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A GUIDE TO HEALTH

For Peace Corps Volunteers



A GUIDE TO HEALTH

MANUAL FOR PEACE CORPS VOLUNTEERS

**PEACE CORPS
WASHINGTON 25, D. C.**

PEACE CORPS

Washington 25, D. C.

Dear Peace Corps Volunteer:

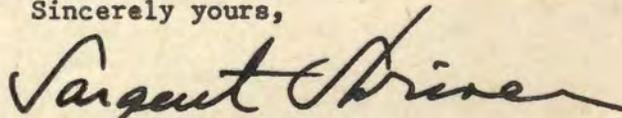
In your overseas assignment you have a signal opportunity - an opportunity to be of service, an opportunity to meet and live with people, an opportunity to live new ways of life.

To be effective in this situation, you must maintain your health in times, places, and situations which may be somewhat hazardous. You will at the same time live with local people and come to know their customs and ways. Carrying out these two tasks at the same time will not always be easy. They will require tact and understanding of your own needs and those of your friends in the host country.

This Manual has been prepared to give you suggestions as to how to handle some of the situations with which you will be confronted. It would be impossible to anticipate all such situations and indeed unnecessary. Peace Corps Volunteers as a group, indeed an extremely healthy group, can live effectively overseas, can maintain their health and can build good relations with local people.

Your health behavior presents an added challenge and opportunity to you. In addition to carrying your skill to a new country, you also carry the example of your own behavior. The Volunteer is, in short, a guide to health which many local people will see and follow. I commend you as Peace Corps Volunteers to this important task.

Sincerely yours,



Robert Sargent Shriver
Director

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A GUIDE TO HEALTH

You as a Peace Corps Volunteer are part of a vital, energetic, and yes, a healthy group of people. Peace Corps Volunteers are many different kinds of people, offering many different skills from different parts of American life. All of you are healthy!



The purpose of this Manual is to provide information to help you maintain your health overseas but if this information is to be of value, you must make the personal decision to use it. Your Peace Corps Physician will assist you in every way possible but when so much is dependent upon your daily habits of personal living, your good health depends upon you. Your happiness and effectiveness overseas depends upon your staying healthy.



In your overseas post many of the community services to protect your health which you have taken for granted all your life will be incomplete. How many times have you thought about the importance of pure water? Don't we turn the faucet on and expect it to be that way? How many times have we thought about community sewage programs or problems of water pollution? These and many other health concerns commonly solved on a community basis will be up to you to solve on a personal basis. You will be given the "know-how"--doing it will largely be up to you!

In addition to the skill which you bring to your host country as Peace Corps Volunteer, you can bring another important asset--

new ideas of health behavior. Living as you will with local people, your health habits will be visible for all to see. You are in a strategic position to show how health may be maintained and improved. The healthy Volunteer can be an example in which all take pride.

Following is a short summary--some quick hints to healthful living overseas:

1. Water. Boil water and drink hot as in tea, coffee and cocoa.
2. Water for bathing. This is not so critical except in areas where schistosomiasis is present.
3. Food. Food should be cooked thoroughly and consumed hot. Fresh fruits are safe when you peel them.
4. Insects. Take your Aralen weekly if recommended. Use a mosquito net.
5. Personal cleanliness. Keep your body clean and wear clean clothes. Use soap containing hexachlorophine.
6. Nutrition. In most areas, the main calorie intake is from grains--wheat, rice, barley, et cetera. To maintain energy, a well-rounded diet is important.
7. Clothing. Wear shoes or sandals and don't have body contact with the soil.
8. Your Peace Corps physician. You have the primary responsibility to maintain your health. Your Peace Corps physician or medical advisor wishes to assist you. Do not hesitate to seek his assistance both for advice in health matters and



for care when needed.

Familiarity with the entire guide which follows will help you to live healthfully. You will also wish to read "Adjusting Overseas."

A. A NEW AND DIFFERENT ENVIRONMENT

In many parts of the world much has been done to correct the unfriendly aspects of the environment. Health services are extensive and available to everyone, thus enabling prevention or the early detection and treatment of human disease carriers. Food and water meet high standards of safety and those animal diseases transmissible to man are well controlled. Such, however, is not the case in many of the developing countries. Health facilities and environmental control are frequently inadequate and may, in some cases, not even exist.

Local people can survive in environments where many health services are lacking due mainly to a resistance they have either inherited or acquired to disease. This resistance, more correctly called immunity, is a result of natural forces and therefore must be distinguished from the type we receive through vaccination (i.e., artificial immunity). Inherited immunity, although important for some diseases, is insignificant when compared to the importance of naturally acquired immunity. This latter type of immunity is usually long lasting and develops as a result of the person actually having had the disease.



It may be helpful in grasping the experience that a native population goes through in acquiring immunity to some diseases to consider a simple little story:

A public health employee working in a remote mountain area of a developing country asked a father how many children he had. The father replied, "three." The health employee counted four, three small children and an infant. He asked the father why he had stated three when there were actually four. The father stated, "three belong to me and one to God." Upon further inquiry it was discovered that all infants in the community were considered to belong to God until after smallpox passed through the community. Those that survived the infection became official members of the family, i.e., they had acquired immunity to smallpox and therefore had a chance to live.



Although there are a number of diseases which will sweep through a community leaving the survivors with life-long immunity, there are also a large number which never produce a lasting immunity. Examples of such diseases are malaria, many dysenteries and intestinal worms. A person can have many attacks of these diseases over a lifetime and not develop immunity. A provincial governor in Asia once said that malaria was the most important of all diseases since "being born and dying was not as important as what happened during your life in between."

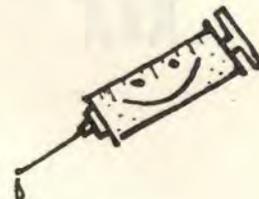
The moral to these little stories is: do not fall into that trap, "if it's all right for the local people, it's all right for me." You might not be the lucky one! The local people pay a very high price in illness and death for their naturally acquired immunity.

B. YOUR LIFE IN A "NEW AND DIFFERENT ENVIRONMENT"

As we have mentioned, modern science has armed us with many of the preventive and curative measures needed to ensure healthy living.

The first line of defense is the artificial immunization and drug prophylaxis programs. These are specific measures against some of the primary killers of man. Prior to departure for your post you will receive a number of vaccinations--poliomyelitis, typhoid and paratyphoid, tetanus, diphtheria, influenza, yellow fever, and smallpox. Immunization against typhus, cholera, and plague will be given if you are assigned to areas where these diseases occur. You will be given booster shots as needed in the areas to which you are assigned. You will also receive, through your medical kits, one drug (Aralen) which is a very effective preventive or prophylactic measure against malaria, if taken at the regular weekly intervals prescribed.

The second line of defense, and perhaps the most important of all since immunization and drug prophylaxis are relatively simple procedures, is the personal means that you must take to defend yourself against disease. This defense has to do with those measures which will provide protection against diseases transmitted through water, food, soil, insects, other animals, and personal contact with an infected person. Although you will receive periodic guidance in these matters from the Peace Corps physician and some assistance from the host government, the actual effectiveness of these measures is going to depend upon how



well you actually carry them out.



One of the best ways to approach this matter is to look around you and gain a "first hand" knowledge of your environment, especially those aspects which will relate to your health. Remember you are now living in a culture different from your own, one which is closer to nature and one which may not attach disease or antisocial significance to certain acts or conditions in their society. Most cultures have ideas of cleanliness but those ideas are not always in keeping with scientific knowledge. The more you understand this environment the better you will understand the necessity for the preventive measures described in this text. Remember--boiled water, clean food, daily baths, hand washing before meals, and proper excreta disposal are not cultural symbols of your society; they are specific means of controlling disease!



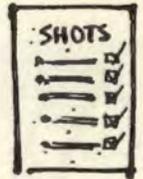
The third line of defense is, of course, what you do if you get sick. The Peace Corps has provided you with a medical kit (together with instructions), and in most places, a medical officer who will periodically visit you for health guidance, and who will make arrangements with local medical facilities for your care. In order to make the most effective use of these arrangements, a good deal will still depend on you. In other words, your early recognition of when you should see a doctor is important if you are to make the best utilization of the medical care arrangements which have been provided.

YOUR IMMUNIZATION

(The First Line of Defense)

It would be helpful if you had some understanding of the immunity conferred by the vaccinations which you receive as well as other types of temporary immunity which can be conferred, should the occasion arise.

Small quantities of various biological products can be injected into the body for the purpose of either conferring a temporary immunity to a disease or stimulating the body to produce its own defense mechanisms against the disease.



Temporary immunity, commonly called passive immunity, is produced when concentrates already containing factors which will fight against the disease, are injected into the body. These concentrates are composed of serum or purified serum fractions obtained from blood donors, convalescent patients or hyper-immunized animals. Since these products provide only temporary immunity, they are usually given to a person only after he has had a real exposure to the disease. Some of the diseases and situations under which these products are administered are:

1. Tetanus. Anti-toxin from (hyper-immunized animals) is recommended when a person who has not been actively immunized with tetanus toxoid sustains wounds, possibly contaminated with soil or horse manure.

measles -

2. Infectious hepatitis. A concentrated serum fraction, gamma globulin, is recommended when people have had intimate and sustained contact with cases of infectious hepatitis.

3. Snake bite. Anti-venom from hyper-immunized animals is given when a person has been bitten by a poisonous snake. A snake bite kit is in your medical kit.

Immunity which is acquired through stimulation of the body to produce its own defense mechanisms against disease is commonly called active immunity. ^{*vaccination*} In this case the material which is injected into the body is either the killed or the attenuated live bacteria or viruses or is some toxic product of bacteria. This material or vaccine stimulates the body to produce its own substances, commonly called antibodies, which fight or destroy the particular disease-causing organism from which the vaccine was made.



Some vaccines, such as yellow fever, produce relatively long lasting immunity and therefore require revaccination ("booster" doses) only every three or five years. Others, however, such as the vaccines for plague and cholera do not produce as long lasting immunity and therefore booster doses are given every 3 or 6 months.

In addition to these relative differences in vaccines, there is also the possibility that the person who has been vaccinated against a disease will encounter such a heavy exposure to the disease organisms that the antibodies produced will not be enough to destroy all of the organisms which enter the body. If this

occurs, then the person may get the disease. The number of antibodies is not constant in the body during the period between vaccination and booster shot. The most antibodies are present shortly after vaccination and the least just before the booster is due. It is for this reason that vaccination for a disease is recommended if the person is likely to have a heavy exposure to that disease.

If epidemic is on way, get booster!

What this means to you is that artificial immunization can provide a reasonable degree of protection provided that:

1. You cooperate with the Peace Corps physician in obtaining your booster inoculations at the intervals specified and at the time you are exposed to an unusually high risk for infection.

2. You understand that protection is not absolute and therefore no one should deliberately try to challenge immunization by drinking polluted water or taking other undue risks of exposure, in the belief that he is absolutely safe.



The Peace Corps will provide you with artificial immunity against smallpox, poliomyelitis, typhoid and para-typhoid fever, tetanus, diphtheria, influenza, and yellow fever. Immunization against typhus, cholera, and plague will be given if you are assigned to areas where these diseases occur.

One final word about immunization relates to your "International Certificate of Vaccination." This document is the only internationally recognized record testifying to the fact that you have received the vaccinations required by the International

Sanitary Regulations. It is very important that you keep this record with the same care as you would your passport. Upon entry or departure from any country, it is required that you produce a valid passport as well as an International Certificate of Vaccination.

Malaria

T. B.

Hookworms

Schistosomiasis _____



No immunization
for these.

CONTROL OF THE ENVIRONMENT

(The Second Line of Defense)

The major disease problems in large areas of the world result from fecal contamination of water, food, and soil. This contamination is the cause of the spread of diarrheas, dysenteries, certain worms, typhoid, and cholera. You can protect yourself from these diseases through being certain your food and water are uncontaminated and that you are always wearing shoes.

Local Immunity
a) Racial immunity
b) by leaving the disease + living through it!

Let's take a look at the diseases we are talking about and then suggest practical methods of water and food protection. The shoes are up to you!

A. DISEASES SPREAD BY FECAL CONTAMINATION

1. How are they acquired?

These diseases are acquired via the intestinal tract and therefore as one can expect the infective agents pass out of the body via the feces. The means by which these diseases are spread is through association with people who have unscientific (lacking a knowledge of germs) standards of personal hygiene and fecal contamination of earth, water and food. Once these are contaminated then the infective agent is conveyed to the susceptible person by either:

- a. Contact with contaminated earth and articles or those people who practice unscientific personal hygiene, or



b. Consumption of



- Polluted water (possibly in the form of un-boiled soups, ice and mixed drinks with water—we must even question bottled beverages).
- Uncooked vegetables and fruits which have been grown or washed in contaminated places.
- Uncooked or partially cooked meat (beef, pork, fish and shellfish in particular) which have been fed from contaminated sources.
- Cooked food which has been handled by a contaminated food handler or upon which contaminated flies have rested.

These means of conveyance provide the basis upon which you can properly establish the measures necessary to guard against fecal-borne disease.

2. Local conditions contribute to the spread of fecal-borne diseases.



It may be hard for you to realize upon first contact with a beautiful sun-lit environment teeming with apparently happy people how such a situation could possibly contribute to the gross contamination that has been described for such areas. Upon closer observation, you may start to notice the factors which contribute to the contamination of ground water and food.

Indiscriminate defecation (i.e., defecation in any place) is rare for adults but a very common practice for children and therefore we have what is called "door-yard contamination". Most children never seem to go far from the house for this purpose. In some areas untreated human excreta may be collected for purposes of fertilizing the crops.

Discriminate defecation (i.e., defecation in a designated place) is the most common practice and may consist of merely designating an area back of the village for such purposes, a drop-privy over a stream or river, a pit-privy dug into the ground, or some more modern convenience such as flush toilets.

The pit-privy or flush toilet may also contribute to contamination of the environment if they are not properly placed or designed.

3. Diseases resulting.

a. Simple diarrheas. Many factors may cause simple diarrheas, including changes of food, water or even emotional tension. Individuals with diarrhea that persists for more than one day should seek medical advice. In simple diarrheas, paragoric and/or kaopectate are helpful.

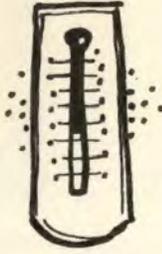
8-10 lb. of fruit
(No Sugar)
Stay away from
grease & spices.

b. The dysenteries. This group of diseases are infections of the intestine. They are characterized by the frequent emission of liquid stools often containing blood and mucus. Abdominal cramps accompanied by painful straining to empty the bowels often occur. There are two principal types of dysentery, bacillary and amebic. Both require special drugs for treatment. Consult your physician for any illness if there is blood in the stool!

- Passes thru food.



Bacillary dysentery is a disease of the intestine which is caused by the dysentery bacilli of the Shigella group. This is a disease most frequently seen in the tropics and subtropics. The most common means of acquiring this



infection is drinking polluted water or eating certain uncooked foods or food which has been contaminated by either flies or an infected food handler (very common).

Symptoms. From 24 hours to a week or more after exposure to the disease the symptoms begin to develop. The onset for a typical attack is abrupt and accompanied by a fever which rises to 100 to 102°F. Diarrhea appears promptly, and the stools may number 15 to 30 in 24 hours. After the bowel has emptied of fecal matter the stools are smaller and consist mainly of reddish blood and mucus. Abdominal cramps may be severe and the evacuations involuntary and accompanied by ineffectual and painful straining. Human carriers of this disease may show, in varying degree, symptoms and signs such as those described or they may be chronic cases which only periodically have recurrence of a typical attack.



Your Peace Corps medical kit contains a drug which is a specific measure for treatment of dysentery. Seek medical advice. When necessary, one can begin treatment enroute to a site where medical guidance can be obtained.

The general supportive measures of treatment are:

(1) A large fluid intake daily to prevent dehydration.

(2) Strict bed rest (staying in bed).

(3) An easily assimilated diet, rich in protein and vitamins (such as bananas and milk with meat).

Patients should be isolated. Bedding, clothing and other articles which have been in contact with the patient should be washed thoroughly with detergent and rinsed several times. Bedding which is heavily contaminated should be boiled before washing. Adequate disposal of feces is essential.

Amoebic dysentery is a disease of the intestinal tract which may in a few cases spread to the liver or other organs. It is caused by a single cell animal parasite called an ameba (more properly Entamoeba histolytica). The distribution of this disease may be world-wide; however, it occurs most frequently in those areas where sanitation is low, including our own country. Transmission occurs through water or food contaminated by infected persons who may or may not show symptoms of the disease and by articles contaminated with their excreta. Those means of transmission which have been incriminated the most are (1) contaminated food handlers, (2) the fly which has fed upon human feces and then rested on food, (3) polluted water, and (4) uncooked vegetables that have been washed or freshened in polluted water or grown in soil which has been fertilized with human excreta.

Symptoms. From two days until several months after exposure to the disease the symptoms and signs may





begin to develop. The onset may be abrupt and therefore recognizable or it may be insidious with very few recognizable symptoms other than fatigue and a vague abdominal discomfort. The case which shows definite symptoms is more common in the tropics but even here it is considered that the insidious cases may outnumber the abrupt or acute cases. An attack of acute amoebic dysentery may in some respects resemble an attack of bacillary dysentery. Severe abdominal cramps, fever, and even ineffectual and painful straining may be common to both. However, a more typical attack of amoebic dysentery usually consists of abdominal discomfort and cramps accompanied by the passage of 3 to 4 loose stools which may increase in number but rarely exceed 12 a day. These stools become semi-liquid and foul smelling and may contain small flecks of blood-tinged mucus.

Treatment. Seek medical care as soon as possible. Bed rest, a large fluid intake daily and an easily assimilated diet, rich in protein and vitamins, and the specific drug as recommended in the instructions in your medical kit are suggested for acute amoebic dysentery as well as bacillary dysentery.



c. Infectious hepatitis is a disease of the liver caused by a virus which is found both in the blood and in the feces. The distribution of this disease is world-wide. It reaches its greatest prevalence in areas of poor sanitation. The most common means of transmission is through the

fecal-oral route^{only} This type of transmission occurs most frequently when one is living in the same household with human carriers of the disease. The important means of transmission are drinking polluted water and eating food contaminated by food handlers. Always wash your hands before meals. Avoid eating uncooked foods. *Keep hands out of mouth*

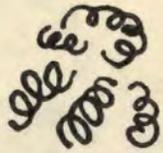
Symptoms. The symptoms and signs of infectious hepatitis begin to develop in 10 to 50 days after exposure to the disease. The typical onset is characterized by headache, fever, nausea and vomiting. *+ loss of appetite.* Within one to eleven days after the onset you may begin to notice certain changes such as dark colored urine, light or clay colored stools, and a yellowish tint to the color of your skin. When the skin turns yellow you have a condition called jaundice. Jaundice is a sign of liver involvement.

It is impossible for you to determine who is a carrier of this disease since children characteristically have milder and less recognizable symptoms and only one out of two of all cases actually develop recognizable jaundice, and many harbor the virus without evident disease.

Treatment includes bed rest and a highly nutritious diet under medical supervision.

d. Roundworm infection *common in Thailand* is an infection of the small intestine by a roundworm called Ascaris. Both male and female worms must be present in the intestine before the chain of transmission can be continued. The male and female mate





and fertilized eggs are passed outside through the feces. Once the eggs have been deposited on the ground it usually takes three weeks before they have matured enough to be infective. Infective eggs are obtained by man through uncooked vegetables or other food which has been contaminated and such accidental means as placing contaminated hands and other objects into the mouth.

This is one of the most common infections of man in the tropics. Not only is most of the population infected but for each infected person there may be many worms which live in the intestine. It has been estimated that one female worm may lay up to 200,000 eggs per day.

Symptoms. The symptoms and signs for roundworm infection are rather vague. The most common complaint is abdominal pain which seems confined to the region of the colon. One sure sign of roundworm infection is when you chance to observe in your feces a worm measuring about 5 to 13 inches in length.

Treatment is relatively simple but requires special synthetic drugs.

e. Hookworm infection is an infection of the small intestine by a worm more properly known as either Ancylostoma or Necator. The male and female mate and the fertilized eggs are passed out with the feces and mature on the ground. After maturation the eggs on the ground hatch and the newly emerged larvae undergo further development for

imported since 1927 in S. Thailand

another 7 to 10 days before they are infective. Once infective they are ready to penetrate the skin of the feet on contact with the soil. After penetration they travel to the intestines via the blood stream, lungs, trachea, gullet and stomach. Most infections are acquired by man when he walks with bare feet over contaminated soil. Keep in mind "door yard" contamination and the specified disposal area behind the village. Both of these areas have conditions of moisture and shade ideal for hookworm.

Can be picked up thru mouth.

- Wash HANDS right away if you work in soil!

Hookworm is also one of the most common infections of man in the tropics. It has been estimated that the number of hookworm infections in man is 456 million.

Symptoms. The symptoms and signs of hookworm disease are variable and depend primarily upon the number of worms present. Common symptoms are weakness, fatigue, intestinal discomfort and pallor. Like Ascariis, hookworms do not multiply in the body.

Hard to treat - to get rid of.

f. Schistosomiasis, "Swimmers Itch" (sometimes called Bilharziasis or simply Bilharzia), is a worm disease of the blood system, involving the liver, spleen and other organs and is caused by a parasitic flat worm more properly known as a Schistosoma. To avoid, do not swim or bathe in streams or ponds unless you are certain the water is uncontaminated. There are three types of schistosoma, one a urinary type and the other two intestinal types. The urinary type is restricted to Africa, the Middle East and one small area in

Find out if present in your area?

India, whereas the intestinal types have a much wider distribution and are known to occur in the Middle East, Africa, West Indies, South America and many parts of the Far East. The life cycle of the Schistosomes is complicated. The adults pair off--male and female--and live in certain veins within the abdomen. One type of schistosome, the urinary type, deposits its eggs in tiny veins near the inner surface of the urinary bladder wall. The other type, which is intestinal, deposits its eggs near the inner surface of the intestine. Once deposited, the eggs work their way out into the urinary bladder or intestine where they are carried to the outside either by the urine or feces. Those eggs which are deposited into water or washed into water soon hatch and a tiny larva emerges. This larva swims about until it finds and penetrates an appropriate snail host. Once within the snail it undergoes a process which produces many larvae of a different type. These new larvae leave the snail, swim about in the water and will burrow through the skin of any person swimming, wading, or otherwise in contact with the water. This may cause itching ("swimmers itch"). Once within the body, the larva develop into mature worms and finally settle down in the veins of the abdomen.



Symptoms. The symptoms and signs for schistosomiasis are variable. In more advanced cases of the urinary type, fever, liver pain, abdominal distress, dysentery and bladder inflammation or obstruction, and bloody urine may

be characteristic. For the intestinal type, fever, night sweats, enlarged tender liver, pain in the back, groin and legs, diarrhea and abdominal distress may be characteristic. The most important things for you to remember about schistosomiasis are:

(1) The distribution of the disease depends primarily on the distribution of the particular type of snail needed to complete the life cycle. Therefore, make careful inquiries in your host country relative to the presence or absence of schistosomiasis. It may or may not be present depending upon the availability of the right snail.

(2) The presence of schistosomiasis means that every source or container of water should be considered as a source of infection unless it is adequately treated.

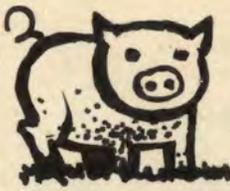
(3) Adequate treatment of water which is to be used for bathing or washing depends upon action based on a certain weakness in the life cycle of the parasite. The larva which leaves the snail in search of man must reach its objective within 30-36 hours or die. Therefore, if you hold snail-free water in a container for at least 48 hours you can feel reasonably sure that the water is safe from schistosomiasis.

(4) If by accident you should come into contact with contaminated water, then you should dry immediately or douse with rubbing alcohol the part of your body exposed to the water. It takes only several minutes for the larva to penetrate through your skin and therefore the faster you can perform the above task the safer you will be.

(5) You can become infected with schistosomiasis by drinking contaminated water as well as by bathing or washing in it.

g. Tapeworm infections are infections of the intestines caused by a flat worm that resembles a long length of white tape made up of hundreds of little sections or segments. The most common type of tapeworm infections that





occur throughout the world are those caused by beef, fish and pork tapeworms. Each of these worms has a head and a number of segments, each segment of which is a self contained reproduction unit for the manufacture of eggs. As the worm grows, especially the beef tapeworm which can reach a length of 15 feet, these segments drop off and are passed out with the feces. The next stage of the cycle depends upon who eats the segments. If a pig consumes segments of the pork tapeworm then the eggs hatch and infective larvae find their way to muscles of the pig. If, however, the pig consumes segments of the beef tapeworm no further development occurs. In other words, the pork tapeworm is specific for pig and man. The same principle applies to the beef and fish tapeworms. Man acquires the infections by eating partially cooked pork and beef. Therefore, be sure that the meat you eat is well cooked as thorough cooking destroys the organism.



Symptoms. The symptoms and signs associated with these infections are frequently vague or absent. Some nervousness, insomnia, loss of weight or abdominal pain may be experienced. One sure sign of tapeworm infection is the presence of worm segments in your feces.

h. Other worm infections in which feces play a major part in transmission are the fluke diseases affecting the intestine, liver and lungs. These diseases, although not as common as the ones we have already mentioned, do have

their importance in certain areas of the world, particularly in the Orient.

The worms causing these diseases are short, oval and flat and are called flukes. They have a life cycle similar to that of schistosomiasis with the exception that the larva from the snail does not penetrate human skin but instead either encysts on aquatic vegetation or penetrates freshwater snails, shellfish, crabs, or fish. Man acquires the giant intestinal fluke Fasciolopsis by eating raw water caltrops or some other raw aquatic vegetation upon which the larva has encysted. He acquires the liver fluke Clonorchis by eating partially cooked or raw contaminated fish and the lung fluke Paragonimus by eating partially cooked or raw crabs.

The main way to avoid these diseases is to avoid raw or partially cooked food. Please note Chinese food is generally well cooked, so take a tip from the Chinese.

i. Typhoid and para-typhoid fevers are diseases which affect the intestines and spread through the blood to affect other parts of the body. The causative agents for these diseases are bacteria of the Salmonella group. The distribution of these diseases is world-wide and they are particularly prevalent in some areas. The principal ways in which these diseases are spread is through direct or indirect contact with the patient or carrier of the disease. Indirect contact consists of consuming water or food which



has either been contaminated by infected feces or urine or by the hands of a carrier or patient. Raw fruits and vegetables, milk and milk products and poorly prepared shellfish are particularly important means of transmission.

Symptoms. These diseases are characterized by either an abrupt or gradual onset; headache, nausea or vomiting; a continued fever of approximately two weeks duration; diarrhea or constipation.

It is important to remember in these diseases that many unapparent cases and healthy carriers may exist and therefore the absence of any apparent sickness in the community may not relate to the chances of your contracting these diseases.

It is also important to remember that although you have been immunized against these diseases, immunity is only relative. If you receive more than the normal exposure you may come down with the disease. But, an abnormal exposure is only likely from failure to observe elementary sanitary practices.

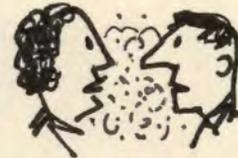


4. Personal protection against fecal-borne diseases.

The preceding pages have dealt with some of the more important fecal-borne diseases of man and the means by which you could acquire these diseases. Without exception, contact with infected people, polluted water, contaminated food, and polluted ground are the primary means of infection.

There are practical means of protection that you can take against these means of infection. By necessity, this protection must be based on adaptations and modifications of local practices rather than the establishment of elaborate facilities which are beyond your immediate resources or local resources.

a. Living with local people. We all know that the success of your assignment will depend a lot on how well you get along with the local people. "Getting along" may mean eating at their house, joint recreation, working together, and even staying at their home for certain periods of time. Such relations should develop unless the people are under quarantine or have some infectious disease.



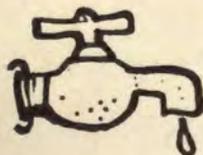
Some people seem to think that there are only two choices when living in a foreign community, either construct a "Little America" or "go native". Actually, neither one of these extremes is advisable from the standpoint of health. The "Little America" concept divorces you from the community and its many interesting aspects of life including those local foods which would contribute to a balanced diet. "Going native" is the other extreme. This is where you disregard all safeguards for health, don the local dress, and just try to be "one of the boys". This leads not only to illness but also a suspicion among your local friends that you are about to infringe on or disrupt their own personal life and relations within the community.

Your friendly relations with them will actually be based upon mutual adjustment, each learning the other's habits and customs. If both of you begin to understand each other's way may be different, then little "idiosyncrasies" relative to the preparation of food, living habits, bathing, et cetera, will be understood. As with all true friendships it isn't a one-sided proposition but a matter of give and take from both sides. One final word from the Chinese: "Be gracious and polite but think with your head as well as your heart."



The local people will offer you all kinds of food among which there may be some special "delicacies" of the region. Express particular delight over that food which is hot and thoroughly cooked and fruit which can be peeled. Drink hot beverages or undiluted fruit juices. Avoid or politely "push around" raw vegetables, any food which would require refrigeration before serving, partially cooked meat, water, or any locally bottled drinks unless you are sure of their source.

Proper handwashing before meals, daily changes of clothing, and avoidance of eating or drinking utensils which might be contaminated will help to reduce the possibilities of fecal-borne diseases.



b. You must have safe water. In developing countries, a source of safe drinking water is a rarity. In rural areas, wells, springs, and cisterns are not adequately protected

against the entrance of contamination. Surface water, where used, is rarely treated and is always hazardous. In most cities, even water from a piped system should be regarded as unsafe due to inadequate treatment, periodic breakdowns in treatment, or intermittent pressure in the system, permitting contamination to enter through leaks, cross-connections with non-potable supplies, by back-syphonage, or a combination of these factors.

Except in those most uncommon situations where the safety of the drinking water supply is beyond question, one or more of the following precautions should be habitually undertaken:

(1) Water boiled vigorously 3 to 5 minutes and kept in the same vessel, or other disinfected (boiled) covered vessel will be safe until used. This is the safest practice.

(2) If water cannot be boiled, considerable protection is offered by the proper use of chemical compounds which liberate free chlorine or iodine into the water. The chemicals come in various forms—tablets, powders, and liquids—and should be used according to direction. Iodine tablets are available in your medical kit. Other chemicals may be obtained in most areas. Dosages are usually doubled when these agents are used in cloudy, dirty, or discolored water. When other treatment is not possible, one or two drops of tincture of iodine may be placed in a glass of water and allowed to act for ten minutes.

(3) Fluid intake may be supplemented or water intake may be replaced by hot tea or coffee or by undiluted citrus fruit juices carefully prepared by oneself.

(4) Be careful:

(a) Use only safe or treated water for tooth brushing and other personal uses.



-OR BEER



(b) Freezing water does not make it safe. Where bulk ice or ice cubes are made, only treated water should be used.

(c) Impure ice or water used to cool or dilute alcoholic drinks is not purified by the amount of alcohol in the beverage.

(d) Uncarbonated soft drinks are not safe and ordinary carbonation does not insure the destruction of all disease organisms.

(e) The use of the "candle" filter is not recommended. It requires daily cleaning and boiling and is inferior to heat or chemical treatment. If any kind of filter is used, the water should be filtered first and boiled afterward.

(f) When a local person is entrusted with the responsibility for water purification, it is necessary to check frequently to be sure that it is being done properly.

(g) You may wish to carry a thermos or canteen of safe water with you.

c. Preparation of food for your use. Some 31 recognized diseases may be transmitted through foods including most of those resulting from the drinking of contaminated water. Illnesses resulting from contaminated food are one of the chief causes of poor health and loss of time in developing countries. All such illness is none-the-less preventable.



It should be remembered that fruits, vegetables, meats, pastries, and animal products—practically all foods—are frequently grown, raised, prepared, and stored under unsanitary conditions. Fecal contamination of soil or animal feed is just one step in a series of occurrences which lead to the contamination of food. You must also consider whether

food has been "freshened up" or washed in polluted water, whether the person handling the food has high standards of personal hygiene, whether the food was properly refrigerated before serving, and whether the food was stored under conditions which would prevent contamination by insects, rodents or other means. All of these factors lead to only one conclusion--you should assume virtually all food is contaminated.

The "saving grace" for this entire situation is that a lot of foods if properly prepared can be decontaminated. What you can and can't do with regard to food is as follows:

Salads -- A delicious salad of thin skinned vegetables such as carrots, tomatoes, cucumber, and local vegetables--avocado, fruits, etc.--can be prepared with perfect safety if the vegetables are thoroughly washed in boiled water and then carefully peeled. One of the best ways to handle a tomato is to place it in boiling water for about a minute and then peel off the loosened skin. Green leafy vegetables such as lettuce, celery, and cabbage should definitely not be used in salads unless they are dropped in boiling water and kept there for at least five minutes. For adequate decontamination head lettuce and cabbage leaves should be dropped individually into boiling water. Chemical decontamination with chlorine, iodine, etc., is not effective



and should not be depended upon, since the chemical in most cases cannot reach all contaminated parts.



Fruits -- may be eaten if they are peeled by yourself or under your supervision. However, any fruit which is cracked should first be dropped into boiling water for 3 to 5 minutes before peeling. The only way to handle strawberries is by cooking.



Meat and fish -- when not spoiled, can safely be eaten if thoroughly cooked and served while hot. The absence of refrigeration means that meat and fish should not be eaten if cold.



Fresh milk -- is safe only if obtained shortly after milking and is boiled. Without refrigeration, boiled milk will keep much longer than that which has been simply pasteurized (154°F--30 minutes or 161°F--15 seconds). If canned, evaporated, condensed or dried milk is used, it should be diluted only with boiled or treated water. Unsafe milk must not be added to hot or cold beverages.

Other foods -- which are likely to be highly contaminated and should not be consumed unless prepared in the home include ice cream and other creams, cold pastries, custards, meringues, and soft type cheeses.

It is to be remembered that without refrigeration the storing and eating of leftovers is particularly hazardous. Milk or other perishable foods, particularly protein foods, which are not refrigerated or thoroughly cooked and

protected from subsequent contamination will permit toxin producing bacteria (staphylococci) to grow and produce a poison which is not destroyed even by subsequent cooking. This toxin produces a violent, though seldom fatal, gastric upset.

You will, of course, not eat canned food from damaged or distended cans.

d. Those who prepare your food. The level of personal health and personal hygiene of local food handling personnel may be low and fecal contamination of food occurs frequently. Food handling practices are the most common source of dangerous contamination of food. Therefore, the training and supervision of local cooks in handling food, personal hygiene, and general cleanliness is an important preventive measure. Medical examination of food handlers should be made before hiring.



(1) See that the cook washes his hands with soap before food preparation. Also see that he keeps his fingernails short and clean.

(2) Examine the exposed parts of his body for any local sores which would serve to contaminate food with staphylococci or other organisms.

(3) See that he understands and follows those safe practices recommended for water and food preparation.

(4) See that he covers food and stores it off the floor to avoid contamination by flies, rodents, etc.

(5) See that he washes dishes with hot water and soap and rinses them with boiling water.

(6) See that he keeps the kitchen clean.



Supervision is your responsibility. It should not be left to someone else.

e. Disposal of Body Waste. Adequate disposal of excreta for yourself as well as other members of your household will do much to promote your own health as well as serve as an example for your neighbors to follow. The basic principle of excreta disposal consists of putting excreta where it is unavailable to people, animals, or insects, and where contamination of the ground surface is prevented. This may consist of a water flush system which empties into sewerage lines or a septic tank, a sanitary pit privy, a bore-hole latrine where feasible or similar installations such as a bucket latrine, etc.

The type of disposal unit you will use may be the same as that utilized by the local population or it may be some type provided especially by the host government. The important things to remember about an excreta disposal unit are as follows:

(1) Location is important! The receptacle should be so located as to prevent the pollution of domestic water supplies, prevent the contents from overflowing to the surrounding ground, or surface water flowing into the receptacle, and should be convenient and accessible to use. If it should be a pit privy, as most of them are, then it should be in a well-drained location between 50 and 100 feet from the well, spring or other sources of domestic water supply. If possible it should be located downhill from the water supply. If the receptacle is to be located in an area which is periodically flooded or in which the water table comes very near to the surface of the ground, then it is advisable to build up a mound of earth. Then dig out the pit in this mound. The surface of the

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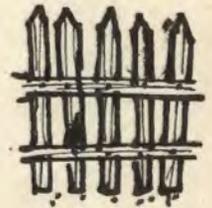
pit will be at a higher elevation than the surrounding ground.

(2) Plans for construction of latrines suitable to local conditions are available from the Peace Corps physician or the Peace Corps staff.

(3) Fly-tight! The important thing to remember about the domestic fly is that it prefers to lay its eggs in feces. Feces are the perfect medium in nature for rearing flies. After the eggs hatch the larvae have a plentiful food supply to live on until they develop into the adult fly. This means that any container for feces must be absolutely fly-tight if you are to control the contaminated fly. The surface of the pit privy is usually covered with a fly-tight reinforced concrete slab which serves as the floor of the privy. In or upon this floor there may be either a simple hole for the deposit of feces or there may be a riser complete with toilet seat. To make this arrangement completely fly-tight the hole or toilet seat must be provided with a tight cover which can be removed and replaced upon use.



(4) Enclosure. Regardless of the type of latrine to be used the housing which is placed over the receptacle must be a tight permanent structure which does not permit rodents or domestic pigs to enter. One of the greatest problems in some areas is the "sanitary pig." Domestic pigs, to use a polite term, are coprophagic (feces eating) and are often very persistent and will destroy any light structure placed over a receptacle, to obtain their goal. Many times the latrine is enclosed on all sides but open from above. Sometimes the base of the superstructure is surrounded with solid wooden boards standing about 18 inches high. This prevents entry of most animals. The only difficulty with this arrangement is for the user to remember to "step over" rather than "shuffle in."



(5) Maintenance. Odors can be reduced by a vent from the receptacle to above the roof of the superstructure or by periodically throwing some sand or earth into the receptacle. If you should desire further safeguards against flies, chloride of lime thrown into the receptacle each week will help reduce fly populations. The native squat type of latrine is more sanitary and has fewer maintenance problems than the latrine equipped with riser and toilet seat.

The important thing for you to remember, regardless of the type of latrine to be used, is that safeguards must be taken to prevent pollution of domestic water supplies: (1) the latrine must be properly placed, (2) the latrine must be kept fly-tight, and (3) the superstructure must be strong enough to prevent entry of rodents and domestic animals. Detailed specifications as to construction and the best type suited for your area can be provided by the Peace Corps staff or a health worker of the host government.

B. INSECT-BORNE DISEASE



While insects as a cause of disease are relatively unimportant in the United States, it was estimated a decade ago that at least 215,000,000 people annually suffered from malaria alone. Approximately 2.1 million of them died as a result. Although a world-wide eradication program is underway, malaria is still probably the most important disease in the world today. It is, however, only one of a number of insect-borne diseases which exist in parts of the world. There are simple means which you may take to protect yourself from insect-borne diseases.

Let's take a look at the diseases which are insect-borne and then consider the personal means which you may take to protect yourself.

1. How are they acquired?

The insects (and other arthropods such as ticks and mites) cause disease by either one of two ways. They may either

transmit disease organisms from one man to another or they, themselves, may actually infest man and cause a disease. Their role in transmission of disease organisms is far more important than the role they play in actually infesting man. Transmission is of two types, mechanical and biological.

Mechanical transmission is when an insect such as the common house fly transports organisms such as dysentery bacteria on its feet, body hairs, and other surfaces from filth to food.

Biological transmission of disease occurs when an insect, mite or tick plays an essential role in the life cycle of the disease organism. The Anopheles mosquito, for example, is an essential means to the spread of malaria. The malaria parasite undergoes a portion of its life cycle in both the insect vector and the human host. Biting insects which carry disease are called vectors. When these vectors feed on an infected host they draw into their stomachs blood and tissue fluids along with disease organisms. Although the blood and tissue fluids are digested, the disease organisms remain intact and may, therefore, be harbored or undergo an essential development in their life cycle within the insect vector. When the vector, after an interval of time sufficient for the disease organisms to multiply and develop, bites a human being, it usually injects into that person the disease organisms along with its saliva.

2. Local conditions can contribute to the spread of insect-borne diseases.

Insect vectors of disease thrive especially in tropical and semitropical climates which permit optimum temperatures the



year around and in situations where poverty, ignorance, and poor sanitation permit many breeding areas and ready access to the human population.

3. Which insect-borne diseases are important to you?

a. Malaria is a disease of the blood which after many attacks becomes a chronic debilitating infection. It is caused by certain microscopic protozoan parasites (Plasmodia) which are transmitted from man to man by certain mosquitoes (Anopheles). It is particularly prevalent in parts of Africa, Asia, Western Pacific Islands, Central and South America, and the Caribbean Islands. Information concerning the malarial hazard at any particular place is best obtained from your Peace Corps physician or from the staff of the malaria eradication program.



Symptoms. The initial attack of malaria begins one or more weeks after the bite of the infected mosquito. A typical attack has an abrupt onset followed by severe symptoms which may be intermittent and last for a week to a month or longer. An attack commonly begins with an indefinite feeling of illness shortly followed by a characteristic shaking chill with rapidly rising temperature, usually accompanied by headache and nausea and ending with profuse sweating. After an interval free of fever, the cycle of chills and fever tend to occur daily, every other day, or every third day, depending upon the species of Plasmodia which has caused the attack. These intermittent attacks

which can last for a week to a month or more can again occur at irregular intervals for several years.

You can prevent malaria. You have been provided through your medical kits with a drug called Aralen or chloroquine to prevent your getting malaria. Aralen is what is called a "prophylactic" for the malignant variety of malaria and will "suppress" infections of benign malaria. Suppression means that the quantity of drug taken weekly will prevent the development of malaria organisms into that stage within your body which produces the disease symptoms. It does not mean that the drug prevents the malaria mosquito from biting you or injecting the malaria organisms into your blood.

If this drug is taken once a week ("always on Sunday" is a good way to remember), it will not only suppress an infection of malignant malaria but it will also eventually destroy all parasites of malignant malaria. Therefore, we use the term "prophylactic" to describe the action of the drug on malignant malaria. Due to a difference in the life-cycle of those parasites which cause malignant malaria and those parasites which cause benign malaria, the drug does not produce a suppressive cure for benign malaria, at least not within a reasonable period of time. The drug merely keeps the infection suppressed. This means that if you were to interrupt your drug schedule and therefore lose the suppressive powers provided by the drug then the organisms could



take hold and really produce disease. Aralen should be started about 2 weeks before you arrive in a malarious area and be continued until 3 weeks after leaving such an area. If you do, it is unlikely that you will become ill from malaria while overseas.

To boil it down:

(1) In a malarious area you can't exactly predict or know just when you will be bitten by a malaria mosquito. Therefore you should maintain your prophylaxis continually.

More reasons:

(2) The drug given is a suppressive and therefore must be present in the blood stream at the time you are bitten if it is to do its job. Therefore, you must have an adequate level of the drug in your blood immediately before going to a malarious area.

(3) The drug is a suppressant that keeps the malaria organisms in check, not one that kills them when they enter the body. Therefore, you must maintain your treatment schedule continuously with no interruptions during side trips to the "big city" or high mountains, etc., in order to maintain a sufficient blood level of the drug.



As added precautions:

(1) Use your bed net as suggested.

(2) Since most bites occur at night, wear long sleeves and other protective clothing when going out at night.

(3) Use insect repellent.



b. Short-term fevers is a convenient way to describe many insect-borne virus diseases which are of short duration (3-7 days) and characteristically produce fever. Some of

the more commonly known diseases of this type are Dengue fever, transmitted by the mosquito, Sandfly fever, transmitted by the sandfly, Japanese B. Encephalitis, transmitted by the mosquito, and Western and Venezuelan encephalitis, also transmitted by the mosquito. These are only a few of the many insect-borne viral diseases that are being discovered today. There are now well over 150 such viruses described. These descriptions are primarily based upon certain distinctions which can be made between the antibodies produced by the individual viruses causing the disease. This does not mean that each disease organism produces symptoms that differ from those produced by others or that each organism necessarily has a different vector from that of its relatives. It is for this reason that we have grouped these diseases under one term, "short term fevers." One of the most important contributions made by the study of antibody distinctions and similarities has been to show how extensively this group of diseases is distributed throughout the world and how much more prevalent they are in tropical and subtropical countries of the world, particularly in those areas of the world covered by the tropical rain forest.

Although we have described these diseases as short term fevers, and this is their most characteristic manifestation, it should be mentioned that a few of them can at times produce very serious conditions such as encephalitis, which is an involvement of the nervous system leading



to disorientation, speech disturbance, paralysis, and even death.

Another feature of these diseases which helps to explain their wide distribution and the fact that they are found in such inaccessible environments as a tropical rain forest is that they do not depend upon man alone for their survival. All are known to be diseases of other animals. In fact, many of them harbour in mammals and birds and only on rare occasions overflow, so to speak, into man.

Symptoms. In general, a person begins to show clinical symptoms within a week or two after being bitten by the vector. The onset of disease is likely to be sudden and consists of headache, fever or feverishness, chills, weakness, a strong aversion to bright light, soreness in the muscles and joints and even at times a sore throat.

c. Filariasis is a disease of the blood and lymph caused by a worm called a filaria which is transmitted from man to man by a number of different types of mosquitoes (Anopheles, Aedes, Culex, etc.). It is a disease which occurs in Africa, Asia, the East Indies, certain Pacific Islands, Central and South America, and the Caribbean. Although it is found in most tropical and semitropical regions of the world, it is usually restricted to certain countries within the region and even then to certain areas within the country. The reason that this disease has drawn so much attention is that in a community where it exists and where



people are subject to repeated re-infections year after year a small number of them will develop gross enlargements of either the scrotum, mammary glands, legs or arms. These enlargements are particularly noticeable and the term which describes them is elephantiasis.

Symptoms. Three to 12 months after a person has been bitten by an infected mosquito the symptoms of this disease may begin. These symptoms may consist of fever, headache, a skin rash and swelling and redness of glands where the limbs join the body or in the limbs themselves and even the scrotum. This attack usually subsides after several days but may occur again at a later date. If you have these symptoms, get in touch with your doctor.

Although it is not the intention of this manual to discuss pathology of any disease, it is particularly important that you understand the relation between the attack described above and the possibilities of your developing elephantiasis. The typical attack described and its subsequent symptoms is merely an inflammatory reaction of the body to the presence of the worm and will not persist nor develop into permanent disfigurement. It is only after numerous attacks caused by numerous reinfections that the body eventually builds up scar tissue in the lymphatics and you have permanent blockage of the lymph channels and therefore elephantiasis. Your contact with this disease will never be sufficient to produce any gross or permanent disfigurement.

*Must have repeated contact over
a number of years.*



Use the suggested methods of protection outlined later and don't worry.

Other types of filaria infection are Loa Loa, a disease of the subcutaneous tissues transmitted by a forest fly in equatorial Africa, and Onchocerciasis, a disease resulting in nodules on the body transmitted by the black fly in tropical regions of Africa and Central America. Treatment is relatively easy.

d. Oriental Sore (Bagdad or Delhi Boil) is an ulcer of the skin caused by a protozoan parasite called Leishmania. This parasite is transmitted from man to man by the bite of the sandfly. The disease is particularly prevalent in the Middle East but occurs also in Africa and Central and South America. This ulcer causes a deep sore which leaves a scar. Scars are particularly noticeable on the faces and legs of people from the Middle East. Treatment is relatively easy.



e. Kala-azar is another serious illness characterized by fever caused by the Leishmania parasite. It affects the liver, spleen and bone marrow and causes anemia. Like the oriental sore, this disease is transmitted by the sandfly. Insect repellents and sprays offer protection. Kala-azar is widely distributed throughout the world but usually localized in given areas. Some of these areas are found around the Mediterranean, in Central Africa, India, and in southern South America. Certain drugs are available for effective treatment of this disease.



f. Relapsing Fever is a disease of the blood caused by a spirochaete type of bacteria which is transmitted from man to man by either the louse or the tick. The louse-borne type occurs in limited localities of Asia, Africa and Central America. The tick-borne type is widespread throughout tropical Africa and also occurs in North Africa, the Middle East, Central Asia, and South America. This disease is characterized by intermittent fever. Fever will last two to three days, alternating with periods of no fever lasting about three to four days. There may be two to ten periods of fever during the course of the disease.

g. Sleeping Sickness or African Trypanosomiasis.

This disease is transmitted by the bite of various species of the tsetse fly, from infected humans or animals in a fashion similar to malaria. In areas where the tsetse is found, individuals should wear suitable clothing including long sleeves and long trousers at all times since the fly bites during the day. The use of insect repellent is of help. Several drugs have been found to be effective prophylactic agents. If needed, your Peace Corps physician will see that you are given prophylaxis to prevent this disease. In cases of infection, it is important that treatment be started immediately.



American trypanosomiasis or sleeping sickness is called Chagas disease and is found in Central and South America. It is an extremely serious disease and can lead

to death. The infection is transmitted from animals to man by the "kissing bugs" (reduviid) usually at night. They acquired this name because of their habit of biting the face. Meningitis may be a serious complication. Treatment is largely for relief of symptoms.



Points to remember are that the reduviid bugs inhabit adobe and thatched huts in endemic areas and so these should not be used unless sprayed with insecticides. Spraying inside of buildings with gammexane or dieldrin is effective. A bed net is an important protective since the kissing bugs feed at night.

h. Other insect-borne diseases of importance are typhus, plague, and yellow fever. These three, thanks to immunization, will perhaps be of less importance to you than some of the diseases mentioned in the preceding paragraphs. You will be vaccinated against yellow fever before you leave. Typhus and plague immunization will also be provided when needed. Typhus fever is a disease caused by a very small organism smaller than bacteria, termed rickettsia. Rickettsia are transmitted from man to man by the human body louse and by ticks. This disease is now confined to those areas of the world where people live crowded together under unhygienic conditions and are louse infested.

Plague is a disease caused by bacteria called plague bacilli. These bacilli cause disease both to man and rodents. Rodents are considered the usual reservoir of

the disease and the disease is transmitted from rodent to man via the rodent flea. If the reservoir of disease is domestic rodents (roof rat, Norway rat, etc.) then the disease is called urban plague; if it is wild rodents (field mouse, etc.) then it is called sylvatic plague. Urban plague can spread rapidly throughout a human population because the source is domestic rodents. Sylvatic plague occurs only occasionally since man is not so closely associated with wild rodents. Sometimes wild rodents serve as a source of infection for domestic rodents and these in turn serve as a source of infection for man. Urban plague is found in certain parts of Asia, Africa and South America. Sylvatic plague occurs in the United States, Middle East, China, South Africa, and Argentina.

Yellow fever ^{most specific occurrence} is an acute infectious disease caused by a virus which is transmitted from man to man or animal to man by mosquitoes. There are two types of this disease: the urban type, which is transmitted from man to man by mosquitoes living in and around cities, and the jungle type, which is normally transmitted from monkey to monkey by certain forest mosquitoes. The jungle type is important to man since forest mosquitoes will bite and infect human beings who go into, or near, the forests. Urban yellow fever has been practically eradicated from the world with the exception of some areas in Africa. Jungle yellow fever is present in Central and South America and Africa.



4. Insects and other arthropods can cause other problems--allergies and irritations.

a. Man can be infected by insects in several ways.

Bot flies are flies which deposit their eggs on birds and mammals, including man. After the egg hatches the maggot or larva penetrates the skin or mucous membrane, goes through a period of development within the host, and then may extricate itself, drop to the ground and pupate. Larvae may penetrate the skin, mucous membranes of the eye and nasal passages, or live in the intestinal tract. Generally speaking, man is only an accidental host for such infections.



The Chigoe flea is the pest which inspired the sailor's oath, "I'll be jiggered." It is a small, burrowing flea found in tropical and subtropical regions in North and South America, the West Indies, and Africa. The female flea lives in dust or sandy soil and when it comes into touch with the bare foot it grabs on and burrows into the softer tissues under the skin. Man is most frequently attacked between the toes or under the toenails where the flea may swell to the size of a small pea and cause excruciating pain. Inflammation and formation of ulcers may result. It is prevented by wearing shoes.

Scabies ^{- 7 m. tick.} is a dermatitis caused by an itch mite which burrows under the skin. It will be discussed more fully under contact infections, since it is transmitted from man to man by direct contact.

b. The poisonous arthropods are those whose bite or sting may introduce into the host a deadly neurotoxic venom or merely a formic acid which causes only temporary pain. The ones which introduce a neurotoxic venom are the scorpions, black widow spiders, and a few other small spiders of South America.

Scorpions can be recognized by the stinger tail which curves over their back and two large forward appendages each equipped with stout pinching claws. Scorpions may be found in tropical forests and they like to hide under bushes or other vegetation. The desert scorpion is smaller and likes to hide under rocks.



Black widow spiders are recognized by the black, brown or gray abdomen and the red, orange, yellow, or white hourglass markings on the underside of the abdomen. They are not to be confused with the tarantula, a large, hairy spider whose bite is not usually poisonous. Black widow spiders like to hide under leaves or in dark corners, and for some reason especially in privies. Their bite causes considerable abdominal pain but persons so bitten rarely die.



Bees, wasps and ants are the ones which usually inject a formic acid which produces a painful sting and local swelling. These stings are not particularly harmful unless someone has developed an allergy to them, or receives many stings. Beetles of the cantharides type, commonly

called Spanish fly, can be poisonous and at times deadly if crushed against the skin or administered internally.

c. Skin irritations, or dermatitis, are caused by a number of mites, primarily chiggers and some caterpillars. Chiggers occur throughout the tropics and subtropics and are usually found attached to grass, bushes, etc. The chiggers attach to man, especially in areas where the clothing fits tightly, such as the tops of stockings, the waist area where belts or underwear are fastened or the armpit area. Chiggers do not feed on blood but insert their long mouth parts under the skin, and inject saliva which partially digests tissue debris which is then drawn back into the mite.



d. No discussion of invertebrate animals is complete without some mention of land leeches. These are small brown forms which usually wait for man or animals on bushes or other undergrowth along the trail. These forms are found in South America and the Far East. They attach to clothing and find their way to bare skin where they insert the mouth-part and commence sucking blood. Never attempt to pull a leech away from the skin. Make the leech remove its mouth parts and drop to the ground by applying to it salt, vinegar, a hot needle, or the lighted end of a cigarette.

5. To protect yourself against insect- and other arthropod-borne diseases and insects.

The measures which will best prevent these diseases are those measures that you take to protect your person.

a. Mosquitoes. The most important measures that you will take are those which prevent mosquito-borne diseases. Not only malaria, but some of the more prevalent or most dangerous diseases (the short term fevers, the encephalitis diseases, and filariasis) are carried by mosquitoes. Mosquitoes rank first among all arthropods that jeopardize the health of man. The important things to remember about mosquitoes are that:

- A body of water of any kind, even that standing in a flower pot, tin can or hoof print of some domestic animal, can serve as the place where mosquitoes deposit their eggs and develop through the larva stage.
- Mosquitoes, once they have reached the adult stage, may fly a mile or more from their breeding site.
- The female mosquito is the one that bites man; especially in the case of the malaria carrying mosquito she most often prefers to bite at night and rest during the daytime in some secluded dark corner of the house, on vegetation outside and even at times on sweaty clothing, which she likes because of the odor. The yellow fever mosquitoes bite most commonly during the daytime.

These three factors point out the most important means of prevention for mosquito-borne diseases:

Screens, bed nets, and protective clothing. In most areas of the world it has been impossible to fully control insect-borne diseases by any feasible means such as screening, insecticides, etc. This has been due to the habits of the people. Many people sit around outdoors after sunset for reasons of sociability, or sleep in the open



of a good
one

fields or jungle. None of the modern knowledge relative to screening, bed nets, and insecticides is of much use under these conditions. If, on certain occasions, you should be required to do likewise, wear a long sleeved shirt fully buttoned and long trousers with the cuffs tucked into socks. If the insect repellent contained in your medical kit is applied to exposed parts an additional measure of protection is provided. The best practice is to be inside a screened enclosure by sunset and inside the bed net when you're ready to sleep. You should have a bed net.



Screening of your home. Screening an entire dwelling in many areas is impractical. However, screening of sleeping quarters and food areas helps to reduce the danger of disease. Screens are made of many materials, including galvanized iron, copper, bronze, aluminum, and plastic. Near the ocean, iron and copper screens are not recommended because of the corrosive action of salt-sprays. Screens must be of the proper mesh, must fit tightly and be kept in good repair. The ordinary window screen with 16 meshes to the inch will keep out most mosquitoes, but screens with 16 x 20 or 23 mesh are necessary for some of the smaller malarial mosquitoes and Aedes. Frequently, mosquitoes follow people into buildings or enter on the human host. For this reason, screen doors should open outward and have springs or automatic closing devices.

Insecticides in your home. An insecticide is a substance employed to kill insects. Suitable insecticides will be readily available for your use. There are two uses in your home for these insecticides. One use is to apply the insecticide on a surface to kill certain insects which light on that surface. The other use is to apply the insecticide directly on the insect or into the air, as occurs when you use a space spray device like an aerosol bug-bomb.

Spraying effects can be lengthy. Residual spraying is one of the most important means of prevention and control for insect-borne diseases. In theory the residual spray works as follows--a mosquito which has entered the house through a defective screen or some crevice or crack not screenable will in almost all cases rest on the wall or under furniture either before or after biting. By resting on a surface which has been sprayed with residual insecticide the mosquito absorbs enough through its feet to kill it. The sprays used for this purpose have a long effect; that is, they will last on the wall for several months to a year, depending upon local building materials or climate. Residual spraying of walls, ceilings, and under furniture is very important to your health and therefore no matter how unsightly a spray deposit may appear to you or your neighbors everything possible should be done to preserve it. The insecticides most commonly used for residual sprays are DDT, Dieldrin or Malathion.



Space spray devices such as the aerosol bug-bomb are of temporary use to destroy any insects present at the time of spraying but do not last long enough to ensure killing of insects which may later fly into the sprayed area.

Handle with care! Insecticides are poisons and therefore poisonous to you as well as insects if they are not properly handled. Food and food containers should not be sprayed. Plants, animals and humans should not be sprayed with just any insecticide or any concentration. Many of these sprays are more toxic for some than for others and cause severe reactions which can lead to death. Insecticides should be placed in labeled containers and stored well away from food. Most fatal accidents with insecticides have been due to someone mistaking an insecticide concentrate for some food or drink. Insecticides in the concentrated form are toxic to man and if inhaled or allowed to come into contact with the skin can produce severe reactions.



Antidote. If someone should by accident take DDT or Dieldrin, induce vomiting by placing the finger down the throat. If this should fail give one tablespoon of salt in a glass of warm water, and repeat until the vomit is clear. Then give two tablespoons of epsom salts or milk of magnesia in water. Keep the patient warm and quiet and give him plenty of boiled milk and water. The same applies if someone is poisoned with malathion with one exception—no epsom salts or milk of magnesia is given.

Some signs of insecticide poisoning are loss of equilibrium, dizziness, confusion, hyper-irritability, convulsions, and other neurologic manifestation.

Keep covered.



Your bed net, or mosquitobar, is the most useful item to prevent insect-borne diseases. This will be made available to you overseas. Mosquito netting is a white cotton or nylon cloth with 23 to 26 meshes per inch. White netting is best, as mosquitoes accidentally admitted to the net are easily seen and killed. Most bed nets are rectangular in shape and large enough to permit a person to sit up in bed. The net is suspended over the bed and tucked in under the mattress.

There is a regular little procedure for you to follow when using a bed net.

(1) Lower the net and examine with a flash-light the inner surface. Look for mosquitoes and any tears in the net.

(2) Kill the mosquitoes present either by hand or with a bug-bomb.

(3) Patch the tears with scotch tape.

(4) Rub insect repellent (supplied in your medical kit) on exposed parts of the body which may touch the sides of the net (knees, wrists, arms and feet).

(5) Be sure to tuck the net in tightly on all sides.



One of the biggest complaints against screening and bed nets is that they cut off air circulation on hot nights. Don't let this interfere with the protection

you must take. Learn to place your bed so as to take maximum advantage of air circulation.



The area surrounding your house is important.

Mosquitoes may develop from egg to adult in any body of water, whether it is in a flower pot, coconut husk, tin can or hoof-print, or unscreened vent of a septic tank. Furthermore, once they have developed to the adult stage their strong sense of smell gradually draws them toward human habitations as night approaches. Therefore, as night approaches many may be resting in grass and shrubbery surrounding the house.

Much can be done to control mosquitoes if standing surface water is eliminated and vegetation is thinned out or trimmed down to reduce harborage.



For the control of surface water one should eliminate any containers such as tin cans, coconut shells and husks, etc., which could hold rain water; periodically examine for mosquito larvae any water containers, potted flowers and plants as well as drains surrounding the house; and drain or fill in any ground depressions which would permit the accumulation of water.

You may wish to encourage village leaders in community malaria control efforts. In addition to spraying and personal efforts directed at surface water other activities may be helpful too. Bodies of water such as streams, ponds, etc. which cannot be filled in or rechanneled because they

are used by the local population can be modified to reduce mosquito breeding. Mosquito larvae in streams are usually found in that slow moving and stagnant water which results from too much emerging vegetation along the banks or the formation of pools adjacent to the main course of the stream. Such vegetation can be removed, the central channel deepened and drains constructed between the pools and channel. Ponds and lakes which cannot be drained may be suitably modified by removing emerging vegetation and the addition of surface-feeding fish that will devour mosquito larvae.

To reduce mosquito harborage around the house grass or weeds should be trimmed regularly, brush and shrubs should be thinned out, and trash such as boards, logs, and other debris should be cleared away.

b. Get rid of other insects too! Most of the procedures outlined for mosquito control (screening, spraying, and clean up) can with little modification be designed for the control of other insects, and some other arthropods.

The number of scorpions, spiders, fleas, mites and ticks can be greatly reduced if the grass is trimmed, old boards and junk cleared away from the houses, and brush and undergrowth thinned out. These procedures eliminate the harborage for such arthropods as well as for any domestic or wild rodent which may serve as a host for fleas, mites and ticks. Fleas and ticks can be further controlled if the house is sprayed with 1% dieldrin or 5% DDT, the insecticide



and concentration usually applied for malaria control. Cats and dogs infested with ticks or fleas can be treated with 1-5% malathion dust. Dogs may be treated with 10% DDT dust but cats should never be treated with DDT or dieldrin.

Bed-bugs, kissing bugs, cockroaches and other household pests may be eliminated with some modification of the residual spraying performed for malaria control. DDT sprayed into cracks and crevices, near beds and upon upholstered furniture, as well as upon wall surface, will not control kissing bugs but will usually control bed-bugs. Dieldrin will kill both. Cockroaches also may not be affected by DDT but if some other insecticide, such as dieldrin, 2.5% chloradane, 1% lindane, 2% malathion or 0.5% diazion emulsion is sprayed into cracks, crevices and other hiding places they will be well controlled.



Adequate sanitation is the best answer for fly control. This sanitation involves the collection and disposal of animal and human wastes and garbage. Animal manure should be collected and either dried, buried, or mixed with compost. In some areas animal manure is used for fuel and therefore the sooner it is dried the less likely it is to become a fly breeding area. Good compost has a high degree of temperature and therefore fly larva cannot survive in it. Human wastes should be deposited in fly-tight excreta disposal units. Garbage should be collected, and buried or composted in order to reduce the available fly breeding areas.



Chemical control of flies is difficult since many of them have developed a biological resistance to such chemicals as DDT or dieldrin--or those most commonly used for malaria control. Those chemicals remaining (the organo-phosphorous group) do not have a long residual effect and therefore wall spraying would have to be repeated at frequent intervals in order to gain control.



The best personal protection against flies is a tightly screened house, special protection for food, and chemically impregnated cords to be hung vertically in 18" lengths from the ceiling. These cords have a variety of different trade names; however, most of them are cords which have been impregnated with diazinon, parathion, or ronnel.

There are three distinct kinds of human lice: the head louse, the body louse, and the pubic louse. All three can be controlled with either a 10% DDT dust or 1% lindane dust. Lindane is used in those geographical areas where lice, particularly the body louse, are biologically resistant to DDT.

For head lice, apply the powder (contained in your medical kit) lightly to the hair and rub in with the fingertips. Do not wash the hair for at least 24 hours. Since the eggs are not killed by the insecticides, second and third applications should be made at weekly intervals for full effectiveness.

For the body louse, dust the entire inner surface of underwear and of any other clothing worn next to the skin, including the shirt. Dust along the seams of the outer garments. Rub the treated clothing lightly to spread the powder. About 1 ounce of insecticide per person is required. If clothing cannot conveniently be removed for making application, unbutton the shirt and trousers and dust the powder liberally on the inside of underwear or other garments next to the skin. Then pat the clothes with the hands to insure even distribution of the powder. Since extra clothing and bedding may serve as a source of reinfestation, these items should also be dusted. Eggs of lice are not affected by DDT, but the young lice are killed soon after hatching. Lice exposed to DDT can be expected to begin dying in 6 hours, with complete mortality occurring after 20 hours of exposure.

For crab lice, apply the powder (insect dusting in your medical kit) to all regions of the body having a moderate to heavy growth of hair. Thorough application is important. Do not bathe for at least 24 hours. One or two repeat treatments at 10-day intervals may be necessary.

*still
eggs as they are hatched*

C. DISEASES TRANSMITTED BY CONTACT WITH OTHER PEOPLE AND ALSO THROUGH THE AIR



1. How are they acquired?

There are several other important ways in which diseases are acquired. One is by means of contact and another

is by inhaling respiratory discharges from infected persons (air-borne infection).

For our purpose, contact diseases can be described as those diseases which can be acquired through contact of the scalp, skin, eyes and sex organs (i.e., the body surfaces) with infectious material. This infectious material may be of human, soil or animal origin and contains infective agents (either bacteria, viruses or fungi). They enter the body through previously existing wounds or wounds inflicted by the contaminated article, establish themselves on the mucous membranes of the genital tract or eyelid, or actually penetrate the skin.

The respiratory or air-borne infections are sometimes also referred to as contact infections. They are primarily acquired by breathing in tiny particles of fluid called droplets which have come from the mouth, throat and lungs of an infected person. At times they may be acquired from breathing in dust which has been contaminated with droplets or other infectious material from infected persons. Infectious material such as droplets or dust contains infective agents which establish themselves in membranes of the respiratory tract.



2. Some local conditions may contribute to the spread of contact and respiratory diseases.

The contact and respiratory diseases thrive best under certain conditions. This is due to one or any combination of the following factors:

- a. Overcrowding, and hence ready contact between the infective and susceptible persons.

b. Poverty and social maladjustment, especially in the urbanized areas subject to the impact of modern civilization, and hence conditions which promote wider venereal contacts.

c. Poor nutrition and concurrent infection with other diseases, and hence a lowering of natural resistance to disease in general.

d. Scanty clothing, and hence the exposure of a large skin area to infection.

e. Personal hygiene which does not consider the possibility of the spread of disease.

f. An environment which is contaminated in the air and on the ground.

g. A tropical climate favorable for the survival of disease organisms.

3. Diseases resulting from such conditions.

a. Venereal Diseases. Diseases which are spread by sexual intercourse are called venereal diseases. Their route is person to person; their passage is direct, and their presence is frequently unnoticed until they have made themselves "at home." No diseases are so essentially social as venereal diseases and for this reason some mention has to be made of social patterns in developing countries before these diseases can be fully discussed.

There have been many erroneous assumptions made about the sexual habits of people living in some areas. In some places women live a very protected life, scarcely seen by any man except their husbands. On the other hand, in other areas what may appear on the surface as "loose moral habits" are actually as socially regulated as our own. The

parties involved are morally responsible for the consequences of all acts, and there are strong rules of moral obligations and patterns of living. An "indiscretion" or "accident" in society, whether it be co-habitation with someone or actual pregnancy, usually leads to severe consequences. The local population may not understand why the responsible parties do not assume their obligations and such "indiscretions" are not "hushed up" or forgiven. It may eventually lead to violence or expulsion from their society. Accepted rules of behavior are necessary to any group of people in order for them to exist as a society. Often these characteristics are not so evident in those who have moved or been transplanted to an entirely different environment such as a city—but one thing you can depend upon is that all societies have strict rules of conduct. Knowledge of local custom is important. In some areas, even such innocent actions as acceptance of a woman as a dancing partner may have greater implications.



In some areas the social upheaval may be so great, especially around the larger cities, that high percentages of the population may have venereal disease.

The two most common venereal diseases are syphilis and gonorrhoea. Both are serious communicable diseases. A person gets syphilis or gonorrhoea by having sexual intercourse with someone who has the disease. In very rare instances syphilis may be spread by kissing. The disease germs

which cause syphilis and gonorrhoea are very fragile. They can live only a few seconds outside the body and, therefore, there is little danger of catching either syphilis or gonorrhoea from toilets, doorknobs, drinking cups, or eating utensils.

Syphilis is caused by an organism called a spirochete. The first sign of syphilis is usually the appearance of a painless sore called a chancre. ^{for week.} The chancre most commonly shows up 21 to 90 days after exposure to an infected person. It will look like a pimple, a blister, or an open sore. The chancre will go away even if the person doesn't get treatment, and this leads many to believe the initial pimple was unimportant. Other signs of syphilis which may appear either before or after the chancre goes away include a rash which may cover any part of the body, fever, sore throat, and splitting headaches. After these signs disappear no other symptoms may show up for a long time, perhaps 10 to 25 years later. Syphilis untreated may lead to mental illness, blindness or other major disorders.



Gonorrhoea is caused by a bacterium called the gonococcus. Many people believe this disease is no more serious than a bad cold. This is not true. Gonorrhoea may cause sterility, arthritis and even blindness. Prompt and proper treatment is important to prevent serious body damage.

The signs of gonorrhoea will usually appear in 3 to 5 days after exposure to an infected person. Common

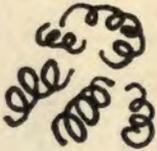
signs are a pus discharge from the sex organs and a painful, burning sensation during urination.

Because of severe pain, a man who is infected with gonorrhoea will usually seek medical attention. The signs of gonorrhoea in a woman are more difficult to detect. Women rarely have a burning sensation during urination, and any pus discharge often goes unnoticed.

Syphilis and gonorrhoea can only be detected and cured by a competent physician. Prompt treatment is important and effective. There are areas of the world where the causative organisms have become resistant to the usual treatment. Self treatment or quacks who advertise as specialists are dangerous and incompetent.

b. Skin Problems.

(1) Ringworm is a term used to describe infections caused by fungi which penetrate the superficial layers of the skin. There are three principal types of ringworm—ringworm of the scalp, ringworm of the body and ringworm of the feet. Ringworm of the scalp appears as round whitish patches on the head which eventually become denuded of hair. Ringworm of the body can be of two principal types—that which can occur on any part of the body and that which is confined to the arm-pit, groin or anal regions. The type which can occur on any part of the body may appear as round, raised and reddish patches or as concentric tissue-paper-like



scales. The type confined to the arm-pits, groin or anal region is more common and is known as either Jock Itch or Dhobie Itch. This itch causes an elevated reddish or reddish-brown area which progressively extends out from the crotch or other site of original infection.

Ringworm of the feet is commonly known as Athlete's Foot. The fungi which cause this disease usually invade the toe webs and soles of the feet.

There are a variety of clinical manifestations for this disease ranging from a mere "crack" between the toes to a condition in which the entire sole of the foot is undermined with pus producing sores. This latter condition is very painful and can be accompanied by fever and other generalized reactions. At times the hands may even be affected.

The important things to remember about ringworm are as follows:

(a) All infections that you have, whether Athlete's Foot, Dhobie Itch, etc., should be cleared up before going overseas. A warm moist tropical climate often causes relatively innocuous infections to flare up and become serious.

(b) Ringworm infections are not easy to contract. Most cases of scalp and body ringworm (other than Jock Itch) occur in children, rather than adults. People who associate with ringworm infected dogs and cats are the ones most likely to become infected. Good habits of personal hygiene and avoidance of ringworm infected animals give good protection against body ringworm.



*must
contagious
They are always present.
Keep dry, barefoot sandals
be open in house.*

(c) Factors which contribute to an infection with "Jock Itch" are perspiration, irritation from clothing and friction resulting from obesity. For "Athlete's Foot", ill fitting shoes, unclean socks, and exposure of the naked feet to floors, showers, and locker rooms are important factors.

(d) Frequent bathing will aid in avoiding fungus infections.

(2) Scabies (Seven Year Itch) is a contact disease caused by a mite. Apparently touching or shaking the hand of infected people is the primary method of transmission. This mite burrows into the skin and deposits eggs. These eggs hatch to produce larvae which develop into the adult stage within the human skin. Generation after generation of mites can be produced without the mites ever leaving the human host. Mites usually locate in the thin-skinned places on the body, particularly between the fingers and along the creases of the wrist. To a limited extent infections may be obtained from undergarments or soiled sheets which have been freshly contaminated by infected persons.



The first symptom of scabies is itching, especially during the night, followed by a swelling which is induced by your scratching of the infected area.

(3) Take care of all wounds or breaks in the skin!

Wound infections can occur more frequently and be of greater importance in tropical areas than in temperate areas. In fact, some of the major tropical diseases, such as yaws, tropical ulcer and madura foot,

develop primarily as a result of wound infection. In addition to these more noticeable tropical diseases there is also a greater prevalence of those infections common to both temperate and tropical zones (i.e., boils, carbuncles, blood poisoning, tetanus, etc.).



Germs can enter the body through little puncture wounds as well as through large wounds. They can enter through insect bites, particularly those which have been scratched; abrasions, made by rubbing or scraping, and a break in the skin permits the entrance of bacteria. Predisposing factors for wounds or wound infections are (1) wearing of scanty clothing, (2) going barefoot, (3) dirtiness of clothing and skin, and (4) low natural resistance resulting from malnutrition or debilitating disease.

Pimples, boils and carbuncles are caused by germs that enter from the skin surface. Any area of the skin which is frequently rubbed or irritated is a good site for germs to collect. The back of the neck, the armpits and the area around the buttocks are frequent sites of boils. They may occur on the face, arms, legs, and ears. Boils around the nose, lips and eyes are dangerous because the blood vessels from those areas drain toward the brain and might carry infection to it. Cleanliness of person and clothing is the best prevention of boils. Do not squeeze a pimple, boil,



Local for ~~boil~~
Local Infections
of any type.

or carbuncle. Do not prick it with a pin. This would breakdown the protective wall around the infection and allow its spread. If it is small, leave it alone. Use a sterile dressing, or the cleanest material available, to cover the boil if it is draining. Pimples, boils and carbuncles can develop into more serious infections such as blood poisoning and therefore they should be promptly and properly cared for when they occur.



Tropical Ulcer and Desert Sore are names which describe ulcers of the skin caused by bacteria. They may differ from boils and carbuncles in that once the peak-like elevation has ruptured a shallow or deep ulcer is revealed which does not heal immediately but usually increases in size. Once these ulcers have healed then a very noticeable scar is left. Many people in developing areas have such round scars, especially on the legs. Dietary deficiency, dirtiness of the skin, and close contact with infected people are predisposing factors for these diseases. These ulcers usually develop at the site of insect bites, abrasions, cuts or lacerations of the skin and therefore prompt attention to such wounds is indicated.

Yaws is a disease caused by a spirochete which enters the skin through a minute abrasion or wound. It is contracted through direct contact with an infected person. Its initial lesions occur predominantly

in childhood. It is spread largely within the family through the use of common towels, bedding, etc. The disease begins with a single sore followed later by a number of sores which break out all over the body, especially on the face and limbs. The sores will heal in several months but later on the disease may break out again in the skin and bones. This disease is widespread, particularly in the most rural populations in the tropics.

Because you maintain standards of personal cleanliness yaws will be of little concern to you.

Tetanus and Madura foot are two infections derived from bacteria and fungi which occupy the soil. Tetanus (lock jaw) is caused by a spore-forming bacterium from the soil which usually enters the skin and establishes itself through some puncture wound made by an object which has been contaminated with soil containing tetanus spores. Please note that objects other than a rusty nail can be contaminated with tetanus spores. Tetanus organisms grow in the wound and produce toxins which affect the nervous system. The usual symptoms are painful contractions of the face and neck muscles (lock jaw) as well as the muscles of the trunk and limbs. The best protection against tetanus is to receive a "booster" vaccination of tetanus toxoid immediately after a deep puncture wound. This will provide



sufficient protection if you have been vaccinated within five years.

Madura foot is a disease caused by certain fungi from the soil which enter the foot through a wound such as that produced by a thorn, splinter, etc. Once the fungi are established in the tissue, the foot gradually swells and the skin breaks down at different points to discharge fluid being drained from deep ulcers. The foot may swell to two or three times its normal size. The best way to avoid this infection is not to go barefooted.



Leprosy is a skin contact bacterial disease which has received considerable recognition throughout the world as an infection which produces gross deformities. Despite its fearsome reputation, it is probably one of the infections which will have the least significance to you. There is little possibility for you to contract the infection through your normal daily contacts. The disease is mainly transmitted through close and prolonged association with leprous patients. It is more frequent in persons exposed to such contact in infancy and early childhood.

There are two forms of leprosy--one type appears as pale patches on the skin which have rough dry surfaces and no feeling if gently touched. The other type causes thickening of the skin and raised lumps

called nodules. The latter type is more infectious than the former.



Smallpox is a highly infectious viral disease which, although contracted through the skin, produces a very serious generalized infection. It is transmitted by direct contact with a patient or patients' belongings, such as his clothing, bed linen and the articles from which he takes food and drink. The disease begins with a high fever, headache and muscular pains. After these initial symptoms, many blisters break out on the skin. These blisters fill with pus and eventually rupture. A crust then forms over the blister and healing occurs. Wherever sweat glands are injured by sores, a deep scar occurs. It is these scars which give a person's face that "pitted" appearance so typical of recovery from smallpox. Fortunately, the smallpox vaccine that you have received gives good protection against smallpox. In the presence of endemic or epidemic occurrence of smallpox in the area in which you live, vaccination should be repeated every 6 months.

c. Contact Diseases of the Eye.

In developing countries, particularly those in which people do not have a scientific knowledge of how disease germs spread, one will encounter many people with eye diseases. These diseases may be similar to a simple "pink eye" such as you would experience at home. They may be

serious complications of bacterial conjunctivitis or they may be trachoma, a disease often leading to blindness. The common "pink eye" or "stye" is a bacterial infection of the eye which can be brought about by rubbing organisms into the eye, or at times by contaminated eye-gnats or flies that like to rest near the moist mucous membranes of the eye. Maintain your standards of hygiene. Seek medical advice if necessary. These precautions should permit you to avoid problems. In areas where people use common towels and wash-rags, bacterial infections of the eye are much more prevalent and serious. It is not uncommon to see a child with pus literally streaming from its eyes.



Trachoma. Most blindness among these people is caused by a viral disease called trachoma. The trachoma virus is transmitted via contaminated hands, towels and wash-rags to the membrane lining the eyelid. Here it establishes itself, causing the eyelids to become red and rough and at times grossly deformed. Eventually the transparent part of the eyeball (cornea) may become infected and after several years a scar will form over the cornea through which the person cannot see, thus becoming blind. Fortunately, this disease is not readily acquired and therefore good standards of hygiene will almost exclude the possibility of your becoming infected.

d. Contact Diseases of the Respiratory System.

Diseases of the respiratory system are primarily

acquired by breathing in tiny particles of fluid called droplets which have come from the mouth, throat and lungs of an infected person. The infective agents passed by droplets are viruses and bacteria, which may establish themselves in the nose and throat or lungs.



Take aspirin only
to eliminate pain
not fever. Fever
works for you.
Cause of psych.
stress -

The most frequent cause of respiratory disease is the common cold. The symptoms of a common cold are many --a cough, sore throat, runny nose, watery eyes, and at times a fever, laryngitis and muscle aches and pain. The cough is usually dry and non-productive and there should be no pussy material in the sputum which might be coughed up.

Influenza is a viral disease which may spread in epidemic waves across the world. The symptoms for influenza are similar to those for the common cold with the exception that muscle ache, eye-ache, and fever are much more frequent for influenza than they are for the common cold. Antibiotics should not be used for the common cold and uncomplicated influenza. Rest and aspirin will relieve any fever and general symptoms but will not shorten the illness.

Another disease of the upper respiratory tract (nose and throat) which is more important than the common cold or influenza is strep throat. This disease is caused by bacteria called streptococci, and hence the name strep throat. The symptoms of this disease are usually a sore throat with difficulty perhaps in swallowing because of the pain, high fever, hacking cough, nausea and vomiting. If

one can look in the mirror or have someone look in his throat, the tonsils and the back of the throat will usually be bright red and swollen appearing with patches of whitish material on the tonsils or on the back of the throat. Not only will complicating infections such as ear infections and severe skin infections sometimes arise from strep throat, but also it is the precursor of rheumatic fever, rheumatic fever heart disease, and nephritis.

You should see a physician if you suspect that you have strep throat.

Pneumonia is a general term for an infection of the lung and is caused by viruses as well as certain bacteria. A predisposing factor for this disease is severe physical stress at the time an upper respiratory tract infection might be present. Influenza is sometimes complicated by pneumonia. There are many symptoms of pneumonia. A characteristic and fairly constant one will be a cough that is productive of pussy appearing sputum. There is often some chest pain and fever. In untreated pneumonia the temperature may rise considerably and the sputum become rusty colored due to the presence of blood. Untreated pneumonia can be very serious; and therefore you should see a physician as soon as possible whenever: (1) temperature is high; (2) rusty or blood-flecked sputum occurs; or (3) when symptoms of a cold or flu last over a week.



Tuberculosis is at the present time the most

important bacterial disease in the world. There are no areas of the world that are free of tuberculosis. The amount of tuberculosis in any area is almost in direct relationship to the economic status of the area. The lower the socio-economic level, the higher is the amount of tuberculosis. For these reasons it is important to have some understanding of tuberculosis, especially those matters pertaining to infection and development of clinical disease and how they are determined.

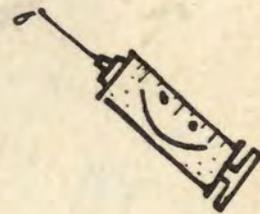


Tuberculosis is spread from one person to another by droplet infection. The particles that are coughed up by a person with active tuberculosis may be inhaled by others and occasionally will lodge in the lung, setting up a small focus of disease. At this point there are seldom clinical manifestations of the disease. The organisms may remain dormant in the body for many months or years or for a lifetime. Occasionally, the initial focus of infection is not contained by the body defenses and tuberculosis can progress rapidly. The more frequent course is for the infection to remain dormant and then later break out and cause clinical disease. When a person has an infection only—that is, this dormant focus—he is not contagious. The skin test (tuberculin test) shows whether a person has been infected with tuberculosis. But it is only when there is active clinical disease that the disease can be transmitted.

Tuberculosis may also be spread by milk from

infected cattle. Drinking milk which has been well boiled will protect you from this means of infection.

The vaccine--BCG--is the only specific preventive measure that now exists. This vaccine is not as reliable as other vaccines. It can only be given to those people who are not at the time infected, i.e., those who are tuberculin negative. It will not prevent infection, but it offers some protection to a person if he does become infected. The disease that might develop after infection is modified so that it is not as fulminant and, therefore, not as great a threat to life. BCG is usually given to those people who are exposed to heavy risk of infection. If it seems desirable, the Peace Corps physician will give you the opportunity to have a BCG vaccination.



Symptoms of tuberculosis may be only slight--weight loss, fatigue, afternoon fever, and cough. Such symptoms require that you contact your physician. Blood in the sputum means that you must get immediate attention. The classical symptoms of tuberculosis are cough, raising of sputum, fever, night sweats, pulmonary bleeding, and weight loss. However, some of these symptoms may never be noted. Others become apparent only in advanced stages of the disease. Avoid close contact with people suspected of having tuberculosis.

It can be emphasized that modern treatment for tuberculosis is excellent. Modern treatment with drugs will

arrest tuberculosis in a relatively short period of time.

4. Obvious disease not the problem!

Such diseases as ringworm, tropical ulcers, desert sores, leprosy, madura foot, yaws, acute conjunctivitis, etc., are all readily noticeable, especially to a new-comer who has just arrived in the tropics. This fearsome scene may cause him to look around and decide that this is no place for him and immediately apply for a transfer. This individual fails to appreciate the true significance of tropical diseases as they relate to him. He is in far greater danger from the "hidden" infections such as malaria, dysentery, etc., than he is from the "obvious" ones such as those cited above. These obvious infections of the skin and eyes are of relatively little significance to a Peace Corps Volunteer who maintains his habits of dress, living, and personal hygiene. They are diseases whose existence depends upon overcrowding, and hence ready contact between infected and noninfected individuals; scanty clothing and no shoes; and an abundance of filth, a lot of which is on the body. Please note that the local people who most closely resemble you in habits of dress and personal hygiene are relatively free of these infections.



a. Habits of dress are important in the prevention of skin diseases. The more skin surface exposed to wind, dirt, sun, chance scratches, and insect bites, the greater the possibilities of contracting certain skin diseases. During World War II, the incidence of desert sore in British

troops was related to short pants, and the resulting exposure of the thigh, knee and calf of the leg to the elements.

To prevent chafing and allow for evaporation and absorption of sweat, wear lightweight, loose, porous clothing. Shoes are a very important item of clothing and should be worn at all times. Some people prefer a shoe which has a canvas hightop coming to just above the ankle. The sole should be of hard rubber with sufficient deep treds to prevent slipping. An oxford-type shoe with leather or crepe soles is the least desirable, since invariably you will lose a shoe in the mud or slip off some slimy log placed over a stream as a bridge. Perhaps you will prefer sandals, as many people do for comfort in the tropics. Socks made of absorbent material, such as cotton or wool, can be worn to absorb sweat and prevent friction of the foot against the shoe. Most foot problems, particularly in women, result from friction, which socks can prevent.



In the sunny tropics you will find local people using suitable headgear which gives good protection. You may want to wear something similar.

b. Washing clothes may be left up to a local wash woman, who may or may not use soap and who may believe in beating clothes with a wooden paddle in order to force dirt out. Beating clothes will break clothing fibers and therefore shorten the life of the garment. Furthermore, beating without the use of soap does not produce a clean product.



Use wash board and soap. The water should be of the same quality as that used for bathing. Clothing should not be dried by spreading it on the ground or hanging it over bushes. This may not be satisfactory because of ground pollution and the presence of biting insects such as mites, chiggers, etc., in the bushes or grass.



c. Bathing is a matter which may require adaptation to local procedures. Not all localities will have a piped water supply which will enable the construction of a modern shower. Do not bathe in the river. It may seem safe from the standpoint of the water flowing by, but will expose a person to hookworm areas on the banks of the stream. Another possibility which must be considered is that of puncture wounds from thorns, splinters, as well as other objects contaminated with tetanus spores and/or fungi, which would produce fungal tumors such as madura foot.

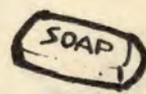
For bathing, most of the more educated people will be using a system referred to in the Far East as the "Shanghai dar" method. This procedure consists of drawing up river water and placing it in large pottery jars. The jars are then stored long enough for the mud to settle out of the water. Once this has occurred, then the water is ready for use. For bathing, the water is scooped out with a ladle, tin can, or similar device and thrown on the parts of the body to be washed. This system is satisfactory provided that you allow the water to stand for about 48 hours before



use. This length of time will exclude the possibility of schistosomiasis infection. For the use of this system, select a bathing area which is well drained either within the house or outside of it. Construct a good shower rack which can be scrubbed daily and dried in the sun in order to avoid fungi and molds. You can now use the jar ladle and shower rack for bathing.

Fancier rigs may be constructed if desired. A bucket with a shower head on the bottom can be rigged with pulleys in such a way as to duplicate a modern shower. Bathing water does not have to be the same quality as drinking water, i.e., boiling or chlorination is not needed. Sometimes a little alum helps to flocculate out the mud.

Bathing should be done once a day. Use your own bar of soap, towel, and washrag. Hexachlorophene soap is to be preferred because it will result in a lower bacterial count on the skin and cut down on infections. Clean wounds and apply the appropriate dressings. The itching due to insect bites can be relieved by a drop of ammonia or caladryl. Change clothing frequently.



D. DISEASES OF ANIMALS TO MAN.

Animals have many diseases which are transmissible to man. These diseases are acquired by man through: bite wounds (rabies), scratch wounds (cat scratch fever), direct contact (ringworm), bathing in water polluted by animal urine (leptospirosis),

inhalation of dust contaminated by infected animals (q fever), ingestion of partially cooked meat (tapeworm) and biting insects which have fed on infected animals (plague and typhus). With the exception of rabies, the diseases of this type which will be most important to Peace Corps Volunteers have already been discussed in previous sections of the manual. If the average Peace Corps Volunteer has little to do with domestic cattle, cooks his meat thoroughly, and treats other food, such as milk, water, etc., as recommended, then he has little to worry about except bite wounds which may be inflicted by dogs, cats, or other animals.

Many of the native villages have dogs that act as scavengers, watchdogs, or in some cases as a food supply. Most of these animals are poorly cared for, engage in many fights, are disease ridden, and therefore are prime suspects for rabies. They are not pets and should be avoided.



Rabies (hydrophobia) is a fatal disease caused by a virus which attacks the central nervous system. This virus appears in the saliva of animals sick from rabies. It gets into the human system through a wound, either a wound which is produced when the animal bites you or one already existing which is licked by the sick animal.

Rabies is world-wide in distribution and, therefore, every community is suspect of rabies. Dogs which show signs of being sick should be destroyed, particularly if they are irritable, restless, extremely vicious, sleepy, and melancholic, and develop signs of paralysis in the muscles of the jaw, throat, legs and

have a wobbly gait. The best prevention against rabies is vaccination of all well animals and destruction of sick animals. Remember that cats, cattle, and other animals such as bats, wolves, jackals, etc., can have rabies and, therefore, any animal that appears sick should be strictly avoided.



If you are bitten by a dog or other animal, the following procedures are recommended:

First Immediately clean out the wound with soap or a detergent. After this is accomplished, ordinary antiseptics and a dressing can be applied.

Second Tie up the animal that has bitten you. This animal must be observed for at least 10 days in order to help the physician decide whether vaccination is necessary.

Third See a physician immediately for further treatment and instructions.

Barriers to H. Educ. -

- 1). Other interests
- 2). Language
- 3). Geo. isolation
- 4). Capacity of econ. to take action - buy food or drugs
- 5). Willingness to co-op. & people outside of village
- 6). Health as a ^{relative} value ~~to~~ other culture values

Methods to Teach -

- 1). Get kids to give their opinions - reports -

YOU AND COMMUNITY HEALTH

*can request list on
community health - have
books + suggestions that
have worked - use for
community action.*

In the preceding sections of this manual we have emphasized the personal measures of protection that you must take against specific diseases. The way you live, your actions, your behavior in different circumstances, may well be a model of health behavior to the people with whom you will be living. Your example of good health practices will be one of your most important contributions overseas.

Community health involves those measures of hygiene that the people as a whole undertake to preserve the health of everyone in the community. These measures necessitate an understanding of the problem and a willingness to take action in their own behalf on the part of the people. In a U.S. community, it may consist of school education for personal hygiene, a "board of health" composed of physicians or public spirited citizens who promote organized efforts for the elimination of some health hazard such as mosquito breeding areas, garbage, refuse, etc., or it may be an established department of health composed of professional employees charged with maintaining health standards. Historically speaking, community health in the U.S. started because of public recognition of a disease threat, developed through stages of a "board of health" which organized citizenry for control of the environment, and spent its first years under a professional department of health dealing with sanitation and maternal and child



health. In other words, all of the public health facilities of today did not develop overnight. They evolved on the basis of what the people felt was needed at a particular time.



In your role in the Peace Corps you will probably not be made responsible for community health. This is normally the responsibility of an established department of health which may have an office in your community or district. However, in your role as a school teacher, community development worker, etc., you will be in a position to give valuable assistance to community health programs, especially when it relates to educational activities and community organization.

You can be a valuable resource in programs involving understanding and participation of the people themselves in the solution of their own health problems. The health problems afflicting much of the world are communicable disease and problems resulting from a lack of sanitation. Little can be done about these until the people, themselves, have an appreciation of the underlying

causes of the problems and a willingness to take action on a personal basis for themselves.

*- make people feel that they are initiating the action!
work with leaders - school, town + religious.*

Problems in Community Health

1. The people that you will work with may have an understanding of medicine and public health which is entirely different from yours. It was not so many years ago that many people placed their entire reliance for medical treatment and medical care on local methods of superstition and magic. The introduction

of western medicine was not easy. However, over the years, many of the people came to recognize some value in modern treatment. People still rely, to some degree, on superstition and magic but will accept modern medicine, especially those aspects of treatment which are dramatic or easily demonstrable with some rapid results, such as an injection for a conspicuous yaws lesion.

Preventive medicine, or the art and science of preventing disease, has been difficult to accomplish in some parts of the world. There have been a number of approaches to preventive medicine. One has been the so-called "sugar-coated pill" approach. This is where public health personnel actually administer drugs and care for the sick in the hopes that by so doing they will be able to introduce through education, many of the concepts of preventive medicine. Other approaches recall the history of public health in the U.S. Public health personnel have concentrated on one disease, a disease which was readily recognized by all people as an important problem, and have clearly shown what can be done with preventive medicine (malaria is an example). Another example has been the emphasis on maternal and child health. No mother or father likes to see their children die, and many young children die where communicable or sanitation diseases prevail. Fifty per cent or more of all deaths may occur in children under five. Therefore, mothers and infants have been a particularly important point of emphasis in beginning public health efforts. What parent would not wish to protect his child from disease if an understanding of how this is possible is introduced to him?





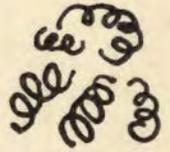
Villagers in many parts of the world have been encouraged to take action in the installation of latrines, improvement of water supply and control of malaria. Through village committees, action programs are initiated in which the people participate. *Imp!* These programs have been similar to those in the United States in which people take responsibility for solving their own health problems.

There have been many other approaches tried with varying degrees of success. One which deserves mention is the "demonstration method." This is where a model public health program is set up in one community as an example for other communities. Some of these have been a success, however, others have "died on the vine", so to speak, mainly because the financial tax resources needed to start and maintain such a venture were either not available or not forthcoming. Many such approaches have ignored the important aspect of involving local people in planning for, and in utilizing the service. If involved early, they are more likely to appreciate and support the service at the conclusion of a demonstration.



2. One question which may occur at this point is, "If drugs can cure disease then why not forget preventive medicine and launch a tremendous drug treatment program?" In most instances this approach has failed due to a number of problems. In handling diseases which would be the most amenable to this type of approach (i.e., those in which man is the only reservoir and in which the disease is only transmitted from man to man by some

contact, such as sexual intercourse, etc.), there have been several problems. The first is diagnosis. Many diagnostic procedures are complicated requiring many physicians and extensive laboratory arrangements. And the second is that even if you were going to treat everyone regardless of cost or diagnosis, you would rarely succeed. Even if you could convince everyone in the community to take treatment, some infected person from the outside would come in and the chain of transmission would start all over again. If you were able to treat all communities no matter how remote and thus remove all reservoirs, then there is always the possibility that the bug itself will find a way out of extinction (witness, the biological resistance developed by malaria organisms to certain anti-malarial drugs).



For most of the serious diseases (i.e., those transmitted via animals, water, food insects, soil, etc.), we can't even theorize. Treatment of all humans would hardly effect the organisms in other animal reservoirs, water, food, insects and soil. No sooner would a person be cured than he would come down again with the disease and repeated treatments would be almost prohibitive.

It is for these reasons that we emphasize preventive medicine in our approach to health problems.

Health Problems Differ

Sometimes the best intentions do not produce the desired results. This can best be illustrated by a simple little story about the "Thomasites". The "Thomasites" were one of the most



famous and useful group of Americans ever to engage in overseas work. They were the school teachers who at the turn of the century left for the Philippines aboard the U.S. Army Transport Thomas. In the Philippines they taught throughout the country, not only in the principal cities but also in the rural barrios. Much of the fine work they did, had to do with teaching personal hygiene to many Filipinos who even today remember the lessons that they were taught. One of the things taught in personal hygiene was malaria control. According to the teachers' experience, malaria was a disease transmitted by a mosquito which deposited its eggs in a low swampy area. Therefore, the students were taught that malaria resulted from swamps and therefore swamps should be drained if malaria was to be reduced. Malaria mosquitos bred in swamps in the United States and therefore why not the Philippines! Unfortunately, the particular mosquito in the Philippines which carries malaria does not go near swamps. It sticks to the highland areas and deposits its eggs in pools or emerging vegetation adjacent to clear running streams!

Perhaps it is unfair to pick on this one minor point out of much good work. However, it illustrates a good point. People should not only rely on their own experience or their particular library but should seek advice from those whose business it is to know.

What Can You Do for Community Health?

In the preceding paragraphs we have attempted to show some

of the various approaches used for community health, the reasons why preventive medicine deserves the greater emphasis, and some of the mistakes a person can make if he does not consult the appropriate authorities. You may have the most important public health tools in your hand, (1) education, (2) community development and (3) your example in personal habits.

MEDICAL RESOURCES (The Third Line of Defense)

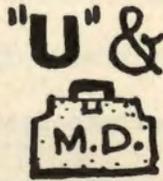
You are not expected to learn all aspects of medical treatment. You are, however, expected to know and understand the value of personal habits which provide a level of protection to you. These habits are far more important in tropical parts of the world than they are here at home. You are expected, also, to carry out for yourself the simple procedures of treatment which you would normally carry out here at home.

You can learn to use effectively the material provided to you in your medical kit. Also, you can learn to recognize the disease problems in the part of the world in which you will be living and, in particular, learn to recognize those symptoms which may indicate serious disease. The Peace Corps physician will visit you periodically, and help you in the identification of problems in your area. He will assist you in solving environmental problems. He will give you information regarding suitable local medical resources. He will give you some instruction regarding the identification of serious symptoms. You have an important part in using your Peace Corps physician effectively.



You must know when to call him or local medical resources.

Much of what is contained in this manual is new and unfamiliar. You may wish to take it with you and use it for reference in an early identification of the problems which will confront you. You may use it as a basis for information for asking your Peace Corps physician questions in identifying your own health problems. You Can Learn to Live Safely in All Parts of The World. Remember, safeguarding your health is your personal responsibility. Your health is fundamental to your effectiveness in the Peace Corps.



GENERAL GUIDE LINES FOR EATING IN UNFAMILIAR CIRCUMSTANCES AND PLACES

A. INTRODUCTION

Don't be too assured and don't be too cynical about being able to subsist on local food supplies.

Be advised that you can, with the proper selection of local foods, have the basis of an adequate diet. This is true - regardless of the place of your assignment - if a few simple guide rules are followed.

Eat the foods of the country. Select a variety of foods that will provide an adequate diet. Many of the local people do not eat an adequate diet because of taboos -- ritual or acquired -- in a quest for status. Examples of this are fish taboos and egg taboos, a demand for white polished rice (for prestige), with refusal of the more nutritious brown (unpolished) or enriched rice.

Local fermented sauces and condiments are good sources of nutrients. Usually they are acquired tastes. Cultivate them but do it slowly to work up a tolerance. Remember that in many parts of the U.S.A. buttermilk, roquefort dressing, Italian meatballs, beer, oysters on the half shell, and ripe olives are acquired tastes. Once appreciated, they enhance the flavor of food and become highly desired attributes to food enjoyment.

Food has three big jobs:

1. Provides fuels for energy/calories. If you use more fuel than you take in, you cannibalize your own tissue. This is all right for an emergency, but it is not a good program to have output exceed input, for this can only lead to self-destruction -- physical and mental.

2. Provides material for the repair and maintenance of your body. This is required as a result of daily living with its stress, strains, and normal depreciation brought about by just living. (For the young and the injured, protein provides food for growth, and replacement of injured tissue.)

3. Provides the chemicals (or agents) that make possible the utilization of other chemicals found in foods. (Face it: Foods are but a combination of chemicals available in palatable form. The proper selection of foods can provide all the chemicals the human body needs to run properly.)

From A(Vitamin A) to Z(the mineral zinc) there is a long list of nutrients the body needs (all chemicals -- to be sure). Fortunately, to know a few basic principles can relieve you of the need to be a chemist or an expert in nutrition.

B. NUTRIENTS

1. Water. This is the No. 1 nutrient

Water is the No. 1 component of all animal tissue (including man's) and plant tissue.

Water is the No. 1 component of beverages such as tea, coffee, fruit juice, or just plain water.

Without water, animals (including man) cannot live. Neither can plants.

Without sufficient amounts (and thirst is no real criterion), man and other animals literally wilt, as does an unwatered plant. In man, insufficient water is manifested by loss of pep, loss of the feeling of well-being, and fatigue.

Water which is boiled for 3 to 5 minutes at sea level and properly protected while it cools, is safe. So is water treated with special chemicals. Tea and coffee from boiled water are safe. Water, contained in the fruits you squeeze and drink immediately is safe. So is the milk of a freshly opened coconut and the water of beer and wine. The water in the local ice cubes and non-carbonated beverages is a bad gamble and the water in locally manufactured carbonated beverages can be an awesome game of Russian roulette.

Drink a quart of beverage a day.

2. Protein. Protein is an essential nutrient. No living matter is without it. It is needed constantly for growth and repair of the human body.

Nutritionally speaking, there are two sources of protein - animals and plants. The flesh of animals, all kinds of fish and shellfish, poultry and game, milk and milk products, and eggs are rich animal sources of protein. Peas, beans, and nuts are rich and reliable plant sources of protein. Since nuts are generally

eaten dry, they take the lead as a protein source. Although dried peas and beans are highest in the dry state, their value on a weight basis is somewhat lessened when they are soaked and cooked -- thus yielding first place to nuts. The cereals are a highly important source of protein. The whole grain of cereals has a useful amount of protein. Most of the protein is in the outer layer (bran) and embryo. Cereal which is milled has portions of these areas removed with subsequent loss of protein. The more highly milled the cereal - the more is lost - as in the polishing of rice and milling of wheat to white flour. Use of undermilled or unpolished rice, and wheat products which have not been highly extracted, assures the needed protein.

Certain areas are vegetarian. This excludes fish and meats from the menu. A daily diet which includes the needed intake of protein and the other nutrients can be had by proper selection of a variety of foods of plant origin. If meats and fish are available, and if there are both animal and plant protein sources available, it is still necessary to make proper selection of foodstuffs to assure adequate nutrition. In addition it is essential that all meats, including poultry, game, etc., be cooked to the well done stage, unless meat inspection similar to that practiced in the U.S.A. is in effect.

Sources

Animal:

Buffalo, camel, cattle, goat, monkey, pig, sheep,
etc.

Fish and shellfish

Chicken, duck, game, etc.

Eggs

Milk and milk products

Organs - liver, kidney, etc.

Plant:

Pulses -

Dried beans and peas, soybeans, soybean flour, kidney beans, lima, navy, chickpeas, pinto beans, peabeans, dhall, gram, ling beans, angle beans, ladies fingers, kochange, tempe, tou-foo, etc.

Nuts and Oilseeds -

Peanuts, almonds, gingelly seed, etc.

Cereals -

Rice, millet, maize, barley, buckwheat, oatmeal

3. Fat and Carbohydrate. These are essentially energy foods. Fat is derived from meat and vegetable sources. Animal fats are the meat fats, butterfat and fish oils. Vegetable fats are extracted from oilseeds such as the peanut, palm seed, cottonseed, and the olive. Fats yield 9 calories to every gram and are highest in energy, as carbohydrates and protein yield only 4 calories to the gram.

Fats serve a special purpose beyond furnishing high energy per unit of weight. Certain of the fats furnish Vitamins A and D. In addition, fats furnish the fatty acids which are essential to living tissue.

All foods contain carbohydrate, with the possible exception of certain meats. High energy yielding foods are the carbohydrate foods (cereals, pulses, nuts, sugar and syrups, roots and tubers, fruits, candies and confections) and the foods containing fats (vegetable oils, oilseeds and nuts, milk and milk products, fish and meats).

The total amount of energy the body needs is governed by age, size and activity. If weight stays right for height, sex and body build, the fuel intake matches the output. If weight is gained, cut down on the high starchy foods (potatoes, roots, and tubers, bread, and sweet cakes), use fat sparingly and cut down on the sugars, syrups, and other sweets. Don't cut down on the so-called protective foods listed as sources of the essential nutrients.

4. Calcium. This mineral is the chief one found in bones and teeth. It is an important constituent of body fluids. In areas where dairying is highly developed, a milk drinking population gets calcium from milk and milk products. In areas where dairy sanitation is questionable, it is better to get calcium from the foods which have provided calcium to populations for centuries, and what milk is drunk should be boiled. In many areas water is high in calcium. Whole grain cereals, leafy vegetables, and the bones of small cooked fish are basic sources. Many of the local foods are processed or prepared in solutions containing lime which adds to them considerable calcium. Availability of canned and dried milk is increasing the source of

calcium on a world-wide basis. In using powdered milk be sure the mixing container is clean and use only boiled water for reconstitution.

5. Iron. This is a mineral of special importance to women. It is one of the essential materials for red blood cells. The body requires a constant source. Loss of blood increases the iron requirement. Although most of the iron taken into the body is derived from food, valuable amounts may be present in water used for cooking and drinking, and considerable amounts may come from the iron vessel in which curry is made. Excellent sources of iron are liver and kidney. All the dried fruits, the leafy vegetables, egg yolk, pulses, oilseeds and nuts and other vegetables, brown sugar and molasses, whole grain cereals are sources of iron.

6. Other Minerals. There are many (19) inorganic mineral substances which must come from food. The chances are in the amounts needed which are quite small; they create no problem. The two above - calcium and iron - are the ones that will be lacking if proper eating habits are not established.

7. Vitamins. There are at the present time nearly 20 vitamins believed to be essential to the proper functioning of the human body. By eating a variety of foods one can be fairly sure that he is getting the full assortment. Vitamin D is perhaps the one exception to this. Vitamins can be divided into two groups:

a. Vitamins that are fat soluble such as Vitamin A and Vitamin D.

b. Vitamins that are water soluble such as vitamins of the "B" family (thiamine, riboflavin, niacin) and Vitamin C.

Vitamin A. Vitamin A occurs in certain fats and oils and in the tissues of certain animals and animal products. The human body can convert the carotene substance of certain plants to Vitamin A. There are then three sources of Vitamin A.

(1) Vitamin A as it is found in animal tissue and products of animals (liver, cheese, egg yolk, butter, and whole milk).

(2) Vitamin A as it is found in oils such as red palm oil and fish liver oils.

(3) Vegetables and fruits which contain the carotene substance which the body converts to Vitamin A. Vegetables and plants in which the yellow-orange substance carotene is found are many and varied. Leafy green vegetables, yellow vegetables, green vegetables, and fruits are the sources.

Sources

Plant:

Red palm oil (very rich)	Avocado pears
Papaya	Potato greens
Tomatoes	Dandelion greens
Carrots	Mustard greens
Mangoes	Green cabbage
Yellow sweet potato	Brussel sprouts
Green and red pepper	Parsley
Peanuts	Spinach
Leeks	Gourd leaves
Lettuce	Radish leaves
Oranges	Green peas and beans

Animal:

Viscera of animals	Cheese made from full milk
Egg yolk	Butter
Liver and kidney	Fish liver oils
Milk - from all species	

Vitamin A is a fat soluble vitamin. This vitamin can be stored in the human liver. In many areas of the world populations show seasonal deficiencies during the non-growing seasons when vegetables and fruits are not available. To prevent such seasonal deficiencies eat plentifully of foods containing sources of this vitamin during the time of availability to build up sufficient reserves in the liver to maintain the body adequately during periods of nonavailability.

Vitamin D. Vitamin D comes largely from the effect of the sun's rays falling on the skin. For the most part this vitamin creates no dietary problem in areas where the climate does not dictate the wearing of heavy clothing, or where sunlight is not cut off by clouds, smoke, fog, or dust, or where living is done inside a building and window glass does not make the sun rays ineffective. Diet sources of this vitamin are chiefly aimed for the young. For the purpose of this manual it suffices to say that by the exercise of good judgement in exposure to the sun, adequate Vitamin D is available.

The Vitamin B Family. Three vitamins which compose this family are of particular dietary importance. These vitamins are all water soluble and are essential for proper body

functioning. There are very few foods which are outstandingly rich sources of the "B" vitamins. Through a varied diet the combined contributions will each day build up the supply which the body needs. Unlike Vitamin A none of the "B" vitamins can be stored away in time of plenty to be drawn on as needed. One way to be assured of maintaining a sure source every day is to eat brown rice and use only flour made from the whole grain. As was the case in protein sources, milling of grains and polishing of rice result in the loss of appreciable amounts of "B" vitamins as well as protein. Certain areas prepare foods in a manner to preserve the maximum amount of nutrients. "B" vitamins are water soluble. To conserve the vitamins and to assure the vitamins get into the stomach certain rules of preparation are essential if not already the custom of the area. For example, avoid the frequency of washing rice - water washes out the vitamins and minerals. Cook rice in as small amount of water as possible. If there is water left after the vegetables are done, the chances are this "pot liquor" has considerable vitamins and minerals in it. Do not waste it. Put it into soups or "dals" or into some form and eat it. Cook the vegetables only until done. The water soluble vitamins are destroyed by heat.

(1) Thiamine. The amount of this vitamin needed is dependent largely on the caloric intake from food sources other than fat. The higher the daily food

consumption, the more necessary it is that adequate sources of thiamine are eaten daily. As activity and food intake rise it can be expected that the proportion of carbohydrate intake to fat intake will increase. That is, more cereals and larger servings of rice and starchy foods will be eaten. Fortunately, rice if prepared as indicated above is an excellent source of thiamine. It is essential, however, that as for protein the beans, peas, nuts and oilseeds must form a substantial part of the daily meal planning to assure thiamine intake. Whenever eggs, pork or animal liver are available they should be eaten - even if available in very small amounts - for these items are excellent animal sources of thiamine.

(2) Riboflavin. This is a vitamin which it is essential to have daily. In areas where milk is available or milk products are in good supply, these sources provide the easiest way to assure an adequate daily intake. This is true for the milk of all animals. Where fresh milk and local milk products such as cheese, yogurt, and curds are either unavailable or unsafe, it becomes necessary to rely on other less concentrated food sources and, eat a varied diet. In this case, a varied diet, in which dried peas and beans, nuts and oilseeds, fruits, whole grain cereals, okra and other green podded vegetables are present as reliable source, is provided.

Beer is not a bad source of riboflavin. If any amounts of lean meats, kidney, liver, or eggs are available include them as they, too, are reliable sources of riboflavin.

(3) Niacin. Although this essential vitamin is chemically similar to nicotine, tobacco smoking does not supply the body with niacin. Follow the guidance given for getting riboflavin without reliance on milk and a diet adequate in niacin is assured.

Vitamin C. Daily consumption of this vitamin requires careful attention. Two basic facts make it easy for a diet to be insufficient in Vitamin C unless care is taken. The two facts are: Vitamin C is mainly found in fruits and vegetables which may be available in limited quantity at certain times of the year; and Vitamin C is destroyed by overcooking and by exposure to air. Don't overcook vegetables and don't grate or mince fruit unless it is eaten immediately. Fortunately, all fruits and green vegetables are good sources of Vitamin C. Other fresh vegetables are also sources - although less important unless large quantities are eaten. As cooking destroys Vitamin C it is advised that insofar as possible all fruits be eaten raw - bearing in mind that certain precautions before eating are essential, as for example washing in treated or boiled water, or peeling. (It is a good plan to eat only the fruits on which the skin is intact before peeling.) If the juice of the fruit is

extracted, it is essential that care be taken to be sure the container is clean and that the juice is consumed immediately or in a very short time after squeezing. In the green vegetables the Vitamin C content is highest in the spring and early summer. When vegetables begin to wilt, Vitamin C is quickly lost. It is necessary to cook all vegetables and not consume them raw or in salads. Accordingly, it is essential that in the cooking the principles of cooking in as short a time as possible and using as little water as possible be maintained. Such procedures aid in the retention of this water-soluble, heat-destroyed vitamin.

Sources

Fruits:

Citrus - limes, lemons, grapefruit, oranges	Banana
Guava	Apple
Pineapple	Melons
Papaya	Persimmon
Mango	Durian
	Etc.

Vegetables:

Leafy green	Cauliflower
Sprouted pulses (beans, etc.)	New potatoes
Brussel sprouts	Tomatoes
	Green plantain

C. THE FOOD GROUPS

After a discussion of nutrients, one is lead to conclude that foods with respect to nutrition fall into 9 groups.

1. Pulses - Dried peas and beans and dals
2. Oilseeds and nuts

3. Meat, fish, poultry
4. Cereals
5. Roots, tubers, and sugar
6. Green yellow or leafy green vegetables
7. Fruits
8. Milk and milk products
9. Fat and oils

D. FROM FOOD GROUPS TO THE ADEQUATE DIET

In the United States the daily food guide for adequate nutrition says:

Eat two or more servings of items from this group:

Meats - Beef, fish, eggs, lamb, veal, pork, poultry

Pulses - Dry beans, dry peas, nuts

Eat four or more servings:

Cereals - bread, oatmeal, farina, rice, noodles,
crackers

Eat four or more servings of items from this group:

Fruit - Green yellow, or leafy vegetables, potatoes

Drink 2 cups of milk or eat the equivalent in milk products.

THEN select other foods to complete the meal and provide additional calories and food values.

In some areas, the agricultural pattern and food habits will allow the following of that guide. In areas of the world where the agricultural pattern or food habits are different, a diet guide which will achieve the same end would be:

Eat one serving:

Pulses - Dry beans, dry peas, nuts and oilseeds
(Animal foods as available alone or as supplement)

Eat one serving:

Fruit - Citrus, guava, mango, banana, plantain,
durian, melon, etc.

Eat three servings of items from these groups:

Green leafy vegetables
Green or yellow vegetable (nonleafy)
Plus one serving of a root or tuber vegetable

Eat at least four servings of items from this group:

Cereals - Brown rice
Whole grain cereal products, millet, etc.

Eat for seasoning or flavor:

Palm oil or other fat

Then select sugars and other foods as desired to form a complete meal of sufficient calories and other food values.

Always make the dairy food guide the nucleus of meal planning.

In addition, remember canned milk, dry milk or boiled local milk gives an extra bonus.

E. FINALE - MARKET LIST FOR AN ADEQUATE DIET

	<u>Vegetarian</u> <u>Oz per day</u>	<u>Non Vegetarian</u> <u>Oz per day</u>
Cereals	16	16
Pulses	4	4
Green leafy vegetables	3	3
Green or yellow vegetables	3	3
Roots and tubers	4	4
Oils/fats	2	2
Sugar and syrups	2	2
Nuts and oilseeds	1	-
Meat or fish or poultry	-	2-3
Fruit (raw or cooked)	1 item	1 item

MEDICAL KIT

Item

PR. Unit

Polymixin 13 }
Neomycin }

1. Aspirin, 5 gr.....	50
2. AlumOH c mg trisil. tabs.....	25
3. Pyribenzamine tablets, 50 mg.....	25
4. Tyzine nose spray 15 ml.....	1
5. Sodium Sulfate ^{Sulfacetamide} eyedrops.....	1
6. Bacitracin ointment, 20 gm. tube.....	1
7. Caladryl lotion, 4 oz.....	1
8. Surgical soap, 3/4 oz. bar.....	1
9. Merthiolate, 1 oz. bottle.....	1
10. Zincundecate ointment, 2 oz.....	1
11. Zincundecate foot powder, 2 oz.....	1
12. Polymagma tablets.....	48
13. Terramycin tablets, 250 mg.....	250
14. Gantrisin tablets, 500 mg.....	50
15. Aralen, 250 mg.....	100
16. Vitamin mineral tablets.....	100
17. Water purification tablets.....	100
18. Oil of Cloves, 1/8 oz.....	1
19. Snake Bite Kit.....	1
<u>also - Coricelum -</u>	
20. Band-aid, 3/4"x3".....	25
21. Elastic bandage, 3"w.....	1
22. Gauze bandage, 2"x10 yd.....	2
23. Gauze pad, 4"x4".....	12
24. Gauze, compressed, 1 yd. sq.....	1
25. Cotton, compressed, 10 oz.....	1
26. Cotton batting.....	1
27. Adhesive tape.....	1
28. Tourniquet.....	1
29. Safety pins, medium, 12's.....	1
30. Blade, safety razor.....	5
31. Scissors, 5-1/2".....	1
32. Thermometer.....	1
33. Insect repellent, 2 oz.....	1
34. Insect dusting powder, 2 oz.....	1

INSTRUCTIONS FOR USE OF MEDICATIONS

The Medical Kit includes a number of drugs that should be taken only under a physician's orders. Because of the nature of your assignment, you are being given the capability of self-medication within prescribed limits. If the doctor can be consulted, this should always be done prior to taking any medication. If treatment is started before medical consultation, you should always plan to contact the physician as soon thereafter as possible. In any case, do not continue treatment beyond stipulated periods without medical advice.

It should also be remembered that you normally experience a certain number of illnesses each year. Under usual circumstances you "weather through" these episodes without any treatment. Mother Nature has endowed man with this ability to overcome the insult of these minor illnesses. Nothing should be done to interfere with this capability. Be sure you have specific cause before medications are taken.

A. GENERAL WARNING

All pharmaceuticals have been known to cause reactions in cases where the patient is sensitive to the product. The drugs provided in this kit have been chosen not only for their therapeutic effectiveness, but also because they cause few reactions. However, it should be kept in mind that a lesion or condition

that does not improve or becomes worse may be caused by a drug reaction. One should report to a physician at the first opportunity concerning any unresponsive illness. If you have a known drug sensitivity, discuss it thoroughly with the physician before the kit is taken out. He will give specific instructions relating to the use of these drugs.

B. DIRECTIONS FOR DRUGS IN MEDICAL KIT

1. Aspirin. This is one of the most widely used and effective drugs for the relief of muscular pains and other ill-defined aches (e.g. headache). It is also one of the better drugs used for symptomatic treatment of fever.

Directions: One or two tablets three or four times a day for control of pain. Usually one or two doses are adequate.

Precaution: Do not take large doses of aspirin nor take tablets on a frequent dosage schedule over a long (3-4 day) period of time.

2. Aluminum Hydroxide with Magnesium Trisilicate. These tablets are an antacid and are used for the relief of stomach distress such as "heartburn," "acid stomach," "upset stomach," etc.

Directions: Chew one or two tablets and wash down with a glass of water three or four times a day. - *ulcer*

Precaution: (1) Should upper abdominal or stomach distress continue for two or three days in spite of the drug and bland diet, seek medical attention. (2) Some individuals become constipated if the drug is taken for a prolonged period.

better than soda bi-carbonate.

3. Pyribenzamine. This drug is valuable for the symptomatic relief of a number of allergic conditions such as hay fever, hives, poison oak or ivy and other types of contact dermatitis. It may also be used to help relieve the nasal congestion and irritated eyes of a common cold.

Directions: One tablet (50 mg.) three or four times a day as necessary to relieve symptoms. - *1 pm & hrs.*

Precautions: The drug can cause drowsiness. Dosages should be adjusted to minimize this side effect. If full dosage is required for relief of symptoms with attendant drowsiness, activities requiring muscular coordination or mental concentration should be restricted (viz., driving).

4. Tyzine. For treating nasal congestion, and as an aid in opening up nasal sinuses and eustacian tubes in upper respiratory infections.

Directions: Spray lightly into each nostril, may be repeated four or five times daily.

5. Sodium Sulfacetamide Eyedrops. May be used in the eye or on eyelid when inflamed or irritated or where there is a localized infection such as a "sty."

Directions: (1) Wash the eyelids and surrounding tissues with soap and boiled water keeping the eyelids closed. (2) Flush out the eye with cooled, boiled water if there is an exudate in the eye. (3) Hold the lower lid down, and place two drops into the exposed inner portion of the eyelid. Always treat both eyes even though only one appears to be involved. Treatment

should be repeated four times a day.

Precaution: If the condition does not improve in two to four days, seek medical attention.

*polymixin B
neomycin +*

6. → Bacitracin Ointment. This ointment should be used in treatment of superficial skin infections and burns.

Directions: (1) In the case of skin infections, wash the lesion well with surgical soap and water that has been boiled. Dry the area with a sterile gauze pad from the kit. Apply the ointment liberally and bandage. Rebandage each day and apply ointment each time the wound is dressed. (2) For burns, wash the area carefully with soap and water that has been boiled. Be careful not to break any blisters and apply ointment liberally, bandage with several layers of gauze. Redress as bandage becomes soiled. In the event of an extensive burn, seek medical attention without delay.

7. Caladryl Lotion. This lotion provides effective relief for mild sunburn, prickly heat, the itching associated with hives, insect bites, and mild poison oak or ivy. It may also be used for other mild skin irritations.

Directions: Clean the area well with soap and water and dry thoroughly. Apply the lotion to the affected area as needed.

8. Surgical Soap. Contains Hexachlorophene, an efficient antibacterial agent. Skin infections should be washed two or three times daily using the soap. Leave the soap on for three minutes before thoroughly rinsing with cooled, boiled water.

9. Merthiolate. Merthiolate may be used on skin abrasions

and cuts. Also to prepare skin before lancing boils or removing splinters.

10. Zincundecate (Desenex). To be used for the treatment of fungus infections of the skin. It may also be used in similar skin infections of the crotch and armpits.

Directions: Wash the affected area with soap and water, rinse well, and dry thoroughly. The ointment should be rubbed into the area. This should be done each night before retiring.

11. Zincundecate Foot Powder (Desenex). This should be applied liberally to the affected area for daytime treatment. It may also be used as a prophylaxis for daytime use as a foot dusting powder.

12. Polymagma Tablets. Use this preparation for dysentery. In cases where there is acute intestinal distress prior to the onset of the diarrhea, the drug may be started before loose stools appear. This particular product will be effective in the treatment of most bacterial intestinal infections. It will have little or only transitory effect on amoebic or viral infections.

Directions: Two tablets initially, then two tablets after each loose stool or every two hours. Do not take more than 16 tablets in 24 hours.

Precaution: In the event there is no improvement in the diarrhea after 36 hours with full therapeutic dosage, seek medical attention. Should you have continued severe pain in the abdomen, regardless of location or character, after five or six hours, seek medical attention without delay.

13. Terramycin. Should not be taken without consulting a physician, unless none are available. Especially effective for pneumonia and many systemic infections. In the event of a sudden rise in temperature with chills, this drug may be used.

Directions: One capsule (250 mgm.) four times a day at 0800, 1200, 1600, 2000 hours. *-Not good for boils!*

↓ every 6 hrs. better!
Precaution: If after 24 to 48 hours the symptoms persist or get worse, seek medical attention without delay. The drug should not be taken for more than four days unless a physician directs otherwise. *-Use for minimum of 3 days. If not - rebound, r. resist anti biotic hard to cure.*

14. Gantrisin. May be used in localized or generalized infections with fever such as: boils, wounds, nose and throat infections, and urinary infections.

Directions: Six tablets initially, then two tablets four times a day until the temperature has been normal for 24 hours.

Precaution: (1) If nausea, vomiting, skin rash, or bloody urine appear, the drug is to be discontinued. (2) Under no circumstances should you continue the drug after 48 hours without medical advice. Should the symptoms persist or get worse after 24 to 48 hours, seek medical attention without delay. (3) Drink 8 to 10 glasses of fluids daily when taking this drug (important!).

Note should be made that the drug Gantrisin (Sulfisoxazole) is a sulfonamide and the precautions taken for sulfonamides should be observed. Take only on a physician's advice except in emergencies. If you have had a reaction to sulfa drugs in the past, don't take this drug without the close supervision of a physician

Appendix - Mx side

who knows of your previous reaction. When taking this drug, particular attention should be given to the liberal intake of fluids (water, tea, coffee, etc.). If nausea, vomiting, urticaria (hives), rash, or hematuria (blood in urine) occur while taking the drug, the drug should be discontinued unless otherwise advised by a physician. When Gantrisin is used intermittently or for a prolonged period, periodic blood counts should be performed to prevent the development of blood dyscrasias (usually lack of white blood cells production by the body).

15. Aralen (Chloroquine). For the chemoprophylaxis of malaria.

Directions: On the same day, at the same time of the day, each week take two (2) tablets, (500 mg.). Do not miss taking this medication under any circumstances (!) in malarious areas unless specifically instructed to discontinue its use by medical direction. Treatment should begin 1 - 2 weeks prior to going into malarious areas and continue for five weeks after leaving the area. If you are traveling, seek medical advice about continued therapy.

16. Vitamin-Mineral Tablets. This is a supplemental tablet containing recommended vitamins and minerals which will reinforce and assure an adequate daily supply of vitamins and certain minerals essential to maintaining good nutritional balance. Dosage is one tablet per day. It is to be noted that additional intake of tablets over the above dosage will be of no additional nutritional value. In fact, the excessive intake of vitamin

tablets (or vitamin-mineral tablets) over the recommended dosage may be harmful.

It is particularly important that the vitamin-mineral tablets be taken during those times where a balanced diet cannot be maintained.

17. Water Purification Tablets. Boiling water is the most satisfactory method of individual water purification under most circumstances. However, under circumstances where adequate boiling of water is not possible, treat the water with the tablets provided in the Medical Kit.

18. Oil of Cloves. This medication has been included in the Peace Corps Medical Kit as a preparation to use for the temporary relief of dental pain (resulting from caries or recent surface exposure of nerve ends of a tooth). Application of Oil of Cloves should be by a small saturated cotton swab. Only the immediate area on the tooth should be touched with the medicated swab. Damage to the oral soft tissues can occur from over-exposure to Oil of Cloves. Oil of Cloves acts by anesthetizing the exposed nerve endings.

19. Snake Bite Kit. Directions for use supplied inside the snake bite kit. Contact medical facility immediately.

Keep tourniquet loose - not enough to stop circulation!
Single slit - not X. - 1/8" - 1/4" or 1/2" distance between marks.
Do not cut arteries or tendons.
- incision + suction good for only 1 hour!
after 1 hour - stop suction -
put cold on ¹¹¹ for 1 hr.

NOTES

NOTES

"Methiodate has one use + one use only - A paint
on the unbroken skin in preparation for
surgery." - TRUE DON'T USE IN CUTS OR ABRASIONS
It kills germs + living cells. + increases chance
for infection + large scars because of dead tissue.
- Best use - soap + water + cover + clean game.
- In general - if it burns, don't use it!

Ear infections -

1) Caused by cleaning out ears -
" " " water behind wax plugs (wax in ear)
Keep all moisture out of ear!
Just clean outside part of ear.
Ingrown toe nails:
Soak in H₂O + H₂O₂ + soap → push toe under nail + get it over
the toe.

FRACTURE or break -

1) Use cold compress for 1st 12 hrs. after 24 hrs hot to get
rid of swelling

(1887) Swatch

at N.C.

Wed 16th ... 12 days - short summer

Mon 19th ...

Wed 21st ...

Thu 23rd ...