

Health Education Program For Developing Communities *(The Most Important Knowledge)*



Handbook & Illustrations

**Available in English, French, Hmong, Khmer, Mandarin, Russian
and Spanish (with more languages coming)**

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Part I: Handbook

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From: *Health Education Program For Developing Countries (HEPFDC)*
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To: *Health Education Program For Developing Communities (HEPFDC)*
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These World Health Organization (WHO) based HEPFDC materials are made available free or at cost through the nonprofit organization Standards of Excellence in Healthcare Missions (SOEHM).

The goal of this program is to provide the best available life-saving information to as many people in as many countries as possible. For this reason we have made all translations available free for downloading at www.hepfdc.info and granted permission to copy the program for non-profit educational purposes.

This program was developed to help physicians, families and communities save the most lives and prevent the most suffering through health promotion and prevention of their most common and serious health conditions. However, there are times when compliance with the best evidence-based guidelines may not be possible and procedures may need to be modified (Lack of means to boil water, or lack of availability of Oral Rehydration Solution packets, for example), and guidelines also change as new evidence becomes available. There may also be delays in the availability of updates.

All matters of health require local healthcare provider supervision, and this program was not intended as a substitute for that supervision. Even our very best evidence-based sources include a disclaimer for liability purposes, and we are also required to state the following: All reasonable precautions have been taken to verify the information contained in this publication. However, the published material and translations are being distributed without warranty of any kind, either express or implied. The responsibility for the interpretation and use of the material lies with the reader. In no event shall the authors, reference sources, translators, publisher, *Health Education Program for Developing Communities*, HEPFDC, SOEHM or its associated non-profit organizations be liable for damages arising from its use.

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ACKNOWLEDGEMENTS

Our goal, from the beginning, has been to provide the very best and most important evidence-based guidelines to the people who need it most. The sources for the best available evidence-based information have changed over the years. The program content is now based almost entirely on information and guidelines available through the World Health Organization (WHO) and its numerous (over 900) collaborating partners, such as the Centers for Disease Control and Prevention (CDC). It represents the work of literally thousands of statisticians, epidemiologists and clinical experts throughout the world.

We changed the name of the HEPFDC from *Health Education Program For Developing Countries* to *Health Education Program For Developing Communities* for a number of reasons. *All* communities in all countries are in ongoing stages of development, and not always for the best. In fact, people in so called “developed” countries are often much more in need of evidence-based nutrition and other lifestyle guidelines than people in so called “developing” countries. And as reported by the WHO, unless that changes, the resulting diseases, although preventable, will bankrupt “even the wealthiest countries.”

We have continued to modify the wording of our materials as part of our goal to promote WHO educational programs and evidence-based guidelines to the maximum extent possible. And we continue to very strongly encourage healthcare providers and educators at all levels of care and in all countries to utilize the increasing numbers of excellent, evidence-based resources available through the WHO website www.who.int

We also wish to thank Daniel E. Fountain, MD for recommendations concerning cross-cultural teaching and Vicki Hesterman, PhD for editorial assistance.

We are also deeply indebted to Standards of Excellence in Healthcare Missions (SOEHM), Global CHE Network, Global Health Outreach and our many patients, friends, family and colleagues for their unfailing inspiration, advice and assistance.

Evidence-based recommendations for improvements to the program are very much appreciated and may be sent to edit@hepfdc.info

Arnold Gorske, MD, FAAP (Editor)

Virginia Mashburn Barron (Illustrator)

Health Education Program For Developing Communities (HEPFDC)

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PREFACE

Most patients we see in both developed and developing countries are suffering from diseases that are preventable. Of all their healthcare needs, the greatest by far is for reliable health information. Although evidence-based life-saving information is available from the WHO, CDC and other sources, it seldom reaches our patients, or even their healthcare providers.

The *Health Education Program For Developing Communities (HEPFDC)* was created to provide the *most important* health care information to the people who need it most (Save the most lives and prevent the most suffering). The program:

- empowers physicians and other healthcare providers, teachers, churches and patients to save lives and relieve suffering through health promotion and prevention of their most common and serious health conditions. (The WHO reports that primary prevention and health promotion can prevent at least 70% of the world-wide disease burden.)

- addresses the most important health problems in "*developed*" as well as "*developing*" countries, and is relevant to urban, as well as, rural communities.

- is based on the most critical global health care needs as specified in the latest WHO World Health Reports.

- emphasizes the WHO top 10 leading risk factors globally that cause the most deaths and suffering.

- includes the current world-wide epidemic of heart disease, stroke, diabetes and other non-communicable diseases (Described by the WHO as the "Slow Motion Disaster").

- describes WHO guidelines for the prevention and care of these as well as other common diseases through "reducing risk and promoting healthy life."

- includes mental health and other recommendations for recovering from disasters, physical or sexual assault, or other serious accidental or war-inflicted injury.

- enables a holistic approach to care of the whole person: body, mind and spirit.

- incorporates WHO guidelines such as "Integrated Management of Childhood Illness," and provides additional evidence-based guidelines for care from the CDC and other WHO collaborating partners.

- includes the written *Handbook* as well as 60 full color teaching *Illustrations*. The PDF files are either shown directly on computer monitors, or printed in the 8.5 x 11 inch letter-size. The PDF Illustration files are also used for large screen projections, and can also be enlarged (129%) to make 11 x 17 inch laminated posters.

- is free for downloading in English, French, Hmong, Khmer, Mandarin, Russian and Spanish (with more languages coming).

- enables the *integration of primary care and community health* at the hospital, clinic/health center, and family/community levels of care. This remains the *key to community transformation and the success of healthcare systems in both developed and developing countries*.—See next section, HOW TO USE THE PROGRAM (HANDBOOK AND ILLUSTRATIONS).

HOW TO USE THE PROGRAM (HANDBOOK AND ILLUSTRATIONS)

1. Integration of Community Health and Primary Care: This program enables the integration of Personal/Primary Care and Public/Community Health, at *all three* WHO "Health Pyramid" levels of care: 1. Hospital 2. Clinic/Health Center and 3. Family/Community.

-At the **Hospital and Clinic/Health Center level** it is used primarily by *physicians* for individual patient counseling and by *nurses* for both individual and group counseling (Teaching at the time of patient need is often the most effective method for behavior change).

-At the **Family/Community level** it is used primarily by *community health workers, teachers* and *church/faith-based* or other *local community health programs*.

This remains *the key to community transformation and the success of healthcare systems* in both developed and developing countries. The highly respected medical journal, *The Lancet*, (Sept 13 2008) reports: "The future of health care generally, and primary care specifically, depends on the integration of personal health care and public health at the level of the local community."

Lack of implementation of these evidence-based guidelines has also resulted in a world-wide epidemic of heart disease, stroke, diabetes and other non-communicable diseases. This "Slow Motion Disaster" recently resulted in the second ever UN General Assembly on Health in its 67 year history. The Director General of the WHO (September, 2011) reported that "In the absence of urgent action, the rising financial and economic costs of these diseases will reach levels that are *beyond the coping capacity of even the wealthiest countries in the world.*"

The program at the community level is based on the following principles (From the WHO):

"a. Communities can and should determine their own priorities in dealing with the problems that they face.

b. The enormous depth and breadth of collective experience and knowledge in a community can be built on to bring about change and improvements.

c. When people understand a problem, they will more readily act to solve it.

d. People solve their own problems best in a participatory group process."

However, as in all areas of healthcare, health education materials that are not evidence-based can cause great harm. Utilization of WHO guideline-based education materials at *all levels* of care (hospital, clinic and community) can prevent patient harm due to confusion and disagreements between health educators and healthcare providers. This also enables health educators at *all levels* to assist the Department or Ministry of Health (MoH) in meeting WHO standards for best possible care throughout the healthcare system.

2. Handbook and Illustrations: The numbered information sections of the Handbook are organized to be used with the numbered Illustrations. The Handbook format was developed in response to requests by health care providers, teachers, pastors and other community leaders to enable them to provide ongoing healthcare education for their communities. The program was developed for use by *non-medical* as well as *medical* people, and can be easily individualized to meet the most important needs of your community. Notations are also included to *assist short-term medical teams*.

The **11x17 inch posters** (8.5x11 inch size enlarged 129%) and PDF digital format with **large screen projection** are used by health educators to provide the most critical community-specific information to larger groups of patients.

The **8.5 x 11 inch notebook size illustrations** and PDF digital format with **computer screen projection** are used by physicians and other educators for smaller groups and for patient-specific teaching.

8.5 x 11 inch Hardcopy Formats. The 8.5 x 11 inch size has been produced in **one or two volume sets** (*Handbook* and *Illustrations* either combined or in two separate volumes). It has been produced in Report Cover, Plastic and Metal Coil, and Notebook (3-ring binder) formats. All versions (including the single volume coil bound versions) enable the presenter or facilitator to read from the Handbook while simultaneously demonstrating the corresponding Illustration. See [PRODUCING YOUR OWN PROGRAMS \(It's EASY!\)](http://www.hepfdc.info) at www.hepfdc.info

3. Participatory Lesson Plan and Picture Book Versions: We attempt to present the HEPFDC information in a *culturally relevant* manner demonstrating a *participatory* approach that will be most likely to result in a beneficial change in behavior. However, the primary goal of this Handbook and Illustration version is to make available the most important and very best evidence-based health care information. And because of space limitations, only a few of the cross-cultural approaches to teaching could be included in this Handbook.

However, comprehensive, step by step, *Lesson Plan* and *Picture Book* versions of the program have been specifically developed to assist community health educators and others in implementing the participatory approach. These include Learner-Centered Lesson Plans, Objectives, Role Play, Storying, SHOWD questions (What do you See? What is Happening? Does this happen in Our place? Why does it happen? What will you Do about the problem?), etc. The above can be downloaded free through the [Lesson Plan](#) and [Picture Book](#) links at www.hepfdc.info (We are deeply indebted to Jody Collinge, MD, FAAP, and the Global CHE Network for these excellent resources).

Local leaders and educators should utilize the participatory method and cultural approach that is most effective for their particular audience and community. For example, doctors, nurses and trained teachers often need a more didactic and less time consuming approach as demonstrated in this Handbook. On the other hand, when adequate time is available, community health workers and their patients usually learn best with the *Lesson Plan* and *Picture Book* versions.

4. Collaboration with Ministry of Health: Prior to utilizing the program, we meet with the Ministry of Health (MoH) officials locally and as high up the chain of command as possible (At times we have been able to meet with the director of the MoH for the entire country). We leave copies of the HEPFDC with the MoH officials and ask that they please review the program prior to our return trip. We emphasize the following to the MoH officials:

- "The information in the program does not come from us. It consists of evidence-based international guidelines from the WHO.

- As all countries are a part of the WHO, the information comes from health experts from all over the world, including your country.

- Never-the-less, if there is any wording you disagree with, please cross it out and we will not teach it."

Why MoH Approval is Important: Although the HEPFDC has been utilized in numerous countries for over 10 years, we have not yet had any words "crossed out." However we believe this process remains extremely important for a number of reasons:

-It demonstrates appropriate acknowledgement of the authority and responsibility of the MoH officials for the healthcare of the citizens of their country.

-It establishes local ownership and sustainability of the program. (The information comes from the WHO, including their country. The program is simply a tool to assist them in meeting their country's WHO goals.)

-It establishes a participatory, collaborative, non-paternalistic, mutual learning relationship from the onset.

-It protects the reputation of local school, church and community health educators after the team leaves. (Local physicians and/or other providers may not be aware of current WHO evidence-based guidelines and may disagree with the educators. Prior approval by the MoH prevents possible embarrassment of all concerned.)

5. Updates: The program has continued to be revised to incorporate new evidence-based information. We have also continued to modify the wording of our materials as part of our goal to promote WHO educational programs and evidence-based guidelines to the maximum extent possible. You can click on one of the Handbooks on the [DOWNLOAD FREE](#) page at www.hepfdc.info to determine if your copy is the latest available edition. The revision date is found at the top of the Table of Contents page. As health guidelines are continually changing, you should also consult the WHO website www.who.int for updates.

**Health Education Program
For Developing Communities**
(The Most Important Knowledge)

**Part I:
Handbook**

1. INTRODUCTION (COVER PAGE)

(Give appropriate greeting in native language. Show COVER PAGE.)

We are very thankful to be invited to your community and we thank you for your wonderful hospitality.

Our goal, and the goal of this book, is to enable you and your community to *save the most lives and prevent the most suffering* through health promotion and prevention of your most common and serious health conditions. The information in this book is the *very best we could find in the world*. It comes from the World Health Organization (WHO) and its collaborating partners such as the Centers for Disease Control and Prevention (CDC). These organizations include thousands of the very best physicians and health experts from all over the world, including *your* country. Also, much of this knowledge was known by our ancestors (yours and mine) but has been forgotten or neglected over the years. And much of the information you already know, but perhaps you did not appreciate how important it was.

These happy, healthy children represent holistic healthcare. Holistic means care of the whole person (body, mind and spirit) and each of these is very important to your health. Holistic is the kind of healthcare that is recommended by the World Health Organization (WHO).

The painting also represents "The Most Important Knowledge" and *our goal to provide the very best health care to as many people as possible*. So how can we accomplish this?

2A. THE MOST IMPORTANT KNOWLEDGE

You have probably often heard that "*Knowledge is more important than medicine.*" We also agree this is true. The WHO reports that *most diseases, even the very serious ones, are entirely preventable*. So the most important way our healthcare providers can try to help you is with knowledge, to enable you to care for yourself and your families and *prevent* these diseases from occurring.

(Note concerning Cross-Cultural Participatory Teaching: People solve their own problems best in a participatory group process which also enables them to determine their own priorities. It is important to know as much as possible about the beliefs of the people we are working with. Asking questions such as the following will also promote group discussion.)

First, we would like to know more about you and the people of your community. For example, when a child in your community becomes ill with diarrhea or pneumonia, what will the parents think about the cause of the child's illness?

Much of the most important knowledge we will talk about *was known by our ancestors* (yours and mine) thousands of years ago, but over the years much of that knowledge was forgotten. For example, many of our ancestors believed that invisible things caused illness, things they could not see. How many here believe that? Well, if you believe that you are absolutely correct. So our ancestors, yours and mine, were certainly as intelligent and as observant as you and I.

However, there was one very important thing they did not have, and that one thing was critical to our understanding of what makes us sick. Does anyone know what that one thing was? ... *The microscope*. With powerful microscopes we can now actually see worm eggs and bacteria and even viruses. And thousands of studies have shown that they are the true causes of the infections that cause so much unnecessary illness and death in the world.

Of course without a microscope there is no way you could know this. And so some people have guessed that maybe these diseases were caused by someone cursing us or perhaps because

God was angry with us. But if they would have had microscopes they would have seen that the true causes of those diseases were the viruses, bacteria and parasites.

2B. THE MOST IMPORTANT KNOWLEDGE

What is the *most* important knowledge?

Most patients we see believe very strongly in spiritual causes of illness. WHO reports emphasize the importance of the **holistic** (social and spiritual as well as mental and physical) approach to healing. Although there is no evidence that other people cursing us can affect our health (unless we believe it will); there is much evidence that our spiritual beliefs, feelings and lifestyles can be very important.

Many of our patients believe that the *most* important knowledge they have is that *God loves each one of us and we need to love each other*. Most of our atheist patients agree that if we were all able to respect and treat each other in a truly compassionate manner, we could eliminate most the unnecessary deaths and suffering in the developing, as well as, developed world. Numerous WHO reports confirm the disastrous effects of war, injustice, poverty and malnutrition in areas such as child mortality.

World Health Organization reports also emphasize the importance of *loving relationships* in the prevention and treatment of illness in areas such as mental health. Other respected medical organizations, such as the Academy of Pediatrics, confirm the critical importance of demonstrating love in raising our families. Loving care is especially important for children. One of the earliest pediatric scientific studies showed that simply holding children when they were ill could reduce their mortality *over 25%*. We know that most of you who are parents hold your children more when they are ill, but perhaps you did not realize how very important this is for your child.

Here we are again relearning what our ancestors, yours and mine, knew thousands of years ago. They knew the importance of caring for each other, and also the harmful effects of hate and anger. Most of us have noticed ourselves that when we are angry we often get headaches or stomach or chest pains. This can even lead to strokes, ulcers or heart attacks. Forgiving people who hurt or offend us is often very difficult. However, this is much more important to our own health and to our family's wellbeing than any revenge might be against those who may have harmed us.

This can affect *all* areas of our lives, physical as well as mental. Numerous scientific studies in psychosomatic medicine have demonstrated the powerful effects of our *beliefs* on our nervous, immune (disease fighting), cardiovascular (heart and blood vessel) and other body systems.

Even a child who has experienced a cut finger knows that his/her body was created to be self-healing. *All* scientifically trained doctors agree that this is true (Our body's immune system is one example of this self-healing).

All scientifically trained doctors (even those who are atheists) also agree that our body's self-healing *responds to our beliefs*. For example, if we believe that a pill will help us, it can help us even if the pill has no medicine in it at all (placebo effect). So, although pills and potions can occasionally be necessary, pills and potions get a lot of unearned credit for the healing that is actually due to the powerful self-healing effects of our beliefs. Therefore, from a scientific standpoint, we know without question that our beliefs are *very* important for healing. This is *not* at all controversial, and is proven scientific fact.

So, *regardless of the cause, there is much each of you can do to prevent illnesses and suffering and to promote health and well-being in yourselves, your families and your communities.*

Our goal is to provide you with “The Most Important Knowledge” from the very best sources we could find in the world. It is the knowledge that can *help you save the most lives and prevent the most suffering* for yourself, your family, and your community.

(Flip back to Illustration **2A. THE MOST IMPORTANT KNOWLEDGE**)

Why is knowledge more important than medicine? The importance of knowledge can easily be shown in the treatment of the *most common illnesses* we get, *virus colds*. Nearly all of us get these infections two or three times a year, and children often get them 5 or 6 times a year. Many of you here today have virus colds. These infections are usually not very serious and after a few days you would get better without any treatment at all. However, virus cold symptoms can make us feel miserable, so people often buy medicines thinking they will help. There *are hundreds of different kinds of cold medicines for sale* in the US and in most countries we go to. Unfortunately, *none* of these medicines, even those in the US, have been shown to be effective in curing colds or even reducing complications. And many of the medicines have actually been shown to be harmful and can make people sicker. *Yet families we see often go hungry so they can afford to purchase cold medicines.* So for virus colds you are better off *not* taking these medicines at all. There are other treatments that help and are safe and we will talk about those later (Sections 30 & 31).

The importance of knowledge is also shown with the world’s most serious diseases. *Tobacco related diseases (such as heart disease, cancer and stroke) are now the world’s leading preventable cause of death.* Smoking prevention is clearly much more important than all of our medicines and all of our treatments (Section 41).

Another example is AIDS. The entire world is suffering from the AIDS epidemic, over *34 million* people have died and over *37 million* more are now infected. Although there are medicines that can help you live longer with AIDS, except perhaps for extremely rare cases, there is *no cure* and all of these people will die from the disease. Yet with *knowledge*, all this death and suffering could have been *prevented*.

There are, of course, conditions such as bacterial and worm infections where medicines are effective and are very important. However, even here it is knowledge that is most important, for knowledge could very often prevent us from getting the infection in the first place. For example, medicines can never cure worm infections where communities do not always use latrines and practice handwashing--These not only prevent worm infections, but deaths from bacterial and virus infections as well. Time after time, for nearly every kind of illness, evidence-based studies clearly show that *knowledge and information are much more important to our health than medicines.*

Our hope is that you will have *community meetings* to further discuss the WHO guidelines we review. And that *you will identify and begin to find solutions* to the problems that are most important to you and your community.

(Note concerning *Participatory Approaches*: Although space here does not permit an adequate demonstration of the process, we believe it is essential to encourage the community based participatory approach in all our educational efforts. Comprehensive, step by step, Lesson Plan and Picture Book versions of the program have been specifically developed to assist Community Health Educators and others in implementing the participatory approach. These can

be downloaded free through the *Health Screening and Participatory Approaches* pages at www.hepfdc.info and also at <http://chenetwork.org/samplelessons.php>)

(Optional for Short Term Medical Teams: Unfortunately, we only have a very short time with you. So we can discuss only a small part of the information that is important to you and your families. However, all the information we have is contained in this handbook which we will leave with _____, who will be setting up free *Community Health Meetings* after we leave. We know that the knowledge you will discover will save many more lives and relieve much more suffering than all of our doctors and nurses and all of our medicines.)

(Optional for Short Term Medical Teams: Because there are so many people, and we have only a few providers, our doctors and nurses are able to care for only your most serious health problem. So perhaps you will not want to wait for so many hours just to be seen for a few minutes. If you do decide to wait and you have more than one health problem, be thinking about which one it is that you want the doctor to try to care for. So, if your friends or your family could not be seen today, tell them not to worry. Just tell them to be certain not to miss your *Community Health Meetings*. The knowledge they will discuss will save many more lives and relieve much more suffering than all of our health care providers and all of our medicines.)

If at any time you have *any questions or you disagree* with any of the information we will be passing on to you, please let us know. We recognize that there may be much value in local and traditional medicine (There are many treatments that have not yet been adequately studied and so there is much about traditional medicine that we still don't know). And it is only by talking about our disagreements that we can provide the best possible care for everyone.

3A. PREVENTION OF DEATHS AND SUFFERING

So, *what information do we need that is most critical to our health and the health of our children?* The WHO states that the information we need that will save the most lives is *not* about how to *treat* our illnesses, but how to *prevent* them from occurring in the first place. And we have always found this to be true in every place we have worked. We know that most of the serious illnesses that we will treat today are entirely preventable, and that they *can be prevented by you and your neighbors*.

What are the three greatest killers in the *entire* world (Includes both developed & developing countries)?

First, it is very important to understand that people in so called "developing" countries often do things *much* better and live *much* healthier lives than those of us from "developed" countries.

For example, when *developed* countries are also included, the three greatest killers are responsible for deaths due to numerous common diseases, including Heart Attack, Stroke, Diabetes, and Cancer (all of the terrible diseases shown at the top of the picture).

Unfortunately, as people world-wide are now adopting our "developed" countries' lifestyles, these diseases have become rapidly increasing epidemics in "developing" countries as well. The Director General of the WHO has called this a "Slow Motion Disaster" and recently reported "In the absence of urgent action, the rising financial and economic costs of these diseases will reach levels that are beyond the coping capacity of even the wealthiest countries in the world."

Yet nearly all of this death and disability and potential world-wide financial disaster *is preventable*. In fact, the WHO reports that over 80% of Premature Heart Disease (#1 Cause of Death), 80% of Stroke (#3 Cause of Death), 80% of Diabetes (#6 Cause of Death), 40% of Cancer (#2 Cause of Death) and *numerous* other conditions could be prevented by *YOU (and me) doing just 3 things*.

Three things that are much more important than ALL of our hospitals and clinics, doctors and nurses, and drugs and surgeries combined. Can any of you guess what those 3 things are?...

3B. PREVENTION OF DEATHS AND SUFFERING

The 3 Things.

*The 3 greatest killers in the entire world are shown on the left side of the illustration (**Unhealthy Diet, Tobacco Use, and Inadequate Exercise**).*

(Note: If time permits teachers [or facilitators] are encouraged to use participatory learning approaches such as SHOWD for the illustrations throughout this manual: What do you See? What is Happening? Does this happen in Our place? Why does it happen? What will you Do about the problem? Also see the [Health Screening](#) and [Participatory Approaches](#) pages at www.hepfdc.info for additional free teaching materials.)

Just a few of the terrible diseases they cause are shown at the top of the illustration. And nearly all this early death and years of suffering can be prevented by *you and me doing just 3 things* as demonstrated on the right side of the illustration:

1) Healthy Diet

2) Not Using Tobacco and

3) Adequate Exercise

In addition, numerous other diseases such as hypertension, dementia, lung disease and impotence could be prevented by *you and me doing the very same 3 things*.

Hundreds of scientific studies have shown that these 3 simple things, that *each* of us can do, could prevent much more suffering and early death than *all* of our hospitals and clinics, doctors and nurses, and drugs and surgeries combined.

Tobacco related diseases remain the world's leading cause of early death and disability with over 5 million deaths per year. However, unhealthy diets with too much meat, animal products, salt, sugar, processed and "fast" foods, and not enough plant-based foods, now cause almost as many deaths as tobacco worldwide. In fact, unhealthy diet now exceeds tobacco as the leading cause of early death and disability in countries such as the US.

Tragically, this has now resulted in long-term suffering for our children as well. For example, in the US we used to call "Type 2" diabetes, "Adult onset" diabetes. However because of unhealthy eating habits and increased weight, this devastating disease is now also occurring in our children and adolescents. In spite of all our medical advances and trillions in healthcare costs, the US Surgeon General reports that we may see "the first generation that will be less healthy and have a shorter life expectancy than their parents"

Unfortunately, people world-wide are now adopting our "developed" countries' lifestyles. So tobacco and diet related deaths are now rapidly increasing epidemics in "developing" countries as well. We will review these later on (See section 41), but first, "What are three of the greatest killers in the *developing* world?..."

3C. PREVENTION OF DEATHS AND SUFFERING (CONTINUED)

What are three of the greatest killers in the *developing* world?

Some people believe they get sick from what other people have done to them. Does anyone here believe that? ... You are absolutely correct! Of course, now that we have microscopes we know that it is not other people cursing us that makes us sick. However, other people, even our friends and relatives, can definitely make us sick and kill us in other common ways. And nearly always they do this unintentionally, and do not mean to harm us at all. The picture shows

examples of 3 of the greatest killers in developing countries. How do you think these 3 things can make us sick and kill us?...

The WHO states that: *Every eight seconds a child dies ... and every year more than five million people die* from illnesses linked to:

1) *Unsafe drinking water*

2) *Unclean homes and neighborhoods* and

3) *Improper disposal of excrement.* (We apologize if some of our topics are embarrassing to talk about, however they cause so many unnecessary deaths that we *must* talk about them.)

What causes the most suffering? The answer, all over the developing world, is exactly the same: At any given time nearly *one-half of all peoples in the developing world are suffering* from one or more of the six main diseases (diarrhea, ascariis, dracunculiasis, hookworm, schistosomiasis and trachoma) *associated with unsafe water supply and sanitation.*

So it is true that other people, even our friends and relatives, can definitely make us sick and kill us with deadly diseases:

1) By contaminating our water supplies (See section 6).

2) By not keeping their neighborhoods clean and free from garbage that attracts disease spreading insects and rodents (See sections 11-13).

3) By not always using properly built latrines (See sections 9&10).

Those are the real "curses" that can make us sick and kill us. And all the resulting deaths and suffering *could be prevented by you and your neighbors.* (Please also note from the picture that even if your water *looks* absolutely clean and clear and pure, it can still contain deadly organisms that can be seen only under a powerful microscope.)

And to make matters worse, now we also have the devastating worldwide epidemic of AIDS. We will talk about AIDS first and then go back and discuss more about these other causes.

4. HIV/AIDS

AIDS is nearly always caused by *unsafe sex.* Because AIDS is a sexually transmitted disease, it is often embarrassing for us to talk about. However, over *34 million people have died* from AIDS and over *37 million* others are now infected, and *all of this death and suffering is preventable.* So, we must talk about it.

AIDS is a *non-curable, lethal* disease. AIDS is caused by the HIV virus. Essentially all people infected with HIV virus will eventually die from AIDS, though it takes several years. That is why it has spread to so many people. There is a "silent" period of several years where infected people don't know they're infected and seem completely well, yet they still spread the AIDS virus through sex. AIDS eventually affects the immune system, so people with AIDS usually die from wasting and chronic infections such as tuberculosis. There are medicines that can help us live longer with AIDS, however, except perhaps for extremely rare cases, none of the medicines will cure AIDS.

(Optional for Short Term Medical Teams: We and most other organizations are not able to provide these medicines, as once they are started they must be taken for the rest of your life. They require close, long-term monitoring and can result in resistant [more dangerous] strains if discontinued or not used properly.)

Over *17 million* children are now orphaned because of AIDS. Many of these orphans also continue to die from AIDS and other preventable diseases.

(Note concerning HIV/AIDS statistics: The estimated numbers of HIV infected individuals, deaths, and living orphans vary from year to year and between reference sources. Please see the HIV/AIDS webpages at www.who.int for current estimates for your country.)

Nearly all people get AIDS by having sex with someone who *looks and feels completely healthy*--it usually takes several years after a person gets HIV to look or feel sick with AIDS. So we know that many of you here today are infected, but the only way you could tell is if you went to the clinic for a blood test. And even the blood test may not become positive until 6 months after you are infected.

So we know that you or the person sitting next to you may have AIDS. Why aren't we afraid to examine you or shake your hand or hug you? Because we also know that **AIDS is *not* spread** by shaking hands, hugging, living, playing or eating with an infected person.

5. PREVENTION OF HIV/AIDS

AIDS is spread by:

-Having sex with a person who is carrying the HIV virus (Even if the person appears completely healthy).

-Drug users who share needles.

-Practitioners who use any instrument that cuts or breaks the skin without sterilizing it first: Tattoos, body piercing, tooth extraction, circumcision, injections of medicines, blood transfusions, etc. can spread HIV if the instruments are not properly sterilized.

-Blood transfusions from infected donors: Blood products must always be properly tested for HIV virus before use.

-Sharing the use of other instruments that may cut or break the skin or gums such as razor blades and toothbrushes.

-An infected mother to her unborn child: About 3 in 10 babies of infected mothers will get the HIV virus by the time they are born. An additional 1 in 10 babies who are breast-fed by infected women will also get AIDS.

Prevention of AIDS: AIDS is completely preventable and *can be prevented by you*. By far the most common cause of AIDS is through *unsafe sex*. The ABC program (Abstinence until marriage, Being faithful to one partner, and using Condoms if A and B are not practiced) has been very successful in reducing AIDS in countries such as Uganda.

-High-quality latex condoms when carefully used can help prevent AIDS and other sexually transmitted diseases. However, they are *not* always effective and the only sure way to keep from getting AIDS is to abstain, or to have a faithful sexual relationship with someone who is not infected. Condoms are also used for birth control. If you use condoms: Buy high-quality latex ones. If you are allergic to latex, buy condoms made from a synthetic material such as polyurethane. Lambskin condoms are not recommended for disease prevention. Follow package directions. If used with lubricants, use only glycerin or water-based lubricating jellies available at pharmacies. (Oil-based lubricants such as petroleum jelly, cold cream, hand or body lotion, or vegetable, mineral or baby oil, can weaken the condom. In addition, condoms can be weakened by exposure to heat or sunlight or by age, or they can be torn.) Never reuse condoms.

-Do not have sex with anyone who has had other partners. From an AIDS standpoint, you are not just having sex with that person. You are also having sex with all of his partners and with all of his partner's partners and with all of their partners and on and on (Could easily be hundreds of people).

-Do not have sex with prostitutes or with anyone who has injected illegal drugs.

-Although newer tests are more sensitive, some blood tests for the HIV virus may not become positive until 6 months after a person has been infected. So, if you wish to have sex with someone who may have had other partners or injected illegal drugs; wait until you are certain they have had no sex and no drugs for 6 months, and then have them get the blood test for the HIV virus. (You can check with your provider to determine how sensitive the test is in your area and how long you have to wait.)

-Do not use needles that have been previously used.

-Do not get tattoos or body piercing from practitioners who may not properly sterilize their equipment. All instruments used for tattoos, body piercing, tooth extraction, circumcision, blood donation and transfusion, etc. should be cleaned and then sterilized, preferably in a pressurized steam sterilizer such as the one we use for our dental instruments. If a steam sterilizer is not available, the instruments should be thoroughly cleaned and then placed in boiling water for at least 30 minutes.

-Do not share razors or toothbrushes.

-If you must receive a blood transfusion be certain the blood has been tested for HIV.

-Male circumcision may also be of some benefit for men, though not their sexual partners. The WHO website HIV/AIDS section reports that "male circumcision can reduce the risk of (the male's) acquiring HIV through sex. However, it is not 100% effective, and circumcised men can still become infected. Circumcision can actually *increase* the risk of transmission if the wounds have not properly healed following surgery. In addition, HIV positive men who are circumcised can infect their sexual partners. While male circumcision is not a replacement for other known methods of HIV prevention, it should be considered as part of a comprehensive prevention strategy" (Note: See WHO website informed consent guidelines for additional information on the potential benefits as well as risks of circumcision when performed by well trained professionals.)

There is also much **False information about AIDS**: Many studies have shown that you can *not* get AIDS by shaking hands, hugging, living, playing or eating with an infected person. *AIDS is NOT cured by having sex with a virgin*. All this does is give AIDS to the virgin. So if you have any questions please ask, as it is very important that you know as much as possible about this deadly but preventable disease.

Again, by far the most common cause of AIDS is through unsafe sex. *Nearly all people who get AIDS get it from having sex with someone who looks healthy and doesn't know they carry the virus*. Sexual diseases have been around for thousands of years. And here again we see that our ancestors, yours and mine, going back to the time of Moses thousands of years ago, knew what was most important in preventing even this most recent sexual disease. And when they told us not to have sex with anyone except our spouse, it was not to lessen our enjoyment of life, but to protect us from the painful and devastating diseases that would destroy our lives.

HIV, Pregnancy and Breast Feeding:

-In some countries medicines are available to **pregnant women** that will help prevent their babies from getting AIDS. In those countries, all pregnant women should be tested for the AIDS virus.

-Do not have your baby **wet nurse** from a woman who has not had a blood test for the HIV virus.

-**Should a mother with AIDS breast-feed her baby?** AIDS may sometimes be an exception to the rule that mothers should always breast-feed their babies. About 3 out of 10 babies whose mothers have AIDS will be infected by the time they are born. The AIDS virus can also be transmitted to about 1 out of 10 babies who are breast-fed from mothers or wet nurses who have

AIDS. However, babies who are not breast-fed have a greater chance of dying from diarrhea, pneumonia or other infections. So it is very difficult to be certain which is best, especially in those areas where the drinking water is not safe and the infant death rate is very high.

However, all mothers who breast-feed their babies should give only breast milk and no other foods for the first 6 months of life. This is especially important for a mother with AIDS who decides to breast-feed her baby. Foods other than breast milk apparently irritate the baby's intestines and make it easier for the AIDS virus to get into the baby's blood.

The WHO therefore recommends "HIV infected women breastfeed their infants exclusively for the first six months of life, unless replacement feeding is acceptable, feasible, affordable, sustainable and safe for them and their infants before that time."

(Note: Additional options continue to be studied, for example it appears that expressing breast milk and "Flash Heat Treatment" can effectively inactivate the virus in breast milk from HIV infected mothers. So it is important for providers to check the HIV/AIDS web pages at www.who.int for future updated recommendations.)

6. SAFE DRINKING WATER

Now we will discuss *the other most important causes of death and suffering in developing countries*. The WHO states that "*No single type of intervention has greater overall impact upon the national development and public health than does the provision of safe drinking water and the proper disposal of human excretions.*"

Sometimes just protecting a spring or well from contamination by people or animals may be all that is necessary.

However, unsafe drinking water has been a problem in every country we have worked. It is one of the main causes of unnecessary deaths especially children under age five (Most are due to diarrhea and dehydration). Even if your water *looks* absolutely clean and clear and pure, it can contain deadly organisms that can be seen only under a powerful microscope.

The best solution is to provide safe **piped-in** water to each residence. This should be the goal of every community. The WHO reports "Providing safe, reliable, piped-in water to every household yields optimal health gains while contributing to the MDG targets for poverty reduction, nutrition, childhood survival, school attendance, gender equity and environmental sustainability." For this reason we now use the green piped-in "water faucet and glass" symbol for "safe drinking water" in this program.

If piped-in safe water is not yet available, or it becomes temporarily contaminated, there are a number of **Household Water Treatment Methods** you can use (Four of these methods are shown in the middle illustrations):

1) Solar disinfection is an exciting and increasingly used option (See also section 7). Much research continues to be done and very inexpensive and effective systems such as **SODIS** (utilizing solar energy and simple clear plastic bottles) are now recommended. The SODIS system offers many advantages. It does not require burning fuel or adding chemicals, and the clear plastic bottles are available free or at low cost in most areas (PET [polyethylene terephthalate] bottles are preferred). Specific guidelines, illustrations and community-based teaching materials in several languages are available free through the WHO and [SODIS](http://www.who.int) websites.

2) Boiling is among the simplest and most effective point of use methods for ensuring safe drinking water. It is especially common where adequate sunlight is not available for use of the SODIS system (6 hours/day).

If your water may not be safe, you should heat it till it comes to a rolling boil for at least 1 minute to make it pure. (If you live above 2000 meters you should boil it for at least 3 minutes. Instruments used for skin piercing, tattoos, tooth extraction, circumcision, etc. need to be boiled for at least 30 minutes.)

However, fuel, as well as safe cook stoves, are not readily available in many parts of the world. Other low cost options for household water treatment continue to be developed and include **chemical disinfection** with chlorine or bleach solution, as well as **filtration** systems.

3) Clay Treatment and/or Storage Containers. These can be used to disinfect, store, as well as, dispense safe water in the home. They also allow some evaporation which helps to cool the water and are preferred in many parts of the world. By working with local potters, it is possible to modify clay pots to have a dispensing spigot (prevents contamination).

4) Safe Water System (SWS) Containers. These can be used to collect, transport, disinfect, store, as well as, dispense safe water in the home. The example shown was developed by the [CDC](#) and utilizes 20-liter (5 gallon) jerry cans. It is now produced in a number of countries throughout the world and costs about \$5 US (Contact safewater@cdc.gov for more information). Other systems, such as the Oxfam 14 Liter Bucket, are also available.

Safe storage is also very important:

- 1) It is best to keep the water in the same container in which it was purified.
 - 2) Be certain to keep the safe-water container covered. Do not use ladles for dipping into the container as they can be easily contaminated.
 - 3) The storage container should have a small dispensing spout or spigot.
- (All four examples shown in the illustration [SODIS plastic bottles, Water boiling pot, Clay treatment/storage containers, and Safe Water System containers] enable all 3 of the above functions)
- 4) If you must transfer the water to another container, it is very important to wash your hands and use clean, safe-water rinsed containers when transferring the water.
 - 5) It is also best to use the water in stored containers as soon as possible (preferably within a day or two).

Local craftsmen may also be able to make safe water containers out of locally available materials (For example, jerry cans that are safe for food products are sometimes used by manufactures for selling cooking oil, etc.). However, as reported by the CDC "Care should be taken to avoid using any container previously used for transport of toxic materials (such as pesticides or petroleum products) as a drinking water storage container. Lastly, locally appropriate cleaning mechanisms – such as use of soap and brushes, or dilute chlorine solution – should be developed and recommended to clean the container on a regular basis."

Additional information on water purification systems, and current specific guidelines on how to use them can be found on the WHO [Water Sanitation and Health section](#). You should also consult your local Ministry of Health authority concerning the best system to use for your area.

Use the safe water for (If boiled, be certain to let the water cool):

- Rinsing fruits and vegetables (that are eaten raw) after they have been cleaned
- Drinking
- Brushing teeth
- Preparing Oral Rehydration Solution (ORS)

Some people complain about the "lack of taste" of the boiled or treated water. If this is a problem you can increase the oxygen content and taste by partially filling a bottle and shaking. Often just letting the water sit in a covered container will resolve the problem. Or you can add a

drop or two of lemon or some other substance to suit your taste. Experiment until you find a combination that is acceptable. However, even without doing anything, after a while you will become used to the "new" taste.

Bottled drinking water that you purchase is often safer than from local sources. However it is not always reliable and studies have shown that it, also, can be contaminated. So if you are still getting sick with diarrhea and other diseases, it may be from the purchased bottled water.

For those who need to boil their water, the availability of fuel, and safe, clean and efficient cook stoves are also critically important.

7. SAFE COOK STOVES

Chronic exposure to smoke from traditional cooking practices is one of the world's greatest – but least well known – killers. The United Nations Foundation reports:

"4 million people lose their lives each year from the simple act of cooking a meal. That's because 3 billion people burn solid fuels such as wood and charcoal for their daily cooking needs. The resulting smoke causes a range of respiratory, cardiovascular, eye, and skin ailments that kill millions and sicken tens of millions more (The specific diseases include child pneumonia, lung cancer, chronic obstructive pulmonary disease, heart disease, and low birth-weight.)

Cooking in such a manner also increases global deforestation, emits harmful particles into the atmosphere, and puts women and children at risk of attack or injury when they collect fuel."

Open flames and unsafe cook stoves are also a very common cause of **burns** and disfigurement in children, and also in women who wear loose, flowing garments when cooking.

They also burn very inefficiently, so that much more wood or other material must be gathered than would be necessary with the improved stoves.

The WHO recommends the following interventions:

Alternative fuels: "The largest reductions in indoor air pollution can be achieved by switching from solid fuels (biomass such as wood, dung, coal) to cleaner and more efficient fuels and energy technologies such as: liquid petroleum gas (LPG), biogas, producer gas, electricity or solar power."

Improved stoves: "In poor, rural communities where access to alternative fuels is very limited and biomass remains the most practical fuel, pollution levels can be lowered significantly by using improved stoves. These stoves, provided they are adequately designed, installed and maintained, are effective in reducing smoke because of better combustion, lower emission levels and potentially also shorter cooking times." They also reduce the amount of wood and other fuel that must be collected.

Improved ventilation of the cooking and living area: can also contribute significantly to reducing exposure to smoke: "chimneys, smoke hoods (with flues), eaves spaces, enlarged and repositioned windows (cooking window)"

Interventions to user behavior: Cooking outside when possible, keeping children away from smoke, drying fuel wood before use (to reduce smoke and increase combustion) can also help. The [Global Alliance for Clean Cookstoves](#) (a public-private partnership led by the United Nations Foundation) also recommends:

Solar cook stoves: This is the most exciting area of research. The advantages of direct solar energy are many. It eliminates the millions of deaths and suffering due to smoke. It saves the family time, unnecessary work and money. Several different types of solar cookers have been developed and used for cooking food and boiling water. Direct solar thermal energy can also be

used for solar hot water heaters, sterilizers and food driers (As well as the SODIS water purification system-See Section 6).

The Global Alliance for Clean Cookstoves reports: "While the efficiency of solar thermal energy for cooking is dependent on sunshine, this "fuel" is available free of charge, making it an extremely cost-effective solution... In some places solar can be the main source of household energy, while in others it is an excellent back-up energy source. As with other fuel efficient stoves, solar cookers are unfamiliar to most cooks in the developing world who are used to cooking over an open flame, so their adaptation to these stoves requires careful training and follow-up."

Retained heat cookers (Insulated Cooking Containers or Hay Boxes—See Lower Illustrations): "Heat-retention cooking is an age-old technique that conserves cooking fuel and keeps cooked food hot for hours. The use of an insulated cooking container can save between 20% and 80% of the energy normally needed to cook over a fire. In conventional cooking, any heat applied to a pot after it reaches boiling temperature is merely replacing heat lost to the air by the pot.

In retained heat cooking, food is brought to a boil, simmered for a few minutes over a fire (or solar cooker), and then put into an insulated container (retained heat cooker) to continue cooking at a slow simmer for several more hours.

The container of hot food can be left in the retained heat cooker until ready to serve. Food that is solar cooked in the afternoon can be kept piping hot in a retained heat cooker for three to four more hours—allowing families to eat a hot solar cooked meal after dark. Retained heat cookers can be constructed using locally available materials (woven baskets or cardboard boxes stuffed with pillows, blankets, grass, crumpled newspaper or other non-toxic insulation)."

This solution can therefore be immediately implemented anywhere in the world. Where available, Styrofoam and similar boxes used as "coolers" can also be conveniently used for this purpose.

See the WHO web pages for [Indoor Air Pollution](#) and the [Global Alliance for Clean Cookstoves](#) website for additional information and updates on research-based recommendations. (See also section 46 re carbon monoxide poisoning.)

8A. HANDWASHING

Most of us know the rules for sanitation, however not everyone, not even doctors, always follow those rules. And that is why so many people continue to get infected and die from infectious diseases. So it is important that we review the rules frequently, even though they seem so simple. WHO and CDC guidelines for hand washing are similar and include the following:

"-Wet your hands with clean running water (warm or cold) and apply soap.

-Rub your hands together to make a lather and scrub them well; be sure to scrub the backs of your hands, between your fingers, and under your nails.

-Continue rubbing your hands for at least 20 seconds. Need a timer? Hum the "Happy Birthday" song from beginning to end twice.

-Rinse your hands well under running water.

-Dry your hands using a clean towel or air dry."

It is important to clean under our fingernails as germs grow there as well.

Do not wash in water that someone else has used. That can transfer their germs and worm eggs to us.

The washing area should have good drainage so that the water does not sit and become contaminated with bacteria or become a breeding area for mosquitoes and other insects.

The drying towels should be washed regularly and hung out in the sun to dry.

8B. WHEN IS HANDWASHING NECESSARY?

It is important that we always wash our hands with soap after using the latrine or WC.

Also remember to wash our hands if we have helped our child go to the latrine or changed a diaper.

If we do not wash our hands before we prepare food, we put the germs and worm eggs, which are too tiny to see, on the food. This can lead to diarrhea, worm infections and other serious diseases.

It is especially important to wash our hands after handling raw meat or poultry, as these often contain harmful bacteria and worm eggs as well.

We should wash our hands after petting a dog or cat for the same reasons.

Always wash before eating or bringing our hands to our mouth.

When we are ill with a respiratory infection, or have an eye infection such as trachoma, we need to remember to wash our hands before touching or shaking hands with anyone else.

9. IMPROPER DISPOSAL OF EXCREMENT

Children should not defecate close to where other children play.

If an animal defecates close to where children play, it must be cleaned up promptly. (The feces of children and animals can be just as dangerous as feces from adults.)

The feces will eventually dissolve in the dirt and you won't see it, but the germs and worm eggs will still be there.

Children often put their toys and fingers in their mouth and get diarrhea and worms this way.

10. PROPER DISPOSAL OF EXCREMENT

The use of properly built latrines is one of the most important ways you and your neighbors can *immediately* begin to prevent deaths from worm infections and bacterial and viral infections. It is very important to build the latrine in a way that keeps flies away from excrement.

There are many different types of latrines and sanitation systems. The example in the picture is a simple pit latrine. (A permanent ventilated [VIP] latrine should be built if large diameter PVC pipe, fly screening and other materials are available.)

For simple pit latrines, the minimum requirement is digging a hole and placing a fly-proof covering over it. A portable reinforced concrete slab is often used. The hole in the center of the slab must *always* be covered with a tight fitting lid when not in use. This is necessary to keep out flies and prevent serious diseases such as Typhoid. So the most important requirements are the *fly-proof cover and lid* (the grey areas in the picture). For this type of latrine, the rest of the building is just for privacy.

The "Water and Sanitation" sections of the WHO website www.who.int give specific instructions for various types of latrines and septic systems. You and your neighbors should consult your local public health authority for the best system to use for your area.

Medicines for treatment of bacteria and worm infections are effective and will help you. However, *unless you can get everyone in your community to use properly built sanitation facilities, you will soon be infected again.*

Here again, we know that Moses and our ancestors knew about the importance of latrines thousands of years ago.

When you are away from home and there is no latrine, children must be taught to go far away from where people bathe or get drinking water or grow their vegetables. They should dig a hole and cover the excrement with dirt.

Remember to teach your children to always carefully wash their hands after using the latrine.

For Pet Owners: The above system is also effective for animal waste in developed countries as well. For example, in the US, excrement from our 75 million dogs usually ends up in our trash cans and landfills. The US Environmental Protection Agency (EPA) estimates that the "typical dog excretes three quarters of a pound of waste per day—or 274 pounds per year." EPA sponsored studies have resulted in US Department of Agriculture guidelines for [Composting Dog Waste](#). However, as noted above, all that is needed is a hole in the ground and a fly-proof cover. This not only prevents exposure to feces-contaminated waste containers throughout the community's disposal system, but eliminates unnecessary handling, as well as transportation and landfill costs. Though not recommended for vegetable gardens, it can also improve the quality of the soil.

11. FLIES AS DISEASE CARRIERS

It is important to not let flies or other bugs land or crawl on us or our food. They often feed on human and animal excrement and carry germs and spread serious diseases such as diarrhea and typhoid fever.

People who live in areas where latrines aren't properly covered often get infected when flies from the latrine land on their food.

If a child or some animal has a bowel movement near the house, it must be cleaned up at once.

Food scraps and dirty dishes should not be left lying around as this attracts flies and other insects.

Food should be covered until it is served.

Flies also spread diseases from person to person, such as trachoma, the eye disease that causes most blindness in the world.

12. INSECT AND RODENT CONTROL

Food scraps and dirty dishes should not be left lying around as this attracts flies and other insects.

Fruit and vegetable waste and other materials such as leaves and grass can be composted in family, school or community compost bins. After a couple months the contents can be removed and used to provide valuable enrichment for your gardens (See Section 14 for further information).

Other trash and insect breeding areas in our neighborhoods should be cleaned up and recycled whenever possible. Recycling saves energy and resources, reduces pollution, and provides raw materials for new products. Check with your local government concerning those items that can be recycled in your area.

What cannot be recycled or composted should be buried in a special pit far from the house or water supply. This is also important for mosquito control.

13. MOSQUITO CONTROL

Malaria, Yellow Fever, Dengue and Filariasis (a parasite disease that causes severe swelling and disfigurement) are some of the illnesses that are spread by mosquitoes.

Mosquitoes breed in water that is not free flowing. To reduce the risk of getting these serious illnesses, mosquito-breeding areas must be destroyed. This includes anything that contains water such as old tires, cans and other trash.

Tires are especially a problem as no matter which way they lay, they retain water. They should be immediately recycled or buried. Some families fill them with dirt and plant fruits and vegetables, especially in urban areas. *Every* family, in both developed and developing countries, should have a garden (See Section 14 for further information).

Prevention of mosquito bites:

All containers that are used for storing water should be covered.

Contact with mosquitoes should be avoided as much as possible. (This is often not possible as the mosquito that causes malaria usually bites at night and the mosquito that causes Dengue usually bites during the day.)

The use of *bed netting* that has been soaked in a long-acting insecticide, such as permethrin, is very important for prevention of malaria and has saved many lives. Women who are pregnant and children are especially at risk and should *always* use treated bed nets.

Wearing long-sleeved shirts and long trousers and dresses may also help. For those who must work in high-risk mosquito infested areas, spraying the outside of their clothes with permethrin is also sometimes recommended. It is very important to follow the directions and not inhale the spray or let it contact the skin. You should check with your local Department or Ministry of Health for current recommendations for your area.

14. GARDENS

Every family, in both developed and developing countries, should have a garden. Plant foods have been found to be critically important for preventing our most common and lethal diseases such as heart disease, stroke, diabetes, and numerous others (See sections 38 and 41).

In addition to cost savings, home-grown fruits and vegetables can contain less pesticide, are fresher, and usually taste better than those that are store-bought.

Gardens also make excellent family, school, church and community projects and provide needed exercise for children as well as adults. Gardening can engage the whole family, strengthen youth and adult relationships, reduce stress, and improve wellness through exposure to sunlight and vitamin D (An important common deficiency in developed as well as developing countries).

Even apartment patios with limited space can be used for container gardens. Essentially any old plastic or metal bucket or other container can be used. There should be a hole in the bottom of the container so the excess water can drain (If the floor must be kept dry, the container can be placed in a base to collect the excess water).

Families that have no area to raise their own food should participate in local school or community gardening projects. These have become very common in cities throughout the world. This can lead to community collaboration and transformation in other areas as well.

Vacant lots are often used by urban communities. If the soil is of poor quality and doesn't drain well, raised beds can be made as shown in the illustration. Ditching can be used or borders can be made with wood boards or stones or even old tires.

Compost Bins: Fruit and vegetable kitchen waste and other plant materials such as leaves and grass can be composted in family, school or community compost bins. After a couple months the contents can be removed and used to provide valuable enrichment for your gardens.

Many different designs of bins as well as different contents can be used. The site is usually under a tree and close to water so that contents can be kept somewhat moist. To improve exposure to air, smaller piles about 3 foot (1 meter) high and 3-5 foot wide are often recommended (If available, a 12 foot length of 3 foot high wire (hardware cloth) fencing can be used to encircle the contents). As a minimum, it should include layers of carbon containing (Brown) and nitrogen containing (Green) materials. The materials should be chopped up as much as possible (decreases composting time). A common design includes alternating layers of the following:

1) Browns: Carbon containing (mostly brown) material (dry leaves and grasses, straw, corn stalks, shredded newspaper, cardboard, paper towels, and napkins). Sprinkle with water so that contents are damp.

2) Greens: Nitrogen containing (mostly green) material (grass clippings, fresh leaves and twigs, vegetable and fruit trimmings, and coffee grounds and filters.-Most any organic material that has moisture or 'life' still in it is considered a green material).

You can also add a thin layer of **3) Composted Soil** (includes beneficial worms and insects to help break down the materials).

If available, you can also add a thin layer of **4) Ash** (includes potassium and other minerals). Sprinkle with water.

If available, you can also add a thin layer of **5) Manure of plant-eating animals** (includes additional nutrients). The manure of flesh-eating animals should not be used (includes harmful worm eggs, etc).

Repeat the layers 3 or 4 times. The compost contents should be kept somewhat moist and exposed to air as much as possible (The contents are usually turned over every 2-3 weeks or so.- The more often it is turned, the sooner the compost will be ready for use). Dairy and other animal products should not be added (Cause bad odors and attract flies and vermin).

If you have questions about gardening or composting, you can ask for assistance at your local church or community meetings. Until relatively recent times most families had gardens, so most communities still have members who are knowledgeable in this critically important area. (For additional information on gardening and composting see the WHO website www.who.int and ask your local Department or Ministries of Health and Agriculture officials for home, school and community gardening guidelines for your area.)

Although some types of worms are very beneficial and are essential for improving the quality of the soil, other worms can be very harmful. These are found where people have contact with uncooked meat, have contact with the excrement of meat-eating animals such as dogs and cats, or do not use latrines.

15A. WORM INFECTIONS

Worm infections cause much serious illness, misery and death in the world. They cause stomach and muscle pain, headaches, fever, cough and wheezing, swelling of the hands and feet, weakness, anemia, malnutrition and seizures. Some migrate to every area of the body including the brain. They are present wherever people eat meat and do not always wash their hands properly, or do not always use latrines.

Worm eggs are found in soil that has been contaminated by excrement. People often get infected by touching soil (or vegetables in contact with contaminated soil) and bringing their hands to their mouth without first washing. Some types of worm infections (*such as Guinea Worm -Dracunculiasis*) are transmitted by contaminated water.

Children get worm infections more often than adults because they often put their hands to their mouths without first washing them.

People can also get worm infections from dogs and cats and other animals, usually through contact with, or foods contaminated with, their excrement. If we pet the animal and put our hands to our mouth without first washing, we may also become infected.

People often get worm infections from meat that is not properly cooked, or from eating other foods that are contaminated after touching uncooked meat.

People often get worm infections directly from other people. People with worm infections often pass worm eggs in their stool, even when they don't know they are infected. The eggs are too small to see. If they do not always wash their hands after using the toilet they pass the eggs to other people. They do this when they touch food or other people or objects that other people use. When they do not wash their hands appropriately, they also re-infect themselves. When ingested, the eggs hatch and larvae from the eggs can migrate to the brain and lungs and other organs. So washing our hands after using the toilet or touching uncooked meat is critically important for our own health, as well as the health of our family and everyone in our community.

Hookworms burrow into the skin of people who go barefoot.

Pinworms are tiny worms that cause anal itching, especially at night. People (especially children) keep re-infecting themselves by scratching the anal area and then bringing their hands with the worm eggs to their mouth. Except for causing anal itching, the pinworms are harmless. However, if the person is also infected with harmful worms, the scratching hand to mouth process can cause re-infection with those worms as well.

How to prevent worm infections:

- 1) Springs and wells should be protected from contamination by people or animals.
- 2) Latrines should be properly built and they should *always* be used.
- 3) Hands should *always* be washed after using the latrine, changing a diaper, petting dogs and other animals, or touching uncooked meat.
- 4) If there are doubts about the safety of the drinking water, it should be boiled or otherwise purified.
- 5) Our hands should always be washed before putting them to our mouth, eating, or preparing meals.

15B. PREVENTION OF WORM INFECTIONS (CONTINUED)

6) Wash your hands often during food preparation. This is especially important if you eat meat. Meat and poultry are also frequently infected with very dangerous bacteria.

7) If you prepare meat or poultry, also be certain to wash your food preparation area frequently with hot soap and water. Also be certain to use *separate* equipment and utensils such as knives and cutting boards for handling those foods. This is also a common source of restaurant caused infections. (See also Sections 17A&B).

8) Dogs, cats and other animals should be kept out of the house. Hands should always be washed after touching them. Their excrement should always be promptly disposed of (See Section 10).

9) If there is hookworm in the area, always wear shoes or sandals.

(Optional Depending on the Area: Shoes are very important for the prevention of other common diseases such as Tungiasis [sand flea disease] and Podoconiosis [a type of elephantiasis causing severe swelling and deformity of the feet due to contact with mineral particles in irritant red clay soils in the highland areas of tropical Africa, Central America and north-west India.]

10) To prevent worm re-infections, people should wear underpants or pajama bottoms to bed, especially if they have anal itching.

16. SCHISTOSOMIASIS (Optional, Depending on the Area)

Schistosomiasis is another serious worm disease that could be completely eliminated if all people always used latrines. Schistosomiasis is contracted by wading or bathing in freshwater streams and lakes that have been contaminated by human urine or feces. The worms enter through the skin, migrate through the blood vessels and cause tissue destruction in the urinary bladder, intestine, liver, lungs and brain.

To prevent schistosomiasis: Avoid all contact with freshwater streams and lakes that are infested. Vigorous towel drying after accidental exposure to water may help to remove cercariae in the process of skin penetration, although this is not very reliable. Heat any water used for bathing or washing (50 degrees C [122 degrees F] for 5 minutes), or use approved water filters or disinfectant tablets. Or if these measures are not feasible, just allow water used for bathing to stand for 3 days (Cercariae, the infective stage of the worm, rarely survive longer than 48 hours).

17A. SAFE FOOD PREPARATION

People can get worm and other serious infections when food is not prepared or cooked properly. This is especially common if families eat meat and other animal products:

Tapeworms are gotten from eating pork, beef and fish when they are not adequately cooked. Worm infections can also be gotten from the utensils or containers used to prepare the meats if the utensils are used for other foods before they are washed in very hot water.

The following are from The World Health Organization: **Five keys to safer food.**

1) Keep clean

-Wash your hands before handling food and often during food preparation, especially after handling raw meat, poultry and seafood. For example, touching vegetables after touching raw meat transfers the bacteria and worm eggs to the vegetables. So even if you did not eat meat, you could become infected from a restaurant where meat was prepared in the same kitchen, if the cooks did not carefully follow safe food preparation guidelines.

-Wash your hands after going to the toilet

-Wash and sanitize all surfaces and equipment used for food preparation

-Protect kitchen areas and food from insects, pests and other animals

-Cloths and sponges used for cleaning dishes should be replaced daily. (Many organisms can grow in the wet cloth.) They should be cleaned in hot water and hung out in the sun to dry.

Why? Dangerous microorganisms (viruses, bacteria, worm eggs, etc.) are widely found in soil, water, animals and people. These microorganisms are carried on hands, wiping cloths and utensils, especially cutting boards and the slightest contact can transfer them to food and cause diseases. For example, people who carry the pork tapeworm secrete eggs in their stool. If hands are not always washed properly, these eggs are transferred to food and other objects. When ingested, the larvae from the eggs migrate to the brain and other organs. This is the most common cause of convulsions in many countries. It is especially common where people do not always use latrines, or wash their hands after using the toilet, or eat pork that is not adequately

cooked, or eat food that is contaminated after touching uncooked pork. Though not as frequent, it also occurs in the US and other developed countries (See also sections 15A&B).

17B. SAFE FOOD PREPARATION (CONTINUED)

2) Separate raw and cooked

-If you eat meat, separate raw meat, poultry and seafood from other foods, and be certain to wash your hands very thoroughly after touching any raw meat product.

-Use *separate* equipment and utensils such as knives and cutting boards for handling raw foods. Do *not* use the same cutting boards for fruits, vegetables and breads as you do for raw meats poultry and seafood. Even with careful cleaning the organisms from the animal flesh remain in the nicks in the wood.

-Store food in containers to avoid contact between raw and prepared foods

Why? Raw food, especially meat, poultry and seafood, and their juices, can contain dangerous microorganisms which may be transferred onto other foods during food preparation and storage. (Proper cooking can eventually destroy the organisms in the meat, but the uncooked fruits and vegetables can become contaminated by the meat knives or cutting board.)

3) Cook thoroughly

-Cook food thoroughly, especially meat, poultry, eggs and seafood

-Bring foods like soups and stews to boiling to make sure that they have reached 70°C. For meat and poultry, make sure that juices are clear, not pink (Ideally, use a thermometer if one is available).

-Reheat cooked food thoroughly

Why? Proper cooking kills almost all dangerous microorganisms. Studies have shown that cooking food to a temperature of 70°C can help ensure it is safe for consumption.

Foods that require special attention include minced meats, rolled roasts, large joints of meat and whole poultry. Inadequately cooked meat, poultry, eggs and seafood are a common cause of dangerous bacteria and worm infections.

4) Keep food at safe temperatures

-Do not leave cooked food at room temperature for more than 2 hours

-Refrigerate promptly all cooked and perishable food (preferably below 5°C)

-Keep cooked food piping hot (more than 60°C) prior to serving

-Do not store food too long even in the refrigerator

-Do not thaw frozen food at room temperature

Why? Microorganisms can multiply very quickly if food is stored at room temperature. By holding at temperatures below 5°C or above 60°C, the growth of microorganisms is slowed down or stopped. Some dangerous microorganisms still grow below 5°C.

5) Use safe water and raw materials

-Use safe water or treat it to make it safe (See Section 6)

-Select fresh and wholesome foods

-Choose foods processed for safety, such as pasteurized and powdered milk

-Wash fruits and vegetables, especially if eaten raw

-Do not eat food from cans that are swollen or that squirt when opened.

Why? Raw materials, including water and ice, may be contaminated with dangerous microorganisms and chemicals. Toxic chemicals may be formed in damaged and moldy foods. Care in selection of raw materials and simple measures such as washing and peeling may reduce the risk.

Additional information in several languages is available in the WHO “Five Keys to Safer Food Manual” at www.who.int

18. BREAST-FEEDING

Breast-feeding is *the most important thing you can do to protect your baby* from serious illnesses and death. The WHO and UNICEF recommend:

-*Exclusive breast-feeding (No other foods or liquids) from birth for the first 6 months of life.* Human milk provides all the fluids and nutrients a baby needs to be healthy. If your baby has a fever or has diarrhea and you feel your baby may need extra water or ORS (Oral Rehydration Solution), you may offer safe water or ORS with a spoon.

-Other foods may be gradually started *after* 6 months of age, however, breast-feeding should be *continued until at least 24 months or longer.*

-As you are also eating for your baby, it is very important that you get more than your usual share of healthy food.

-Being **underweight** is one of the most common killers of children in poor families, especially those under the age of five. The younger the child the greater the risk. The additional food started after six months should therefore be as nutritious as possible (Cereal fortified with iron is often recommended).

So this is a good picture as the child this mother is feeding is almost 3 years old.

19. BOTTLE FEEDING

Many mothers are not aware of the many critical health benefits of breast-feeding for both mother and child. In the US it is usually the wealthier and best educated women who breast feed their babies.

It is estimated that *over one million* children die each year because they are not adequately breast-fed.

Breast milk contains antibodies that are not present in any other kind of milk or food. When babies don't get the antibodies that are present in breast milk they often die from diarrhea, pneumonia and other infections.

Babies also often get sick when their mothers do not properly sterilize the bottles and nipples and formula before feeding the baby. This is a great deal of work and is very difficult to do properly even under ideal conditions with safe water and modern stoves and refrigerators. So never use baby bottles for feeding anything, even water. Use a cup and spoon instead. They are much easier to keep clean.

Babies also often get sick when they are fed milk that has been left standing at room temperature for several hours after being prepared.

Breast-feeding also has many **benefits for the mother**: It reduces the risk of cancer of the ovaries and breast and builds bone strength to protect against osteoporosis (thin, weak bones) and bone fractures in older age. Although not always reliable for this purpose, breast feeding can also help the mother space her pregnancies, so that she does not become pregnant too soon. So the mother is making the baby and herself healthier by breast-feeding. (Some mothers worry that breast-feeding will cause “sagging” breasts and that they won't be as attractive. Studies have shown that this is not true. Increasing the number of your pregnancies can be associated with “sagging” breasts, but *not* breast-feeding.)

If the mother must work outside the home, the enabling of continued breast-feeding at work also has **benefits for the mother's employer**: As breastfed babies don't get sick as often, there is

a reduction in sick time taken by parents for children's illnesses, and lower health care and insurance costs.

The most important benefit for babies from human breast milk is probably the antibodies that protect babies from becoming ill, however there are numerous other benefits. There is increasing concern about the harmful effects of hormones and other chemicals in cows milk. Recent studies have even shown that breast-fed babies grow up to be smarter than formula fed babies. We still don't know the reasons for this. Perhaps it's because formulas are usually made from cows' milk and cows don't need to be very smart when they grow up.

20. IMPORTANT FACTS ABOUT BREAST-FEEDING

Sometimes mothers stop breast-feeding because they receive bad advice. Sometimes that bad advice comes from doctors who are not specialists in the care of mothers and babies.

If You Feel You are not Producing Enough Milk for Your Baby: This is a very common problem, especially right after the baby is born and your milk supply is first coming in.

1) *NEVER* give "supplemental" bottle feedings to your baby. This is by far the most common cause of decreased milk supply. (The less your baby breast-feeds, the less milk your body will produce.) If your baby is sick with diarrhea and you feel your baby may need extra water or ORS, you may offer this with a spoon. (Bottles and nipples are frequent causes of infection and diarrhea unless they are always properly sterilized.)

2) Breast-feed **MORE** frequently. The more often you breast-feed the more milk you will produce.

3) Drink more liquids.

4) Get more rest. Lack of rest also can lead to post-partum depression. Your husband and other relatives need to take over your other duties until the baby is breast-feeding without any difficulty. Because breast-feeding is so important for your baby's life, it is necessary that all of your other responsibilities be of secondary importance.

5) As you are also eating for your baby, it is important that you get more than your usual share of healthy food. This is necessary to prevent your baby from becoming underweight. Additional vitamins, if available, may also help.

6) If you must leave your baby to go to work, breast-feed before and after and as often as possible when you are at home.

7) There are also a couple of natural reflexes that are there to help you and it is important that you work with them and not against them. **Rooting Reflex** and **Latching On** (See lower Picture):

-Touching your breast to the center of your baby's lips stimulates your baby to open his mouth widely. This is called the "rooting reflex." As this occurs, pull your baby straight forward onto the nipple and areola. (The areola is the area of darker colored skin surrounding the nipple.) When a baby is correctly positioned, or "latched on," your nipple and much of the areola are pulled well into the baby's mouth. Your baby's lips and gums should be around the areola and not on the nipple.

-You can help your baby latch on by holding the breast with your free hand as shown in the picture. Place your fingers under the breast and rest your thumb lightly on top (back behind the areola). Make sure your baby is properly lined up at your breast. Also be sure your fingers are well back from the areola so they do not get in the way.

-Babies use their lips, gums, and tongues to get the milk to flow from the breast. Simply sucking on the nipple will not draw milk and may hurt the nipple. When the baby first nurses

there will be a tugging sensation. If it hurts while you breast-feed, then your baby may not be latched on correctly and may need to be repositioned.

-Break the latch on by slipping your finger into the corner of your baby's mouth, reposition, and try again. It can take several tries.

8) The mother's **letdown reflex** causes the release of milk from the breast. If the mother is worried, tense or upset it can interfere with the release of milk. So if your household is not very peaceful, set aside a quiet place ahead of time where you can relax and not be disturbed during feedings.

Cracked Nipples: If your baby is not positioned properly or does not latch on well when you start breast-feeding, you might end up with cracked or sore nipples.

-To prevent cracked nipples, position the baby better and be sure the baby's lips and gums are on the areola and not on the nipple. Also, try to vary your baby's position at each feeding. And alternate between which breast you offer first.

-While some infants nurse for only 10 minutes on one breast, it is common for others to want to nurse much longer. However, if your nipples are sore you may want to limit the length of feeding to 10 minutes on each side and to increase the frequency of feeding until the soreness resolves.

-If your baby has fallen asleep at your breast, or if you need to stop a feeding before your baby is finished, gently break the suction with your finger. Never pull the baby off the breast without releasing the suction.

-The best treatments for cracked nipples are dryness and warmth. Do not wear plastic breast shields or plastic-lined nursing pads that hold in moisture. Wash your breasts only with water, not soap. Creams and lotions rarely help and may actually make the problem worse. Instead, gently pat your nipples dry, then apply some of your milk.

Mother's Illness: Many parents are concerned that breast-feeding has to stop if the mother becomes ill. During most illnesses (including colds, flu, bacterial infections and even surgical conditions), breast-feeding should continue. Both the mother and baby benefit if it does. (Sometimes doctors who aren't specialists don't know this and tell mothers to stop when they should actually continue.) By the time you show symptoms of an illness, your baby has already been exposed to it. The best thing for the baby is to continue breast-feeding. This is because you have already started to produce antibodies that through your milk protect your baby from getting infected. If you stop breast-feeding when cold or flu symptoms appear, you actually reduce your baby's protection and increase the chance of the baby getting sick.

-If for some reason you are unable to breast-feed your infant while you are ill, keep up your milk supply by expressing milk for your baby either by hand or using a pump. Even with more serious illnesses, such as breast abscess, surgery requiring anesthesia, or severe infections, you usually only need to stop breast-feeding for a very short period.

-However, there are two diseases that mothers *can* transmit to their babies. One is *untreated* tuberculosis. Mothers with active tuberculosis should not breast-feed until appropriate treatment has been started. The other is AIDS. Whether mothers with AIDS in developing countries should breast-feed remains controversial (See section 5). So other than active TB that has not yet been treated, and perhaps AIDS, breast-feeding should be continued, even if there is mastitis.

Mastitis: Mastitis is an infection of the breast. It occurs when a milk duct gets blocked and bacteria infect a portion of the breast. It causes swelling, burning, redness, and pain. This usually occurs in just one breast and may also cause the nursing mother to feel feverish and ill. If you have any of these symptoms, let your health provider know at once so that you can start

antibiotics. Lots of rest, warm compresses, antibiotics, breast support, and continued breast-feeding are all that are usually needed. Do *NOT* stop breast-feeding. This condition will not hurt the baby and frequent nursing will help prevent the infection from spreading.

21. DIARRHEA

Bottle feeding is the most frequent cause of diarrhea in infants. Unsafe water, infected meat, poultry and eggs, and inadequate hand washing are frequent causes in older children and adults. Diarrhea kills more than 4 million children every year (More than 10,000 per day). *Most of these deaths could be prevented by breast-feeding, boiling or otherwise treating water to make it safe, and proper use of ORS (Oral Rehydration Solution) or "Suerro".* The ORS is used to prevent and treat dehydration by replacing the fluid and minerals that are lost in the diarrhea and vomiting.

It is very important to remember that it is *not* the diarrhea, but the *dehydration* that kills people with diarrhea. The diarrhea itself is *often necessary* so that the body can get rid of toxins. And medicines that just stop the diarrhea have been shown to *increase* mortality in children. So it is replacing the fluids that are lost through diarrhea that is lifesaving. Dehydration can also kill teenagers and adults, however, the younger the child, the greater the risk.

Oral Rehydration Solution (ORS) Packets: Management of acute diarrhea should begin at home. Families with infants and small children should keep a supply of ORS packets at home at all times and use the solution when diarrhea first occurs in the child.

22. HOW TO MIX ORS

Always use safe drinking water. If you are not certain that your water is safe, bring it to a rolling boil for at least 1 minute, cover it and let it cool. (Or use the public health method recommended to make the water safe in your community.)

Add one packet of ORS to one liter (1000cc) of safe water.

Make certain to use a container that holds at least one liter. It must be at least this size (Show water bottle) otherwise the solution will be too concentrated and can make you sick.

(Optional Depending on the Area: For those countries that use ounces point out the similarity between one liter [1000cc] and one quart [32 oz.]

(Optional For Short Term Medical Teams: This is the water bottle we use to prepare our ORS when we get sick with diarrhea. We will leave a water bottle like this with _____ so you can compare your container to be certain it is the correct size.)

(Note: ORS is by far the best solution, however in those areas where ORS packets may not be available, recommended home fluids as designated by your country's Ministry of Health should be utilized. See Section 23, RULE #1. Home-made solutions with table salt and sugar are no longer recommended in most countries as deaths have occurred from mistakes in preparation. Also the home-made solutions usually do not contain needed potassium.)

23. HOW TO TREAT DIARRHEA AT HOME--INCREASED FLUIDS & FOODS

These rules are from the WHO. They were originally written for children as they are at much greater risk of dying from dehydration due to diarrhea than adults, however the same treatment principles apply to adults. Following the guidelines is very important and is often lifesaving. **There are now four rules for treating diarrhea at home** (A new rule "Give supplemental zinc" has been added):

RULE #1: Give the Child *More Fluids* than Usual to Prevent Dehydration:

1) Use recommended home fluids:

-*Next to Breast Milk, ORS solution is the best* for all ages. Purified plain water is also good and may be used for all ages, however plain water does not replace the salts that are lost in the stool. You see that the ORS is being given with a cup and spoon. Never use baby bottles. Baby bottles are very difficult to keep clean and can contain deadly germs.

-For Children **over 6 months** old, you may, in addition, use food-based fluids that the child has had before. **What fluids to give:** If your country's Ministry of Health has designated recommended home fluids you should use those. *This is especially important if ORS packets may not be available.* Wherever possible, these should include at least one fluid that normally contains salt (see below). Plain safe water should also be given.

Unsuitable fluids: A few fluids are potentially dangerous and should be avoided during diarrhea. Some examples are: Commercial soda and other carbonated beverages, Commercial fruit juices, Sweetened tea, Coffee, Some medicinal teas or infusions.

Suitable fluids: Most fluids that the child normally takes can be used. It is helpful to divide suitable fluids into two groups:

A. *Fluids that normally contain salt, such as:* ORS solution, salted drinks (e.g. salted rice water or a salted yoghurt drink), vegetable or chicken soup with salt. (Note: These should contain the normal amount of salt. Do not add additional or more salt than usual.)

B. *Fluids that do not contain salt, such as:* Plain safe water, Water in which a cereal has been cooked (e.g. unsalted rice water), Unsalted soup, Yoghurt drinks without salt, Green coconut water. Weak tea (unsweetened), Unsweetened fresh fruit juice. (Note: Many of the fluids in group B also provide needed potassium. Check with your local Ministry of Health if you have questions on the best fluids to use in your area.)

2) Give as much of these fluids as the child will take.

3) Continue giving more of these fluids until the diarrhea stops.

RULE #2: Give supplemental zinc (Up to 6 months of age: 10mg every day for 14 days. Six months or more: 20mg every day for 14 days.) Zinc can be given as a syrup or as dispersible tablets, whichever formulation is available and affordable. By giving zinc as soon as diarrhea starts, the duration and severity of the episode as well as the risk of dehydration will be reduced. By continuing zinc supplementation for 10 to 14 days, the zinc lost during diarrhea is fully replaced and the risk of the child having new episodes of diarrhea in the following 2 to 3 months is reduced.

RULE #3: Give the Child Plenty of Food to Prevent Under-nutrition.

1) *Increase the frequency of breast-feeding.* Breast-feeding is always what is most important both for prevention and treatment of diarrhea. If the child is not breast-fed, give the usual milk in a cup. However, if the cow's milk seems to make the diarrhea worse, you may have to temporarily change to a lactose free formula such as soy.

2) If the child is six months or older you may continue to give the following foods, *if the child has had them before:*

-cereal or another starchy food mixed with milk or pulses (peas, beans, lentils, and similar plants having pods), vegetables, meat, fish or egg.

-give fresh fruit or mashed banana or green coconut water to provide potassium.

-give freshly prepared foods; cook and mash or grind food well to help digestion.

3) *Encourage the child to eat,* offer food at least 6 times a day. Frequent, small feedings are tolerated better than less frequent, large ones.

4) *Give the same food after diarrhea stops*, and give an extra meal each day for two weeks.

5) *While the person is having diarrhea*: Your body needs some sugar and ORS contains exactly the right amount. However, *do not give foods high in sugars* (Sodas and sweetened drinks such as tea, coffee [which also contain stimulants] or other drinks to which sugar has been added)--These draw water into the intestine and make the diarrhea worse. (Also do not use commercial fruit juices. These also contain added sugars which can make the diarrhea worse.)

RULE #4: *See next section and illustration (#24).*

24. WHEN TO TAKE THE PERSON WITH DIARRHEA TO THE HEALTH CARE PROVIDER

RULE #4: Take the person with diarrhea to the health provider if she/he develops any of the following (The younger the child, the sooner you should take her/him):

- does not get better in three days
- many watery stools
- develops a fever or looks sicker
- repeated vomiting
- blood in the stool
- eating or drinking poorly
- becomes very thirsty
- seems to be getting dehydrated. We will talk about dehydration next.

25. SIGNS OF DEHYDRATION

Signs that you or your child may be becoming dehydrated include the following:

- decreased frequency and amount of urination. Urine may be dark colored.
- mucous membranes of the mouth may be slightly dry.
- increased thirst--this may cause them to be restless or irritable. They usually want to breast feed more often. However, children who are severely dehydrated may be too lethargic to drink.

Signs of severe dehydration include:

- increased heart rate
- tenting of the skin (Skin pinch goes back slowly)
- listless
- sunken eyes and fontanel (soft spot).

If your child has any of these signs you need to take her to your health care provider IMMEDIATELY. You should continue trying to give ORS on the way. (The child in lower picture is severely dehydrated and is an example of what we are trying to prevent. When a child looks this bad it is nearly always too late for ORS as he is too lethargic to take enough by mouth and needs immediate stomach tube or IV treatment for survival. The child should be taken to the health provider before he gets this sick.)

26. ORS FOR PREVENTION OF DEHYDRATION

There are two reasons to give ORS, prevention and treatment:

Reason #1: For diarrhea, to prevent dehydration (WHO Plan A):

ORS is used to replace fluid from ongoing stool losses in children with mild diarrhea and no dehydration. Offer ORS after each loose stool. (At least 10 ml/kg after each loose stool is recommended. Example: For 1 year old at 10 kilograms, this equals 100 cc after each loose

stool). *Offer as much as they will take as long as they are not vomiting.* However, children who are not dehydrated often don't want to take ORS, in part because of the salty taste.

If your child refuses to take the ORS:

-First try giving small amounts of ORS frequently by spoon so that the child gets used to the taste.

-You can also try adding a few drops of lemon or some other fruit to make it taste better. (Do not add sugar as sugar can make diarrhea worse)

(Optional For areas where Low-osmolarity ORS packets are not yet available [See illustration box with the question mark]: Studies several years ago showed that a more dilute form of ORS is better tolerated in most children. So if your child refuses to take the full strength ORS, you may wish to add 1/4 cup of safe water to 3/4 cup of ORS. However, ORS packets in most countries have now been reformulated to be less concentrated [Low-osmolarity ORS] so this dilution with 1/4 cup of safe water should no longer be used in most areas. Original full strength ORS, if available, has been recommended for adults with Cholera. So check with your Department or Ministry of Health to determine whether dilution is recommended.)

If the diarrhea is very mild, ORS may not be required *if* age-appropriate feeding is continued and other fluid consumption is encouraged. Continued age-appropriate feeding, with increased fluid intake as described in Rules #1 to #3, may be the only therapy required *if* there is no dehydration.

27. ORS FOR TREATMENT OF DEHYDRATION

ORS for *treatment* of dehydration (WHO Plans B&C): This is **Reason #2** for giving ORS and here the use of ORS is *extremely important*.

Only ORS and breast milk should be given until the child is rehydrated, or if the child is vomiting.

If the child is not breast-fed and full strength ORS is used, additional safe drinking water should also be offered.

(Note: ORS is by far the best solution, however in those areas where ORS packets may not be available, recommended home fluids as designated by your country's Ministry of Health should be utilized. See Section 23, RULE #1.)

How To Give ORS:

-Begin with a tablespoon every 1–2 minutes for a child under 2 years.

-Give frequent sips from a cup for older children.

-The amount can be gradually increased as long as there is no vomiting.

-If the child vomits, wait 5-10 minutes. Then give the solution more slowly (for example, a spoonful every 2–3 minutes and gradually increase as tolerated).

-If diarrhea continues after the ORS packets are used up, give other fluids as described in Rule # 1 above and return for more ORS packets.

How Much ORS to Give: As long as there is no vomiting, you should give as much as the child will take. In general, after each loose stool, give:

-Children under 2 years of age: 50-100 ml (a quarter to half a large cup) of fluid

-Children aged 2 up to 10 years: 100-200 ml (a half to one large cup)

-Older children and adults: as much fluid as they want.

-If the child's eyelids become puffy, stop the ORS and give only breast milk (or plain water if the child is not breast-feeding). Re-start the ORS after the puffiness is gone.

(For additional information see www.who.int sections on Diarrhoea)

28. TAKING MEDICATION

All medicines can be dangerous.

-It is very important that you take medicine *only as directed* by your health care provider. Never give your medicine to someone else to use. Many people die from inappropriate use of medicines. And all medicines can cause harm if not used correctly. So always be sure to ask your health care provider or the pharmacist if you have any questions.

-A common mistake is to take more medicine than directed. Some people think that if a little bit is good, more should be better. This is *not* true. Medicines cause very toxic effects and death if taken in too high a dosage.

-It is also very important to check with your doctor *before* reducing the frequency or dosage of a medicine your doctor has prescribed. For example, reducing some blood pressure medicines can cause rebound high blood pressure which can cause strokes. Not taking tuberculosis medicines exactly as directed can lead to resistant bacteria which do not respond to any treatment. And there are many other examples.

-Always be certain to tell our providers if you are currently taking any medicine. Otherwise the medicine we give you might interact with the ones you are taking and cause you serious harm.

-Keep all medicines out of reach of children. This is VERY, VERY important. Many children die from ingesting medicine. So be certain to keep ALL medicines, including the ones we give you, locked up in a safe place.

Developing babies are especially susceptible to the harmful effects of medicine:

1) That is why pregnant women should take *no* medicine at all except for certain vitamins. When medicines must be given, a health care provider knowledgeable in the care of pregnant women should specifically approve them.

2) *Nausea and vomiting* are common during pregnancy, especially during the first part of pregnancy. This is often called "morning sickness," although it can occur at any time of the day. It usually goes away by the middle of pregnancy. Vitamins B6 and B12 have been shown to be beneficial and are provided in most multivitamins. Ginger preparations have also been shown to be helpful. Additional things you can do to help you feel better include (Modified from American College of Obstetrics and Gynecology): Get up slowly in the morning and sit on the side of the bed for a few minutes. Eat dry toast or crackers before you get out of bed in the morning. Get plenty of fresh air. Take a short walk or try sleeping with a window open. Drink fluids often during the day. Cold drinks that are bubbly or sweet may help. Eat five or six small meals each day. Try not to let your stomach get empty, and sit upright after meals. Avoid smells that bother you. Eat foods that are low fat and easy to digest.

3) Pregnant women should *never drink alcohol or use tobacco*; even small amounts of these chemicals can cause harm to the developing baby.

4) However, *taking certain vitamins is important* for women who are pregnant. This ensures they are receiving enough folic acid to prevent spine and nerve defects and possibly cleft lip/palate in their babies. Women who *may* become pregnant should also avoid alcohol and tobacco and should take vitamins as some of these defects can occur by the 4th week, before she realizes she is pregnant.

The food supplement industry is not regulated in some countries, including the US. If your vitamins are made in the US, to ensure quality and safety, it is important that the label always include a "USP", "CL" or "NSF" certification logo (See Illustration). This does *not* mean that all products with the logos are effective or that they should be taken, as some vitamins and other

supplements have been shown to be worthless or actually harmful to our health. It only means that the independent laboratory certifies that the product actually contains what the label says it contains (See also Section 38B). These preparations continue to cause unnecessary suffering and deaths. So in the US, we first need to determine whether the vitamin or supplement is recommended by the WHO or other evidence-based authority such as the CDC or Institute of Medicine. And then find a preparation that includes one of the above certification logos on the label.

Choking is a very common cause of death in children less than five years of age. So if your child is less than 5 years and must take pills or "chewable" vitamins, grind them into a powder between two spoons. You can then mix them with a small amount of liquid or food.

Antibiotics are overused in all countries we go to. Antibiotics are only good for infections caused by certain harmful bacteria. Different kinds of antibiotics work for different kinds of bacteria. However most respiratory infections and diarrhea are caused by viruses, and antibiotics can cause people with virus infections to become worse. Using antibiotics can be harmful by destroying the good bacteria in your system. Destroying the good bacteria can allow fungus and other infections to take over. Unnecessary use of antibiotics also causes resistant bacteria that cause very serious illness that will not respond to any treatment.

All medicines, even when used correctly, can have harmful unintended side effects and cause many deaths. This is true for even the most commonly used over-the-counter medicines. For example, Ibuprofen and other commonly used NSAID pain medicines can cause heart attack, stroke, kidney failure, and severe intestinal bleeding without warning symptoms, *even when taken in recommended dosages*. Tens of thousands of people have died from these NSAID pain medicines. Older people are especially at risk.

-Even natural medicines and some kinds of teas have caused serious illness and deaths.

-So if any medicine is making you feel worse, **immediately** talk to your health care provider.

29. PREVENTION OF RESPIRATORY INFECTIONS

There are two main types of respiratory infections:

1) Upper Respiratory Infections (usually "virus colds"-these are very common and can be managed at home) and

2) Lower Respiratory Infections (often pneumonia-this causes many deaths and needs to be evaluated by a healthcare provider as soon as possible).

There is much you can do **to prevent** the above conditions:

-The most important thing we can do to prevent and reduce the severity of respiratory and other infections in children is to *breast-feed* them (at least 24 months or longer). Exclusive breast feeding (no other foods) for the first 6 months of life is especially important.

-Keep your family's *immunizations up to date*. Although immunizations will not prevent virus colds, they can prevent common types of pneumonia and other deadly complications.

-Washing your hands will help keep you and others from becoming ill.

-Provide adequate nutrition. This is especially important for pregnant mothers and children. This includes adequate Vitamin A, C and D, and Zinc (See section 38).

-Avoid using alcohol and tobacco.

-Reduce indoor air pollution: Prevent tobacco smoke. "Second hand" smoke harms children's lungs as well as the smoker's lungs. Use properly ventilated stoves (See section 7).

Respiratory infections are spread through coughing and sneezing and failure to wash our hands before touching others. To **avoid spreading** our illnesses to others we must:

-Cover our mouth or nose (Can use the bend in our arm) when we cough or sneeze.

-We must not pick up our children or shake hands with others until after we wash our hands. So again, *hand washing is one of the most important things we can do to prevent disease in both ourselves and others.*

30A. CARING FOR RESPIRATORY INFECTIONS

Upper respiratory infections. Most are caused by viruses. **Virus colds** are the most common illnesses we get. Nearly all of us get these infections two or three times a year and children often get them 5 or 6 times a year. A cold often includes a runny or stuffy nose, sore throat, sneezing and coughing and can last for two weeks or sometimes more, however most can be managed at home.

There are hundreds of different kinds of cold and cough medicines for sale in all countries we go to. Unfortunately, none of the medicines, even those from the US, have been shown to cure a cold or even reduce complications. Though intended to reduce cold symptoms, these medicines can actually be harmful and make people sicker. They are especially harmful for children. For example: Decongestants constrict the arteries not only in the nose, but throughout the body. They can make children irritable and hyper, interfering with their need for rest, and can cause elevated blood pressure and stroke in adults as well. The antihistamines thicken airway secretions, and cough medicines suppress the natural protective cough reflex.--Both therefore *increase* the chances of developing pneumonia, especially in children. The medicines have also been associated with numerous other harmful effects and other causes of death, such as Sudden Infant Death Syndrome. You should also avoid using alcohol and tobacco.

So what can you do if you or your child is sick with an upper respiratory infection (virus cold)? (The following are also recommended to **prevent pneumonia.**)

1) *Drink lots of liquids.* This has been shown to be effective for all ages. This helps to keep the secretions loose so that they can be coughed up or swallowed and also helps prevent pneumonia and sinus infections.

2) Offer adequate nutrition. Increased fruits and homemade fruit juices (do not add sugar) are often recommended for virus colds. (Note: For children with inadequate nutrition, supplemental zinc may help to prevent pneumonia. However, the best dosage is not yet known, and too much zinc can also be harmful, so providers need to check the WHO website for current recommendations.)

3) For breast-fed infants, *increase the number of breast-feedings.* Breast milk has antibodies that can help fight infections. This is especially true if the mother is already sick with the virus.

4) If the air is very dry it may also help to increase the humidity--by boiling water on a well-ventilated stove, or breathing in steam from a cup or bowl of hot water, for example (Be careful not to place the hot water where it can spill and cause burns).

5) For infants who cannot yet "blow their nose": If the secretions interfere with breast-feeding, *clear the nose with a bulb suction syringe.* If the secretions are thick, placing a few drops of *saline solution* in the nose and then suctioning may also help.

This may also help adults with sinus infection. You can make saline solution by adding a pinch of salt to 30cc (1ounce) of safe water. Be certain to keep the bulb syringe clean and to wash it with soap and clean water between uses.

30B. CARING FOR RESPIRATORY INFECTIONS (CONTINUED)

6) Chicken or vegetable *soup broth* and *hot tea* may also be helpful.

7) Also be sure to get enough *rest*.

8) **TLC (Tender Loving Care)**. This is very important not just for respiratory infections, but also for *all* illnesses. Sick people especially need to be shown that they are loved. We can show our love for them by:

-touching or holding them

-reading to them

-massaging aching muscles or "back rubs"

-praying with them and for them.

Probably you are doing many of these things already, but perhaps you did not realize how important they were. Scientific studies have shown that "loving care" treatments *are* effective in helping people get better, and have reduced the death rates in children by *greater than 25%*.

Numerous WHO reports and WHO "Quality of Life Assessments" also recognize the importance of the spiritual aspects of health. And reports from the US National Institutes of Health document how our "beliefs and values" initiate a neurohormonal cascade that results in the healing response. This is *proven* medical science and is not at all controversial. Your spiritual beliefs, lifestyle and prayer can be *very* important for your family's healing.

Lower Respiratory Infections (Often Pneumonia). Occasionally a person with a virus cold will go on to develop pneumonia or other serious infections. This happens most often in children who are not breast-fed, those who are malnourished, those exposed to tobacco smoke and other indoor air pollution, those who are treated with cough & cold medicines, and those whose immunizations are not up to date. Pneumonia is the most frequent cause of unnecessary death in children. (See Section 30A for how to prevent pneumonia.) If your child develops rapid or difficult breathing or other signs of more serious illness, it is very important to be evaluated by a healthcare provider *as soon as possible*. See section 32 for other signs that you or your child needs to be evaluated by a healthcare provider.

31. TREATMENT OF PAIN AND HIGH FEVER

It is important *not to overdress* children when they are sick. Overdressing can cause the fever to become very high. Babies and children should have the same amount of clothes and blankets on as you need yourself to feel comfortable.

Most fever does not need to be treated. Fever may actually help our bodies to fight infection. If the fever is very high, and the child is uncomfortable, sponging the child with lukewarm water may be helpful. However this should be stopped if the child starts to shiver, as shivering increases the body temperature. Massaging the child's skin while applying the water may also help bring down the temperature.

Again, remember to *drink lots of liquids*. Fluids are very important for bringing down high fever.

Also, most of the **headaches** in patients we see are caused by not drinking enough fluids (dehydration). Dehydration is especially common in people who are ill, and also in field workers and should be treated (and prevented) with water or other fluids, *not* medicines. (NSAIDs such as Ibuprofen can cause kidney toxicity when taken by children and adults with even mild dehydration.)

Paracetamol (APAP, Acetaminophen, Tylenol, and Tempra are the same). Paracetamol may occasionally be helpful in the treatment of some infections when there is pain or very high fever. However, like all medicines, it can also have adverse effects.

If there is Headache or Other Pain: This may be treated with paracetamol. Be certain to use the correct dose as too high a dose can cause liver damage. Do not use alcohol when you take paracetamol (Alcohol can also cause liver damage).

Aspirin should never be used in the treatment of any infection (Can cause Reye's Syndrome, brain and liver toxicity).

If there is **High Fever**: Mild fever can be a good thing and should *not* be treated. However if the fever is high (Greater than 39C or 102-103F) and you or your child are uncomfortable, you may use paracetamol.

32. WHEN TO TAKE THE PERSON WHO IS ILL TO THE HEALTH CARE PROVIDER

Occasionally a person with a virus cold or other minor illness will go on to develop pneumonia or ear or other infections. This happens most often in children who are not breast-fed, those who are malnourished, those exposed to tobacco and other smoke, those who are treated with cough & cold medicines, and those whose immunizations are not up to date.

Signs that you or your child needs to be evaluated as soon as possible by a health care provider include:

- Breathing becomes difficult. In-drawing (rather than normal expansion) of the lower chest when the child breathes (May be pneumonia). Or stridor, a harsh noise made when the child breathes in.

- Breathing becomes fast when child is at rest: 2-12 months: >50 breaths per minute.

- 12 months to 5 years: >40 breaths per minute.

- There is a chronic cough or problem with breathing that has been present for more than 30 days (May be TB or asthma)

- Not able to drink or breast-feed

- Becomes sicker instead of gradually better after the 3rd day.

- Seems to be having pain.

- Persistent vomiting

- Has convulsions

- Is lethargic (difficult to arouse).

- Becomes more irritable when you pick him up or move his neck (may be meningitis).

- If the fever lasts for more than 3 days

- If the fever is accompanied by shaking chills or you suspect malaria (Other signs of malaria include headache, back and muscle pain, sweats, nausea and vomiting).

- Your child just "looks very sick" to you or another experienced parent.

33. TUBERCULOSIS

Tuberculosis or TB is one of the most common life-threatening infections that anyone can get. TB is spread through the air when an ill adult coughs. (Children easily get infected with TB, however only adults spread it by coughing.) It can very easily be spread to others who live in the same house. TB and other life-threatening diseases can also be gotten from cows milk in areas where milk is not always pasteurized.

The most common presenting sign of TB is a *cough that lasts for more than a month*. If you have had a cough for more than a month, it is very important that you go to a local health clinic for testing. Coughing up bloody sputum may also sometimes occur.

Other than the persistent cough, adults often don't feel sick with TB and therefore delay seeking testing. This is very dangerous, especially to the children and adolescents they are in contact with. Children and adolescents are especially susceptible to TB and often become gravely ill with fever, chills and night sweats, weight loss, infection of the bones and joints, or meningitis (infection of the brain and spinal cord). Even when the diagnosis is made early in these children, they often die, even with appropriate treatment.

So what is most important is prevention--getting *all adults with coughs for more than one month tested and, if positive, treated to prevent the disease in children and adolescents*.

It is also very important that *people with TB take their medicine until their health provider says they are completely cured*. TB is very difficult to cure and you must take the medicine for *6 months to a year or more*. Otherwise it can come back as a resistant form of TB and be very difficult or impossible to treat.

34. SCABIES

Scabies is caused by a tiny mite that burrows under the skin and causes a very itchy rash with bumps. Adults most often get the rash between the fingers; children can have it anywhere. The itching is worse at night and is due to a sensitivity reaction. Scratching the bumps may cause sores with pus.

You should see your health care provider, as this rash can be treated with medication.

Bedding and clothing worn next to the skin during the 5 days before beginning therapy should be laundered in very hot water, or stored out of contact with anyone for at least 5 days. The mites do not survive more than 4 days without skin contact. As the itching is caused by a sensitivity reaction, it may persist for several weeks despite successful treatment. If the itching interferes with sleep you can ask your provider for a medicine to decrease the itching.

35. HYGIENE

So, in addition to washing our hands, bathing and washing our clothes is also important. The baby being bathed in the river makes a beautiful picture, unfortunately, this can be a very dangerous practice. Unless all your neighbors upstream always use good latrines and have not contaminated the water, you should not bathe in rivers or lakes. Unfortunately, nearly every place we have been, the water has been contaminated with bacteria such as Typhoid, or worms such as Schistosomiasis, and those who use the water very often become infected and sick. If you are not certain of the purity of your water supply, it should be boiled or otherwise purified (Be certain to always let the water cool to prevent burns).

Brushing our teeth at least twice a day and flossing at least once a day are also very important parts of hygiene. We will now talk more about oral health.

36. ORAL HEALTH FOR ADULTS

Tooth decay is the most common cause of pain of the mouth or face reported by adults, and most adults show signs of gum disease that results in a loss of teeth.

What You Can Do to Maintain Good Oral Health:

-Avoid tobacco. In addition to heart disease, stroke, lung cancer and other diseases caused by tobacco, smokers have *7 times* the risk of developing gum disease compared to non-smokers.

Tobacco use in any form--cigarette, pipes, and smokeless (spit) tobacco--also increases the risk for cancers of the mouth and throat, and fungal infection of the mouth (Candidiasis).

Advertising and movies often give teenagers the impression that smoking is "cool" or "sexy". No one tells them about the stained teeth, stinky breath, gum disease and cavities. But by then it is often too late and they are addicted to the nicotine.

-Limit alcohol. Heavy use of alcohol is also a risk factor for oral and throat cancers. When used alone, alcohol and tobacco are risk factors for oral cancers, but when used in combination the effects of alcohol and tobacco are even greater.

-Eat wisely (See section 37). Avoiding sugars when snacking applies to adults as well as children. Limit the number of snacks eaten throughout the day. Increased amounts of fiber-rich fruits and vegetables are also very important. They stimulate salivary flow to aid re-mineralization of tooth surfaces with early stages of tooth decay.

-Drink lots of safe water. If possible, drink fluoridated water and use a **fluoride toothpaste**. Fluoride's protection against dental decay works at all ages.

-Thorough tooth **Brushing and Flossing** to reduce dental plaque can prevent tooth decay and gum disease. Brushing should be done at least twice a day (Usually after breakfast and always before bed) and flossing and using an interdental cleaner at least once (before bed).

-How to Brush: Place your toothbrush at a 45-degree angle against the gums. Move the brush back and forth gently in short strokes. Brush the outer tooth surfaces, the inner tooth surfaces, and the chewing surfaces of the teeth. Brush your tongue to remove bacteria and freshen your breath.

-How to Floss: Wind about 30 to 45 cm (12 to 18 inches) of floss around middle fingers of each hand. Pinch floss between thumbs and index fingers, leaving a 3 to 5 cm (1 to 2 inch) length in between. Keep this taut between your fingers. Use thumbs to direct floss between upper teeth. Use index fingers to guide floss between the lower teeth. Gently guide floss between the teeth by using a back and forth motion. Do not snap the floss into the gums. Curve it into a C shape against one tooth. Slide floss up and down against the tooth surface and under the gum line.

-Always Rinse your mouth and "**Swish**" between the teeth with safe water after flossing, and also after eating snacks or **whenever you are unable to brush and floss**. (See section 37 for additional information on diet, toothbrushes, interdental cleaners, and fluoride.)

37. ORAL HEALTH FOR CHILDREN

Tooth decay remains one of the most common diseases of childhood. Untreated tooth decay causes daily suffering due to: persistent pain, inability to eat comfortably or chew well, embarrassment at damaged teeth, and distraction from learning.

What Can Parents Do For Their Children?

-Breast-feed your baby and don't use bottles. In addition to infections, bottles also cause tooth decay, especially when used at bedtime. Milk, formula, juices, and other drinks contain sugar. Prolonged exposure to sugary drinks while a baby sleeps (when saliva flow is reduced) increases the risk of tooth decay.

-Encourage your children to eat regular nutritious meals and to **avoid frequent between meal snacking**. Soda and other sweetened drinks, candy and sugar cane are especially harmful.

(See section 36 for detailed instructions for Brushing and Flossing.)

-For children, use a small, **soft toothbrush**. Even for adults, soft brushes are best. (Sometimes brushes are too hard and may cause the gums to bleed. To soften the brush you may carefully

insert the lower part of the bristles in very hot water. Do not insert the plastic part of the brush in the hot water as this may loosen the bristles.)

-**Interdental cleaners** are now also often used. These are special wooden or plastic picks or brushes that are used to clean between teeth.

-**Homemade** toothbrushes and Interdental cleaners are also effective. These can be made with a twig that is sharpened on one end to clean debris between the teeth and chewed on the other to make a brush.

-If dental floss is not available, clean sewing thread or fishing line is sometimes used.

-Then “swish” between the teeth with safe water. (It is recommended that this be done before brushing so that the fluoride in the toothpaste can remain in contact with the teeth.)

-Begin using **toothpaste with fluoride** when your child is about 2 years old. You may use toothpaste with fluoride before 2 years if there is no fluoride in your water supply. If you cannot afford to buy toothpaste with fluoride, just brush with safe water, or safe water with a pinch of baking soda. Brushing alone will help to prevent cavities and gum disease.

-Use only a small amount of the toothpaste (about the size of a pea). (Fluoride is important for fighting cavities. But if children younger than 6 years old swallow too much fluoride, their permanent teeth may develop white spots.)

-Teach your children to spit out the toothpaste.

-**Brush your child's teeth twice a day** until your child has the skill to handle the toothbrush alone. Often this is done after breakfast, and they should always brush their teeth at bedtime. Continue to closely watch brushing to make sure the child is doing a good job and using only a small amount of toothpaste.

-After brushing, rinse the toothbrush thoroughly with safe water to ensure the removal of toothpaste and debris, allow it to air-dry, and store it in an upright position.

-Remember to “**swish**” *between the teeth with safe water* after using a pick or flossing. It is also very important to rinse and “swish” after eating snacks or **whenever they are unable to brush and floss**.

38A. NUTRITION-EATING THE RIGHT FOODS

*Nutrition has become one of the most critical factors in determining the health and wellbeing of people throughout the world. Both **under-nutrition** and **over-nutrition** now cause millions of unnecessary deaths each year.*

Millions of the world's poor, especially children, continue to suffer and die from diseases related to under-nutrition. Under-nutrition affects the immune system and many of these children die from infections. More than one third of child deaths worldwide are due to under-nutrition.

However, there is now also a *worldwide epidemic of obesity* due to *over-consumption of the wrong kinds of foods*. Obesity and the related diseases of diabetes, high blood pressure, heart attacks, strokes and cancer are now the greatest killers of adults throughout the world. Obesity often begins in childhood, and has become a critical problem in developing as well as developed countries. This often leads to unnecessary suffering in childhood and early death as an adult.

We will review **UNDER-NUTRITION** first:

In poor families in developing countries, being underweight is one of the most common killers of children, especially those under the age of five.--The younger the child the greater the risk. In addition to breast-feeding your children until three years of age, you must be certain your children under five get their share of the family's nutritious food. (Help toddlers to eat instead of leaving them to serve themselves from the family dish.)

Plant-based milks from various sources such as soy are increasingly available. If you use cow's milk or cow's milk products such as ice cream, cheese and yogurt, you must be certain that the milk has been *pasteurized* (For example, heated to 60 degrees C [140 F] for 30 minutes). The heating is important to prevent diseases such as Brucellosis and TB as well as other common deadly bacterial infections such as salmonella. Or use powdered milk with safe water. Also, for older children who drink milk and are not malnourished, low or nonfat milk should be used. There is now much disagreement about the need for cow or other animal-based milk in the diet. All guidelines agree that we should be drinking more water and avoiding soda and other sugar sweetened beverages.

Iron, Vitamin A, and Zinc deficiencies are especially common in malnourished children and contribute to many deaths. However, too much iron, Vitamin A and zinc can also be harmful, so it is important to obtain these from the diet whenever possible. Although specific **supplements** such as **Vitamin D** (See Section 40), **B12** (See Section 38B), **Folic acid** (See Section 28), and **Zinc** (See Section 23) are often needed, it is important not to substitute supplements for a healthy diet.

Foods high in **Iron** include: liver, clams, iron fortified cereals, oysters, brewer's yeast, spinach, baked potato with skin, beans, peas and raisins.

Foods high in **Vitamin A** include: milk (including breast milk), egg, liver and fish liver oils, green vegetables, yellow fruits and vegetables. Orange-flesh sweet potatoes are especially recommended.

Foods high in **Zinc** include: Oysters (very high), crab, liver, beef, pork, poultry, bran flakes, dried beans and lentils, milk and cheese.

In most parts of the world, plant sources of the above nutrients are usually healthier and less likely to be contaminated.

Eat a variety of healthy foods to get the energy, protein, vitamins, minerals, and fiber you need for good health. New studies emphasize numerous health advantages of eating a plant-based diet in meeting the above requirements. In addition, some foods, such as ground flax seed, are very inexpensive and just 1-2 tablespoons/day will provide the essential Omega 3 fatty acids found in more expensive and less healthy animal products.

It may sometimes be difficult to eat from each food group each day. But by doing such things as buying your children fruits and vegetables instead of soda, you will help them to be as healthy as possible. Also, children should limit sweets and should not drink coffee as this will decrease their appetite for healthier foods. Sweets are also the most common cause of tooth decay with its pain and suffering.

The food groups on the left in the illustration (**1.Salt, 2.Fats, 3.Sugar, and 4.Alcohol**) are often called "**The 4 Addictions**" as it is very easy to become addicted to these foods. This has resulted in the world-wide epidemics of high blood pressure, heart disease, stroke, diabetes, dementia, and numerous other diseases. These diet caused diseases *could be prevented and cured simply with changing to a healthy diet as demonstrated on the right*. As diet is now surpassing tobacco as the leading preventable cause of death in the world, this illustration could help you save more lives and prevent more unnecessary suffering than any other in this manual.

If you drink alcoholic beverages, do so in moderation. Alcohol is a very dangerous and addictive drug and causes numerous diseases and unnecessary deaths. You may have heard that drinking small amounts of alcohol may lower the risk for coronary heart disease among men over age 45 and women over age 55. However, *there are other factors that reduce the risk of heart disease that are much more important*, including a healthy diet, physical activity,

avoidance of smoking, and maintenance of a healthy weight. Alcohol also *increases* the risk of death from cancer, stroke and other serious diseases. And drinking larger amounts of alcohol can *damage* the heart. Risk of alcohol abuse increases when drinking starts at an early age. Alcoholic beverages supply calories but few nutrients.

Alcoholic beverages are harmful when consumed in excess, and ***many people should not drink at all***. Excess alcohol alters judgment and can lead to dependency and a great many other serious health problems. **If you choose to drink alcoholic beverages:**

-Limit intake to no more than ***one*** drink per day for women or ***two*** per day for men, and take with meals to slow alcohol absorption. (One Drink=12 ounces of regular beer or 5 ounces of wine or 1.5 ounces of 80-proof distilled spirits.)

-Avoid drinking before or when driving, or whenever it puts you or others at risk.

Alcohol increases the risk for motor vehicle crashes, other injuries, high blood pressure, stroke, violence, suicide, and various types of cancer, including breast cancer. Alcohol consumption during pregnancy increases risk of birth defects. Alcohol OFTEN causes social and psychological problems, cirrhosis of the liver, inflammation of the pancreas, damage to the brain and heart, and early death.

38B. NUTRITION-EATING THE RIGHT FOODS (CONTINUED)

OVER-NUTRITION (Eating too much of the wrong kinds of foods) is now surpassing tobacco use as *the major* preventable cause of death and disability throughout the world. As reported in section 38A, it is the sugar, animal fat and salt that are largely responsible. Over two-thirds of adults and over one-third of children in the United States are now overweight or obese. This is often measured by Body Mass Index (BMI). The higher your BMI the greater your risk for Heart disease, Stroke, Type 2 diabetes, High blood pressure, Cancer and other life-threatening conditions. It is also associated with dementia (decreased mental functioning), serious breathing problems, osteoarthritis, erectile dysfunction (impotence) and gallstones.

These weight related diseases have now increased to *epidemic levels in developing as well as developed countries*. For example, the *Lancet* (June 2011) reported that ***nearly 10%*** of adults *world-wide* now have *diabetes*, and the prevalence of this disease with its devastating medical complications is rising rapidly. WHO references also report that non-communicable diseases associated with *over-nutrition* are now surpassing *under-nutrition* as the leading causes of death in *low-income* communities (as well as high income communities). And nearly all of this premature death and unnecessary suffering can be prevented by ***YOU***.

In general, a **healthy diet** is one that:

-does *not* include "Everything in Moderation." Some foods are *much* healthier than others and we need to be eating *more* of them, some foods may be eaten if limited to very small amounts, and some foods should be avoided and *not be eaten at all*.

-emphasizes vegetables, fruits, whole grains, beans and nuts (plant-based diet).

-may include some milk and milk products. Soy and other plant-based milk preparations are often recommended (fat-free or low-fat for people over 2 years of age who are not malnourished or underweight).

-limits processed foods and meat and animal products.

-is low in saturated fats, cholesterol, salt (sodium) and sugars.

-contains no trans fats ("partially hydrogenated oil" and/or "shortening").

The above is often summarized as an "Evidence-based" or "**Whole-food Plant-based Diet**." "Whole-food" means no or limited processing (No or little refining or addition of salt,

sugar or other chemicals). Many boxed, canned and packaged items in grocery stores are highly processed. For example, boxed breakfast cereals are plant-based, however many contain refined (instead of whole grain) cereals, and most contain too much added sugar, salt and other chemicals. A much healthier choice would be oatmeal with a label that states only "100 % Whole Grain Oats" with nothing else added. You could add healthy fresh fruit and/or cinnamon, cloves, raisins, etc, for flavor.

Choose a diet with plenty of vegetables, whole grain products, legumes and fruits which provide needed vitamins, minerals, fiber, and complex carbohydrates, and can help you lower your intake of fat. Most whole grains and other whole, unprocessed foods also have a lower glycemic index (release their sugars more slowly) and are the best source of carbohydrates. This can be important for appetite control, as well as for management of diabetes.

If you and your family are not malnourished or underweight, **choose a diet low in saturated fat and cholesterol** to reduce your risk of heart attack and certain types of cancer. This is especially important if you are overweight. To reduce your intake of saturated fat and cholesterol:

- 1) Avoid use of solid (meat and dairy) fats such as butter, hard margarines, lard, and partially hydrogenated shortenings. All oils are high in calories. Coconut and palm kernel oil are also high in saturated fats. Instead, if you must use oil, use vegetable oils such as canola (contains beneficial omega-3s) or olive oil (extra-virgin appears to be best).

- 2) Avoid *hydrogenated* and *partially hydrogenated* foods and *shortening*. These contain *trans* fats which are also found in meat, dairy and other animal products. However, most *trans* fats are found in commercially prepared partially hydrogenated foods such as baked goods, fried foods, snack foods, "fast" foods and other processed foods.

The CDC recommends: "Check the Ingredient List on the food package for 'partially hydrogenated oil' (and 'shortening'). The Nutrition Facts Label can state 0 grams of *trans* fat if the food product contains less than 0.5 grams of *trans* fat per serving. Thus, if a product contains partially hydrogenated oils then it might contain small amounts of *trans* fat even if the label says 0 grams of *trans* fat."

Current guidelines state there is *no* safe level of these *trans* fats and that it is best to eliminate them completely from your diet.

The CDC therefore recommends: "Ask your grocer to stock products free of 'partially hydrogenated oil' and 'shortening'... Choose restaurants that do not use (them) to prepare food."

- 3) Avoid processed meats such as bacon, hot dogs, sausages, salami and bologna. Also avoid salt cured meats such as ham (In the US, sugars are also often added to cover the saltiness).

- 4) If you eat meat, limit your intake. Choose lean poultry or other lean meats, not fried. Trim fat from meat and take skin off poultry. Also, after handling raw meat or poultry, always wash your hands and cooking utensils *very* thoroughly to prevent bacterial and worm infections (See Section 17). This is especially important if your meat or poultry is from the US where animals often receive antibiotics. The CDC reports that this is a source of antibiotic-resistant bacteria (infections that do not respond to our usual antibiotics).

- 5) Also limit use of egg yolks and whole eggs (Egg whites and egg substitutes contain no cholesterol and little or no fat).

- 6) If you eat dairy products: Choose fat-free or low-fat (for people over 2 years of age who are not malnourished). To prevent common deadly bacterial diseases, be certain all dairy products have been pasteurized. As there is concern about the harmful effects of hormones in cows milk in the US, soy and other plant-based milk preparations are increasingly recommended.

7) Choose dry beans (cooked), peas, and lentils often. Choose nuts and seeds such as flaxseed (Contains essential omega-3s. One or two tablespoons/day of ground flax seed sprinkled on oatmeal or other foods is often recommended, especially for those who do not eat fish).

8) If you eat fish: Choose fish low in mercury, PCBs (polychlorinated biphenyls) and other contaminants, and shellfish from non-polluted water.

9) *Get most of your calories from whole (unprocessed) **plant foods** (vegetables, fruits, whole grains).*

Recent studies report that people in the US and most other developed countries eat far too much meat and dairy products and that this is the major cause of the millions of premature deaths due to Heart disease, Stroke, Diabetes, High blood pressure, Cancer and other chronic diseases. Also, as reported in the sections on infectious disease, meat and animal products cause much suffering and death simply due to bacteria and worm infections in both developed and developing countries. Contrary to advertising and common beliefs, these animal products are *not* needed for adequate protein, calcium and other nutrients. Many of our very best athletes get plenty of protein, calcium and other nutrients from a strictly plant-based (vegan) diet, with no dairy or animal products at all. Our most highly respected healthcare organizations have confirmed the benefits. For example, the American Academy of Pediatrics reports:

"Well-planned vegan and other types of vegetarian diets are appropriate for all stages of the life cycle, including pregnancy, lactation, infancy, childhood, and adolescence...There is substantial epidemiologic evidence that a high consumption of fruit and vegetables is associated with reduced mortality from cardiovascular disease, stroke, cancer, and other causes."

Position papers of the Canadian Paediatric Society, American Dietetic Association, and numerous others report similar recommendations.

The UN also reports ("Livestock's Long Shadow" and others) that the world's increased consumption of meat is unsustainable and also contributes significantly to the millions of deaths due to *under*-nutrition. Growing animals raised for slaughter consumes far more resources (land, water, fertilizer, fuel) and creates much more environmental pollution than growing food crops. This also results in the world's poor being increasingly unable to afford food of any kind.

Supplements. It is also important not to substitute supplements for a healthy diet. Although specific supplements such as B12 or Vitamin D are often needed, there is increasing evidence that too much calcium and other mineral and vitamin supplements, as well as too much animal protein, cause harm. Vitamins D (See section 40) and B12 are among the exceptions.

B12 deficiency can present with many different symptoms and has several different causes. The CDC reports that it is often undiagnosed and untreated, especially in the elderly. Although most cases of deficiency occur in people over 50, many others, such as those on a strict vegetarian diet, are also at increased risk. This is especially important where water has been treated to destroy bacteria (All B12 originates from bacteria which are destroyed along with deadly bacteria by safe water treatments). As remaining natural sources of B12 are often not well absorbed, especially in the elderly, the CDC recommends that *all* adults over 50 years take a vitamin supplement or fortified food source of B12. For the elderly, much higher doses than are found in multivitamins (for example, 1000 micrograms cobalamin/day) are often recommended.

Depending on your diet and the specific foods available locally, additional supplements may be needed. Ask your doctor or Ministry of Health for supplement recommendations for your area. If your vitamin or other dietary supplements are made in the US, to ensure quality and safety, it is important that the label always include a "USP", "CL" or "NSF" certification logo (See Section 28).

Choose a diet low in sugars. Most people eat far too much sugar. This leads to obesity, diabetes and heart disease as well as tooth decay. Between meals, do not eat foods or beverages containing sugars.

-Get most of your calories from vegetables, whole grains, and whole fruits. **Whole grains** such as whole wheat are healthier and contain more nutrients and fiber than refined grains such as white flour, white rice and white bread; so it is very important to *read the labels on all store-bought products*. Packaged and processed foods often contain little nutrition and way too much sugar, salt, and fat. **Whole fruits** also have more fiber and less sugar than store-bought fruit juices.

-The American Heart Association recommends that *adult females consume no more than 6 teaspoons (24 grams) total per day* and *adult males no more than 9 teaspoons (36 grams) total per day* from all food sources containing added sugar.

-Soft drinks and other sugar sweetened beverages are especially harmful. A *single* 12 ounce (354mL) can of regular soda usually contains at least *10* teaspoons (over 40 grams) of sugar (This is more than the *total daily* amount recommended for both men and women). Some sodas contain up to 13 teaspoons (52 grams) per 12 ounce (354mL) container.

-Limit sweets such as candy, cake and pastry.

-*Numerous* other foods contain added sugars. Store-bought food and drinks list the **sugar content** under many different names including: glucose, fructose, sucrose, corn syrup, corn syrup solids, high-fructose corn syrup, dextrose, molasses, fruit juice concentrate, evaporated cane juice and many others. These sugars have been included in many different types of store-bought foods and it is best to avoid them as much as possible. So it is *very important to read the labels*.

-Many of the above foods are advertized as "Low-Fat" or "Non-Fat." However their sugars are converted by the liver into fat, resulting in the same conditions (Obesity, Diabetes, Heart disease, Stroke, Etc) that people are trying to avoid.

-It is especially important to avoid the intake of soft drinks, sports drinks and fruit drinks sweetened with sugars. These have been shown to be a *major* cause of obesity and diabetes, as well as tooth decay in adults as well as children.

-Drink water (or other sugar and alcohol free drinks) often.

Choose a diet low in salt (sodium). Very small amounts of salt are necessary. Also, to prevent iodine deficiency, whatever salt you use should be iodized. However, most people consume far too much salt. The WHO recommends *less than 2 grams of sodium* (or 5 grams of salt-sodium chloride) per day for adults. Other health authorities are now recommending even less (Less than 1500 mg/day.) This is especially important for preventing high blood pressure, stroke, vascular and heart disease. It also results in increased calcium loss, osteoporosis and kidney disease. Choose fruits and vegetables often. Instead of table salt use herbs, spices, and fruits to flavor food. Numerous pre-prepared salt-free herb/spice blends are also available commercially (e.g. Mrs. Dash and similar preparations). Again, reading labels on all store-bought food is extremely important. Processed and canned, as well as restaurant foods often have a very high salt content and *should be avoided* unless prepared with low or no salt seasonings.

Increase potassium. Most families around the world consume less than the recommended levels of potassium. WHO recommends an increase in potassium intake from food to reduce blood pressure and risk of stroke, vascular and heart disease. WHO suggests a potassium intake of 90 mmol/day (3510 mg/day) for adults. Beans and peas are especially high in potassium. Others include: nuts, vegetables (especially green) and fruits such as bananas, papayas and dates.

Additional health benefits of plant-based diet. There are numerous additional health benefits to following plant-based diet recommendations. For example, it is increasingly recommended for the prevention of **Alzheimer's** and **dementia**. A plant-based diet also reduces our exposure to toxins such as **dioxins**. The WHO reports: "Dioxins are found throughout the world in the environment and they accumulate in the food chain, mainly in the fatty tissue of animals. More than 90% of human exposure is through food, mainly meat and dairy products, fish and shellfish. Dioxins are highly toxic and can cause reproductive and developmental problems, damage the immune system, interfere with hormones and also cause cancer."

A plant-based diet is also the very best treatment we have for common **intestinal problems** such as constipation. Constipation is firm stools that are difficult to pass. To prevent constipation as well as diverticulitis and other more serious bowel diseases: Eat a high-fiber diet that includes beans, bran, whole grains, fresh fruits, and vegetables. Drink at least 8, eight-ounce glasses of water or other unsweetened fluids per day. (Alcohol can have a dehydrating effect and can sometimes make constipation worse.) Daily exercise is also important.

The WHO has summarized the above diet guidelines in "**Five Keys to a Healthy Diet**":

1) Give your baby *ONLY* breast milk for the first 6 months of life

-From birth to 6 months of age your baby should receive only breast milk, day and night.

-Breast-feed your baby whenever the baby appears hungry.

-Continue breast feeding until at least 24 months.

-It is also important to avoid certain foods from 6 to 12 months of life. For example, to prevent serious bacterial illness due to infant botulism, babies less than 12 months should not be given honey.

2) Eat a variety of healthy foods

-Eat a combination of different foods: staple foods, legumes, vegetables and fruits and limit foods from animals. Recent scientific studies document that *red and processed meat consumption contributes substantially to increased early deaths*, especially from cardiovascular diseases and cancer. Most dairy products (milk, cheese, butter, ice cream) contain harmful saturated fats. It is also important to limit alcohol. The UN General Assembly declared 2016 the "International Year of Pulses" to emphasize the critical importance of healthy foods such as beans, peas, lentils and chickpeas (often found in hummus).

3) Eat plenty of vegetables and fruits

-Consume a wide variety of vegetables and fruits (more than 400 g per day).

-Eat raw vegetables and fruits as snacks instead of snacks that are high in sugars or fat.

-When cooking vegetables and fruits, avoid overcooking as this can sometimes lead to loss of important vitamins.

-Frozen, canned or dried vegetables and fruits may be used, but choose varieties without added salt or sugars. (Canned foods can also be rinsed to help remove added salt and sugar.) Frozen fruits and vegetables usually retain nutrients better than those we buy fresh and leave sit in the refrigerator for several days.

4) Limit amounts of fats and oils (This is especially important if you are overweight or at risk for conditions such as heart disease.)

-If you use oil, choose unsaturated vegetable oils (e.g. canola or olive oil) rather than animal fats or other oils high in saturated fats (e.g. coconut or palm oil).

-If you eat meat, choose white meat (e.g. poultry) and fish (contains beneficial omega-3s), that are lower in harmful fats rather than red meat, and limit the amounts.

-Avoid consumption of cured or processed meats such as bacon, hot dogs, ham and luncheon meats (are high in fat and salts and often include chemicals). These have been strongly associated with the risk of cancer.

-If you use dairy products, use non- or reduced-fat milk and dairy products (for people over 2 years of age who are not malnourished) and to prevent common deadly bacterial infections, be certain it has been pasteurized.

-Avoid processed, baked, and fried foods that contain *trans* fatty acids. These are often labeled "*hydrogenated*" or "*partially-hydrogenated*" or "*shortening*" on store-bought food. (However unhealthy fats are not always labeled, especially with "fast" food, bakery, and restaurant food. "Fast" foods, fried foods, and sweets such as donuts often contain *trans* and other unhealthy fats that should be avoided.)

5) Eat less salt and sugars

-Cook and prepare foods with as little salt and sugar as possible (instead use herbs, spices, and fruits to flavor food). Many herbs and spices (turmeric, cinnamon, cloves, etc.) have been reported to have significant additional health benefits as well.

-Read labels on all store-bought food and beverages. Many pre-packaged foods, even for very young children, contain way too much salt and sugar. Avoid store-bought and restaurant food and beverages with high salt and sugar content. (In the US, most of our excess salt and sugar [as well as fat] comes from these two sources. Most restaurant and "fast" foods are very unhealthy.) If you eat at restaurants which do not label their foods, always ask if the foods are prepared and flavored with salt and sugars, or whether herbs, spices, and fruits are used instead. (Also remember to ask whether the food contains any partially hydrogenated oils or *trans* fats- these are especially common in fried foods.)

-Choose fresh fruits for snacks instead of sweet foods and confectionery (e.g. cookies, donuts and cakes-These often contain unhealthy fats as well as sugar).

-Avoiding the intake of soft drinks, sport drinks, and fruit drinks sweetened with sugars is especially important. These have been shown to be a *major* cause of obesity and diabetes as well as tooth decay in adults as well as children. (See the "Just One Soda" lesson on the [Participatory Approaches](#) page at www.hepfdc.info for additional free teaching illustrations. See also the WHO website for additional Food & Agricultural Organization of the UN (FAO)/WHO dietary guidelines)

Unfortunately, it is very easy to become **addicted to the high salt, sugar and fat** in our diets, so that foods without high concentrations no longer taste very good. This is the reason most restaurants and the fast food industries, as well as home cooks continue to add them to their foods. It usually takes *at least 3 weeks of avoiding such foods* before our taste begins to return to normal. So following the above guidelines will be difficult for many people. However, to halt the ongoing epidemics of Heart Disease, Stroke, Cancer, Diabetes, Dementia and the other Non-Communicable Diseases, it is absolutely essential that we do so (See section 41).

39. PHYSICAL ACTIVITY

Balance the food you eat with physical activity--This is especially important if you are overweight. Adequate exercise will reduce your chances of having high blood pressure, heart disease, stroke, cancer, the most common kind of diabetes and other serious diseases. It can also improve your mental functioning and your quality of life.

Sedentary (Little Exercise) Life Style (See also section 41B): Many people have jobs where they only exercise a certain part of their body and others don't get much exercise at all.

Exercise helps your heart and your body stay stronger and work better. It lowers blood pressure, improves your cholesterol levels, and can help you lose weight if that is a problem. It also strengthens your bones and improves your energy level and spirits.

There is now a world-wide epidemic of obesity that involves all age groups in developing as well as developed countries. Appropriate physical activity is therefore important for men, women and children and *ALL* age groups.

The WHO recommends the following **Five Keys to Appropriate Physical Activity**:

“1) If you are not physically active, it's not too late to start regular physical activity and reduce sedentary activities. (For example, reduce sedentary habits such as watching TV and playing computer games.)

2) Be physically active every day in as many ways as you can.

3) Do *at least* 30 minutes of moderate-intensity physical activity on 5 or more days/week. (The Institute of Medicine now recommends that all people engage in some type of *exercise for at least one hour every day* of the week. However, even a half hour a day will help decrease your risks and help you to lose weight.)

4) If you can, enjoy some regular *vigorous*-intensity physical activity for extra health and fitness benefits. (For example, ride a bike to work instead of taking the car.)

5) School-aged young people should engage in *at least* 60 minutes of moderate-to vigorous-intensity physical activity each day.”

At least 60% of the world's population fails to complete the recommended amount of physical activity required to induce health benefits.

As noted in section 41, heart disease and stroke and the related conditions of obesity, diabetes and high blood pressure kill far more adults than anything else in the world. There are scores of medications for these conditions, and though some can be very helpful, all have adverse effects, and *none* can result in a cure. Yet studies have shown that even our most deadly diseases, including high blood pressure, diabetes and heart disease, *can be cured*, and they can be cured by *you*.

Appropriate Diet and Exercise are two very simple things. Yet the WHO and our best evidence-based sources report that (even in the most advanced countries) *what we do for ourselves and for our families can save many more lives and prevent much more suffering than all of our medicines and all of our surgeries combined*.

Note: Most people (as well as many doctors) do not realize how *very powerful* diet and exercise are as treatments. If you take medicine (for diabetes or high blood pressure for example) you will often need to decrease the dosage to prevent adverse effects. You may eventually be taken off medicines completely. So it is very important to be followed closely by your doctor. Although a healthy diet and exercise result in a decrease need for medicines and you start feeling better, *never* stop or reduce your medicines until instructed to do so by your doctor.

40. OSTEOPOROSIS

A physically active lifestyle, healthy diet, and avoiding tobacco will also help prevent osteoporosis. Osteoporosis is thinning and deterioration of bone that may be caused by:

- inadequate calcium and vitamin D;
- sedentary (inactive) lifestyle;
- tobacco and alcohol use;
- too much salt, soda, and animal protein in the diet;
- hormone imbalance;

-medication adverse effects.

The WHO states we must act now to prevent a pending *epidemic* of spine and hip fractures due to this disease.

A lack of calcium and Vitamin D also causes Rickets, impairment of growth, and poor development of teeth in children. Osteoporosis usually affects older people. It especially affects women after menopause and results in fractures of the hip, back and other areas.

Complying with the following recommendations while we are young can also help prevent osteoporosis when we are older:

1) *Avoid smoking* (This not only causes thinning of the bones and numerous other serious conditions, but also thinning of the skin and premature wrinkles. So people who don't want to look old before their time shouldn't smoke.)

Women who smoke also have lower levels of estrogen compared with nonsmokers, and they often go through menopause earlier. Smokers also may absorb less calcium from their diets.

2) *Avoid or Limit alcohol* intake to no more than one drink per day for women or two per day for men. Regular consumption of 2 to 3 ounces a day of alcohol may be damaging to the skeleton, even in young women and men.

3) *Limit salt, soda, and animal protein* in your diet.

4) *Breast-feed* your babies.

5) A *physically active life style* with walking and other weight bearing activities is very important to prevent osteoporosis. Like muscle, bone is living tissue that responds to exercise by becoming stronger.

6) *Physician follow-up* is necessary to evaluate the following causes of osteoporosis: Possible hormone imbalance such as inadequate estrogen or excess thyroid hormone. Medication adverse effects-especially if you are taking steroids or medicines for conditions such as acid reflux disease, depression or convulsions.

7) *Calcium* (Note: As calcium requirements vary with age and guidelines differ, it is best to consult the WHO website for current specific recommendations.) As too much animal protein has also been associated with osteoporosis, vegetable sources are especially recommended. Food sources of calcium include:

-dark green, leafy vegetables, such as broccoli, collard greens, bok choy, and spinach.

-dairy products (Choose fat-free or low-fat for people over 2 years of age who are not malnourished) such as milk and yogurt.

-tofu, or bean curd, when it is made with calcium salts

-almonds.

-sardines and salmon *with* bones.

-foods fortified with calcium such as orange juice; soy, sunflower or almond milk (usually contain as much or more calcium as cows milk); cereals; and breads.

8) *Vitamin D* is produced by the skin when exposed to **sunlight**, so 5-15 minutes outdoors per day is often recommended. (However, it is also important not to get too much sun and to protect your eyes. Too much sun can cause skin cancer, premature aging and cataracts of the eyes. Avoid the midday sun whenever possible. Wearing a hat and good quality sunglasses can prevent cataracts and other sun damage and all outdoor workers should wear them. However, you must be certain the sunglasses provide both UVA and UVB protection, otherwise they cause more harm than good.)

Vitamin D is also often added to foods such as orange juice and soy, sunflower, almond and cows milk. The current Recommended Dietary Allowance ranges from 400 IU/day for infants to 800 IU/day for people over 70. Very large amounts (greater than 4000 IU/day) may be harmful.

Additional Vitamin D supplements may be needed for those who do not get adequate exposure to sun or to vitamin D containing foods. This is especially important for dark skinned older people, as well as infants, in colder climates. The CDC also recommends B12 supplements for *all* people over 50 (See section 38B).

9) *Calcium Supplements*: The plant foods listed above are the most healthy sources of calcium. Another source of calcium is calcium carbonate tablets. As too much calcium may also be harmful, calcium supplements should be taken *only when the diet is deficient* in calcium. There is a limit to the amount of calcium that can be absorbed at one time, so, when needed, it is best to take the tablets several times a day. The tablets are also better absorbed when taken with meals, especially those meals that do not contain much natural calcium.

Calcium carbonate is also often used as an antacid (See section 42 ACID REFUX DISEASE).

41A. HEART DISEASE, STROKE, DIABETES, CANCER, DEMENTIA & OTHER NCDs

The WHO reports there is now an epidemic of deaths due to heart disease, stroke and other non-communicable diseases (NCDs) in developing as well as developed countries. This global epidemic of diseases due primarily to overweight and smoking recently resulted in the second ever UN General Assembly on Health in its 67 year history. The Director General of the WHO reported “In the absence of urgent action, the rising financial and economic costs of these diseases will reach levels that are beyond the coping capacity of even the wealthiest countries in the world.”

Yet nearly all of this premature death and unnecessary suffering can be prevented, as the *major causes are all under YOUR control*.

Life-threatening risk factors YOU can control include: Smoking, Overweight, High blood cholesterol, Sedentary (little exercise) lifestyle, Diabetes, High blood pressure, and Stress.

1) Smoking and Other Tobacco Use: We have already discussed some of the harmful effects of smoking such as gum and dental disease, osteoporosis, stomach problems, and so on. Snuff and other forms of smokeless tobacco cause similar diseases and are also very common causes of cancers of the mouth.

Next to unhealthy diet, Tobacco related diseases are the *world's leading preventable cause of death*, responsible for about 5 million deaths a year. Total tobacco consumption is on the rise. We now know that nicotine is a very highly addictive drug, so once you start smoking or using other forms of tobacco it may be very difficult to quit.

Yet nicotine remains legal, uncontrolled and unregulated, so the number of smokers, estimated at 1.3 billion today, is expected to rise to 1.7 billion by 2025. Some people are lucky and don't die from smoking. However, every second smoker *will* die of a tobacco-caused disease. Quitting smoking can immediately begin to reduce those risks, the sooner you quit, the less your risk of early death. Smoking causes **heart attack, stroke, and blood vessel disease that leads to amputation**--all of these terrible diseases shown here. (Although smoking does not cause diabetes, it is a very common cause of amputations in diabetics.)

It also causes **lung cancer, emphysema, bronchitis, headaches** and **many** other diseases, including **dementia (decreased mental functioning)**, and **erectile dysfunction (impotence)** in

men (Tobacco advertisements try to show us that smoking is "manly" or "sexy" but its effects are exactly the opposite). *STOPPING SMOKING IS THE MOST IMPORTANT THING THAT CAN BE DONE TO PREVENT THESE DISEASES AND IS MUCH MORE EFFECTIVE THAN ALL OUR MEDICINES.* If you smoke in your home, the secondary inhalation of the smoke also causes diseases such as asthma, cancer and sudden infant death in your loved ones. *The scientific evidence is so overwhelming that there is no longer any excuse for anyone, anywhere, to smoke at any time.*

41B. HEART DISEASE, STROKE, DIABETES, CANCER, DEMENTIA & OTHER NCDs (CONTINUED)

Other life-threatening Heart Disease, Stroke, Diabetes, Cancer, Dementia and other Non-Communicable Disease (NCD) Risk Factors *You Can Control Include:*

2) Overweight: (See also section 38. NUTRITION & 39. PHYSICAL ACTIVITY.) Weighing too much can increase your risk for developing many health problems including Heart disease, Stroke, Type 2 diabetes, Cancer and other serious diseases. You can lower your health risks by losing as little as 10 to 20 pounds. Limit the amount you eat, and exercise for one half to one hour every day.

It is very important to read the labels, especially on processed foods. You should especially avoid foods high in animal fats, saturated fats, trans fats ("partially hydrogenated oil" and "shortening") and sugars. Greasy, fatty foods such as meats, as well as many desserts and sweets are loaded with unhealthy fats, sugars and calories. Recent studies also document that red meat consumption is associated with conditions such as diabetes, cardiovascular disease and cancer and a *substantial increase in early deaths.* (In the US, unhealthy diet has now surpassed tobacco use as the most important cause of premature death and disability.)

Instead, eat a variety of fruits, vegetables, beans and whole grain foods each day. These foods provide lots of vitamins, minerals, and fiber, yet they provide the least concentrated sources of calories, so can also help you control your blood sugar, as well as lose weight. Scientific studies continue to emphasize the *critical importance of a whole-food plant-based diet in prevention and treatment of all of the diseases in this section.*

3) High Blood Cholesterol: (See also section 38. NUTRITION & 39. PHYSICAL ACTIVITY.) This also can be controlled by reducing the amount of animal products, trans fats, saturated oils, and sugar in your diet. Instead eat more fruits and vegetables.-These contain no cholesterol. Foods rich in soluble fiber such as oats, barley, psyllium, okra and eggplant, as well as soy and other plant foods, can help to reduce cholesterol. Cholesterol levels can also be improved by exercise. There are also medicines that can help.

4) Sedentary (Little Exercise) Life Style: (See also section 39. PHYSICAL ACTIVITY.) Most people in rural areas of developing countries get plenty of exercise. However some have jobs where they only exercise a certain part of their body and others don't get much exercise at all. Exercise helps your heart and your body stay stronger and work better. It lowers blood pressure, improves your cholesterol levels, and can help you lose weight if that is a problem. It also strengthens your bones and improves your energy level, mental functioning, and spirits. The Institute of Medicine now recommends that all people engage in some type of *exercise for at least one hour every day* of the week. However, even a half hour a day will help decrease your risks and help you to lose weight.

5) Diabetes (Type 2 or "Adult Onset"): (See also section 38. NUTRITION & 39. PHYSICAL ACTIVITY.) This used to be called "Adult onset" diabetes. However because of unhealthy eating habits and increased weight, this devastating disease is now also occurring in

our children and adolescents. Type 2 diabetes also places you at serious increased risk of heart attack and stroke as well as blindness, kidney disease and amputation. Although medications are often necessary; *diet, weight reduction and exercise* have been shown to be much more effective than medications in preventing, controlling, and curing Type 2 diabetes. It is also essential that you never smoke (often results in amputations). *Alcohol is especially toxic* to diabetic patients and can worsen diabetic nerve damage, decreased vision and high blood pressure. If you have diabetes, you should be seen by a dietitian to help you regulate your diet and blood sugar levels. To help keep your blood sugar at a healthy level (especially if you are taking insulin) you should:

- Eat about the same amount of food each day
- Eat at about the same times each day
- Take your diabetes medicines at the same times each day
- Exercise about the same amount at about the same times each day

If you are *diabetic and overweight*, what is most important is losing weight by changing the foods you eat and exercising at least ½ to 1 hour every day. You should especially avoid red meat products, saturated and trans fats, sweets and sugary foods and beverages. Eat a variety of fruits, vegetables, beans and whole grain foods each day. These are the foods you should primarily eat. They provide lots of vitamins, minerals, and fiber, yet they provide the least concentrated sources of calories, so can also help you control your blood sugar, as well as lose weight. Vegetables are an especially good choice. Recent studies have shown that Type 2 diabetes can be *cured* with a plant-based diet, restricting the use of fats and oils, and choosing foods with a low glycemic index (foods that release sugar slowly, such as most whole grains and other whole, unprocessed foods). So consulting a dietitian who has knowledge of current guidelines, as well as your physician, is very important.

6) High Blood Pressure: (See also section 38. NUTRITION & 39. PHYSICAL ACTIVITY.) Most people with high blood pressure don't feel sick. That is why high blood pressure is called the "Silent Killer." The reason it is important to treat high blood pressure is because it causes heart attacks and stroke. Fortunately, *there is much you can do to decrease your blood pressure.*

Diet changes are our most effective treatments and include *reducing the salt* in your diet to less than 2 grams (Some references now state less than 1.5 grams) sodium per day--Use spices instead.

It is also important to *increase potassium intake* (Beans and peas, bananas and other fresh fruits and vegetables), and other recommendations as described in section 38. *Limiting alcohol intake, increasing physical exercise, decreasing weight, and reducing stress* are also very important for controlling your blood pressure.

Blood pressure requires close follow up by your regular health care provider. If your provider puts you on a blood pressure medicine it is very important that *you always continue it, every day*, even if you don't feel sick. *Always* see your provider *before* stopping your blood pressure medicine (even before skipping one dose). Stopping the medicine abruptly can cause a rebound blood pressure that is very high and very dangerous and can cause heart attack and stroke.

We used to think that once you were on blood pressure medicine you would need to take it for the rest of your life. However we now know that people who begin to follow a whole-food plant-based diet can often reduce and discontinue their medicines. So it is very important that you continue to be seen regularly by your provider so he or she can monitor your blood pressure and adjust your medicines.

7) Stress: Stress can also lead to heart attack and stroke and other health problems. Some people respond to stress by overeating, or drug or alcohol abuse. Studies have shown that

patients who pray and have a spiritual life emphasizing love and forgiveness seem to manage stress better and respond better to treatment. Meditation, exercise and Tai Chi can also help.

The numerous benefits you can achieve are *in addition to* the benefits of "The 3 Things."

The 3 Things alone can do much to eliminate these diseases (See also sections 3A&B): **Healthy diet, regular exercise and avoiding tobacco products** are just **3 simple things**. Yet the WHO reports that **over 80%** of all:

Premature Heart Disease (#1 Cause of Death),

Stroke (#3 Cause of Death),

Type 2 Diabetes (#6 Cause of Death),

and over 40% of Cancer (#2 Cause of Death)

and *numerous* other conditions such as hypertension, dementia, lung disease and impotence *could be prevented by 1) a healthy diet, 2) avoiding tobacco products, and 3) regular exercise.*

Although our drugs and surgeries for these conditions may help, all have adverse effects and *none* can result in a cure. They save very few lives compared to a healthy diet, exercise and avoiding tobacco. Just 3 simple things. And each is under **your** control, and your control alone.

As noted previously, although the above changes result in a decrease need for medicines and you start feeling better, *never* stop or reduce your medicines until instructed to do so by your doctor.

(Note concerning **Support Groups**: Some people have difficulty accomplishing these lifestyle changes on their own, but can successfully do so with the assistance of support groups. WHO evidence-based reports have specifically documented the effectiveness of lifestyle interventions when conducted in the work place, community, religious, and other setting.

For example, the WHO has given the following its highest possible rating of effectiveness: "Behaviour can be influenced especially in...religious institutions...Using the existing social structure of a religious community appears to facilitate adoption of changes towards a healthy lifestyle, especially in disadvantaged communities." From *Interventions on diet and physical activity: what works: summary report. WHO 2009.*

Support groups can be successfully established even in very poor communities. For additional evidence-based guidelines and lesson plans see the *Health Screening and Participatory Approaches* website pages at www.hepfdc.info)

42. ACID REFLUX DISEASE

Unhealthy diet and smoking are also frequent causes of gastrointestinal problems. Acid reflux disease is one of the most common problems we see in adult patients. There are a number of causes for stomach pain. For example, if you have weight loss or a severe gnawing pain in the mid stomach that is relieved by eating, or if you vomit blood or have blood in the stool, you need to have an evaluation for ulcer or other disease.

However, the most common cause of pain in the mid upper stomach or lower chest is acid reflux disease. This is also called "Heartburn" or "Acid Indigestion" or "Gastroesophageal Reflux Disease." It affects the muscle sphincter connecting the esophagus (feeding tube) with the stomach. The picture shows the location of the sphincter between the esophagus and the stomach.

Reflux means to flow back or return. Acid reflux occurs when the sphincter is weak or relaxes inappropriately allowing the stomach's acid contents to flow up into the esophagus.

Fortunately, there is **much you can do to prevent and treat this distressing condition.** Treatment aims at reducing damage to the lining of the esophagus from stomach acid:

-Smoking weakens the lower esophageal sphincter and increases acid production, it is therefore *very important to stop smoking*.

-*Avoid alcohol* for the same reasons. (Smoking and alcohol also make ulcers worse. You will often hear us talk about *smoking and excessive use of alcohol*. These are *not* at all “religious” or “moral” issues for the WHO or us. They are *critical, life-threatening health issues* for all of us and so the WHO *must* talk about them.)

-Other foods may also need to be limited if they cause you symptoms. These include fried and fatty foods, carbonated beverages, coffee, and “hot” foods such as pepper. Fried and fatty foods and sugar sweetened beverages are not healthy and should be avoided for other reasons as well (See sections 38&41)

-People with stomach pain should *avoid aspirin and non-steroidal anti-inflammatory* pain medicines such as Ibuprofen. (In the absence of liver disease or use of alcohol, Paracetamol is usually ok)

-Avoid lying down until 2 to 3 hours after eating. Avoid bending over shortly after meals, and avoid wearing belts that are too tight.

-Going for a walk after meals is also recommended and is helpful for many other conditions as well.

-If you have symptoms while sleeping, lie on your left side (as this lady is doing) and/or elevate the head of the bed 4 to 6 inches.

-Lose weight if overweight. This is *VERY* important and in itself is often enough to completely cure the symptoms.

-Decrease the size of portions at mealtime (You can increase the number of feedings if you are not over-weight).

-Chew gum (preferably sugarless) for 1 hour after meals. This increases alkaline saliva which neutralizes stomach acid.

-Antacids may also help reduce symptoms. The calcium antacids are often recommended because they may also help prevent another common problem, osteoporosis (thinning of the bones) for those who do not get enough calcium in their diet. However the calcium antacids sometimes cause a “rebound secretion of acid,” so don’t use them if they make your acid reflux symptoms worse instead of better. (Note: Other medicines for acid reflux have different side effects and can make osteoporosis worse. See section 40.)

43A. CARING FOR BACK PAIN

Another very common problem often due to overweight, inadequate exercise or smoking is back pain. You should see your provider for all episodes of severe or persistent back pain. If your exam does not indicate complications, the episode will nearly always respond to simple measures.

Episodes of acute back pain may be treated with **ice** to the area for the first 6 hours after injury. This may be continued for the first two days to decrease swelling. After three days **heat** may be applied to help healing.

-**Pain relievers** such as Paracetamol are often recommended. Do not use alcohol while taking Paracetamol or use more than the recommended dose. Do not use paracetamol if you have liver disease. Be certain to keep all medicine out of reach of children.

-**Activity** may be somewhat restricted for the first two days and then gradually increased, beginning with stretching and simple exercise such as walking. People with acute back pain should stay active and continue daily activities as much as possible. They should temporarily

avoid prolonged sitting, heavy lifting, or twisting the spine and should pay particular attention to correct posture in all their activities.

-Note the **firm mattress** (placing boards underneath the mattress often helps), and the pillow between the legs--this will also help *prevent* back pain. Also note the man's foot resting on a box. This will help prevent back pain if you have a job that requires prolonged standing.

-If the episode of pain lasts for more than 6 weeks, or there are other symptoms such as fever or weight loss or retention of urine, you need to **see your provider** for further studies *as soon as possible*.

-After the acute pain has subsided, stretching movements can help relieve your back and help prevent further episodes. These should be done daily and are best done after you have been walking or otherwise active for a while and your muscles are "warm." The movements should be smooth and not jerky and should be held for at least 30 seconds. Some positions may be held for 10 to 15 minutes if it feels comfortable and continues to bring relief. **Examples of stretching movements** are shown in the lower illustrations and include:

-*Lying flat on your back on the floor*: This is especially helpful for recent injuries. Have your legs resting elevated on a footrest or chair with a pillow—This can be very relaxing so many patients prefer to hold this position for 15 minutes or more.

-*Sitting*: Leaning forward in your chair and lowering your head to your knees and holding that position for at least 30 seconds or for as long as it feels comfortable.

-*Standing*: With your hands on your low back lean backward and hold for at least 30 seconds or for as long as it feels comfortable.

43B. CARING FOR BACK PAIN (CONTINUED)

Perform exercises to strengthen your back muscles. After the acute pain has subsided, back exercises should be done daily. It is best to first warm up your muscles by walking and stretching before you exercise. Do not do exercises that cause pain. If you are recovering from a serious back injury, do only those exercises that have been approved by your provider.

The following are **examples of exercises** that have been used to strengthen the muscles of the spine:

-*Pelvic Tilt* (Top Picture): This is a good exercise to start with, especially if you have had a recent back injury. Lie flat on your back with your legs flexed at the knee. Tilt your pelvis to bring your lower spine in contact with the floor by contracting your abdominal and buttock muscles. Hold for 5 to 10 seconds and relax. Repeat 10 to 12 times. Do three sets. (This exercise is often easier to do if you place your arms alongside your body rather than behind your head as shown in the picture.)

-*Bicycle* (Middle Picture): Lying flat on your back, flex your legs at your knees and hips. Alternate flexing and extending in a bicycle motion. Do three sets of as many as you can comfortably. Do not hold your breath or use jerky movements. (If you have had a recent back injury, it may be better to place your arms alongside your body rather than behind your head as shown in the picture. If there is *no recent injury*, this exercise is sometimes done with the neck flexed more than is shown in the picture, however, do not put pressure on your neck.)

-*Partial sit-ups or crunches* (Bottom Picture) are often recommended. Begin flat on your back with your legs flexed at the hip. Your hands can be crossed over your chest if that is more comfortable. You can place your feet under a bed frame or heavy piece of furniture to provide leverage. Slowly raise your head and shoulders off of the floor. Do three sets of as many as you

can comfortably do. Rest for 5-10 minutes or do another type of exercise between sets. Do not hold your breath, use jerky movements, or put pressure on your neck.

43C. HOW TO PREVENT BACK PAIN

Back pain is the most common health problem of the adult patients we care for. However, *there is much you can do* to prevent this painful condition.

Daily stretching and back exercises (as described in sections 43A&B) are also *very effective* in helping you to *prevent* back pain. The following are also important:

-Do not smoke

-Losing weight will help if you are overweight (and will often cure the symptoms entirely).

-Always lift properly. Never bend over when you lift. Always keep your back straight and bend your knees. This allows you to lift with your legs instead of your back. Do not turn or twist to pick up something, even if it is light. Keep the object as close to your body as possible.

-Wear a back support if your work requires that you lift often. This will provide some support and will remind you to keep your back straight when lifting. People in many parts of the world wrap a very long narrow cloth tightly around their waist for the same purpose. This practice goes back to Old Testament times when people would "gird up their loins". However you should not use restrictive braces, or over-use back supports to the point where they can result in weakness of your back muscles.

-Use good posture while sitting and standing. If your job requires prolonged standing, elevate and rest one foot on a box or stool to help keep your back straight (See section 43A).

-Use a firm mattress, or place your mattress on boards or on the floor. Place pillows under your lower legs if you sleep on your back. Place a pillow between your legs if you sleep on your side (See section 43A). Do not sleep on your stomach.

-Routine exercise 30-60 minutes/day (Include aerobic exercise at least 3 days/week) is very important for the prevention of back pain as well numerous other conditions as such as heart disease, obesity and diabetes (See also section 39. PHYSICAL ACTIVITY).

-Healthy diet. Recent studies indicate that this can be of *critical* importance. The same unhealthy diet that causes atherosclerosis of the blood vessels of the heart, brain, kidneys, etc, also causes reduced blood supply to the spine and nerves. The whole-food plant-based diet described in section 38. NUTRITION may be what is most important for prevention of back pain as well (See also illustrations 38A & B NUTRITION).

44. ACCIDENT PREVENTION FOR INFANTS AND TODDLERS

Sudden Infant Death Syndrome: Infants sometimes die unexpectedly while they are sleeping. This is often associated with cough and cold medicines, parents' smoking; also with putting infants to sleep on their stomach. Do not use pillows or leave other soft objects in an infant's crib. Always put infants to sleep on their *back*. Stop smoking-This could save your life as well as your child's.

Poisoning: This is an especially common cause of death in children less than 3 years of age. Young children may put anything in their mouth. They are constantly investigating the world around them, and putting things in their mouth is part of the way they learn. Many common medicines and household products are poisonous and cause deaths in children. Common examples include

Medicines: NSAIDs including aspirin, paracetamol, tranquilizers, sleeping pills, iron pills.

Household Products: Drain cleaners, weed killers, insect or rat poisons, lye, kerosene, detergent, mothballs. **How you can prevent deaths from poisoning:**

- Keep all medicines locked up and out of sight.
- Keep all chemicals and detergents locked up and out of sight.
- Teach your children not to drink or eat anything unless it is given by an adult.
- Try not to take medicine in front of small children. Children tend to copy adult behavior.

Choking is also a very common cause of death in children less than 5 years of age. Part of the reason is that they are always putting everything in their mouth. But they also often choke on foods that people mistakenly give them such as nuts and popcorn. Because they don't yet have all their teeth, their chewing is not very effective and large particles can get caught in their throat. Older people who don't have all their teeth often choke on food such as steak for the same reason. **How you can prevent deaths from choking:**

- Do not give your young children nuts, popcorn, hard candy, hotdogs or foods of similar size.
- Always cut up your younger child's food into very small pieces. Older people who are missing teeth should also do this.
- Do not let young children play with deflated balloons, marbles, or toys with small parts they can choke on.
- If your child is less than 5 years and must take pills or "chewable" vitamins, grind them into a powder between two spoons. You can then mix them with a small amount of liquid or food.
- If an older child or adult is choking and the airway is *completely* obstructed, use abdominal thrusts (See section 48) to help expel the object.

45. DROWNING/ FALLS/ TRAFFIC ACCIDENTS

Accidents are the most common cause of death in school age children. Children this age are taking off on their own. They look to friends for approval. They try to do daring things. They may not want to obey grown-up rules. But your child can learn safety rules with your help and reminders. **How you can prevent deaths from drowning, falls and traffic accidents:**

- Your child is not safe alone in water, even if he or she knows how to swim. Do not let your child play around any water unless an adult is watching. Never let your child swim in canals or any fast-moving water.
- Teach your child to always enter the water feet first. Diving head first has caused many neck fractures with permanent paralysis of the arms and legs.
- Use window and stairway guards to prevent falls in the toddler age group.
- Teach your younger child never to cross the street without a grown-up. Teach your older child to *stop completely* at the curb, then look to the left, to the right, and back to the left again before crossing.
- Always use bicycle and motorcycle helmets. This is the most important thing you can do to protect yourself and your children while riding a bicycle or motorcycle.
- Always use seat belts and infant/child car seats when riding in cars or trucks.

46. RABIES/INDOOR SMOKE

RABIES: Bites from dogs, cats, bats, skunks or other animals may cause rabies. Rabies is a disease that is almost always fatal once the symptoms begin. However effective treatment is available if it is used *before* symptoms begin. It is therefore very important to seek treatment as soon as possible after a bite. Rabies is especially common in developing countries. **How you can prevent deaths from rabies:**

-All people who wish to keep dogs, cats and other animals as pets should have them **immunized** against rabies. They should also have their pets seen regularly by a veterinarian to prevent the spread of other illnesses to themselves and their children. In addition to rabies, dogs and cats carry more than 15 different kinds of worms and serious bacterial and other diseases that they can transmit to people.

-Prevention of dog bites: The most important lessons for children to learn are *not to tease* dogs they know, and *to avoid* dogs they don't know. Don't disturb a dog while she's sleeping, eating, chewing on a toy, or caring for puppies.

Also instruct your child to do the following: Stand still if you are approached or chased by a strange dog. Do not scream or run, ride your bicycle, kick, or make threatening gestures. Stand up straight and motionless, hands at your sides, and avoid eye contact with the dog. Never turn your back to the dog. Once the dog loses interest in you, slowly back away until he is out of sight. If the dog does attack, "feed" him your jacket, purse, bicycle, or anything that you can put between yourself and the dog.

-If a dog, cat, or other domestic animal bites you or your child; it should be captured, securely confined, and *observed for 10 days*. (If it can be confirmed that the animal is still healthy after 10 days, you will probably not have to have rabies shots.)

-All **bite wounds** should be flushed thoroughly, and gently but thoroughly washed with soap and water for 15 minutes. (If available, a dilute virus-killing agent such as povidine-iodine solution should be used to irrigate the wounds.) Then see your health care provider to determine whether rabies vaccine is necessary.

-Notify the health or police department whenever you see an *animal that seems sick or injured*, or one that is acting strangely. Don't try to catch the animal or pick it up.

INDOOR SMOKE (See also section 7):

Irritants from indoor smoke are associated with pneumonia and asthma and are a common cause of other lung damage. Pneumonia is the most common cause of preventable deaths in children. There is much you can do to prevent these and other deadly conditions.

Prevent **tobacco smoke**. "Second hand" smoke harms children's lungs as well as the smoker's lungs.

Use of properly ventilated, efficient **cook stoves** is also very important. Open fires and poorly ventilated cook stoves are unhealthy and unsafe, and inhaling the **smoke and fine particulates** leads to four million deaths a year, primarily among women and children. In addition to these premature deaths, millions more are sickened from acute and chronic lung and other diseases (See section 7).

In addition, **carbon monoxide poisoning** is caused by an invisible gas that is formed whenever wood, coal, gas, or other fossil fuels are burned. It is also formed whenever fuels are burned in engines. The carbon monoxide gas is colorless and odorless so you *cannot see or smell it*. Carbon monoxide poisoning requires special tests to diagnose, so we do not know how common it is in other countries. However, it is the *most common cause of poisoning* in the US.

It is especially common when the weather is cold and families burn fuel indoors without adequate ventilation so that the poisonous gas cannot adequately escape. Sometimes the entire family is found dead. Earlier symptoms include *headache, nausea and tiredness*--People with these symptoms are often misdiagnosed as having the "flu," but it is really early carbon monoxide poisoning. There may also be *dizziness, confusion or problems with vision*.

Remember that we are not talking about the part of the smoke that you can see and smell (although these are also very harmful). Deadly levels of carbon monoxide can be present even when there are only hot embers without any smell of smoke at all.

How you can prevent deaths from smoke and carbon monoxide poisoning (See also section 7): If you must cook inside the house, always be certain the chimney or stove pipe ventilation for your stove is functioning properly-This will also prevent lung damage, pneumonia, asthma and other deaths and illness caused by smoke. If there is no chimney or stovepipe ventilation, and you must have a fire inside the house, always be certain that the doors and windows are left wide open to provide adequate ventilation.

A number of low-cost safe cook stoves are being developed. Check with your Ministry of Health concerning the availability of solar or other efficient, properly ventilated cook stoves in your area.

People in developed countries, particularly those in colder climates with well insulated houses, are especially at risk for carbon monoxide poisoning: Be certain to have your cook stove, home heating system, and chimney or stovepipe ventilation checked periodically by your local gas company or furnace serviceman. Never use portable gas or charcoal grills in the house, or outside near an open window. During power outages, do not use gas powered generators in the house, attached garage, or near an open window. Also never leave your car or truck motor running without adequate ventilation.

47. FIRST AID

(Note: Many of the following can be prevented. See the WHO website pages on “Violence and Injury Prevention.” Ask your Department or Ministry of Health for information on managing the most important risk factors in your community.)

Burns: Stop the burning-If clothes are on fire, roll on the ground or wrap in a blanket or use water. Immerse in cool water until pain is relieved (Great Britain’s National Health Service recommends 10-30 minutes). If large area, keep rest of the body warm until medical help arrives. Use non-adhesive dressings. If these are not available, plastic wrap (Saran wrap, etc.) has been used to make a non-adhesive emergency covering. **Do not** break blisters, or use ice, ointments, greases, powder, etc. Seek medical care. (See section 7 on use of cook stoves for prevention.)

Scrapes and Cuts: Wash with clean water and soap. Apply sterile gauze dressing. If the cut is large, apply dressing, press firmly and elevate to stop bleeding. Bandage and seek medical care. Puncture wounds (such as stepping on a nail) can be easily infected and should always be seen by your health provider. *Need for tetanus boosters* should be checked whenever the skin is broken or, for burns, even if the skin appears intact.

Fractures: Any deformity of injured part usually means a fracture. Do not move the person without splinting. Suspected neck or back injury should only be moved with medical assistance to avoid causing paralysis.

Sprains (Top Picture): Elevate the injured part. Cold (ice) compresses may be helpful, especially during the first six hours. Seek medical advice if marked pain or swelling. If minor sprain: Continue elevation, rest, and compression dressing (ace wrap) for 2 to 3 days, followed by a gradual return to normal activity.

Nosebleeds (Middle Picture): The bleeding is nearly always from the front middle divider of the nose. In the sitting position, squeeze outside of the nostrils with thumb and index finger *continuously* for 5-10 minutes. A common mistake here is to *not* hold the pressure *continuously* for 5-10 minutes. Bleeding in the nose is like bleeding everywhere else; if you release the

pressure, even temporarily, you will pull off the clot and the bleeding will start again. Nosebleeds can often be prevented by keeping the fingernails cut short and applying an ointment such as Vaseline to the front middle divider of the nose.

Eyes: Attempt removal of *foreign body* by gentle use of a clean moist cotton swab. Pain in the eyes from foreign bodies, scrapes, scratches, etc. can be alleviated by bandaging the lids shut until medical aid can be obtained. For *chemicals* splashed in eyes (Bottom Picture), flush immediately with clean water and continue for 15 minutes. Do not use drops or ointment. Seek medical aid.

Newborn Umbilical Cord Care: It is very important to follow your provider's advice for preventing infection of your newborn baby's umbilical cord. (Note: Recent controlled studies from developing countries document that application of 7.1% chlorhexidine digluconate solution or gel, delivering 4% chlorhexidine for umbilical cord care, reduced mortality by at least 18% if used within the first 24 hours of delivery.)

48. CHOKING HELP: ABDOMINAL THRUSTS (HEIMLICH MANEUVER)

(Note: The following guidelines are for older children and adults only. Guidelines for infants and younger children continue to be revised and differ between various sources. For infants less than 1 year, abdominal thrusts are usually *not* recommended. Some sources recommend delivering 5 back blows [slaps] followed by 5 chest thrusts and repeating until the object is expelled or the victim becomes unresponsive. So please see the recommendations of your Department or Ministry of Health and current WHO guidelines for management of choking in infants and younger children.)

Many communities are now offering courses in life saving techniques such as Abdominal Thrusts and CPR (Heart-Lung Resuscitation). These courses take several hours and it is not possible for us to teach you here. However, we do want to leave you with some information on treatment of choking and encourage you to take the courses if they become available in your area.

Choking: Any person who has choked on something and is *still coughing, crying or able to make any sounds is best LEFT ALONE*. Abdominal thrusts can cause damage to internal organs, especially in children, *so you must be certain the airway is completely obstructed*.

Ask the victim if he is choking. Often the victim will look like the child in the picture and will bring his hands to his throat and his eyes will be wide with distress, and there will be *no sound*. If the person is *not able to make any sounds and there is no air movement*, Abdominal Thrusts should be given.

Abdominal Thrusts with a Conscious Victim Standing or Sitting (See Upper Picture):

1) Stand behind the victim. Place the thumb side of one fist against the victim's abdomen in the midline slightly above the navel and well below the chest.

2) Grasp the fist with the other hand and exert 5 quick upward thrusts. The fist should not touch the lower part of the rib cage as this may damage internal organs.

3) Each thrust should be a separate distinct movement and should be continued until the object is expelled or the victim becomes unconscious.

Abdominal Thrusts with a Victim Lying Down (See Lower Picture):

1) Place the victim on his back with his head to one side and open his airway. Kneel close to the victim's side or straddle his hips.

2) Place the heel of one hand on the victim's abdomen in the midline slightly above the navel and well below the chest. The other hand should be placed on top of the first.

3) Press both hands into the abdomen with a quick upward thrust. If necessary, a series of five thrusts is performed, and each thrust should be a separate and distinct movement. Each thrust is directed upward in the midline and should not be directed to either side of the abdomen.

4) After delivery of 5 abdominal thrusts, attempt rescue breathing (Look into the mouth first and if you see the obstructing object, remove it): if the airway remains obstructed, repeat these maneuvers.

49. RECOVERING FROM DISASTERS AND OTHER TRAUMATIC EVENTS

We often care for people who have been victims of physical or sexual assault or rape, or have suffered serious accidental or war-inflicted injury. Others are recovering from disasters such as hurricanes or earthquakes. Traumatic events such as these are usually sudden and overwhelming. In some cases, there are no outwardly visible signs of physical injury, but there is nonetheless a serious emotional toll. Profound sadness, grief, anger and other strong emotions are normal reactions. Understanding these normal responses to traumatic events can aid you in coping effectively with your feelings, thoughts, and behaviors, and help you along the path to recovery.

1) The following are *normal* responses to a disaster or other traumatic event:

-Mental functioning. Those who have suffered traumatic stress may act irrationally, have difficulty making decisions; or may act in ways that are out of character for them normally. *Initially* you may feel *shock* (Feeling stunned, dazed, numb, or overwhelmed) or *denial* (Not fully acknowledging the severity of the event). *Later responses* vary with the individual. You may experience: Irritability or anger; Self-blame or the blaming of others; Isolation and withdrawal; Fear of recurrence; Feeling helpless; Mood swings; Sadness, depression, and grief; or Concentration and memory problems.

-Physical health: Traumatic stress can cause a range of physical symptoms which may include: Loss of appetite; Headaches or chest pain; Diarrhea, stomach pain, or nausea; Hyperactivity; Nightmares; The inability to sleep or Fatigue or low energy.

-Interpersonal relationships: Those who survive traumatic stress may undergo temporary personality changes that make relationships difficult. There may be an increase in arguments with friends and coworkers or marital discord.

It is also important to realize that there is no “standard” reaction to extreme stress and we all respond differently. Some people react immediately and recover quickly, while others have delayed reactions.

2) How can I help my family and myself? We each have different needs and different ways of coping. Focusing on *your strengths and abilities* will help you to heal. The following have been found to help:

-Give yourself time to heal. Don't hold yourself responsible for the disastrous event or be frustrated because you can't do more to help in the rescue work. Anticipate that this will be a difficult time in your life. Allow yourself to mourn the losses you have experienced. Try to be patient with the changes in your emotional states and those of your family.

-Engage in healthy behaviors to help you cope with stress: Take steps to promote your own physical and emotional healing by maintaining a healthy life style. (i.e. healthy eating, rest, exercise, relaxation, meditation.) This healthy outlook will also help your family. It is also very important to try to *reestablish routines* such as eating meals and going to bed at regular times. Spend time with family and friends. Try to limit demanding responsibilities of yourself and your family. Participate in memorials, rituals, and use of symbols as a way to express feelings. Use

existing support groups of family, friends, and church. Do *not* use alcohol or drugs--They very commonly make things much worse for both survivors and their loved ones.

-Try to find a **local support group** with others who have experienced similar stress (Often available following disasters, or war related injuries, or for women who have been victims of abuse or rape). It is common to want to strike back at people who have caused great pain. However, nothing good is accomplished by hateful language or actions.

-**Ask for support** from those who care about you and will listen and empathize with your situation (Though it is important to remember that they may also be suffering from the effects of traumatic stress). Allow yourself to receive as well as give.

-**Acknowledging our feelings helps us recover.** Talk with someone about your feelings--anger, sorrow, and other emotions--even though it may be difficult. Communicate your experience in whatever ways feel comfortable to you--such as talking with family, a pastor or close friend, or keeping a diary. Use meditation and/or other spiritual resources.

3) Helping Children Cope with Disaster: Disasters can be frightening for adults, but they are especially traumatic for children, especially if they don't know what to do.

-Children depend on *daily routines*. When emergencies interrupt this routine, children often become anxious. Reestablishing a regular schedule for eating, playing, chores and going to bed will help restore a sense of security.

-In a disaster, they'll look to you and other adults for help. *How you react* to an emergency gives them clues on how to act. If you react with alarm, a child may become more scared. They see our fear as proof that the danger is real. If you seem overcome with a sense of loss, a child may feel their losses more strongly.

-Children *often regress* and show younger behaviors such as thumb-sucking and bed-wetting. Children's fears also may stem from their imagination, and you should take these feelings seriously. A child who *feels* afraid *is* afraid. Your words and actions can provide reassurance. When talking with your child, be sure to present a realistic picture that is both honest and manageable for the child.

-Feelings of fear are healthy and natural for adults and children. But as an adult, you need to keep control of the situation. When you're sure that danger has passed, concentrate on your child's emotional needs by *asking* what he or she is most concerned about.

-Having children *participate* in the family's recovery activities will help them feel that their life will return to "normal." Your response during this time may have a lasting impact.

-Be aware that after a disaster, children are *most afraid* that: the event will happen again; someone will be injured or killed; they will be separated from the family; or will be left alone.

4) Immediately after the disaster, try to reduce your child's fear and anxiety:

-**Keep the family together.** While you look for housing and assistance, you may want to leave your children with relatives or friends. Instead, keep the family together as much as possible and make children a part of what you are doing to get the family back on its feet. Children get anxious, and they'll worry that their parents won't return.

-Calmly and firmly **explain the situation**. As best as you can, tell your children what you know about the disaster. Explain what will happen next. For example, say, "Tonight, we will all stay together in the shelter." Get down to the child's eye level and talk to them.

-**Encourage children to talk** about the traumatic event and ask questions as much as they want. Encourage children to describe what they're feeling. If they are very young, have them draw pictures of what happened and explain them to you. Listen to what they say. If possible, include the entire family in the discussion.

-Include your children in recovery activities. Give children chores that are their responsibility. This will help children feel they are part of the recovery. Having a task will help them understand that everything will be all right.

-You can help your children cope by understanding what causes their anxieties and fears. **Reassure them with firmness and love.** Let your child cling to you more often and let them be more dependent on you in the months following the trauma. *Hugs, holding and other types of physical affection are extremely important* to children who have experienced stress.

-The above will help your children realize that life will eventually return to normal. If a child does not respond to the above suggestions, **seek help** from a mental health specialist or a member of the clergy.

-WHO reports emphasize the importance of the **holistic** (spiritual as well as mental and physical) approach to healing. Most of the places we go, the local pastors offer the most help. If you have any questions or need help in this area, please let us know.

5) Family Emergency Plan: Contact your local emergency management or civil defense office, or your local Red Cross chapter for materials that describe how your family can create an Emergency Plan to prepare for future disasters. Everyone in the household, including children, should play a part in the family's response and recovery efforts.

-Teach your child how to recognize danger signals: Make sure your child knows what fire alarms and local community warning systems (horns, sirens) sound like. If you live by the ocean and the tide suddenly goes out, immediately run for high ground as this may be the first sign of a tsunami.

-Teach your child how and when to call for help. Help your child memorize important family information such as their family name, address and, if available, local phone number. They should also know where to meet in case of an emergency. Some children may not be old enough to memorize the information. They could carry a small index card that lists emergency information to give to an adult or babysitter.

50. CONCLUSION--THE MOST IMPORTANT KNOWLEDGE (SUMMARY)

So this is the *most important knowledge from the very best sources we could find in the world*. It is from the World Health Organization and its collaborating partners that include the very best physicians and health experts representing your country and countries from all over the world. It is the most important knowledge that would *help you save the most lives and prevent the most suffering for you, your family and your community*.

The importance of loving each other was emphasized by our ancestors (yours and mine), and was reviewed at the very beginning of this program. WHO reports confirm that if we were all able to treat each other in a truly compassionate manner, we could eliminate most of the unnecessary deaths and suffering in the developing, as well as, developed world (See Section 2B and www.who.int concerning social determinants of health). For most of our patients this remains the *most* important knowledge. Also remember **The Important 15:**

- 1) To prevent AIDS, have sex only with your spouse.
- 2) Don't smoke or use other tobacco products.
- 3) If you use alcohol, use only a small amount.
- 4) Avoid processed meats and animal fats.
- 5) Limit salt, sweets and sugar-sweetened beverages.
- 6) Eat mostly plant-based unprocessed whole foods.
- 7) Obtain adequate exercise.

8) Keep your home and neighborhood clean and free of breeding areas for flies and mosquitoes and plant a vegetable garden.

9) Breast-feed your babies.

10) Use safe drinking water.

11) Use safe food preparation and a safe, well ventilated cook stove.

12) Teach your children to wash their hands and remember to do so yourself.

13) Always use properly built latrines.

14) Always be very careful when you use medicines. All medicines can have serious unintended harmful effects (Even herbal medicines and even the ones we give you). Always keep all medicines locked up and out of reach of children.

15) And remember that nearly always the most important treatment you can provide is TLC (Tender Loving Care).

Do you have any questions.....?

Thank you again for your kind hospitality and for inviting us to your wonderful community. We will leave copies of this health education program with _____. Our hope is that you will have **community meetings** to further discuss the WHO guidelines we have reviewed, and that *you will identify and implement solutions* to the problems that are most important to you and your community.

(Appropriate farewell in native language.)

REFERENCES

The *Health Education Program for Developing Communities* content has always been based on the best available evidence-based sources. The sources for the best available international standards and guidelines have changed over the years. The program content is now based almost entirely on information available through the World Health Organization (WHO) and its numerous (over 900) collaborating partners. The WHO website is also continually updated to incorporate changes in evidence-based guidelines. We have therefore deleted our previous reference pages. For further information and possible updates in guidelines please see: www.who.int We also continue to very strongly encourage healthcare providers and educators at all levels of care and in all countries to utilize the increasing numbers of excellent resources available through the WHO website.

**Health Education Program
For Developing Communities**
(The Most Important Knowledge)

**Part II:
Illustrations**

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2016 Edition

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