

# SAFETY AT SEA

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## MEDICAL READINESS & RESPONSE

Daniel J. Carlin MD

This lecture is dedicated to  
Adm. Jeremy Michael Boorda USN  
1939-1996

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# Medical Readiness

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- ◆ Your Crew
- ◆ Your Vessel
- ◆ Your Destination

# Medical Readiness for The Crew

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- ◆ Pre-existing medical problems: the most common are hypertension, chronic back pain, heart disease and poor teeth.
- ◆ Individual Medications: Who takes what? Do they have an extra supply for the duration?
- ◆ Serious Allergies
- ◆ Smokers and Drinkers (*At sea is not the time to quit*)
- ◆ Seasickness
- ◆ A Summary Medical Record for Each Member

# Medical Readiness for the Crew

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## ◆ Men are at risk for:

1. Back injuries
2. Heart attacks
3. Prostate problems
4. High blood pressure
5. Kidney stones

## ◆ Women are at risk for:

1. Heart attacks
2. Urinary tract infections
3. Yeast infections
4. **Pregnancy**

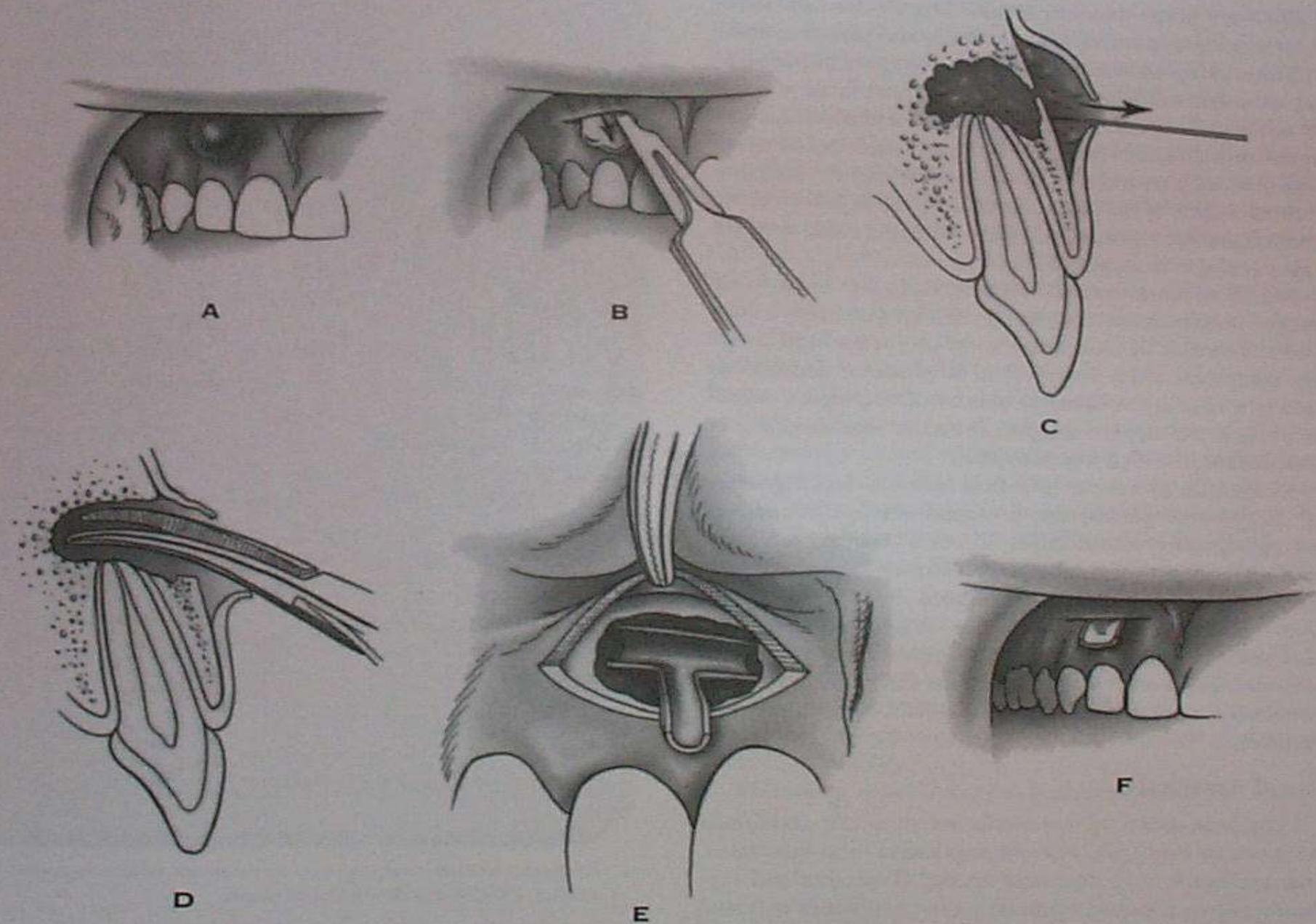
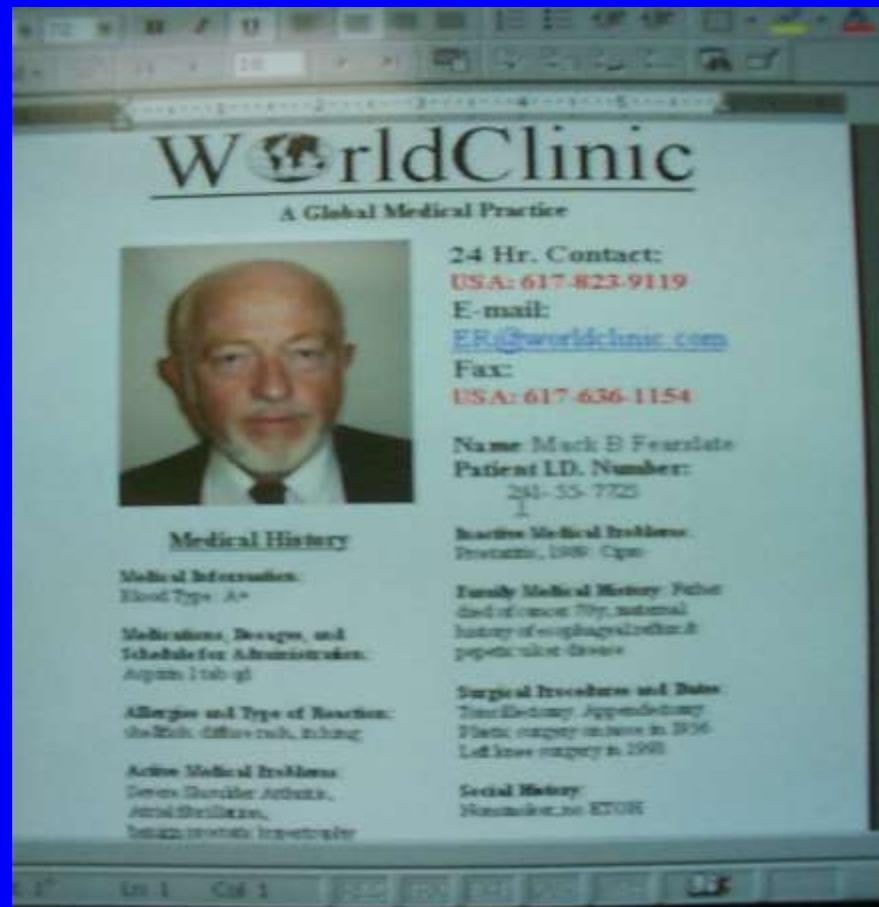


Fig. 13-16 Incision and drainage technique. A, Fluctuant abscess. B, Abscess incised with scalpel. D, Last drainage removed by suction or caught in gauze sponges. C, Cross section showing incision

# Summary Medical Record

1. Your medical conditions requiring regular attention
2. Past surgeries and inactive medical problems
3. Medications and allergies
4. How to reach your doctor
5. Who to call in an emergency
6. A copy of an EKG



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Fax: USA: 617-636-1154

**Name:** Mark D Fearstate  
**Patient ID. Number:** 241-35-7725

**Medical History**

**Medical Information:**  
Blood Type: A+

**Medications, Devices, and Schedule for Administration:**  
Aspirin 1100 qd

**Allergies and Type of Reaction:**  
shellfish, coffee, milk, fish

**Active Medical Problems:**  
Overs Shoulder Arthritis,  
Atrial Fibrillation,  
benign prostatic hyperplasia

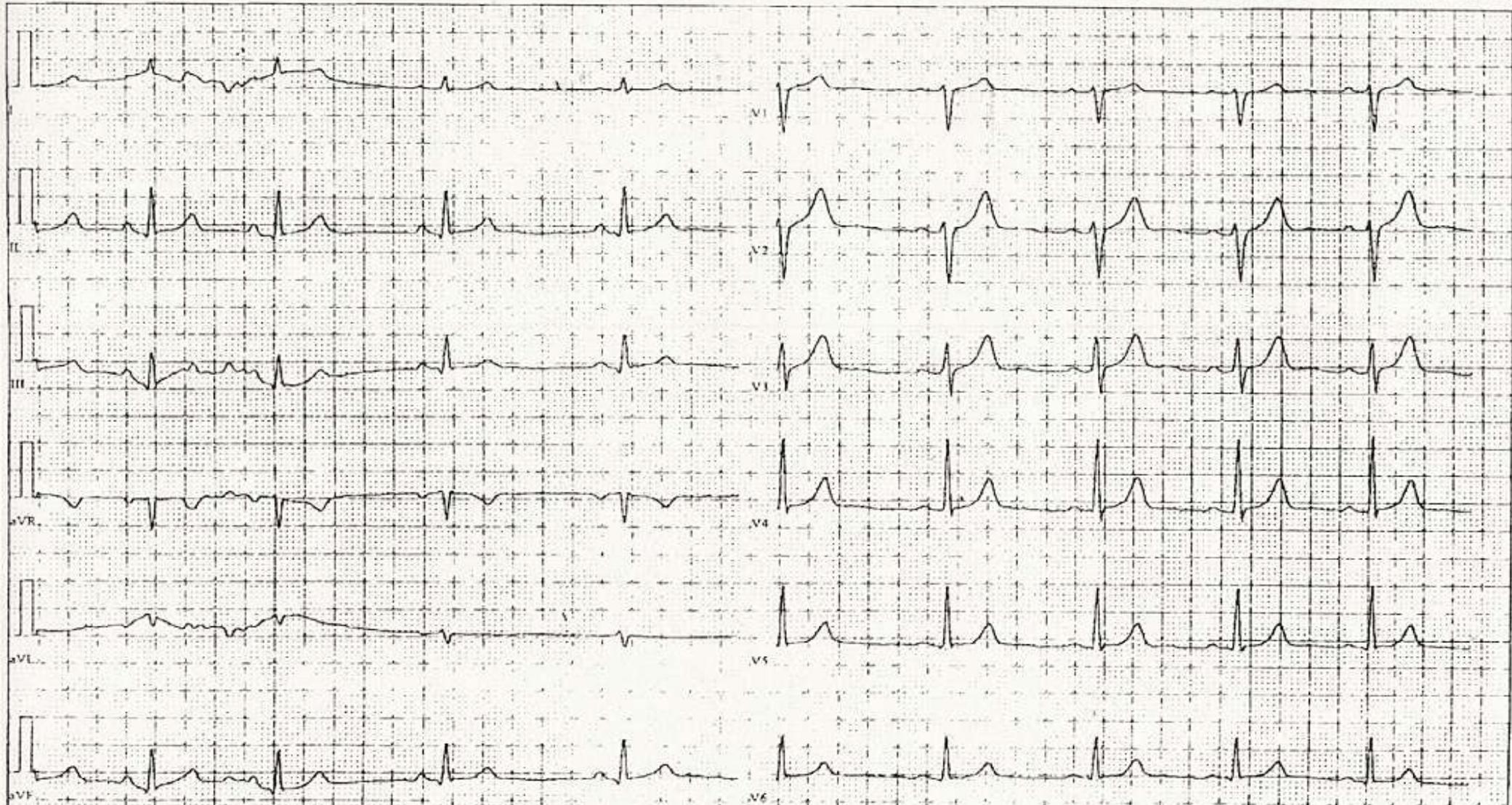
**Inactive Medical Problems:**  
Prostate, 1990 Cps

**Family Medical History:** Father died of cancer 70y, maternal history of esophageal cancer & peptic ulcer disease

**Surgical Procedures and Dates:**  
Tonsillectomy, Appendectomy  
Plastic surgery on nose in 1996  
Left knee surgery in 1998

**Social History:**  
Nonsmoker, no ETOR

Name	William Cravens	Rate	58	BPM	Interpretation	S&W Thermal Plant Clinic
ID	457909336	PR	172	msec	Sinus Bradycardia - With rate variation	
Sex	Male	QT/QTc	400/397	msec	P:QRS - 1:1, Normal P axis, II Rate 58	
BP	148/100 mmHg	QRSD	98	msec	cx - 11	
Weight	160 lbs	P Axis	69		WITHIN NORMAL LIMITS	
Height	72 inches	QRS Axis	70			
Age	46 Years	T Axis	60			
Physician		Date of Report	13/08/98	16 11 02		
Technician	Dornbusch/Lyons/Lacey	Reviewed By				
History	Family history - significant	Review Date	13/08/98	16 12 35	Comments	
Medication	Lariam					



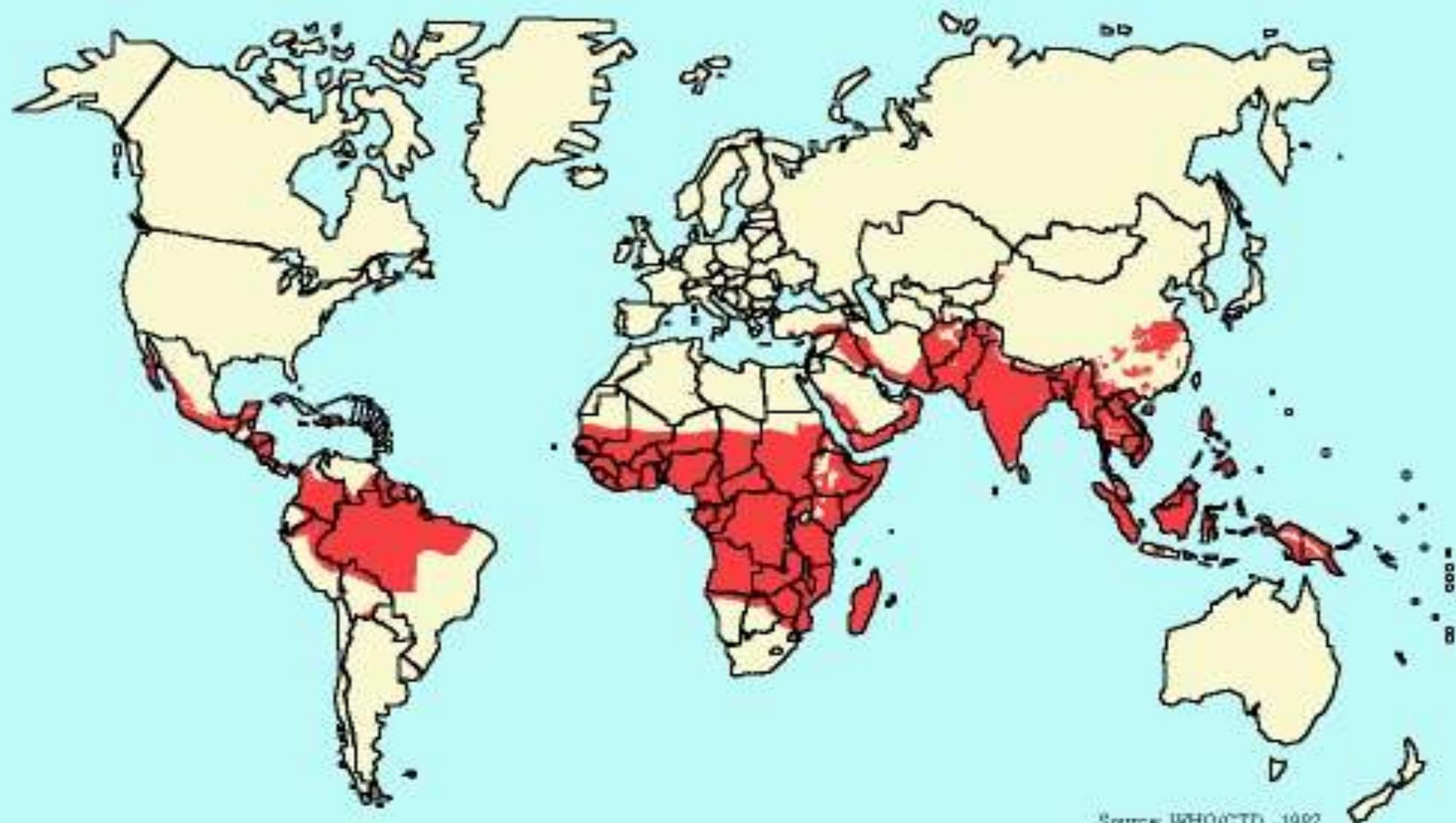
# Medical Readiness for Your Destination

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- ◆ What immunizations do you need?
- ◆ What are the local disease risks?
- ◆ Is clean water and fuel available?
- ◆ Will they bar your entry if you have not had a yellow fever shot? Attention esp.. if you plan on transiting the Panama Canal.
- ◆ Malaria
- ◆ Immunizations are not always safe in undeveloped countries. Do it before you go.



## MALARIA SITUATION



Source: WHO/CTD, 1997

# Medical Readiness for Your Vessel

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- ◆ Secure Storage: Will anything fly if you suffer a knockdown?
- ◆ Do you have a preventer? If not, can you perform neurosurgery underway?
- ◆ Secure harnesses and jacklines
- ◆ A comprehensive medical locker
- ◆ Communication Link: Primary and Secondary

# Vessel Readiness: Medical Locker

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- ◆ Bandages, Splints, Duct Tape, Betadine
- ◆ OTC meds
- ◆ Prescription and Controlled Meds
- ◆ Surgical Equipment
- ◆ Dental Kit
- ◆ Reference Book
- ◆ Crew Medical Records
- ◆ A Preventer



"Should be a required component of all boats' safety kit." —*Salvage Boat*

# THE ONBOARD

## MEDICAL HANDBOOK

*First Aid and Emergency  
Medicine Afloat*

- SHOCK, CPR, INJURIES
- DENTISTRY, DERMATOLOGY,  
SUNBURN
- DROWNING, SEASICKNESS,  
DIVING MEDICINE
- DANGEROUS SEA LIFE
- PEDIATRICS, GYNECOLOGY
- A SHIP'S MEDICINE CHEST
- EMERGENCY RADIO

PAUL G. GILL, JR., M.D.

# Vessel Readiness: Medical Locker

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- ◆ Essential prescription meds:
  1. Levaquin, tetracycline, Flagyl
  2. Lomotil
  3. Phenergan suppositories and Transderm Scop
  4. Sublingual nitroglycerin spray, aspirin
  5. Narcotic pain reliever: Vicodin, Dilaudid supp.
  6. ANAKIT, Benadryl, and prednisone
  7. Diflucan tabs and Clotrimazole creme

Levaquin: very expensive, very effective

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# Dangerous High Seas Infection: Treated with Cipro and Tetracycline

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# Prednisone: always taken as a tapering dose



# Diffucan 100mg. tablet

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# Valuable Medical Equipment



# Blisterpack your meds if possible



# Betadine: The antibacterial equivalent of duct tape

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# Random & Useful Stuff



# Surgical tools: Use what you know

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# Vessel Readiness: Communications

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- ◆ Single Side Band: Voice and Digital (PinOak)
- ◆ SATPHONE: Globalstar, Mini-M, Iridium?
- ◆ Marine VHF: Fixed and Handheld
- ◆ Cellular Phone: effective to 20 miles offshore
- ◆ Worldwide Digital Information Networks:  
INMARSAT C, Orbcomm
- ◆ The AT&T High Seas Operator is defunct



The Internet is almost everywhere.



# Medical Response: Common Illnesses and Injuries

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- ◆ Seasickness / Dehydration
- ◆ Hypothermia
- ◆ Heat Exhaustion / Sun Sickness
- ◆ Lacerations and Contaminated Wounds
- ◆ Broken bones, injured backs, pulled muscles, wrist tendonitis
- ◆ Devastating Injuries: Head Trauma, Heart Attack, Major Burns

from my own career as a ship's medical officer.  
In 1980, I met a young man from Detroit who had joined the US Navy. His first assign-

- you may be on duty for 24 hours of the ship
- after you have learned to swim properly, you may go 'change' and report to sickbay to see the doctor.

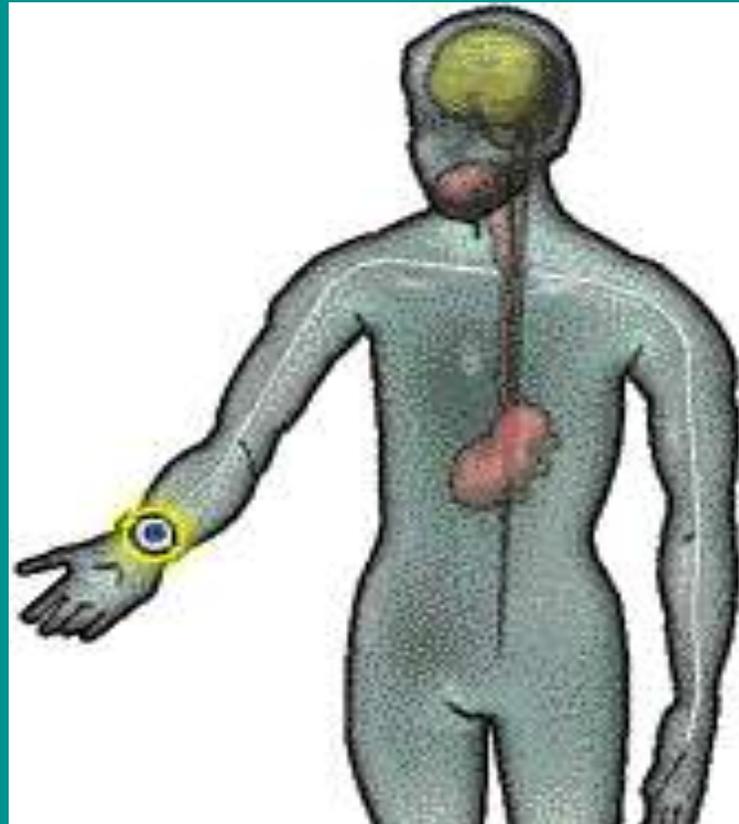


# Medical Response: Seasickness

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- ◆ Mismatch between what your middle ear feels and what your eyes see.
- ◆ Steer the boat for awhile. Do something on deck.
- ◆ Stabilize your neck with a c-collar or towel wrap.
- ◆ Lie down, neck stabilized, head slightly elevated, in the lowest center point.
- ◆ Meclizine (Bonine) is good before you go.
- ◆ Transderm Scopolamine: Test it's use first.
- ◆ Phenergan suppository is good once symptoms start. Add a decongestant (Sudafed) if you are still queasy.

# relief band





**The ReliefBand® device is indicated for the treatment of nausea and vomiting due to chemotherapy.**

See package insert for complete list of indications.

**Clinical application.** Activate the ReliefBand® device at the start of chemotherapy infusion and continue throughout treatment as complementary therapy for nausea and vomiting.

**Home use.** Can be worn continuously for up to six days following chemotherapy.

**Patient-controlled.** Patients may adjust settings as needed.

**NST™ Technology** The ReliefBand® device uses Nerve Stimulation Therapy™, a form of stimulation that uses the body's normal nerve impulses to treat nausea and vomiting.\* The stomach has a normal rhythm of about three cycles per minute. With nausea, this rhythm becomes abnormal and erratic. Research shows a close correlation between these physical changes and the patient's report of nausea. Stimulating the underside of the wrist helps cause the stomach to return to a normal rhythm, and helps to reduce nausea.



**FAST FACTS**



## RELIEFBAND® DEVICE

**Drug-free**

**Non-invasive**

**Easy to use**

ReliefBand® device Model WB-6, is a six-day disposable product.

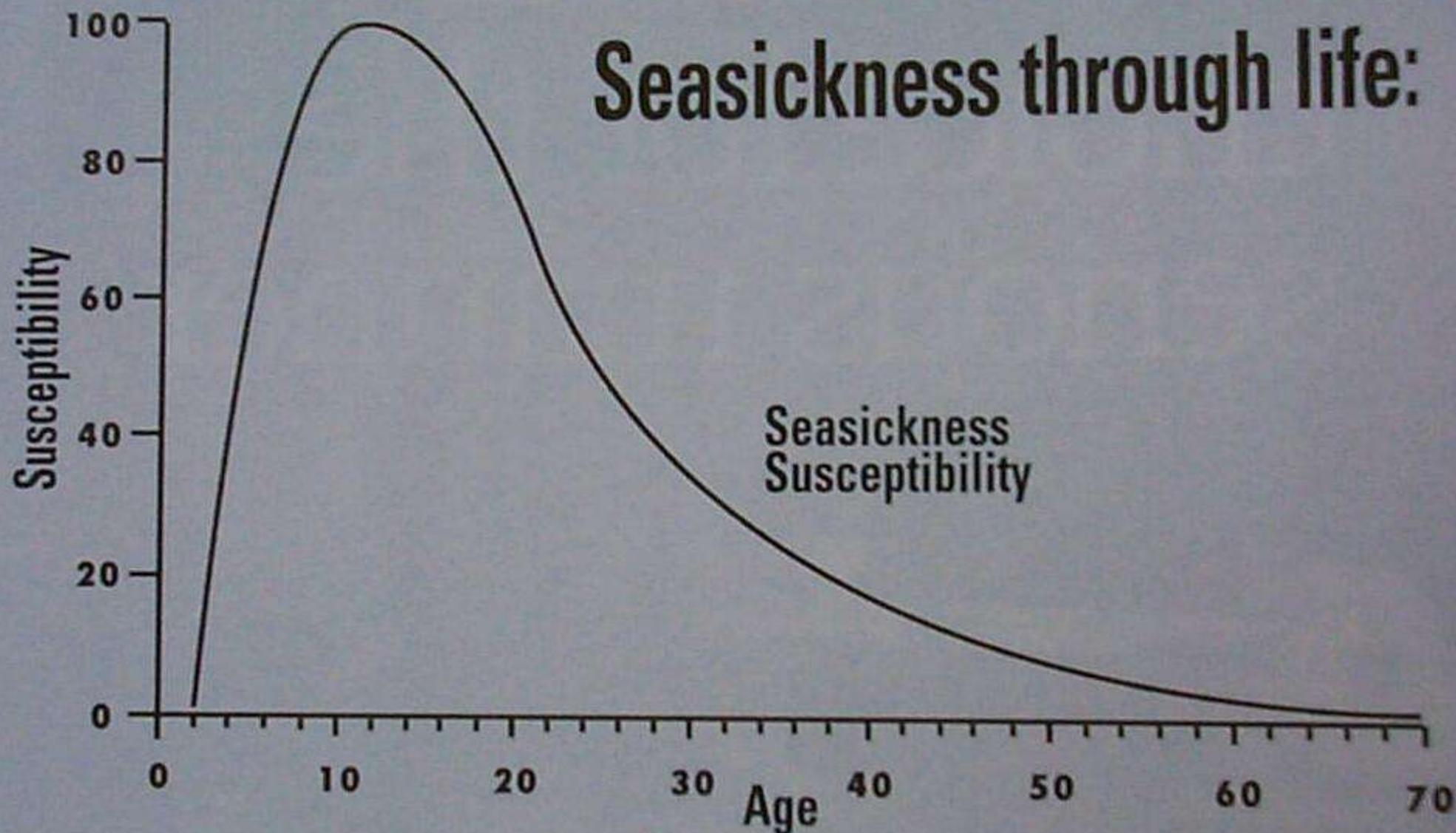
- Rotary dial adjusts output to one of five power settings.
- Light indicates operation and low battery condition.
- Adjustable strap.

Also available in two-day disposable and reusable models.



ReliefBand® is a registered trademark, and Nerve Stimulation Therapy™ and NST™ are trademarks of NeuroStim Biomedical, Inc. U.S. Patent No. 6,992,000 and Canadian Patent No. 2,376,274. Other patents pending.

# Seasickness through life:





# Medical Response: Hypothermia

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- ◆ Can be subtle, like dehydration, can impair judgement and performance
- ◆ Wind and being wet lead to rapid heat loss
- ◆ Obey the Ocean Dress Code: **Layer upon Layer!**
- ◆ Treat it by: Strip him, Dry him, Rack and Sack him, Hot Liquids
- ◆ **WARM THE CORE FIRST: THE LIMBS WILL WAIT**

# Medical Response: Hyperthermia

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- ◆ Heat exhaustion is just that, too tired, too hot. Left unchecked, it becomes.....
- ◆ Heat Stroke, a slowly frying brain
- ◆ Cool the core with cold fluids, cool the limbs with cold liquids and a fan

# Sun Sickness

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- ◆ Sunblock: 30 grade, waterproof, twice a day.  
Apply esp.. to the ears and tip of your nose.
- ◆ Late stage Melanoma is lethal, so look for it first:
  - irregular speckled border
  - bizarre and inconsistent coloration
  - history of rapid growth
- ◆ Fair skinned folks should perform a mole check once a month.

# Get a Sunblock that sticks

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# Medical Response: Lacerations and Wounds

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- ◆ Obey the 3 Rules of Managing Wounds:
  1. Open it till you see or feel the bottom.
  2. Clean the hell out of it.
  3. Make sure the rest of the limb still works.
- ◆ NEVER, EVER, CLOSE A DIRTY WOUND.  
Infection and death may ensue.
- ◆ If in doubt, clean it, pack it with clean gauze, and leave it open

Stingray spine to the thigh. Venom,  
salt water, spine sheath. High Risk.

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Boom to the back of the head.  
Shearing laceration. Low risk

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You must see the bottom of the wound

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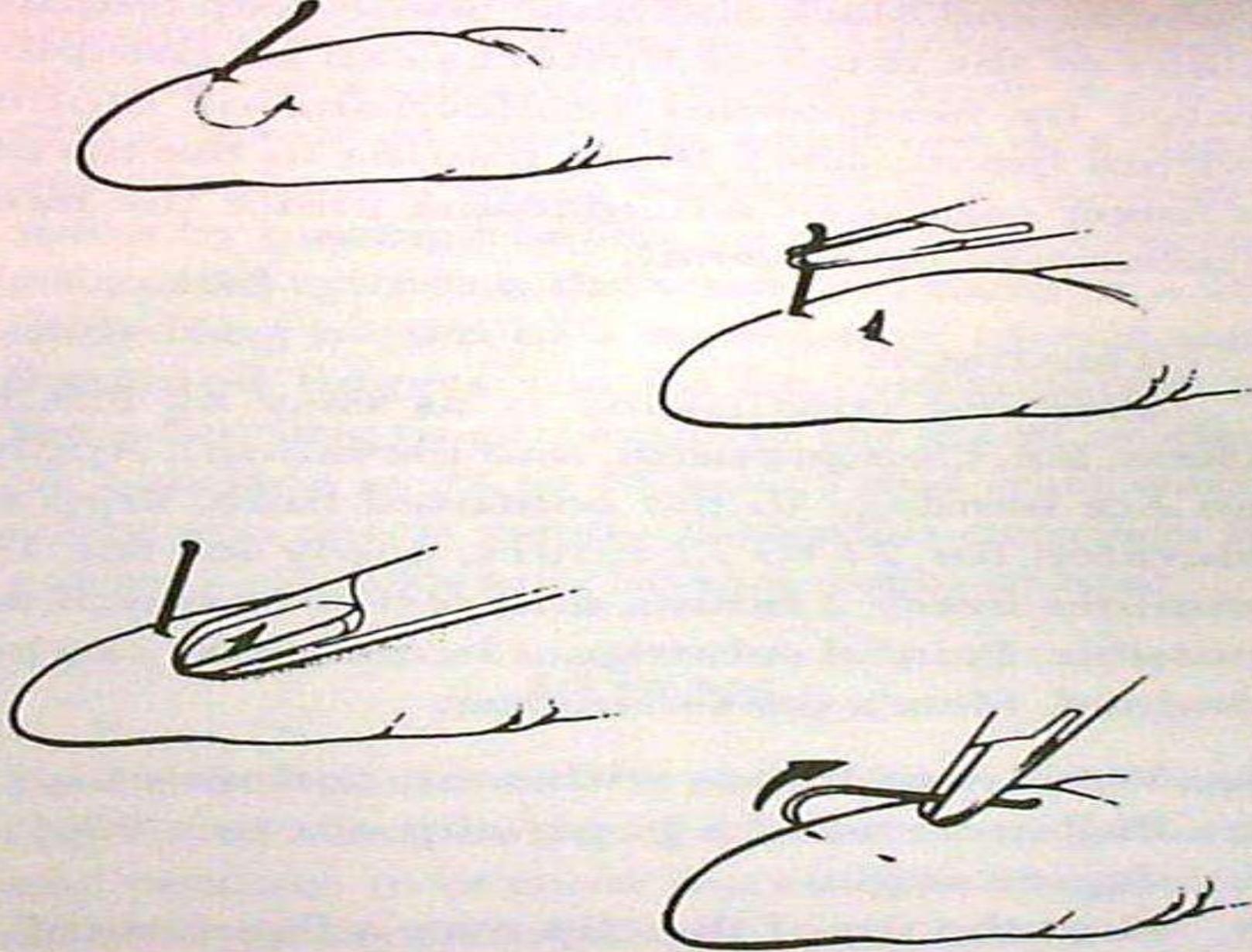
Rinse, Rinse, Rinse.

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Staple/tape it together. Keep the edges up





*Figure 2-2. Fishhook removal: the “push-and-snip” technique.*

# Medical Response: Muscles, Bones, and Backs

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- ◆ The foredeck is where most injuries occur.
- ◆ An injured back is the complete loss of one able bodied sailor for the duration.
- ◆ For all of the above: RICE IT
  1. Rest it
  2. Immobilize it with a splint.
  3. Cold and Compress it.
  4. Elevate it.
- ◆ Check and recheck the blood flow, strength, and sensation downstream from the injury.

Fractured toes. Buddy tape it.

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Juno e-mail printed Thu, 19 Nov 1998 19:36:17 , page 1

From: 427310272@c-link.net

To: raceop@sac

Date: Wed, 11 Nov 1998 [REDACTED]

001 427310272 1111 3340.343S 00048.148E 08510 2154 G

WELL, THIS IS VIKTOR,

I DID IT, BUT IT WASD SOMETHINGU NEXPEKTED.

I COULD NOT STOP BLEEDING, LOST AT LEAST HALF A LITER.

PLACED TWQ SHOCK KORDS AS TIGHT AS POSSABLE BLEEDNG

THE SAME. AFTER BANDAGE T BECAME EASIER,

BUT NOW THREE HOURS LATER THE HAND CAN NOT GET THE S

IT FEELS HOT AND COLD BUT NO STRANGTH AT ALL.

PLEASE WHAT SHOULD I DO BEFORE TOO LATE.

VIKTOR,

# Devastating Injury: Head Trauma, Heart Attacks, Burns

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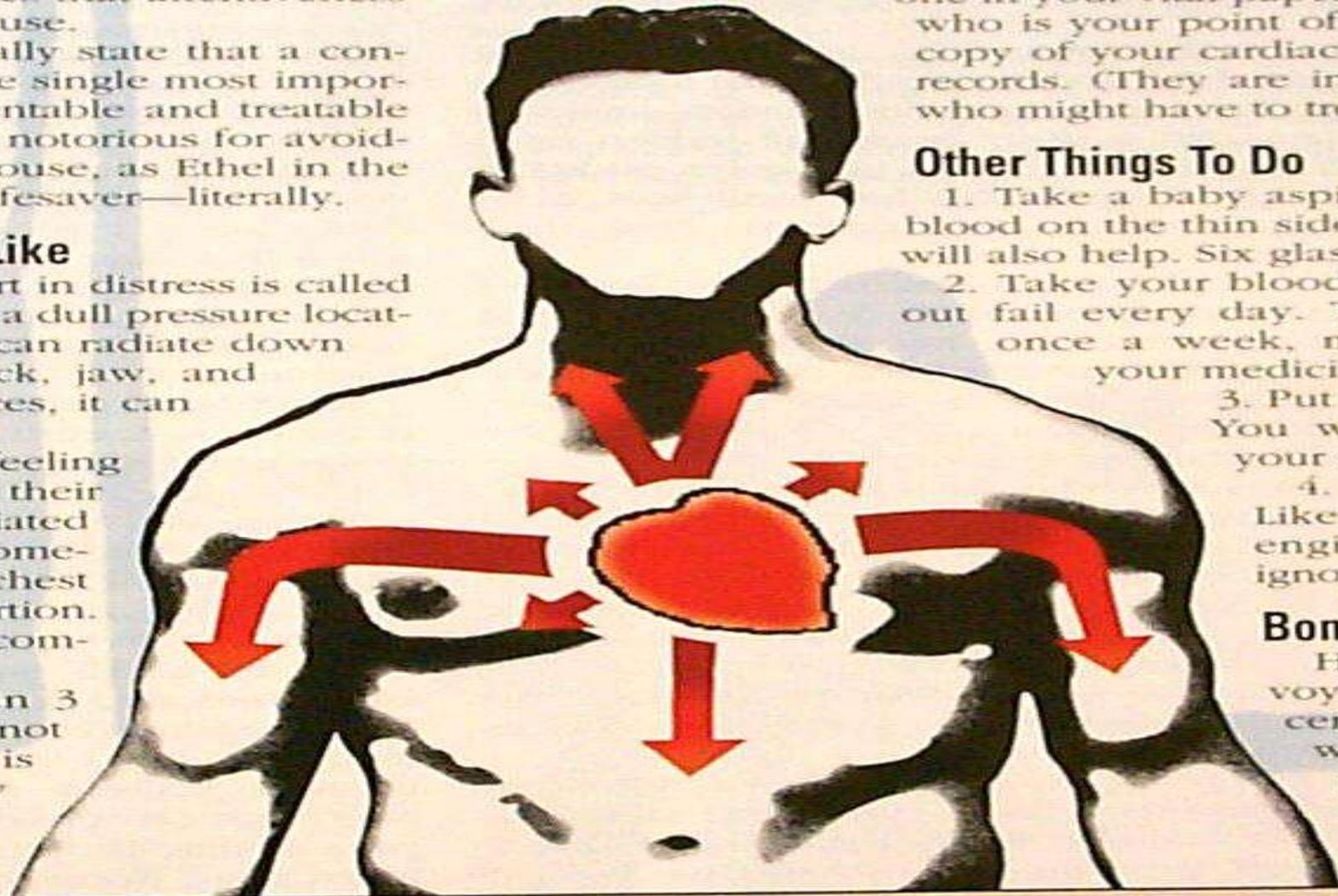
- ◆ A heart attack is a failure to prepare adequately. Screen and Prevent.
- ◆ The most common traumatic death at sea is a head injury from a swinging boom.
- ◆ Anything more than a minor burn should be evacuated as soon as possible. Force fluids, cleanse gently, antibiotic ointment, cover.

ned spouse.  
categorically state that a con-  
bably the single most impor-  
ng preventable and treatable  
men are notorious for avoid-  
sistent spouse, as Ethel in the  
an be a lifesaver—literally.

## What It Feels Like

Your heart in distress is called  
angina. Usually, it is a dull pressure local-  
ized in the chest. It can radiate down  
your neck, jaw, and  
arms. In some instances, it can  
radiate to the back of the  
arm.  
Describe it feeling  
like a heavy weight  
sitting on their  
chest. This  
is associated  
with  
nausea, some-  
times  
onset of chest  
pain  
after exertion.  
Angina  
is also a com-

monly  
longer than 3  
minutes and  
generally not  
relieved by  
rest.  
It also is  
not affected  
by breathing.  
Angina  
usually occurs  
in per-  
sone or



who is your point of contact at home  
copy of your cardiac test results to  
records. (They are invaluable to the  
who might have to treat you.)

## Other Things To Do

1. Take a baby aspirin each day to  
thin the blood on the thin side. A glass of wine  
will also help. Six glasses will not.
2. Take your blood pressure medi-  
cine every day. Take your blood  
pressure once a week, mornings before  
your medicines are best.
3. Put down the cigarette.  
You will not be able  
to work if your  
crew does not  
work.
4. Be attentive to  
your body.  
Like a funny noise  
in the  
engine room it  
should not be  
ignored.

## Bon Voyage

Head out and  
have a  
voyage. Just remem-  
ber the  
center of your  
world's most  
important  
pump.

Protect it, main-  
tain it,  
it will give you  
a  
trouble-free life.

### Cardiac Chest Pain

- dull ache, pressure sensation
- substernal, radiates to arms, neck
- not worsened by movement or respiration
- not affected by pressing on it
- not relieved by antacids
- lasts more than 3 minutes

### Non-Cardiac Chest Pain

- sharp, stabbing
- localized, non-radiating
- provoked with movement or respiration
- worse with pressing on it
- relieved by antacids
- short-lived, less than 30 seconds

# Medical Response: Preventive Medicine on the High Seas

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- ◆ Stretch out your back every time you leave your rack. Knee to chest and twist, switch legs
- ◆ Obey the Ocean Dress Code
- ◆ Did I mention the part about a preventer?
- ◆ Drink lots of fluids to help stabilize your core temperature and prevent dehydration
- ◆ If you are over 35... take a baby aspirin, take your meds, and look after your crew/spouse.

# Medical Response: What to Do in an Emergency

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- ◆ Stay calm. People rarely die suddenly.
- ◆ Move the patient to a secure bunk.
- ◆ Splint and immobilize the neck of anyone complaining of neck pain before you move.
- ◆ Find out exactly what happened.
- ◆ Call your medical resource: Report the situation clearly and calmly. Use a form.
- ◆ Clarify all advice you receive.

# Medical Response: Radio Medical Advice Resources

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- ◆ Your hometown emergency room
- ◆ DH MEDICO on the SSB
- ◆ Passing ships
- ◆ Commercial Medical Advisory Services
  1. Medical Advisory Systems Inc. 301-855-8070
  2. Maritime Medical Access 202-994-3921
  3. Maritime Health Services 206-340-6006
  4. WorldClinic: 800-636-9186

# How to Die Underway

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- ◆ **Drown:** after falling overboard while urinating
- ◆ **Roast:** hyperthermia
- ◆ **Freeze:** hypothermia
- ◆ **Seasickness:** leading to impairment of judgement
- ◆ **Injury:** leading to loss of skipper at a bad time
- ◆ **Bad Heart:** too far from land
- ◆ **Drive, esp.. at night, in a developing country**

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◆ “For the truth is that I already know as much of my fate as I need to know. The day will come when I will die. So the only matter of consequence before me is what I will do with my allotted time. I can remain on shore, paralyzed with fear, or I can raise my sails and dip and soar in the breeze. “

-Richard Bode

*“First You Have to Row A Little Boat”*