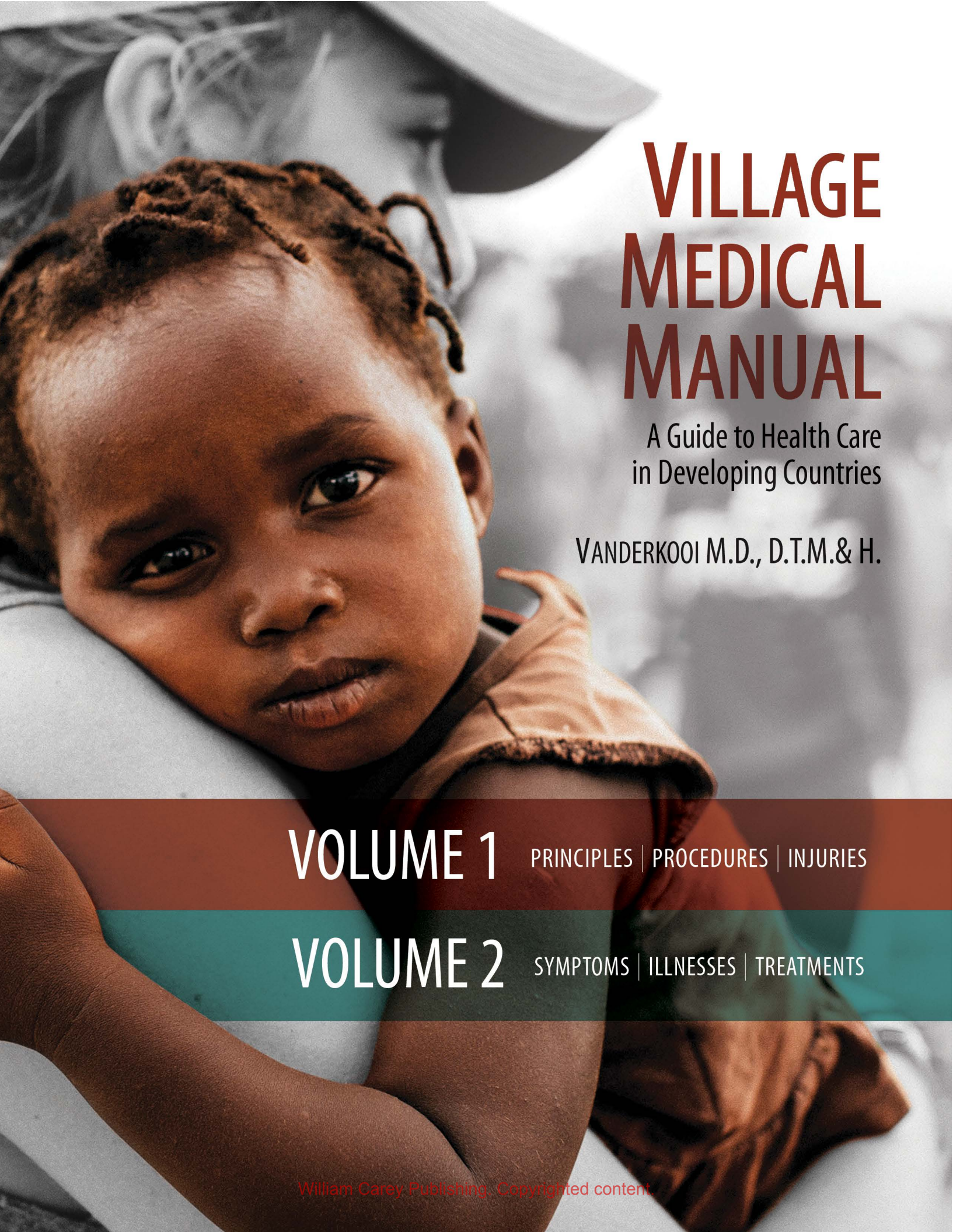


VILLAGE MEDICAL MANUAL

A Guide to Health Care in Developing Countries

VANDERKOOI M.D., D.T.M.& H.

VOLUME 1 PRINCIPLES | PROCEDURES | INJURIES

VOLUME 2 SYMPTOMS | ILLNESSES | TREATMENTS

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Village Medical Manual (Updated): A Guide to Health Care in Developing Countries
Volume 1: Principles, Procedures, and Injuries
Volume 2: Symptoms, Illnesses, and Treatment

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This book is intended for use only by those who are forced by location and circumstances, in developing countries, to render medical care for which they are not professionally trained. It does not reflect the state of medical art in Western countries, and it is not to be used as a substitute for professional medical care. Please take note of the following:

1. Medicine is not an exact science. Diagnosis is largely an art learned by experience and training.
2. To the best of the author's knowledge, only conditions that are common in some parts of the developing world are included in this book.
3. Only the most common and constant symptoms are listed for each condition.
4. Only the most common diseases are listed for each symptom. Diseases that are not treatable in developing areas are not listed or not emphasized. The emphasis is almost entirely on infectious and nutritional diseases. These are most common in developing areas and are treatable in that context.
5. Descriptions given for diseases will in general be correct, but they may not be true in certain areas of the world. Diseases manifest differently according to the particular strain of the infecting organism, the environment, and the age and genetic heritage of the patient. For example, the symptoms of typhoid fever in India may be quite different from those in South America.
6. Only the most common, the safest and lowest cost drugs are listed. More effective alternatives may be available. Every effort has been made to check and double-check the recommended doses, but it is essential that doses of unfamiliar drugs be checked against another reference.
7. Only the most important precautions about drug use and possible side-effects are listed. It is essential, before using drugs, to check recent information regarding safety, precautions and side-effects. This information changes frequently. The following web addresses are useful: www.drugs.com; www.webmd.com; www.rxlist.com; www.medicinenet.com
8. Verbal descriptions and illustrations give only a very rough approximation of how to do procedures and physical examination. They do not adequately substitute for hands-on training and experience.
9. The assumption is made that only minimal drugs and equipment are available. There are frequently better treatments where there are better facilities. More accurate diagnosis will be available in locations where there are laboratory and imaging facilities.
10. Only the common and less serious injuries are addressed in the injury section. If an injury does not match a description, studying the principles and following those is usually more reliable than following specific directions for an injury that is similar but not the same.
11. Recommendations for evacuation are made on the assumption that sending out would entail a considerable amount of time, expense and difficulty. For situations in which professional medical help is readily available, it should be used in all cases.
12. Maps are unreliable. Lack of shading indicates both absence of the disease in question and absence of any data regarding that disease. The two are not equivalent. Sometimes data is absent because intelligent people know enough not to enter the area.
13. Maps are unreliable. To make them, educated people must do surveys. This requires at a minimum
    a.) The absence of local armed conflict;
    b.) A functional infrastructure, including roads;
    c.) Creature comforts such as hotels, food and water
    d.) Friendly nationals who will cooperate.
    Where any of these amenities is lacking, maps are unreliable. Grant money is awarded for disease elimination, so results of surveys may be modified accordingly. Disease distributions change rapidly, especially with migration, flooding or drought. Be particularly sceptical of shading that ends at political borders. Germs don't respect border controls. On the other hand, if the nearest shading to your location is 1000 miles away, you will not likely see the disease except in travelers. Maps can be helpful to illustrate generalities; however, the borders of areas indicated are constantly in flux in the real world.
14. The protocols in this manual were developed for use in medcical scenarios where Western medical care is not readibly available. **Do not try to use these protocols to bypass licensed medical care in the West**, as the spectrum of disease in the West is different from that in developing areas.
15. In particular, the assumption of the book is that the presenting complaint of the patient has only one explanatory diagnosis. This, in some cases, may not be true. If a patient comes down with malaria and hepatitis at the same time, the protocols will be entirely misleading. Only Western-type medical care can help.

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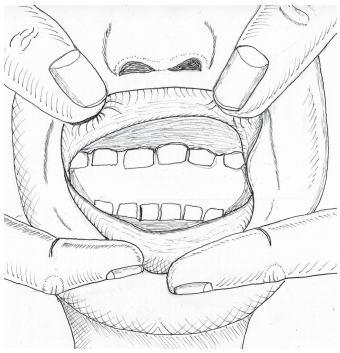
CHAPTER 1: PATIENT EVALUATION AND LOGIC OF DIAGNOSIS

1.A: Patient Age 1-1
1.B: Medical History 1-1
1.C: Physical Examination, Vital Signs 1-3
1.D: Physical Exam, Head, Neck, Lymph Nodes 1-8
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When confronted with an illness or injury, determine the patient's age and why he came or was brought to you.

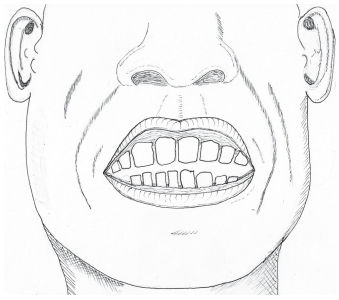
1.A: PATIENT AGE

The approximate age of an adult is usually obvious; the most specific sign is the presence of creases beside the eyes. If the patient is a child, you need to know his age in order to know how to approach the medical history. His age may only be approximated in cultures that do not record birth dates, but in most cases that is good enough. Look at the child's teeth.



1.A.a Baby teeth on top are broader than they are long. JP

This is reliable unless the child has rickets, HIV infection or congenital syphilis, when tooth eruption is delayed. Only rarely is tooth eruption delayed with other serious illnesses such as tuberculosis. Very rarely delayed teething may be normal. In all cases, the child will be older than the teeth indicate. There is a chart on the previous page, tabulating age vs. tooth and social development.



1.A.b Normal upper front adult teeth are longer than they are broad. If the person has congenital syphilis, this may not be true. JP



1.A.c To estimate a child's age, have him put one arm up and over his head. If he can touch the opposite ear with his fingers, then he is at least 6 years old. OW

1.B: MEDICAL HISTORY

The medical history is a hundred times more important than the physical exam or lab work. For every patient you must do a medical history; most of the time an exam will be necessary; in just a few cases you will need to do labs additionally, usually a urine dipstick.

The ***chief complaint*** is whatever bothers him, or if the patient cannot speak, what the relatives think is wrong. This must be a symptom, not a diagnosis, a generality or a physiological explanation. "Waist pain" is an acceptable chief complaint; "all my blood goes to my head" and "I don't feel well" are not. The latter two could represent headache, congestion, dizziness or something else.

Once you have the initial statement, ask the patient to paint a word picture in order to define the terms he used in the chief complaint. He may describe a pain as an elephant standing on his chest, a fire inside or being stabbed with a knife. Dizziness might be the room spinning or his head feeling light.

When the chief complaint is pain, you should define the location. Have the patient point to exactly where it hurts. Areas that one person calls "chest", another might call "abdomen." Sometimes pain travels. Chest or abdominal pain may go to the back or shoulders, whereas back pain may be felt in the genital area or legs.

Now determine the time course of the problem. First ask the patient how long he has had his complaint. After he answers, ask if he ever had it previously. For example, if your patient is short of breath, he might tell you that he has been this way for two days. However, in response to your second question, he might then admit that this happens every rainy season. Suddenly you are dealing with a recurrent problem rather than a one-time illness.

The patient may answer your question with "not long" or "for a long time." Insist on estimates in terms of numbers. One helpful device is to suggest two widely variant estimates such as "two seconds or a year?" Usually the patient will respond with something like "about three to five hours."

Innumerate patients may give estimates in terms of their own culture. "As long as it takes to walk to the river" is a valid estimate which you can convert to a number.

When and if you transmit this initial information to a physician by radio or email, begin this way.

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Standard transmission

"This _____(age)_____(nationality) _____(male/female) presents with the chief complaint of a _____ (duration) history of _____(chief complaint)."

For example,

"This 40-year-old African female presents with the chief complaint of a two-month history of cough and fevers,"

This communicates well (radio, phone, or e-mail). Keep the patient nearby to answer additional questions from the consultant. A form for the medical history is in Appendix 9.

Example of a medical history

"This 4-year-old national male presents with the chief complaint of lethargy and vomiting. The child had chicken pox a week ago and appeared to be recovering well until two days ago when he began to refuse food and started sleeping excessively, but he would wake up when called. Yesterday he vomited five or six times. Since this morning, it has been increasingly difficult to arouse him, and he has vomited five times. The vomit was initially undigested food, but now it is just small amounts of water. The child's mother observed no blood in it. The child has never been seriously ill before and is taking no medicines except aspirin."

Clarifying the chief complaint

Problems with eliciting history

In the Third-World many medical people despair of eliciting a medical history. Those whose lives are culturally deprived have no idea what is needed. Indeed, in some cultures it may be impossible. The patient might be trying to figure out what is the polite answer to your questions, not understanding the concept of truth. After the chief complaint, you should get a clear picture as to exactly what the patient was feeling and the time course. Have the patient describe quantities. For example, if a patient coughs up blood, he might bring up phlegm that is slightly blood-tinged, or a whole cupful of solid clots. Diarrhea can vary between two small loose stools a day and running like an open faucet; it may or may not be bloody. Pain[1] can be quantified by how much it interferes with daily activity.[2] **Mild pain** is annoying, but the patient continues his work. **Moderate pain** interferes with all but simple activity. With **severe pain** the patient can attend to nothing else. There is ethnic and individual variability in pain tolerance. In some cultures women go through childbirth with no complaints; in other cultures a simple injection provokes screams and tears.

When *pain* is the chief complaint, the clarification can be remembered by the mnemonic "SOCRATES."

Mnemonics for a history of pain

***S** is for the **SITE** of the pain, where it is*

***O** is for the **ONSET** of the pain, over seconds, minutes, hours, days, weeks, or months. Onset is defined as the time from the very first symptom to the time the patient decided to do something about it., or he was bedridden.*

***C** is for the **CHARACTER** of the pain, whether burning, pressure, sharp, crampy.*

***R** is for the **RADIATION** of the pain—if it goes anywhere else beside its primary location.*

***A** is for **AGGRAVATING** and alleviating factors.*

***T** is for **TIMING**—when it tends to occur.*

***E** is for **EXTRA** symptoms that occur along with the pain.*

***S** is for **SEVERITY**—how much it interferes with the patient's life.*

If your patient will not volunteer the information, you should ask about other symptoms which are frequently associated with the chief complaint. The following symptom groups are frequently associated; find the chief complaint and ask about other symptoms in that group or groups.

Associated symptoms

Fever, *chills, headache, eye pain, aching all over, vomiting, dizziness.*

Cough *(dry or moist), chest pain, shortness of breath, noisy breathing, swelling of legs and feet.*

Nausea, *vomiting, diarrhea, constipation, abdominal pain, loss of appetite, weight loss.*

Back pain, *low abdominal pain, pain with urination, pus from penis in males, pain with intercourse in females.*

Back pain, *pains shooting down legs, numbness and tingling in legs and feet, weakness or paralysis of legs, difficulty urinating.*

Refer to Appendix 9 for a more complete list of associated symptoms.

Ask about any **previous medical history**. If a patient with severe abdominal pain had an ulcer five years ago, it is important to know this. Ask about any medicines the patient is currently taking. If he is taking a medicine from a pharmacy, you can look it up to determine if his chief complaint might be a side-effect of the drug. If he is taking a folk medicine, that is important also. Write it down. If you see six people who have all taken the same folk medicine and all have the same symptoms, the symptoms may be a side-effect of the medicine. If the medicine helped the symptom, that too is valuable information.

Finally, ask about **family and social history**. Find out which family members, if any, are or have been ill. Find out about the circumstances of any unusual or premature deaths in the family. If you do not already know it, ask about where the family lives, what the sanitary conditions are and whether there has been any involvement in witchcraft. Nationals frequently will not offer this kind of information unless it is asked. They may have no understanding that you need a true story, an accurate picture.

---

1 *It is important to distinguish tenderness and pain. Pain means that a part ordinarily hurts. Tenderness means that touching or pushing provokes pain. A body part might be painful without being tender (as the left arm is painful when someone is having a heart attack). It might be tender (i.e. pain provoked with touching) without being painful ordinarily as in a recently extracted tooth.*

2 *Also see Chapter 8 for evaluating pain.*

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If you know that this will be a problem, then find one intelligent native speaker of the language. Teach this one about a proper medical history. Practice with this person. Then have him come to clinic with you as a pretend patient. Have the first few real patients all in the room together as you run through the medical history script that you have taught him. Then ask who is ready to do similarly. Verbally reward those who give good histories. Have the others wait and listen until they "get it". The word will get around the community that this is what you want. Once folks know, they will comply. After that adamantly refuse to deal with any patient until you get a history. However, have that person sit around and listen to the histories of others. The author's experience has been that after listening to a few histories the light dawns, and the difficult patient will comply. If you treat people without histories, you will be defeated.

One issue on which you should stand firm is to never consent to double translation for illnesses, from your language to language B to language C and vice versa. A single translation introduces more than enough inaccuracies; double translation is hopeless except for injuries.

Initial impression

While recording the medical history you should gain a first impression of your patient. If the problem is injury you will need to cut (not pull) off all the patient's clothing. For illness problems, look at an adult patient to determine *how sick* he is. "How sick" does not apply to injury problems. A person is **mildly ill** if he is annoyed with his symptom, but does his daily work. He is **moderately ill** if he stays in bed most of the time, but will get up to get himself food or water, and he would definitely get out of the house if it caught fire. A person is **severely ill** if he cannot attend to his needs.

In children, one looks at their interaction with their environment. A **mildly ill child** will grab for car keys and play with them, look around, react negatively to a shot and positively to his mother. A **moderately ill child** is either sleepy or irritable, will not play, but has some positive or negative responses. A **severely ill child** shows no response to anything, positive or negative, is unaware of his environment and will not play or eat.

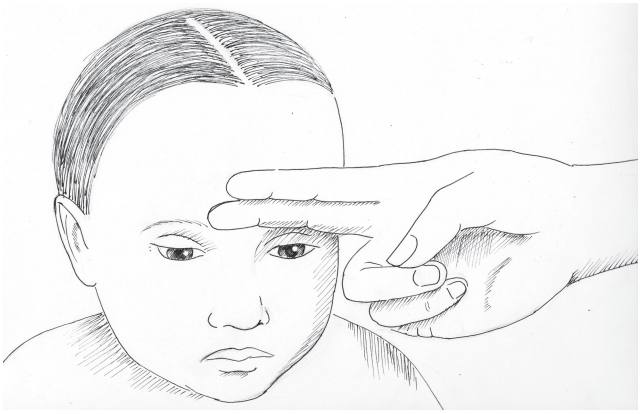
1.C: PHYSICAL EXAMINATION, VITAL SIGNS[3]

First determine the vital signs. The vital signs for adults are: temperature, pulse, respiration and blood pressure. The vital signs for children are: temperature, pulse, respiration and either body weight or arm circumference. For this you will need a watch with a second hand or digital seconds, a thermometer, a blood pressure cuff, a stethoscope and a scale or tape measure.

Temperature

It is important to know the patient's temperature accurately. In high-tech environments, the mere presence or absence of fever is sufficient. In developing areas an accurate number is essential for calculating the expected pulse for the patient, given his current temperature. A slow or rapid pulse relative to the temperature is an important diagnostic clue.

The temperature that really matters is the core temperature: the heat in the center of the patient's body, not the temperature on the surface. But the surface of the body is far more accessible. From time immemorial mothers have determined temperatures by touching foreheads. This is extremely inaccurate. The author has missed fevers of 39°/102° and "found" fevers where none existed.



1.C.a The hairy side of the middle segment of one's finger is the most temperature-sensitive, but it also is inaccurate. OW

Core temperatures can be estimated with alcohol or mercury thermometers in the mouth, the armpit, or the rectum. Rectal is the only legitimate standard. It is time-consuming, requiring at least 2 minutes. Rectal temperatures are safe in cooperative patients; alcohol or iodine disinfection prevents transfer of germs from one patient to another.

Correcting a mouth or armpit temperature

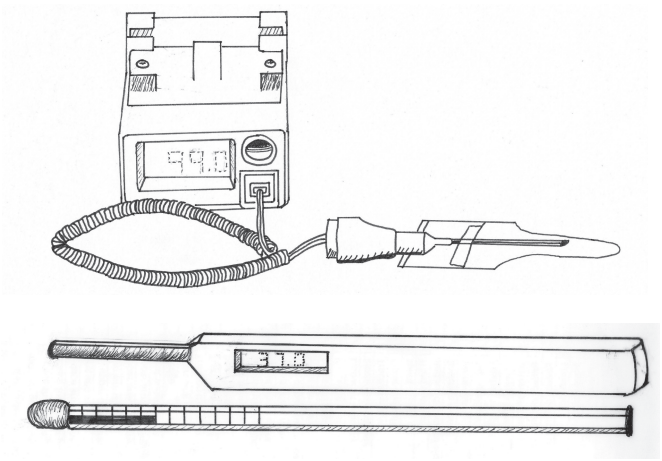
The standard core temperature is the rectal temperature, determined with a mercury or alcohol thermometer. The temperature taken in the mouth, provided the patient cooperates, is about 0.9° Fahrenheit or 0.5° Celsius lower. The armpit temperature, provided the patient cooperates, may be another 0.9° Fahrenheit or 0.5° Celsius lower, though it may also be the same as the oral temperature if the patient holds his arm very tightly. It is important to add these corrections. An oral temperature of 36.1° is corrected to 36.6° Celsius. 99° Fahrenheit is corrected to 99.9°.

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3 *See the Powerpoint lectures on physical examination.*

Environmental and safety enthusiasts have decided that mercury thermometers are unacceptable. Small plastic, inexpensive digital thermometers at first took their place. For most purposes, in the environment of Western civilization, these are acceptable, though not as accurate. For married couples using morning temperatures to guide birth control the inherent random error is too great to be reliable. The longer it takes to register a temperature the more accurate the device. Thirty seconds is a reasonable time for an accurate reading.

If you are doing low-tech diagnosis and treatment in a developing area, it is essential that you obtain a mercury or alcohol thermometer or, at a minimum, one of the pencil-like electronic thermometers, or a box-like thermometer with an attached covered probe. These are probably accurate to a tenth of a degree or so, which may be sufficient.



1.C.b Above is a box-shaped electronic thermometer. Below are an electronic thermometer and an old-fashioned mercury thermometer. JP, AR

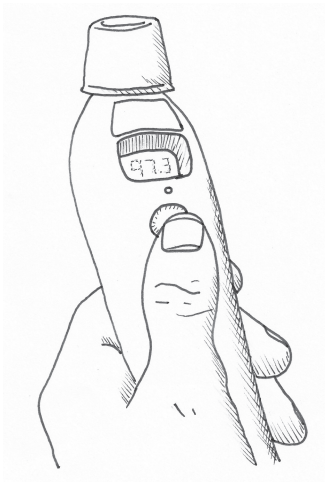
The current rage is LED thermometers which give a digital output on a little screen. These generally read low, possibly as much as 5° F; the only fevers they detect are high fevers, and then they underestimate. The faster the device the more inaccurate it is. These only measure the body surface temperature, not the core temperature. There are, at present, three types: ear thermometers, forehead thermometers and no-touch thermometers which project a beam of light at a distance. They have been shown to be grossly inaccurate in the context of heat stroke, a major problem in athletes anywhere as well as the hot tropics. Hence they should never be used in any context where heat illness is a consideration.

Some sources consider the temperature of the eardrum to be standard, but this is unreliable. When you put the LED thermometer tip by the ear canal, you can no longer see the eardrum; you don't know where it is directed. You will miss high fevers in people who come in from the cold, even after they have been indoors for an hour. In a hot environment you will find fevers that are not there. On the average, however, they read low. Never believe an ear thermometer.



1.C.c This is an ear thermometer. It usually reads low. OW

Reportedly forehead LED thermometers measure the temperature of the temporal artery. This may be so if the technique is perfect. Perfect technique mandates knowing precisely where the temporal artery is located. In my experience they invariably read low, possibly because perfect technique is difficult or impossible to attain in a Third-World clinic setting.



1.C.d This is a forehead thermometer. The cylinder on the top end is placed on the patient's forehead. JP

There are no-touch versions of these, reliability unknown. Considering that both the forehead LED and ear LED consistently read low, and that the manufacturers acknowledge that the devices measure only surface temperatures, it is highly unlikely that they are accurate. Nevertheless, in a busy clinic it is legitimate to determine accurate temperatures only of those patients who complain of fever, who feel feverish, or who look moderately or severely ill.

Correcting an LED temperature

Rather than giving these up altogether, it is feasible to correct for the innate error. Measure the temperatures of about 100 people who appear to be healthy and have no complaints. Then tally each temperature to the nearest 0.1° Celsius. The average normal temperature on your device will be that temperature registered by the greatest number of people. The correction that you must make is the difference between that and 36.9° Celsius or 98.6° Fahrenheit, which is the average true core temperature. Then the range of normal temperatures is 0.3° Celsius above and below, or 0.5° Fahrenheit above and below this mean. An example is given below. In this case the average temperature is 36.4°, so the corrected temperature is whatever the device output indicates plus 0.5° Celsius.

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1.C.e Table of normals, for correcting LED temperatures

Bar graph: each shaded cell represents 5 subjects; 1's are additional subjects.

35.2°	11				2
35.3°	1				1
35.4°	1				1
35.5°	111				3
35.6°	1111				4
35.7°		1			6
35.8°					5
35.9°					5
36.0°					5
36.1°		111			8
36.2°		1111			9
36.3°			111		13
36.4°				111	18
36.5°					15
35.6°					10
36.7°			1		11
36.8°		1111			9
36.9°					5
37.0°	1111				4
37.1°	11				2
37.2°					

In summary, these are the corrections you should make for various thermometers and temperature locations.

1.C.f Summary table of core temperature corrections

Type of thermometer	Correction
Rectal, non-LED	None: this is standard
Oral, non-LED	Add 0.5° C, 0.9° F.
Armpit, non-LED	Add at least 0.5° C or 0.9° F, double this if there is doubt about cooperation
LED ear	Useless; don't use it
LED forehead	Corrected temperature is the output plus the difference between the mean and 36.9° C or 98.6° F. Don't use it in athletes or hot tropcs.
LED no-touch	Unknown correction

1.C.g Normal rectal temperatures; in extreme environments normals will be different than these. Determine your own normals.

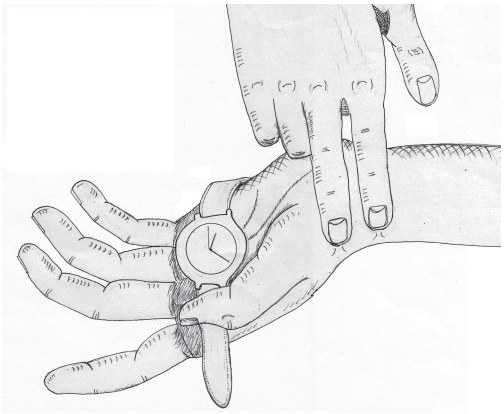
Normal rectal temperatures, mercury thermometer		
1 month to 5 years	36.6° to 37.2°C	98° to 99.5°F
6 years to adult	36.4° to 37.1°C	97.5° to 99.0°F

Pulse rate

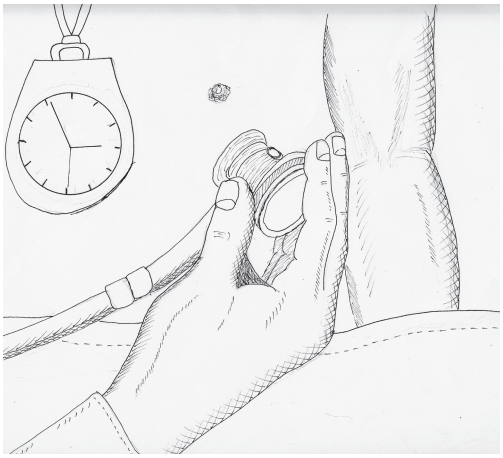
Pulse is usually determined with a pulse oximeter for those who can afford it. The pulse oximeter gives an electronic read-out of the pulse rate, and this is invariably accurate.

For a manual determination of pulse rate, one holds the patient's wrist and, with the fingers at the base of the thumb on the non-hairy surface, one feels the pulse. Count the number of pulsations that you feel in 30 seconds and multiply that by two for the number of beats per minute.

1.C.h Feel and count the pulse at the wrist like this. JP



Alternatively, listen to the patient's chest with a stethoscope, near the nipple in males and children, below the breast in adult females.



1.C.i Listen and count the cycles like this. JP

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