splint		1
Malleable forearm splint		1
Inflatable splints (half-leg/full leg/half-arm/full arm)		1 set
Thigh collar		1
Neck collar (sm/med/large)		1 set
Thomas splint		1
Seton traction kit		1

Disinfectants

- chlorine compound	sufficient for 50l water	
- general disinfectant		5 L
- insectiside	liquid	5 L
	hand spray	1
	powder form	15 gm

Dental instruments :

Excavator double ended, Guy's pattern	1
Filling paste inserter	1
Dental mirror size 4	1
Cavit tube (temp filling inserter)	1

Stretcher Equipment :

Neil Robertson/ Paraguard type	1

First Aid Kit (per 10 people)

Triangular Bandages	4
Small dressings (13 BPC)	4
Med dressings (14 BPC)	2
Large dressings	2
Medium safety pins	6
Bandaids assorted	20
Sterile eye pads	2
Cotton wool	15gms
Disposible gloves	5

Doctors Bag (if doctor is carried on board)

Adrenaline 1:1000		1ml amp	5
Aminophylline 25mg/1ml		10ml amp	4
Aspirin 30mg		tabs	50
Beclomethasone 50microgm		inhaler	1
Chlorpromazine 25mg/1ml	1ml amp		1
Cyclizine 50mg/1ml		1ml amp	5
Dextrose 50%		20ml amp	2
Diazepam 5mg/ml	2ml amp		5
Frusemide 10mg/1ml		2ml amp	5
Glucagon 1mg/ml	1ml amp		1
Glucose infusion 5%		500ml bag	1
Blood glucose test strip			10
Blood glucose lancets			10
Grudel Airways		set of sizes 4,3,1	1
Hydrocortisone 100mg/2ml		100mg vial	1
Insulin 100iu/ml rapid action		10ml vial	1
IV giving sets + cannulas + leur lock		16g/18g	6 (3/3)
Laerdal Pocket Mask			1
Plasma substitution infusion fluid		500mls	4
Morphine 15mg/1ml		1ml amp	5
Oxygen Resuscitator bag + tubing			1
Manual suction pump + 2 yankauer & 2 14fr catheters			1
Paediatric paracetamol 120mg		tabs	24
Prednisolone 5mg		tabs	25
Salbutamol 100 micrograms		inhalers	1
Swabs Alcohol			50
Syringe and needle pack -	2ml syringe + 21g needle		2
	20ml syringe + 21g needle		2
	1ml insulin syringe + 25g needle		2
Stethoscope			1
Sphygmomanometer			1

continued to part 2

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Medical FAQ's Version 2.00

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Craig Ellis

Part 2 .

The next two sections contain a significant amount of technical information. It is intended as a very brief overview and introduction of the subject area. I accept no responsibility for the accuracy or otherwise of this material. The following are more specific references for these topics :

Antibiotics

* Antibiotic Guide 1996. S. Lang. ADIS Press. 1995. (Local NZ book, most university hospitals produce similar)

* Handbook of Antibiotics, R.Reese. Little Brown and Co. 1993

Microbiology

* Microbiology : An introduction. G. Tortora. Benjamin&Cummings 1997 ISBN 0805385355

* Medical Microbiology and Immunology. Levinson. Lange 1996. ISBN 0838562256

* Clinical microbiology made rediculously simple. Mark Gladwin. Medmaster 1997. *** Excellent. My choice.***

Laboratory Medicine

No ideal book in this section, but these are a couple of suggestions.

* Clinical Laboratory Medicine. K.McClatchey. Williams & Wilkins 1994. ISBN 0683052553

* Medical Laboratory Haematology. 2nd Ed. Butterworth.

7.0 . Medications

7.1 Storage and Rotation of Medications

Medications can be one of the more expensive items in your storage inventory and there can be a reluctance to rotate them due to this cost issue and also due to difficulties in obtaining new stock.

Unfortunately, drugs do have limited shelf life. It is a requirement for medications sold in the US (and most other first world

countries) to display an expiration date. It is my experience that these are usually very easy to follow, without the confusing codes sometimes found on food products, e.g. -- Exp. 12/00=December 2000.

I cannot endorse using medications which have expired. But having said that it is my understanding that the majority of medications are safe for at least 12 months following their expiration date. A colleague recently did some aid work in the Solomon islands and a local pharmaceutical warehouse gave him a number of expired drugs. They stated that the drugs were safe to use for at least another 18 months. As with food the main problem with expired medicines is not that they become dangerous, but that they lose potency over time, and the manufacturer will no longer guarantee the dose/response effects of the drug. The important exception to this rule is the tetracycline group of antibiotics, which can become toxic with time, there may be others that I am unaware of but it is very difficult to obtain this information. Let the buyer beware, the expiry dates ARE there for a reason.

In addition, I recommend that if you are acquiring medications on a doctor's prescription that when you have the prescription filled you explain the medications are for storage (you don't need to say exactly what for), and request recently manufactured stock with distant expiration dates.

The ideal storage conditions for most medications is in a cool, dark, dry environment. These conditions will optimise the shelf life of the drugs. A small number of drugs require refrigeration to avoid loss of potency. These include insulin, ergometrine, oxytocin and some muscle relaxants. Others such as Diazepam rapidly lose potency if exposed to the light.

7.2 Antibiotics

7.2.1 Antibiotic Recommendations. In some cases access to antibiotics may be very limited. The following is my preferred list of antibiotics. If your limited in what you can get, I suggest you purchase and expand in this order. All are good broad spectrum antibiotics and have different strengths and weakness. I suggest you purchase an antibiotic guide, most medical book shops have small pocket guides for junior doctors detailing which drug to use for which bug and outlining sensitivities.

1st A Broad spectrum Penicillin (e.g.-- Amoxycillin +Clavulanic Acid)

2nd A Quinolone (e.g.-- Ciprofloxacin)

3rd A Cephalosporin (e.g.-- Cefaclor)

***** If allergic to Penicillin, I would advise A Quinolone as a first choice with some Metronidazole as a anerobe back-up. Alternative would be Erythromycin.

7.2.2 Antibiotic Summary

The Bugs:

A basic understanding of how bugs (read bacteria) cause infections is required to appropriately use antibiotics. I will not discuss viral or other infective agents here. This is not the forum for a proper discussion, so consider this a brief introduction. There are HUNDREDS of bacteria, I will only discuss common disease causing ones in man.

Four Classes of Bacteria
- Gram positive (+ ve)
- Gram negative (- ve)
- Anaerobes
- Others

Gram positive bacteria stain blue and gram negative bacteria stain pink, when subjected to a gram staining test. It is related to the presence or absence of a coating in the cell wall of the bacteria. Anaerobic bacteria are ones which require no oxygen to grow. Bacteria are also described by their shape (cocci = round, bacilli = oval) and how they are grouped together (chains, clusters, pairs)

Gram Positive Bacteria (Gram +ve)

- Staphylococcus: Commonest pathogen is S. aureus. Gram + cocci in clumps. Causes boils, abscesses, impetigo, wound infections, bone infections, pneumonia (uncommonly), food poisoning and septicaemia. Generally very sensitive to Flucloxacillin as first choice and Augmentin and the Cephalosporins. A strain which is resistant to the above, known as MRSA and is currently treated with vancomycin.

- Streptococcus: Gram + cocci in pairs or chains. Most are not pathogenic in man, except Strep pneumoniae and the Strep pyogenes. Strep pneumoniae causes pneumonia, ear infections, sinusitis, meningitis, septic arthritis, and bone infections. Strep pyogenes causes sore throats, impetigo, scarlet fever, cellulitis, septicaemia and necrotising fascitis. Very sensitive to penicillins, cephalosporins, and the quinolones.

Gram Negative Bacteria (Gram -ve)

- Neisseria meningitidis: Gram -ve cocci in pairs. Common cause of bacterial meningitis, may also cause pneumonia and septicaemia. Can be rapidly fatal. Sensitive to penicillins, cephalosporins, quinolones, cotrimoxazole and tetracyclines.

- Neisseria gonorrhoeae: Gram -ve cocci in pairs. Causes gonorrhoea. Sensitive to high dose amoxycillin (single dose), Augmentin and also cephalosporins and quinolones.

- Moxella catarrhalis: Gram -ve cocci in pairs. Common cause of ear and sinus infections, also chronic bronchitis exacerbations. Sensitive to Augmentin, Cephalosporins, Quinolones and Cotrimoxazole and tetracyclines.

- Haemophilus influenzea: Gram -ve cocco-bacilli. Can cause meningitis (esp. in children under 5), epiglottitis, cellulitis and a sub group cause chest infections. Sensitive as M.catarrhalis

- Escherichia coli: Gram -ve bacilli. Normally found in the bowel. Causes Urinary infections, severe gastroenteritis, peritonitis (from

bowel injury), septicaemia. Drug of choice is a quinolone or cephalosporin.

- Proteus sp.: Gram -ve bacilli. Lives in the bowel. Causes UTI's, peritonitis (from bowel injuries), wound infections. Drug of choice is the quinolones.

Anaerobes

- Bacteroides sp. gram negitive bacilli. Normal bowel flora. Commonly causes infections following injury to the bowel or wound contamination, causes abscess formation. Treated first choice with metronidazole or second with chloramphenicol or Augmentin.

- Clostridium sp. Gram positive species.produce spores and toxins.

    - C. perfringens/C.septicum - common cause of gangrene, treat with penicillins or metronidazole

    - C.tetani - tetanus) damage is from toxins, not
    - C. botulinum - botulism) the bacteria themselves

    - C. difficille - causes diarrhoea following antibiotics. treat with metronidazole

Others:

- Chlamydia sp: Includes C.pneumonia, responsible for a type of atypical pneumonia and C.trachomatis, responsible for the sexually transmitted disease chlamydia. It is best treated with Tetracyclines or as second choice a macrolide.

- Mycoplasma pneumoniae: A cause of atypical pneumonia. Treated best with a Macrolide, with a second chioce of a tetracycline.

The Drugs:

Penicillins - These act by preventing replicating bacteria from producing a cell wall. A number of bacteria produce a enzyme which inactivates the penicillins (B-lactamase).

A number of varieties:

*Benzyl Penicillin: Injectable preparation. Antibiotic of choice against severe Strep pneumoniae and Neisseria sp infections such as chest infections, meningitis and cellulitis.

*Phenoxymethylpenicillin (Penicillin V): Oral preparation of above. Usually used only for the treatment of sore throats (strep throats), in other infections largely replaced by amoxycillin which is better absorbed.

*Flucloxacillin: Oral and IV drug of choice for Staph infection such as cellulitis, boils and abscess and bone infections. Also usually effective against Strep, but not first choice.

*Amoxycillin: (newer version of ampicillin): Oral and IV. Effective

against most gram positive and negitive bugs. Limited use secondary to B-lactamase resistance in many bugs. This is overcome with the addition of Clavulanic Acid (eg Augmentin). Overcoming this resistance, makes this combination my ideal survival antibiotic, with good gram positive, negitive and anaerobic cover. This drug I feel is the best "broad spectrum" antibiotic commonly available, other AB's may be better for specific infections but this is the best all purpose one.

Cephalosporins - Same method of action as penicillins. Developed in three generations (now four, but not widely available). The third generation e.g., Cefotaxime (Claforan, IV only) and Ceftriaxone (Rocephin, IV only) have the most broad spectrum. They are effective against most gram positives and negatives and some variable anaerobic cover. The second generation e.g., Cefuroxime (Zinacef, oral and IV) and Cefaclor (Ceclor, oral only) also have good general cover, but are not as effective against some gram negitive bacilli. This loss of gram negitive cover expands to most gram -ve cocci and bacilli in the first generation cephalosporins e.g., Cephalexin (Keflex, oral only) and Cephazolin (Kefzol, IV only). The third generation is ideal for use in those with very severe generalised infection, meningitis or intra-abdominal sepsis (e.g., penetrating abdo wound or appendicitis, with metronidazole added in) and the second generation offer a good broad spectrum antibiotic for general use in skin, wound, urinary and chest infections.

Quinolones - Acts by inhibiting DNA replication in the nucleus of the replicating bacteria. New generation of antibiotics. Most common is Ciprofloxacin. Very broad spectrum cover, except anaerobes. Excellent survival AB, but my second choice due to amoxycillin + clavulanic acids better cover of anaerobes. Effective for most types of infections except intra-abdominal sepsis and gangrene.

Macrolides - Acts by inhibiting protein synthesis in the replicating bacteria. Includes Erythromycin and the newer Roxithromycin and Clarithromycin. Often used in people with a penicillin allergy, however it does have a reduced spectrum (esp. with Gram negatives), but is an alternative to tetracycline in Chlamydia. First choice in atypical pneumonias e.g., with Mycoplasma pneumonia.

Co-Trimoxazole - Acts by interfering with folate metabolism in the replicating bacteria. Previously a very broad spectrum antibiotic, now has a much more variable response rate due to resistance. Still useful for urinary and, mild chest infections.

Metronidazole - Acts by directly damaging the structure of the DNA of the bacteria/protozoa. Drug of choice for anaerobic infection. Should be used with another broad spectrum AB in any one with possible faecal contamination of a wound or intra-abdominal sepsis (such as severe appendicitis). Also the drug of choice for parasitic infections such as Giardia.

Others - There are many other antibiotics available. I have only discussed the common ones above. For further information I refer you to any Antibiotic guide, of which there are many.

NOTES

In pregnancy Penicillins and Cephalosporins are safe. Many others are not (or only during certain parts of the pregnancy). You should always check if any drug you are using is safe, before using in pregnancy and breast feeding. The PDR will tell you. If you want a specific reference try "Drugs in Pregnancy", Ed D.F Hawkins.

8.0 The Basic Laboratory

8.1 The basics of a diagnosis can generally be reached by a careful history and physical examination. Modern medicine relies heavily on laboratory investigations. In a survival situation these will not be available. However there are some simple laboratory tests which can be performed with very little equipment or chemicals. The problem is that even basic tests require some equipment. Ranging from simple test strips to a microscope and a few chemicals. Obviously what you are preparing for will dictate what tests you may want to be able to perform.

8.2 Urine Testing: Urine is easily tested with multi-function dip stix. These can test for the presence of protein, glucose, ketones, nitrates, red blood cells and white blood cells. The test strip is dipped in a specimen of clean catch urine (ie you start to pee in the toliet, stop, then start again into the specimen container, stop, and continue into the toliet) and panels containing the test reagents change colour depending on the presence and concentrations of the substance being tested for The colour changes are compared to a table supplied with the strips. Can be used to diagnose urinary infections, toxaemia in pregnancy, dehydration, diabetes (outside pregnancy) and renal stones/colic.

The following is a quote on analysing urine from a book to be published on the practice of medicine under relatively primitive conditions.

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>From . Roberts, S. D.; A Guide to the Practice of Medicine Under Austere Conditions (Revised Ed.), 1997, to be published.

Urinalysis

Of the various bodily fluids, urine is the most easily obtained. It is possible to perform a number of tests on urine with little or no equipment. Visual and olfactory examination of a urine sample alone can provide considerable information. Urine which is pink, red, or red-orange may contain blood, although it is important to remember that these colors may also be seen in those who have eaten certain foods, such as beets, blackberries, or rhubarb. Urine which is green or blue-green, or which takes on these hues on standing, may indicate diseases of the liver or gall bladder. Bright yellow or yellow-orange urine is indicative of kidney dysfunction (if there is no reason for the urine to be concentrated and if the color is maintained for several days). Cloudy urine may result from abnormally high levels of phosphates or carbonates in the urine, and may be a precursor of kidney stones. Cloudy urine may also indicate the presence of an infection, particularly if the fresh urine has an odor of

ammonia or other disagreeable odor (note that urine will develop an ammoniacal odor on standing).

It is possible to approximately localize an infection that is producing cloudy urine by using the three glass test. This test requires three clean containers (glasses), of which at least one (the second used) will need a capacity of at least 500 ml. In this test, the first 5 ml is voided into the first container, the second container is used until the patient is almost done, and then the third container is used to collect the last 5 ml. If the urine in the first container is the most cloudy, with decreasing cloudiness in the remaining containers, a urethral infection is the most likely cause. If the urine in the first container is less cloudy than either of the following two, a kidney, bladder, or prostate infection is indicated as the cause, while, if the urine in the third container is the cloudiest, the prostate is the likely site of the infection.

The odor of maple syrup associated with fresh urine is, of course, the classic sign of maple syrup urine disease. The urine may also have character istic odors which are associated with other genetic disorders: the `mousy' odor associated with phenylketonuria, for instance.The presence of glucose in urine has long been recognized as an indication of diabetes, and its detection has been assigned a high degree of importance by the general public. While its presence was at one time detected by taste, a more aesthetically acceptable method (which is also less likely to transmit infection) is to heat the urine and observe the odor. If the scent of burning sugar or caramel is detected, there is an excessive amount of sugar present.

Proteins, or carbonates and phosphates, in urine may be detected by filling a test tube three-fourths full of urine and boiling the upper portion. Any cloudiness produced by this may arise from either the presence of carbonates and phosphates (which may be normal) or from the presence of proteins. These two causes may be differentiated by adding a small amount of acetic acid (3-5 drops of 10% acetic acid) to the tube: if the cloudiness vanishes, carbonates and phosphates were the cause; if the cloudiness persists (or becomes apparent only after the acid is added), proteins are present.

The iodine ring test is a simple test which can detect the presence of bile in the urine before color changes or jaundice make its' presence obvious. In this test, the appearance of a green ring after layer-ing a 10% alcoholic iodine solution over the urine in a test tube indicates the presence of bile.

****

8.3 Blood Counts : There is no easy way to do blood counts without some basic equipment. You require a microscope and a graded slide. A graded slide is a microscope slide which has very small squares etched onto its surface. Using a standardised technique a smear of blood is placed on the slide. Now using the microscope the number of different types of blood cells in a square on the slide is counted, this is then repeated several times and then averaged. This technique will give you:

- White Cell count
- White Cell differential
- Red Cell count
- Platelet count

8.4 Blood Grouping: The simplest thing to do is have your group or expedition blood typed prior to your expedition or TEOTWAWKI. However provided you have several basic chemicals a cross match is a simple test. But due to its potential fatal complications if done incorrectly I will not describe the procedure here. It is well described in any basic laboratory medicine textbook. Also see 'Lucifer's Hammer" quote in section 12.0.

8.5 Pregnancy Tests: The ability to accurately diagnose pregnancy may be important, both for psychological reasons and for the practical reasons. Currently available pregnancy test kits test urine for the presence of the hormone Human chorionic gonadothrophin (HCG). They require only a small amount of urine, and are accurate from 10-14 days from conception.

8.6 Blood Glucose test strips: Also known as BM stix, after a common brand. This can be used to diagnose diabetes (in a survival situation), both generally and during pregnancy, also it can detect low or high blood sugars in other severe illnesses. A finger or toe is pricked a a drop of capillary blood is collected onto a test strip. It's allowed to sit for 30 seconds, then is wiped off, and a further 90 seconds, then the colour of the test strip is compared to a control chart to give a blood glucose level.

8.7 Gram Staining: This is a technique for approximate identification of bacteria in urine, pus, sputum, cerebral spinal fluid (csf) and from bacterial cultures. Although not highly accurate in species identification, combined with a knowledge of the clinical situation, it enables a good guess to be made for the appropriate antibiotic. It requires a microscope and also several chemical solutions. This is a very standard microbiological procedure and can be learned very easily at any entry level microbiology course.

The basic technique is: (1) the infected area or fluid is swabbed and the swab smeared onto a slide and dried and fixed. (2)It is then washed with crystal violet for 1 min, rinsed, washed grams iodine for 1 min, long rinse, washed safranin 30 seconds, washed again then dried. It is then examined down the microscope. The bacteria will stain certain colours and appear certain shapes depending on species, this aids in identification as discussed already.

9.0 Simple Medical Tips

9.1 * Rectal Fluid Resuscitation

The standard technique of giving fluids to an unconscious, shocked or dehydrated person is with intravenous fluids. However this may not be possible in a survival situation. An alternative is to give fluids rectally. This method will obviously not work if the cause of the problem is severe diarrhoea. This is included for interest only and I do not recommend this procedure :-)

The person is placed on their side, with the buttocks raised on two pillows. A lubricated plastic tube with a blunt end (a large urinary catheter or naso gastric tube is ideal) should be passed through the anus into the rectum for about 9 inches. It should pass with minimal

pressure and should not be forced. The danger is perforating the bowel.

The tube should be taped to the skin. A longer length of tubing and a drip bag or funnel should be attached to the end and elevated. Then 200mls of fluid slowly dripped in over 15 to 20 minutes. The catheter should then be clamped. This can be repeated every 4 hours with a further 200mls. Upto 1000-1200mls/24hrs can be administered this way. If 200mls is tolerated it can be worth increasing the volume slightly or reducing the time to 3 1/2 or 3 hrs. If there is over flow the volume should be reduced. A rectum full of faeces does not absorb water very well, so the amounts may need to be reduced, but given more frequently.

9.2 * Death

People are going to die, one way or another it will happen and you need to be prepared for it.

9.2.1 Diagnosing Death:

No pulse.
No respirations.
No heart sounds.
No pupil response to light.

Hypothermia Note:

Precautions need to be taken where the person concerned has been in the extreme cold, either the snow or very cold water. Severe hypothermia causes a profound slowing in the bodies metabolism and as a consequence can mimic death. Hence the saying " Your not dead, until your warm and dead ".

One option is to aggressively resuscitate anyone found in the above situations, although in my view this is likely to be an extremely uphill battle in a survival situation, especially if they clinically appear to be dead. The management of severe hypothermia is dealt with in detail in most advanced first aid texts. But for interest the basics are included below:

Extreme care needs to be taken in handling a very hypothermic patient as they are predisposed to developing ventricular fibrillation if roughly handled. But the goal is slow rewarming

- body heat
- warm room
- space blanket
- warm IV fluids *
- irrigation of stomach and bladder with warm fluid *
- packing groin and axilla with hot packs. *

* there is still some debate in the literature about the place for these last 3 options.

9.2.2 Handling a dead person: The human body decomposes very quickly,

especially in hot weather. A decomposing body rapidly becomes a health hazard. A dead person should be buried quickly, in a reasonably deep grave to avoid predation by scavengers. Most religions have short rites for the burying of the dead, but for the non-religious a favorite poem may be appropriate.

9.2.3 Records: It is important to document the fact that someone has died, but also the circumstances of the death, your guess as to a cause of death and how the body was disposed of. This becomes important for legal reasons should things return to normal or in the case of an isolated expedition for the coroner on your return.

9.3 * Gastroenteritis and Dehydration. Gastroenteritis is still a killer in the third world especially for young children (I include typhoid, cholera, giardia, salmonella, "food poisoning" etc, under the general heading gastroenteritis). The most important preventive action you can take in preventing gastroenteritis is to wash your hands following defecation. Also hands should be washed before handling food, dealing with the sick or babies and infants. All drinking water should be boiled unless you are sure of its purity. Hand washing and clean water will prevent 99% of diarrhoeal disease. This topic is very well covered in "Where there is no Doctor".

9.3.1 What kills is not having diarrhoea or vomiting, but dehydration. Again this is not the forum for detailed medical treatments. But you must understand how to recognise dehydration and know how to treat it. The basis of any treatment is replacement of lost fluids and electrolytes. This is a relatively simple matter if you have access to IV fluids, but without you must rely on the patient drinking. It is often difficult to get a patient to drink, especially when they feel very unwell, but it must be emphasised to them that if they don't drink they will die. The secret is small amounts of fluid, frequently. If you try and force a large glass down, it will come straight up right away. They must put in at least what they are putting out, more in hot weather. There has been much debate over what to offer to replace lost fluids and electrolytes. It must contain not only water, but also Sodium (table salt), Potassium (light salt) and also some form of sugar. The sugar is vital for absorption to take place in the intestines, salts alone are poorly absorbed when the gut lining is damaged as it often is in gastroenteritis. I refer you to an excellent article in *Scientific American* May 1991 on oral rehydration formulas (thanks to Logan VanLeigh for the reference).

9.3.2 Oral Rehydration Fluid: The following is an easy formulae for making an oral rehydration fluid.

1/4 Tsp Salt (Sodium Chloride)
1/4 Tsp Lite Salt (Potassium Chloride)
1/4 Tsp Baking Soda
2 1/2 Tbsp Sugar

Combine ingredients and dissolve in 1000 mls (1 liter) of boiled and cooled water.

9.4.0 Sterilisation:

I've tried to emphasise the importance of basic hygiene in any survival situation. This is especially true when performing any surgical procedure. From suturing a small cut or dressing a wound, to dealing with a major injury or operation.

You should wash your hands for 2-3 minutes with soap or a surgical scrub and then if available use a pair of sterile gloves. The instruments you are working with should also have been sterilised.

There are several effective low tech ways to do this:

1) Soaking in Alcohol: Soak the instruments in Ethyl Alcohol. The higher the concentration and the longer the soak the better. Recommended that > 70% (ideal is >95%) solution for >12 hrs. This time can be shortened to several hours by the addition of Formaldehyde solution to the Alcohol.

2) Boiling in water: Boil in water for 30 minutes (at sea level). Will cause rusting of anything which holds a edge such as scissors and knives. De-ionised or soft water will reduce this problem.

3) Pressure cooking: The gold standard in a survival situation. This is the basis for hospital autoclaves. Ideally the instruments must be cooked for 30-40 minutes at temperatures >110 deg at 18-20 psi. Using this method it is possible to sterilise instruments wrapped in cloth or linen. This will mean they stay sterile following removal from the pressure cooker and can be used at a later date. If packed allow further 15-20 minutes drying time. The instruments need to be placed on a rack in the pressure cooker, above the water in the bottom, rather than in the water. The main problem is that home pressure cookers and canners mostly they come in a range of 5, 10 and 15 lbs of pressure which I understand equates to 220, 230 and 240 degrees Fahrenheit at sea level pressure. There's no safe way to take them up to 20 psi without the serious risk of blowing their pressure safety valves. They generally come in two types, the dial gauge and the dead weigh pressure gauge.The dial gauge can do odd pressure levels, but really needs to be calibrated periodically with a year being the suggested interval. This calibration is usually beyond what the average homeowner can do, thus they are not well suited to survivalist use. The dead weight gauge can only do what it is manufactured for, 5, 10, 15 psi for most pressure canners and usually only 10 or 15 psi for most pressure cookers. The best advise to those using these devices is to use one set for 10 or 15 psi and lengthen the "cooking time" by 15 minutes. There is no good information available about improvising "autoclaving", so this information must be used with caution. (Thanks to Alan Hagan for help with this section)

10.0 Alternative Therapies.

10.1 Finally, I feel I should make a passing comment on alternative therapies. I *EXCLUDE* herbal- and plant-based medicines from the following comments, because obviously these medicines form the basis of modern pharmacology and post-TEOTWAWKI will do so again. I stress these are my opinions. If you find a particular alternative treatment works, and wish to practice it and use it post-teotwawki then that's fine. However I think it would be unsafe to ignore conventional medicine. The alternative therapies are most commonly used and successful with low grade chronic problems. I would suggest that what will kill you and what you need to prepare for is not chronic lower

back pain or irritable bowel syndrome, but major trauma, or cholera, or severe pneumonia and I don't think arnica or a good foot rub will fix the problem. Things which are currently annoying or distressing chronic problems may pale into insignificance alongside finding enough to eat and drink and avoiding the baddies. (But who knows, under survival stress it may make them worse :-))

10.2 Colloidal Silver should be specifically mentioned as it receives a lot of questions on the news group. IMHO its merits have been exaggerated in the extreme. There is no reputable scientific evidence that it has any useful in-vivo (in the human body, rather than in a lab) antibiotic or antibacterial effects. If its proponents can supply recent case/controlled trials, published in a reputable scientific or medical journal, I am prepared to revise my opinion and include the results here. I just advise caution to those who plan to rely on CS as their antibiotic in a survival situation.

11.0 Common Sense Medical Phrases

There are hundreds of little sayings within medicine about dozens of topics. At first some of them sound extremely basic or stupid, but the all have a basis in fact. Medicine is made up of common sense. Here's a selection. I welcome additions.

* Knowledge is power.

* First do no harm.

* Masterful inactivity saves lives.

* The placebo effect has cured more people than any doctor.

* If it hurts rest it or immobilise it.

* Always wash your hands before touching a patient.

* Its better to boil all your water, than die of diarrhoea.

* Don't shit in the water you are going to drink (or let anyone else).

* A comfortable, warm bed fixes many problems, a good meal fixes many more.

* Direct pressure stops bleeding.

* Pretend you know what you are doing and people will believe you do.

* Don't stitch a dirty wound.

* Clean boiled water is a great antiseptic (So is urine but we won't start that one)

* If you've got a rash: If it's wet, dry it; if it's dry, wet it.

* 90% of problems get better by themselves.

12.0 Quotes and Final Comments

12.1 Quotes from "Lucifer's Hammer", Larry Niven and Jerry Pournelle. Copyright Little Brown and Company (UK), 1995. pg 610-612

I've included these quotes because one accurately describe a primitive medical technique, giving an example of how a life saving procedure such as cross matching blood can be done under primitive conditions and the second and third summarises several key realities of a long term TEOTWAWKI situation. Obviously I do not recommend using this procedure.

When Maureen reached the hospital, Leonilla Malik took her and led her firmly into a front room.

"I came to help," Maureen said. "But I wanted to talk to the wounded. One of the Tallifsen Boys was in my group and he-".

"He's dead." Leonilla said. There was no emotion in her voice. "I could use some help. Did you ever use a microscope?"

"Not since college biology class"

"You don't forget how" Leonilla said. "First I want a blood sample. Please sit down here." She took a hypodermic needle from a pressure cooker. "My autoclave" she said. "Not very pretty but it works."

Maureen had wondered what had happened to the pressure cookers from the ranch house. She winced as the needle went into her arm. It was dull. Leonilla drew out the blood sample and carefully squirted it into a test tube which had come from a child's chemistry set.

The tube went into a sock: a piece of parachute cord was attached to the sock, and Leonilla used that to whirl the test tube around and around her head. "Centrifuging" she said. "I show you how to do this and then you can do some of the work. We need more help here in the lab". She continued to swing the test tube.

"There", she said. "We have separated the cells from the fluid. Now we draw off the fluid and wash the cells with saline." She worked rapidly. "Here on the shelf we have cells and fluid from the patients who need blood. I will test yours against theirs."

"Don't you want to know my blood type?", Maureen asked.

"Yes. In a moment. But I must make the tests anyway. I do not know the patients blood types and I have no way to find out, and this is more certain. It is merely very inconvenient."

The room had been an office. The walls had been painted not long ago and were well scrubbed. The office table where Leonilla worked was formica, and very clean. "Now", Leonilla said "I put samples of your cells into a sample of the patient's serum, and the patient's cells in yours, so, and we look in the microscope."

The microscope had also come from a child's collection. Someone had burned the local high school before Hardy had thought to send an expedition for its science equipment.

"This is very difficult to work with." Leonilla said. "But it will work. You must be careful with the focus." She peered into the microscope. "Ah, Rouleaux cells. You cannot be a donor for this patient. Look so that you will know."

Maureen looked in the microscope. At first she saw nothing, but she worked the focus, the feel of it coming back to her fingers. ..Leonilla was right, she thought. You don't really forget how. She remembered that you weren't supposed to close close the other eye, but she did anyway. When the instrument was properly focused she saw blood cells. "You mean the little stacks like poker chips?", she asked.

"Poker chips?"

"Like saucers-"

"Yes. Those are Rouleaux formations. They indicate clumping. Now what is your blood type?"

"A" Maureen said.

"Good. I will mark that down. We must use these file cards one for every person. I note on your card that your blood clumps that of Jacob Vinge, and note the same on his card. Now we try yours with others." She went through the same procedure again, and once more. "Ah. You can be a donor for Bill Darden. I will note that on your card and his."

....."We have no way to store whole blood, except as now - in the donor".

....."No, we must learn to live without penicillin." She grimaced. "Which means a simple cut untreated can be a death sentence. People must be made to understand that. We cannot ignore hygiene and first aid. Wash all cuts."

12.2 For a fictional account I recommend James Wesley Rawles "TEOTWAWKI". This contains accounts of survival medicine in practice (in addition much other excellent material) with detailed descriptions of several surgical procedures and childbirth in a post-collapse society. Although there is some dramatisation to it I feel this accurately reflects some of the medical situations which will need to be faced.

12.3 These are some final thoughts about the medical situation post a severe TEOTWAWKI. I've included this just to stimulate some thoughts and discussions:

With no antibiotics there would be no treatment for bacterial infections, pneumonia and a cut would kill again, contagious diseases (including those sexually transmitted) would make a come back and high mortality rates would be associated with any surgery. Poor hygiene and disrupted water supplies would lead to an increase in diseases such as typhoid and cholera. Without vaccines there would be a progressive return in infectious diseases such as polio, tetanus, whooping cough, diphtheria, mumps etc, especially among children. People suffering from chronic illnesses such as asthma, diabetes or epilepsy would be severely effected with many dying (especially insulin dependent diabetics). There would be no anesthetic agents resulting in a return to tortuous surgical procedures with the patient awake or if they were lucky drunk or stoned. The same would apply to painkillers, a broken leg would be agony and dying of cancer would be distressing for the patient and their family. Without reliable oral contraceptives or condoms the pregnancy rate would rise and with it the maternal and neonatal death rates, woman would die during pregnancy and delivery again and premature babies would die. Women would still seek abortions and without proper instruments or antibiotics, death from septic abortion would be common again. In the absence of proper dental care teeth would rot and painful extractions would have to be performed. What limited medical supplies were available would have to be recycled, resulting in increases risks of hepatitis and HIV infection.

THE MOST IMPORTANT THING TO REMEMBER IS THAT GOOD HYGIENE CAN PREVENT MANY PROBLEMS. WASH YOUR HANDS AND BOIL YOUR WATER!

Any comments or suggestions welcomed. I plan to periodically update this FAQ with any recurring questions from misc.survivalism and also with any interesting things I come across.

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All views in this FAQ reflect only my opinions and is not to be considered in any way a professional opinion or advice.