

Medical Kit Essentials

What 'might' just save you, or others.

Dr Dan Lack

Lifetime Member - *Rocky Mountain Rescue, Colorado*

Medical Officer – *Ben Lomond Ski Patrol, Tasmania*

Medical Advisory Committee – *Australian Ski Patrol Association*

Volunteer Clinical Faculty – *University of Colorado School of Medicine - Wilderness Section*



Today's wondrous journey into medical kits...

- Many resources will tell you what you need in a wilderness medical kit.
- Today:
 - Those essentials picked up from years of mountain rescue, surf rescue, ski patrol, mountaineering, remote field work.



What we (I care about)

- ***Prevention*** (including preparation).
- What is going to prevent self-evacuation, allow for ***self-treatment***?
- What is going to allow ***self-evacuation***?
- What is going to allow ***waiting for rescue*** or weather to clear?
- What is going to ***save a life***?
- Some other essentials.

Prevention

- What is going on when things are miserable in the wilds?
 - Cold/Hot.
 - Blisters.
 - Gastro.
 - Tired/exhausted.
 - Dehydrated.
 - Stressed.



Prevention – Essentials.... but not really in the medical kit!

- Spend the money on high quality rain/warm/foot gear.
- Use the gear beforehand.
- Spare gloves, warm hats, glasses (@ altitude/snow/glaciers)
- Know how to layer in wet/cold/hot weather.

Prevention – Water Quality

- *To be certain, have 2 methods available.*
 - Boiling is usually always available (needs fuel).
 - Good for everything.
 - UV exposure
 - 4 hours of sunlight exposure can significantly reduce numbers.
 - *Filters*
 - Everything but viruses.
 - Can be great, can clog and break easily.
 - *Chlorine based chemical treatment.*
 - Sensitivity → Bacteria>Viruses>Protozoan Cysts (Giardia>Cryptosporidium).
 - Iodine-based
 - Not for >4 weeks.



[https://www.wemjournal.org/article/S1080-6032\(19\)30116-4/fulltext](https://www.wemjournal.org/article/S1080-6032(19)30116-4/fulltext)

Prevention – Hygiene

- *Just wash your hands....*

- We have gotten much better at this the last 18 months!
- A good supply of soap, *hand sanitizer* or other concentrated alcohol (*isopropyl alcohol*).

Curr Microbiol
DOI 10.1007/s00284-014-0643-3

Microbial Sequencing Analyses Suggest the Presence of a Fecal Veneer on Indoor Climbing Wall Holds

S. L. Bräuer · D. Vuono · M. J. Carmichael ·
C. Pepe-Ranney · A. Strom · E. Rabinowitz ·
D. H. Buckley · S. H. Zinder

Prevention – Training, Altitude

- *Physical fitness will make most things easier → likely safer.*
- Altitude
 - *Physical fitness* does not mean less chance of altitude illness.
 - *Smart acclimatization schedule.*
 - *Acetazolamide.*
 - Try it before you go – allergy, side effects.



[https://www.wemjournal.org/article/S1080-6032\(19\)30090-0/fulltext](https://www.wemjournal.org/article/S1080-6032(19)30090-0/fulltext)

Prevention – Vaccinations

- Choose your adventure, choose your vaccines – CDC.
- *<https://wwwnc.cdc.gov/travel>*

Prevention – 6 legged biting things + shiny things.

- Its basic but if you want to be happy → *insect repellent, sunscreen*
- Side note.... Malaria prophylaxis
 - Can be region dependent.
 - *Doxycycline* → also is a good antibiotic choice.

Prevention – Wear and Tear

- Blisters, repairs
 - **Hypafix** → the fancy pants duct tape.



Preventing Self Evacuation or Retreat

- It is important to having the ability to self-treat.
- This also includes psychological treatment!

Self Treat – Infections

- Gastro, respiratory, skin
 - *Bactroban* → Topical - skin
 - *Chlorsig* → Topical – eyes
 - *Doxycycline* → Respiratory, diarrhoea, ticks (malaria)
 - *Azithromycin* → Diarrhoea, +
 - *Ciprofloxacin* → Diarrhoea
 - *Augmentin/Duo/Forte* → Broad spectrum
 - *Metronidazole* → Parasites, abdominal
- Cleaning wounds → *isopropyl alcohol*
- *Consider the region for antimicrobial resistance – travelers diarrhea*

Self Treat – Pain, Nausea

- Simple → *Paracetamol, ibuprofen, diclofenac (?PR)*
- Something a little stronger → Choice depends on location/activity/level of practice.
 - *E.g. Oxycodone, tramadol.*
- Teeth
 - *Wax, gum or epoxy* → To treat acute teeth damage.
- Do anti-emetics work?
 - Apparently sniffing *isopropyl alcohol* is better than ondansetron!
(<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6189884/>)
 - You'd probably still want an official one! *Metoclopramide, ondansatron.*

Self Treat – Dehydration, Lacerations, Allergies

- *Electrolytes.*

- Prepackaged or home made (16:1 sugar:salt)

- *Skin Glue, steri-strips, sutures*

- Hardware superglue may not be medical grade but is handy for many things!

- Allergies

- *Oral Antihistamine* – also a sleep aid if you pick the right one.
- *Dexamethasone (PO, IV)* – significant allergic reactions, inflammation, altitude.

Self Evacuation

- Search and rescue may not:
 - Be available
 - Be within easy reach
 - Respond at night or in bad weather.
- Assume you need to get yourself out.



Self Evacuation – Immobilise

- ***Splinting Materials.***

- ***Step one in pain relief = splint!***

- A robust splint will allow you to move through terrain (perhaps slowly).
 - Splinting from the shoulder to the finger, ribs, knee to the toe will give you a chance at mobilizing.

- ***Are you able to improvise?***

- Depending on size of expedition → ***extremity vacuum splint***

- **Strapping**

- ***Tape (e.g. hypafix)***
 - ***Bandages***



Self Evacuation – How to Carry Someone

- Carrying device
 - *Have you ever tried to carry a near lifeless human?*
 - Are you able to improvise a safe 'assist' carry/litter?
 - *Light weight carry device*



Self Evacuation – Pain Relief

- Local Anesthetic → local/regional anesthesia.
 - Ring block, haematoma block, dental
 - *Lignocaine* (?longer acting – bupivacaine)

Awaiting Rescue

- If you can't get yourself out, or move, what do you need?
 - Confidence that you can stick it out.
 - Decision making tools.
 - Luck.



Awaiting Rescue – Shelter

- *Bothy Bag*

- Staying put = a need to stay warm and dry.
- Any decline in either → ouch!
- At the very least some form of emergency shelter.



Waiting for Evac – Food

- *Stash of energy dense emergency food.*



Waiting for Evac – Decision Making

- When do you 'make a go for it'?
 - Vital signs monitoring.
 - SpO2, BP, Temp, stethoscope, timing device
 - Are these essential or an aid?
 - Psychological state.
- Make it easy for SAR to find you,
 - Bright things!!



What Is Going to Save A Life?

- There is a short list of interventions in the wilderness that:
 - Are easily carried;
 - Can be used simply, safely and while under pressure;
 - May save a life.

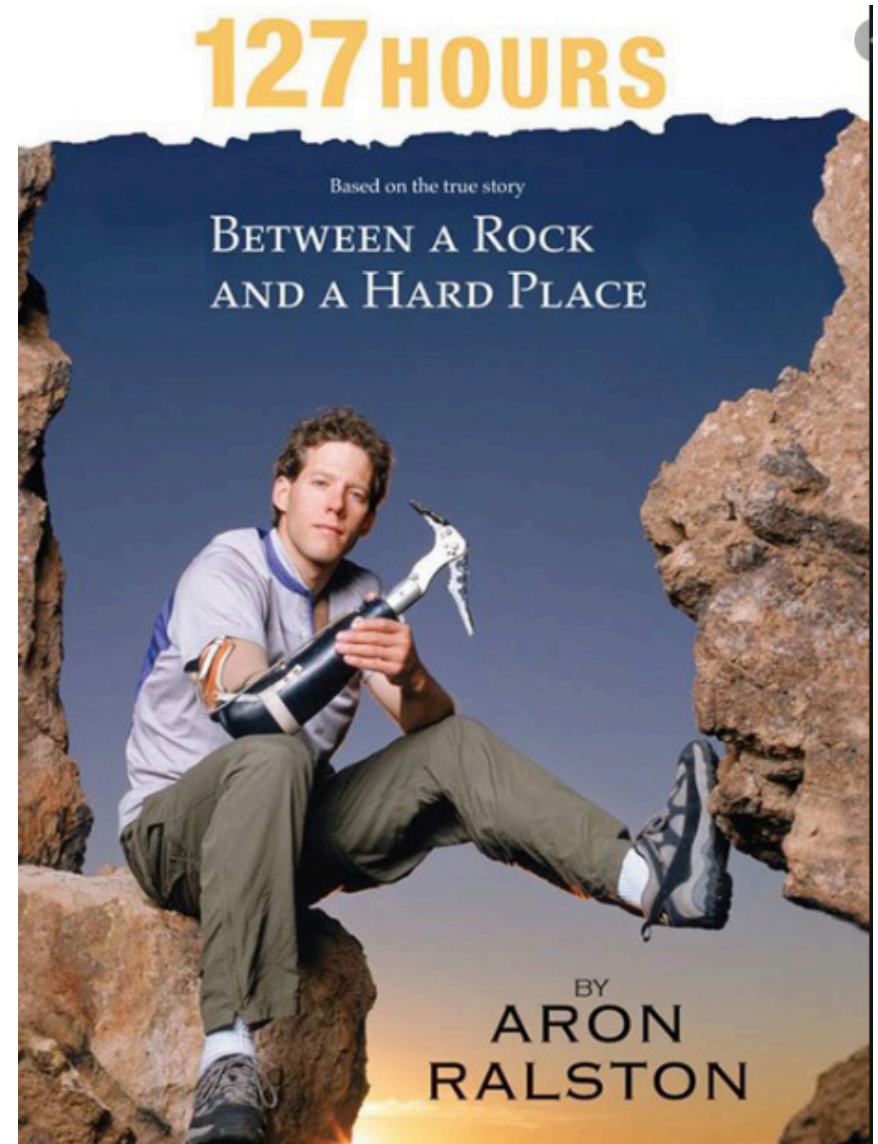


Potential Life-Saving Measures

- *Adrenaline*
- *Salbutamol*
- Breathing for someone → lightning strike.
- *Chest decompression needle* (Seen it done once on a mountain rescue.)
- Stopping bleeding
 - *Pressure bandages*
 - Tourniquet (extreme + can be improvised easily).
- Hypoglycemia – need to think of it to treat it.
- Warming someone up → requires access to fuel.
 - Food, hydrocarbons.
- Snake bite *bandage*
- *Dexamethasone* – altitude

Other Essentials?

- *Benzodiazepine*
 - Seizures
 - Panic - Psychological trauma
- *Aspirin*
 - Possible cardiac issues
 - Anti-inflammatory
- Some form of sharp cutting device....



What is needed at the very bottom of the kit..

- *A calm mind to help yourself, and others.*

Thanks!

