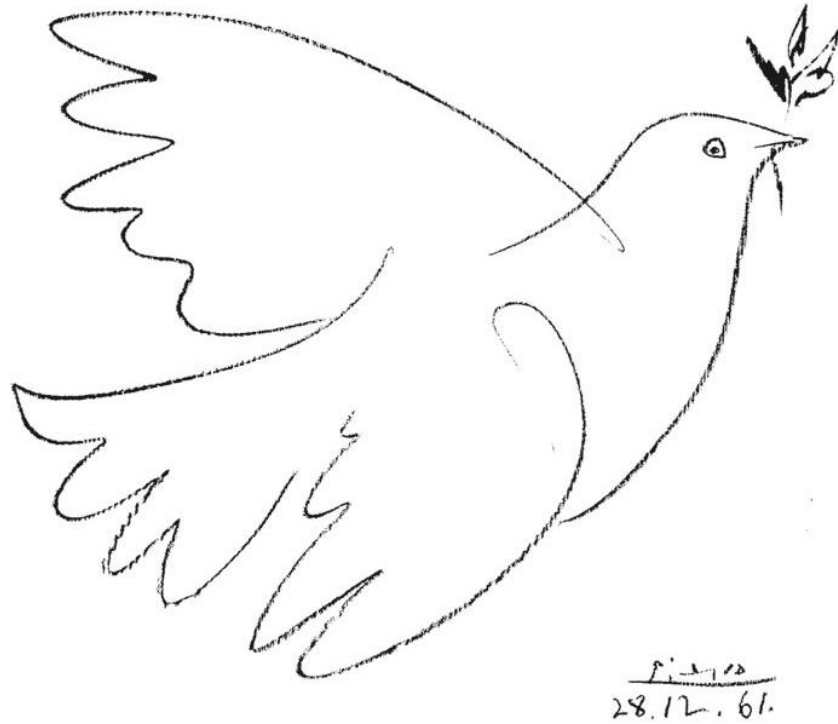


Towards Health and Wellbeing



Section-II **SELF-CARE FOR HEALTH AND** **DISEASE PREVENTION**



VOLUNTARY HEALTH ASSOCIATION OF INDIA

Section-II

Self-Care for Health and Disease Prevention

Key Components

Concept OF Health & Self care

Living a Healthy Life

Disease Prevention & Control

Managing common ailments (including covid) at home

Education & Empowerment for self care

Learning Outcomes

After the session the participants will be able to

- Explain the concept of Health & Self-care
- Will be able to enlist the factors conducive to good health
- Will be able to write the factors conducive to Healthy Life throughout the life cycle
- Will be able to enlist various factors responsible for prevention of diseases and control of accidents
- Will be able to practise disease prevention in different settings
- Will be able to list various steps to be followed for rational home management of common communicable & non communicable diseases including COVID 19
- Will be able to advise on rational home management of common communicable & non communicable diseases including COVID 19
- Will be able to initially manage common communicable & non communicable diseases including COVID 19 at home

Concepts & Definition of Self care

WHO has defined “self care” as “the ability of individuals, families and communities to promote health, prevent disease, maintain health, and to cope with illness and disability with or without the support of a health-care provider”. The scope of self-care includes health promotion; disease prevention and control; self-medication, providing care to dependent persons; seeking hospital/specialist care if necessary; and rehabilitation including palliative care.

- Health promotion activities include eating balanced meals, doing appropriate and adequate exercise/physical activities, and actively participating in social activities.
- Disease prevention activities include children and pregnant women getting immunized against preventable diseases; observing personal hygiene such as washing hands; eating, storing and serving food hygienically, protecting our body from diseases; keeping our houses and environment clean, avoiding smoking, drinking and drugs; and having safe sex,
- Self-treatment/medication: using home remedies during sickness, such as taking fluids like ORS when having diarrhoea, taking a sponge bath, or paracetamol tablets during fever, etc.
- Providing care to dependents: This includes taking care of those who cannot take care themselves, such as new born and infants, young children, the elderly and those who are differently abled.
- Seeking medical assistance: if fever, discomfort, pain or bleeding does not subside; going to health centre or hospital for professional treatment.
- Rehabilitation: helping people with disability or having physical difficulties in the family/community to restore/retain their physical ability. This includes, but is not limited to, occupational rehabilitation, physical rehabilitation.

Factors Conducive to good health

- A healthy lifestyle can prevent many illnesses or delay the onset and severity of existing ailments.
- If the person maintains good health, he/she is less likely to fall sick. However, if illness does occur, self care with proper management, including medical care where necessary, can help the body heal itself.

- With self-care, we can take charge of our health to a great extent and lead an active, healthy life!

Life Cycle approach to Health Care

What is Life Cycle approach to Health Care

All of us go through different phases in our lives. This section will briefly discuss what needs to be done to be healthy through each of these phases which bring with them changes as well as new responsibilities and challenges.

The different phases of human life are as follows:

- Pregnancy and childbirth
- New-born: from birth to one month of age
- Infancy birth to one year of age
- Childhood: One to five years of age
- Older child: 6-9 years
- Adolescence: 10 to 19 years
- Adulthood 19 to 60 years
- Old age 60 years & above

Pregnancy and Childbirth

- By the age of 20, girls and boys are usually physically and mentally mature for marriage. Each country in the region has a legal age for marriage. It is best to follow the rule.
- After marriage, before planning a baby, it is advisable for the couple to get a health check up done to ensure both are in good health, with no underlying health concerns.
- Pregnancy is a significant, yet normal condition in a woman's life during the reproductive phase (15-49 years). It should be seen as a natural function of the female body and not as an illness.
- A normal pregnancy lasts usually for about 9 months or 40 weeks.
- A woman should register with the health worker/hospital as soon as the menstrual period is missed. A full history and examination, with recording of weight and blood pressure, blood and urine examination would be done.
- At least 4 visits must be made during the pregnancy for antenatal check up – 2 visits between 4th to 6th months, and 2 visits between 7th to 9th months. The first visit should be as early as possible.

- Two Tetanus Toxoid (TT) immunization injections are given in the first pregnancy. In subsequent pregnancies, a single booster dose is necessary. In addition, a pregnant woman should take iron and folic acid tablets.
- Diet must be nutritious to include extra milk and milk products, cereals, pulses/legumes, vegetables, fruits, oils, as one also has to eat for adequate growth of the baby. During the entire pregnancy period, the total weight gain should be about 10-12 kg.
- Routine work should continue during pregnancy. At the same time, adequate rest, including 8 hours of sleep at night and at least 30 to 45 minutes during the day, is needed.
- Tobacco use is a health hazard. Any form of smokeless or smoking tobacco is harmful both for the mother and baby. A traditional belief that smokeless tobacco helps in controlling nausea during pregnancy is false and misleading. Inhaling the smoke exhaled by other smokers is also harmful both for the mother and the baby.
- Nausea or vomiting that is more pronounced in the morning, tender and sensitive breasts, unusual fatigue, frequent urination and emotional sensitivity are a normal phenomenon of pregnancy.
- The mother should go to the hospital for investigation and treatment if there are any complications such as bleeding, headache, swelling of the feet during pregnancy. A mother with diabetes or heart disease must have her delivery in a hospital.
- The delivery should be conducted in a health facility. If that is not possible, then a skilled birth attendant should conduct the delivery.
- After delivery, the mother must keep her private parts clean by washing with water after passing urine and stools.
- Sexual intercourse is not advised after delivery for 6 weeks.

New-born: Birth till two months of age

- The baby's body should be wiped dry all over, especially the head, immediately after birth. The mother should hold the baby as soon as possible after birth as this helps in "bonding" between the mother and the baby.
- The new-born must be kept warm.
- The normal birth weight of a baby is 2.5 kg. A baby weighing less than 2.5 kg at birth will need special care and attention.
- Exclusive breastfeeding is a MUST and should be started as soon as possible after the birth. Any other feed such as honey or water SHOULD NOT be given to the baby. The baby should be fed on demand day and night, normally every 2-3 hours. The mother should finish emptying one breast thoroughly before switching to the other breast. Next time, the mother should begin feeding from the other breast

first. While breastfeeding, the woman can take any posture, sitting or lying down, that is comfortable, using pillows or folded blankets under the back or the arms.

- A bath is not necessary for the baby for the first two days as it washes away the protective coating on the skin. Subsequently, the baby may be bathed daily. Eyes, ears and private parts should be cleaned during the bath. The mouth should also be cleaned after every feed.
- The umbilical stump must be cleaned and kept dry. Any oil/ medicine should not be applied. If there is discharge from the umbilical cord, it is important to CONTACT THE HEALTH WORKER.
- The baby must be immunized immediately after birth and it should be ensured that the health centre or hospital takes care of this.
- Diet of the mother must be nutritious: extra milk and milk products, cereals, pulses/legumes, vegetables, fruits, oil, sugar. Extra amount of food must be eaten, so that the mother can regain her strength.
- The family must consult the health worker if
 - The mother is bleeding profusely.
 - The baby is not feeding properly.
 - The yellow colouration of the baby's eyes and skin does not disappear by the end of the first week.

Infancy: Birth to one year of age

- Breast milk is the BEST for all infants till the age of 6 months. It contains all the necessary nutrition for the infant. There is no need to give the infant water or any other milk.
- Complimentary feeding (starting other food) along with breast milk is started after 6 months of age. The infant should be fed at least 5 times a day. Some foods that are eaten by the family can be given, but it has to be cooked till very soft and mashed before feeding. For example, if lentils are being cooked, then some amount can be taken out separately, cooked till it is very soft, then mashed and fed to the infant. No spices should be added to it, however, a little oil can be added. By the time the child is one year-old, he/she should be eating semi- solid food from the family kitchen. Top milk can also be given. Milk should be boiled and fed with a clean cup and spoon. Leftover milk should NOT be given to the infant. Feeding with a bottle is also not advisable as the bottle may not be properly cleaned. Water should not be added to the milk.
- Cleanliness during cooking, before feeding and after cleaning the infant's stools is to be maintained.
- Babies gradually grow physically and mentally. These steps of growth are called the "milestones".

- It is important to get the "Road to Health" card or "Health Card" from the health worker. The card should be kept carefully and one must learn how to use it.
- The infant is growing well if the weight increases regularly. Weight must be recorded every month.
- If the weight does not increase in two months, the infant should be taken to the health facility. Immunisation schedule for the baby should be followed as advised.

It is important that both the mother and the infant are clean and bathed regularly. If the weight is increasing and the infant is active, the quantity of food being given is adequate.

Childhood: One to under-five years of age

It is important that during these years in a child's life, she/he remains healthy. This is also the time when healthy habits can be formed.

Breast feeding can continue till the age of two years.

- The diet must contain cereals, milk and milk products, lentils, beans (eggs, meat if eaten by the family), vegetables, fruits, oil, sugar. The child should eat whatever is cooked in the family kitchen. She/he has to be given small feeds, totaling to at least 5 feeds a day, as the stomach is small.
- Good eating habits include sitting in one place while eating, the mother being present, food being served by the mother, and when the child is encouraged to finish the food on the plate. Food must not be wasted.
- Clean habits are: Washing the face, hands and feet, bathing and changing clothes. Washing the hands before eating, after passing urine and stools. Washing the mouth after every meal, brushing the teeth in the morning and at night before sleeping.
- To encourage the child to learn, she/he should be sent to a school for under-five children. All countries in the region have play schools for this age group.
- Immunisation schedule will continue at this stage and Booster doses are also given. The "Road to Health" card or "Health Card" should continue to be used.
- The child has to be taught to respect elders and obey the parents. Good habits are best inculcated during this phase.
- The environment in the home must be made safe and happy for the child. Kitchens, bathrooms, stairs are places where accidents can occur. Medicines, house cleaning agents, pesticides and electric appliances etc. must be kept in safe places where the child cannot reach them.

Older Child: six to nine years

This phase begins when the child starts going to school at the age of 6 years till the age of 17 years. Children between 11 to 18 years are called “adolescents” and will be dealt with separately.

Children between the ages of 6 to 11 years are also growing children and need the same attention as younger children. The need for nutritious diet, therefore, remains the same as before.

- The quantity of food eaten is to be increased and good eating habits have to be maintained. The child should be encouraged to eat home food and not buy food from outside.
- Formation of healthy habits should continue. The child should be able to keep her/himself clean under parental supervision.
- Both girls and boys must be encouraged to study and continue in school till senior secondary. The parents must talk with their child to detect if the child is having any problem in school. Common problems are bullying by other children, teachers being very strict, difficulty in learning, etc. In view of increasing cases of child abuse, it is important for the parent to convey to the child that no one should touch her/him in a way that is not correct.
- In many schools, a School Health Programme is conducted and children are examined at regular intervals. Parents must cooperate with this and see that their child gets a proper check-up and make efforts to follow clinical advice.
- Physical exercise and play are important. The child must have time to play with other children.
- The child has also to be taught to keep the environment in the home and outside the home clean. A healthy environment makes a healthy family.
- Children also need to engage themselves in some household work to help the parents. Taking part in family religious activities, going out together for shopping, sharing enjoyable moments like story time or play time keeps them happy and within the family.
- Accidents in the home and outside have to be avoided. The child has to be taught to cross roads safely and not to play on the roads.

Adolescence: 10 - 19 years

Adolescence is the age between 10 to 19 years. This is the time when changes occur in both girls and boys. Body changes occur due to increase in hormone (secretions of

certain glands) levels in the blood, which results in body development, sexual development and emotional changes.

Adolescence in girls:

- One of the first signs is that the breasts slowly develop from a small nodule to their full form.
- Menstruation (monthly bleeding) starts during this phase. At first it may be small amounts and at irregular intervals. It gradually increases in amount; the bleeding may last for 2-5 days and comes regularly once a month. Once menstruation begins, the girl can become pregnant if she has sexual intercourse.
- During menstruation girls have to maintain hygiene. They can use cotton pads or clean cloth and have to change as frequently as needed. The private parts must be washed whenever the pad is changed (if possible). Underwear should be changed as needed. Pads/cloth should be disposed by wrapping in paper or putting it in a bag and throwing into a dustbin.
- The regular monthly blood loss can lead to loss of iron, making the girl pale (anemia). So a balanced diet for girls is very important.
- Other changes include hair growth in the armpits and pubic region.
- The hormones in the blood can cause changes in the skin. Pimples form on the skin and upper part of the chest. This is called "acne" and can be very stressful for the child.
- Several emotional changes occur and this is a stressful time for a girl. She finds her body changing and has to manage menstruation. She becomes aware of boys and is attracted to them. She has to dress differently and the elders expect her to behave in a different manner. She also becomes aware about sexual intercourse.

Adolescence in boys

- In boys, hair develops on the face, in the armpits and pubic region. The voice changes from childlike to a deeper tone.
- Acne occurs due to hormonal changes, along with Development of the testis.
- Emotional changes occur and this is a stressful time for the boy. He finds his body changing, becomes aware and is attracted to girls and sometimes to older women. He becomes aware of sexual intercourse. He may masturbate. This is normal and does not cause any problems.
- Some boys can also become aggressive towards family members and others. This is also the time when boys may try smoking or drugs under the influence of friends or seniors and may even be prepared to have sexual contact because they

feel that they have grown up and should act mature. All these situations must be handled with sensitivity and care.

For both girls and boys

- As girls and boys grow fast during adolescence, the diet has to be balanced to provide enough of energy. The food items can be the same as the family is taking, however, the quantity should be enough for normal weight gain.
- As girls are prone to develop anemia if their diet is not balanced, they have to eat plenty of foods containing iron – green leafy vegetables, milk, meat (if non-vegetarian), eggs. Sometimes iron tablets may have to be taken.
- For adolescents, daily exercise helps to maintain weight, strengthen the bones, muscles and joints. Participating in school and community sports helps build team spirit and also helps dealing with wins and losses.
- Personal hygiene must be maintained.
- The girl/boy must take part in the family activities and should be given some responsibility in the family. Taking part in religious activities with the family is also helpful in managing stress.
- Good behaviour with others must be encouraged. Boys must be counseled about respecting women whereas girls should be taught to maintain their self respect and conduct themselves with dignity in any situation.
- It is important that parents should counsel adolescents about the dangers of indulging in casual sex with known/unknown partners. This can lead to unwanted pregnancy and sexually transmitted infections including HIV. The principle of having sexual intercourse after marriage and remaining faithful to a single partner is the best way to stay free of these problems.
- Counseling about the dangers of experimenting with smoking, alcohol, drugs which can lead to addiction, should also be done by both parents and teachers.

Adolescence is a very challenging and eventful phase with numerous changes that are physical, mental as well as emotional. Parents need to accept and understand the changes happening in their child. During this phase, care must be taken to see that communication between parents and children is kept open. It is better for parents to be the first and foremost information source than friends and outsiders.

Adults

Women:

In general an adult woman after marriage settles into her new home with her husband, has children, looks after her home and also, works outside the home to support the family. This is an active time in her life and she has to look after her health.

Her diet has to be nutritious including milk and milk products, cereals, lentils/ pulses, vegetables, fruits, oils and sugar.

Regular physical exercise together with household duties will keep her weight in control, strengthen the bones and joints and help her control stress. Being faithful to a single partner protects her from sexually transmitted diseases and helps her to plan her family.

As the woman grows older (usually after the age of 40 years), menstruation begins to get irregular and then stops due to changes in the hormones. This is a natural change and is NOT an illness. The symptoms preceding menopause may include:

- Irregular bleeding – the number of days decreases and bleeding does not occur every month.
- “Hot flushes” – there is sudden feeling of heat and redness on the face and neck. There can be sweating, headache, irritability which lasts for a short time.
- Less interest in sex.
- Loss of fat on the skin, wrinkling.
- Reduction in breast size .
- Weaker bones (osteoporosis).
- Frequent urinary infection.
- Menopause being a natural change has to be understood and accepted as a normal body function in a woman’s body.

Men:

It is important for men to understand that having sex with multiple partners can lead to sexually transmitted diseases. It is better to be faithful to a single partner. Casual sex should be avoided.

While doing manual work, one should follow the instructions of the supervisor and use protective measures advised to prevent accidents. Men working with substances like chemicals, asbestos, lead must have regular health check ups.

- Diet has to be adequate to maintain the body weight of the person depending on the work done. Over-eating, eating the wrong type of foods with too much oil and

fat and lack of physical activity can lead to obesity which is dangerous as a person gets older.

- Regular exercise is needed even if a person has physical activity during work. It strengthens the muscles and bones, prevents increase of weight, is good for the heart and relieves stress.
- It is best not to smoke, use tobacco or take drugs. tobacco products orally, taking drugs. If one has started, then it is essential to STOP immediately.

Both men and women have to:

- Be aware that other diseases such as diabetes, high blood pressure (hypertension), heart disease can start at this age. Regular health checks will help in early diagnosis.
- Cancers can occur at any age. Early detection means early treatment. The early warning signs (danger signals) for cancer are:
 - A lump or hard area in the breast.
 - A change in a wart or mole.
 - A definitive change in the digestive and bowel habits.
 - Persistent cough or hoarseness (change) in voice.
 - Excessive loss of blood during monthly bleeding, or bleeding between the dates.
 - Blood loss from any site.
 - A swelling or sore that does not get better.
 - Unexplained loss of weight.

Old age - the autumn of life

Old age starts from age of 60 years. From this phase onwards, the body starts slowing down even though a person may think that she/ he is fully active. The cells in the body begin to degenerate and this leads to decrease in their function. This degeneration is a normal function. Therefore growing old is not an illness but a phase in our lives which has to happen to all people who live beyond 60 years. There is no medicine that can slow down this degeneration. What matters is how the person sees herself/himself as an elder.

- A healthy elder who can look after herself/ himself is a great support to the rest of the family. It is advisable that she/he must stay with or nearby family members.
- As always, the diet has to be nutritious. Extra milk is needed for senior citizens to help keep the bones strong. They may need to eat small quantities of food at least 5 times a day, so that they get the right quantity of food and nutrients. Plenty of green leafy vegetables (spinach) help prevent constipation.

In general, because of decreasing cells, brain function slows down. A person can:

- Become forgetful. Remembers very well all that happened in childhood, but will not remember where she/he has left the spectacles. As the age increases, forgetfulness increases and can cause the person a lot of trouble.
- Become irritable, depressed or emotionally unstable (sudden bouts of tears or happiness at different times).
- Develop dementia where there is increase in forgetfulness; difficulty in performing daily routines such as cleaning teeth, dressing; difficulty in using correct words; and other such problems.
- The elderly must keep active and continue doing what work they can. Reading, watching television, meeting together in groups and discussions keeps the mind active.
- Eyesight decreases because of cataract or glaucoma (increase in the pressure of the eye). Hearing capacity gradually decreases. The teeth fall out as the gums lose strength. Eating becomes difficult and the person prefers softer foods. Such changes can be detected and the person helped through periodic health check-ups. For instance, cataract surgery can be done if needed. Glaucoma should be treated early so the person will not get blind. A hearing aid and dentures can be provided too as required.
- Further, if the person has any disease such as diabetes, high blood pressure and heart disease, she/he has to continue with the treatment and follow up with the doctor.
- The joints become stiff and painful and the bones too become thin and break easily even with a slight fall. Movement may sometimes be difficult and painful. The spine too becomes stiff making bending forward painful.
- The pumping action of the heart and the action of the lungs decrease. There is difficulty in walking fast and also in breathing.
- Senior citizens must continue with whatever exercise they were doing at a younger age. Exercise may be at a slower rate and for a shorter time, but they **MUST** exercise. Yoga, done gently, is very helpful as it exercises all the muscles and joints of the body. At this age, yoga must be done with the help of a trained teacher. The elderly must be careful to prevent accidents at home.

A walking stick, if advised, must be used.

- There is difficulty in eating the same amounts of food that she/he was used to. Distension and an uncomfortable fullness after eating a large meal can occur. Sometimes, constipation can also occur.
- Kidneys and urinary bladder: The function of these parts slows down. The person can start passing urine many times in the day and night.

- In men, the gland near the urinary bladder (prostate gland) becomes large and the person will have difficulty in passing urine. Sometimes, he may not be able to pass urine at all.

Urinary infections can occur in both men and women.

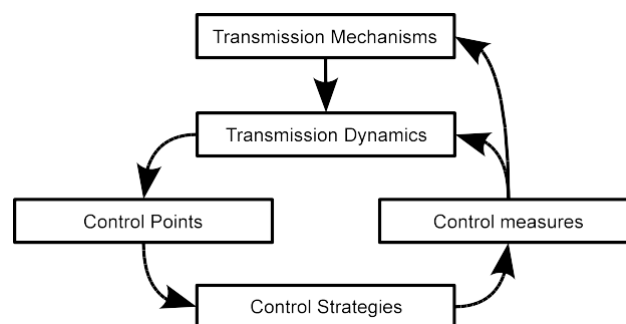
Regular health check ups are helpful in monitoring any sudden changes or detecting the onset of any serious ailments early

Prevention & Control of diseases including definitions, stages of prevention, steps for prevention Immunization including Covid immunization

Disease Prevention

Epidemiologic concepts

Epidemiology is “the study of the distribution and determinants of health related states and events in populations, and the application of this study to control health problems”



Infectious diseases differ in important ways from non-infectious diseases because of the mechanisms by which microbial agents are transmitted and the population dynamics of transmission and disease occurrence. To improve our conceptual understanding, we use a systematic, comprehensive, and integrated approach (Figure 1). Specifically, we cover the following:

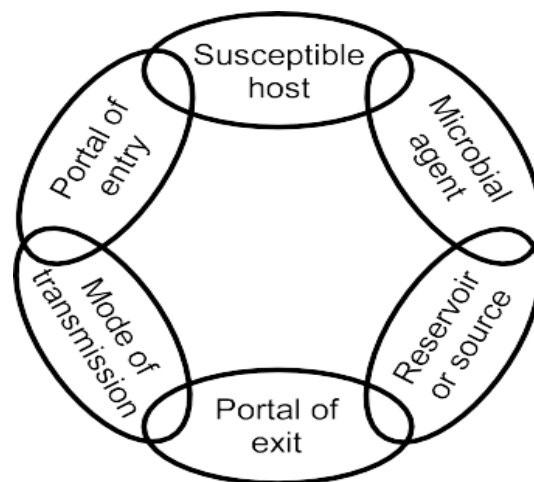
1. Transmission mechanisms
 - (a) Chain model of infectious diseases
 - (b) Natural history of infection and infectiousness
 - (c) Convergence model of human-microbe interaction

2. Transmission dynamics
 - (a) Reproductive number
 - (b) Infection rate among susceptible
 - (c) Generation time

3. Transmission containment
 - (a) Control points
 - (b) Control strategies
 - (c) Control measures

First, we review infectious disease transmission mechanisms. How are infections transmitted and why? Second, we review infectious disease transmission dynamics. At the population level, what mechanisms explain the transmission of microbial agents and the appearance of infectious cases? How do infectious cases interact with susceptible hosts? Third, we review transmission containment. From our study of transmission dynamics, we identify transmission control points for preventing and controlling infectious diseases. We will use these control points to guide the development of appropriate control measures. This process helps us to evaluate the success or failure of our control measures.

2. Transmission mechanisms
 - 2.1. Chain model of infectious diseases



The Chain Model of infectious diseases contains the key components that must be “linked” in order for an infection to occur. First, there is a susceptible host. Second, there is a microbial agent capable of adhering, entering, infecting, and causing disease in the susceptible host. In its natural settings, the microbial agent multiplies and survives in a reservoir. The source is where the microbial agent is when it is

transmitted to the susceptible host. The reservoir can also be a source of infection. The portal of exit is how the agent exits the source. The mode of transmission is the mechanism by which the agent is transmitted from the source to the host (e.g., contact, droplet, airborne, etc.). And the portal of entry is how the agent enters the susceptible host (e.g., respiratory tract, gastrointestinal tract, genitourinary tract, skin).

Susceptible host. Human host susceptibility is a relative attribute and depends on the condition of host defences. Host defences consist of innate immunity and acquired immunity. Innate immunity consists of nonspecific mechanisms that do not require prior exposure to foreign agents in order to resist or fight invasion of the host by these foreign agents. The other type of host defence is acquired immunity, which can be active or passive. Acquired active immunity is comprised of host antibody or cellular immune defence mechanisms that target specific foreign agents based on prior exposure to this or antigenically similar agents. Vaccination is a form of active immunization. Acquired passive immunity is when a host receives preformed antibodies that were made in other hosts. Receipt of immune globulin is a form of passive immunization.

Microbial agent. Microbial agents or their toxins can cause human disease.

Microbial reproduction can occur outside or inside the host. Host injury can occur directly from the invading microbe, from an inflammatory host immune response, or from organ hypo perfusion (septic shock).

Infection and transmission are two sides of the same coin: infection is from the perspective of a susceptible host and transmission is from the perspective of an infectious source. Infection is acquisition of a microbe by a host. Infectivity is the probability of infection given exposure to a microbial agent. Transmission is the transfer (infection) of a microbe from an infectious source to a host. Transmission can occur within species (intra-species), between species (inter-species), or between the environment and a species. Transmissibility is the probability of microbe transfer to a host given contact (exposure). This is also called the transmission probability.

Infection can result in several possible states: elimination, commensalism, colonization, persistence, or disease.

Disease is a state of infection where the host-microbe interaction results in sufficient host damage to be detectable by diagnostic tests, or to cause clinical symptoms or signs. The term pathogenicity describes the probability of developing disease given

infection. The term virulence describes the probability of severe disease, complication, or death given disease.

Reservoir. Reservoirs for microbes can be either human, animal, or environmental. Generally, the reservoir contains nutritional substrate to support microbial growth. To control an infectious disease, we must know the primary reservoir(s). For some infectious diseases, human are the only reservoir: polio, hepatitis A (B and C), measles, mumps, rubella, varicella, smallpox (before eradication³), and malaria. In large part, smallpox was eradicated from the human species because humans were the only reservoir – this is a necessary, but not sufficient, condition for successful eradication [6]. Other necessary conditions for eradication include that the microbial agent is not part of the normal human flora, and that effective prevention measures exist (e.g., vaccination).

Table: Chain Model of Infectious Diseases – Reservoirs

1. Human
 - (a) Symptomatic illness
 - (b) Carriers
 - (c) Asymptomatic (no illness during infection)
 - (d) Incubatory (pre-illness)
 - (e) Convalescent (post-illness recovery)
 - (f) Chronic (persistent infection)
2. Animal (zoonosis)
3. Environment

Source. The source is where the infectious agent survives or reproduces prior to transmission to a host.

Mode of transmission. The mode of transmission is the mechanism by which the microbial agent gets from the source to the susceptible host. Microbes can be transmitted from the source to the host by contact, respiratory droplet, airborne, vehicle-borne, or vector-borne routes.

Chain Model of Infectious Diseases – Mode of Transmission

1. Contact
 - (a) Direct contact (e.g., touching, kissing, having sex)
 - (b) Indirect contact (e.g., intermediate object, fomites)
2. Respiratory droplets (large particles: secretions, cough, sneeze)
3. Airborne (small particles: droplet nuclei, dust)

4. Vehicle-borne (e.g., ingestion, instrumentation, infusion/injection)
5. Vector-borne (e.g., mechanical, biologic)
6. Vertical transmission (e.g., in utero, at birth, breast milk)

Portal of entry. The portal of entry is where the infectious agent enters the host. Possible portals of entry include the following:

- Mucous membrane surfaces
 - Nose, mouth, oropharynx
 - Gastrointestinal tract
 - Genitourinary tract
 - Respiratory tract
 - Anorectum

Strategies for Disease Prevention

Definition/Introduction

The natural history of a disease identifies five stages:

- underlying,
- susceptible,
- subclinical,
- clinical,
- and recovery/disability/death.

Corresponding preventive health measures have been grouped into similar stages to target the prevention of these stages of a disease. These preventive stages are primordial prevention, primary prevention, secondary prevention, and tertiary prevention. Combined, these strategies not only aim to prevent the onset of disease through risk reduction, but also reduces complications of a manifested disease.

Primordial Prevention:

Primordial Prevention consists of risk factor reduction targeted towards an entire population through a focus on social and environmental conditions. Such measures typically get promoted through laws and national policy. Primordial prevention targets the underlying stage of natural disease by targeting the underlying social conditions that promote disease onset. An example includes banning the smoking in public places ; this, in turn, decreases risk factors for Cancer, cardiovascular disease, type 2 diabetes, etc.

Primary Prevention:

Primary prevention consists of measures aimed at a susceptible population or individual. The purpose of primary prevention is to prevent a disease from ever occurring. Thus, its target population is healthy individuals. It commonly institutes activities that limit risk exposure or increase the immunity of individuals at risk to prevent a disease from progressing in a susceptible individual to subclinical disease. For example, immunizations are a form of primary prevention.

Secondary Prevention:

Secondary prevention emphasizes early disease detection, and its target is healthy-appearing individuals with subclinical forms of the disease. The subclinical disease consists of pathologic changes, but no overt symptoms that are diagnosable in a doctor's visit. Secondary prevention often occurs in the form of screenings. For example, a Papanicolaou (Pap) smear is a form of secondary prevention aimed to diagnose cervical cancer in its subclinical state before progression.

Tertiary Prevention:

Tertiary prevention targets both the clinical and outcome stages of a disease. It is implemented in symptomatic patients and aims to reduce the severity of the disease as well as of any associated sequelae. While secondary prevention seeks to prevent the onset of illness, tertiary prevention aims to reduce the effects of the disease once established in an individual. Forms of tertiary prevention are commonly rehabilitation efforts.

One of the most important and best ways to prevent oneself from getting infected with a disease or causing it to spread to others is by keeping ourselves, our environment and the food and water that we consume, clean. Simple steps followed every day to maintain cleanliness will help to prevent many diseases. The following sections will discuss these in detail:

Immunization

Universal Immunization Programme of India

Smallpox eradication in the decade of 70s compelled the world to focus on immunization programme in the both the poor and developed countries. In India, Expanded Program on Immunization (EPI) started in the year 1978 with the aim of immunizing all the children below one year with BCG, DPT and typhoid vaccines. OPV was also added to EPI a year later. In 1983, along with children, immunization of all pregnant women was started with Tetanus Toxoid vaccine. In 1985, the EPI was converted to Universal Immunization Program (UIP) to bring all the eligible children and all the pregnant women in the country under the umbrella of immunization. The main objectives of UIP are:

- Rapidly increase immunization coverage
- Improve quality of services
- Establish a cold chain system
- Introduce a system for district wise monitoring
- Enhancement of indigenous vaccine production

In 1985, the UIP was started with vaccines against six vaccine preventable diseases (VPDs): Measles, Polio, Tuberculosis, Diphtheria, Pertussis and Tetanus. Over the time, the UIP has continuously evolved and new vaccines are being added to it. Currently, there are vaccines against 12 VPDs in UIP of India. Out the 12 diseases, vaccines against 10 diseases (against Polio, Measles, Diphtheria, Pertussis, Tetanus, childhood TB, Hepatitis B, Rubella, Rotavirus diarrhea and meningitis & pneumonia caused by Haemophilus Influenza type B) are available across the country whereas vaccines against 02 diseases (Japanese encephalitis and Pneumococcal Pneumonia) are available in the selected states/districts. **Universal Immunization Programme is the largest public health program in world and it targets around 2.67 crore new-borns and 2.9 crore pregnant women each year.**



Diphtheria



Pertussis



Tetanus



Measles



Rubella



Polio

Under the UIP, vaccines are provided to prevent the following VPDs:

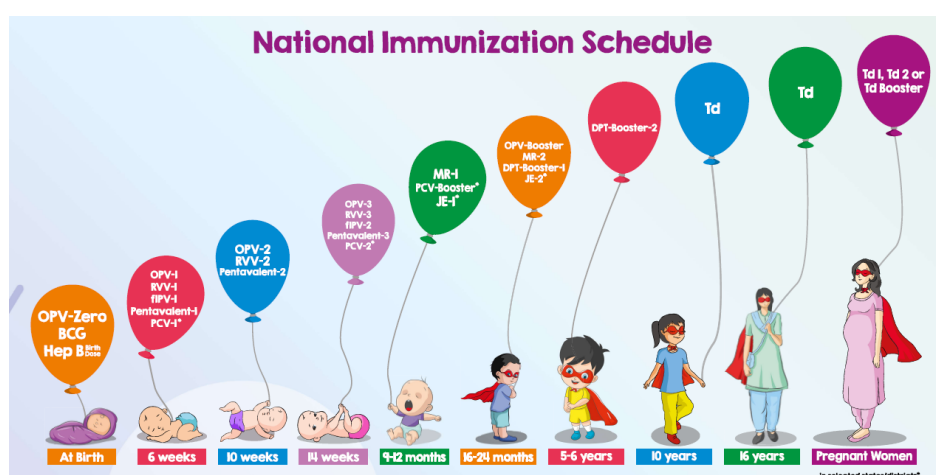
- Diphtheria
- Pertussis
- Tetanus
- Polio
- Measles
- Tuberculosis
- Hepatitis B
- Haemophilus Influenzae Type B related diseases (bacterial meningitis, pneumonia and others)
- Japanese Encephalitis
- Encephalitis
- Diarrhoeas due to rotavirus
- Rubella
- Pneumococcal disease

Vaccine Preventable Diseases (VPDs) covered under UIP

Immunization schedule Under UIP

Vaccine	Due Age	Maximum Age
For Infants		
BCG	At birth till one year	At birth till one year
Hepatitis B – Birth dose	At birth within 24 hours	At birth within 24 hours
OPV- 0	At birth	within the first 15 days
OPV 1, 2 & 3	At 6 weeks, 10 weeks & 14 weeks	till 5 years of age
Pentavalent 1, 2 & 3	At 6 weeks, 10 weeks & 14 weeks	1 year of age
fIPV 1 & 2	At 6 weeks & 14 weeks	1 year of age
RVV 1, 2 & 3	At 6 weeks, 10 weeks & 14 weeks	1 year of age
PCV 1, 2 & PCV-Booster	At 6 weeks, 14 weeks & 9 months	1 year of age
MCV 1/ MR 1	At 9 completed Months - 12 months	5 years of age
Japanese Encephalitis-1	At 9 months-12 months	15 years of age
Vitamin A (1st dose)	At 9 months	5 years of age
For Children and Adolescent		
DPT Booster- 1	16-24 months	7 years of age
MCV 2/ MR 2	16-24 months	5 years of age
OPV Booster	16-24 months	5 Years
Japanese Encephalitis-2	16-24 months	till 15 years of age
Vitamin A (2nd to 9th dose)	At 16 months. Then, one dose every 6 months.	up to the age of 5 years
DPT Booster-2	5-6 years	7 Years of age
TT	10 years & 16 years	16 Years
For Pregnant Women		
TT-1	Early in pregnancy	
TT-2	4 weeks after TT-1	
TT- Booster	If pregnancy occur within three years of last pregnancy and two TT doses were received	

BCG: Bacillus Calmette-Guerin; DPT: diphtheria-pertussis-tetanus; fIPV: fractional-dose IPV; JE: Japanese Encephalitis; OPV: oral polio vaccine; PCV: Pneumococcal conjugate vaccine; RVV: Rotavirus vaccine, TT: tetanus toxoid



Adult Vaccination in India

Vaccinations are readily available for such common adult illnesses as influenza (flu), pneumococcal disease, herpes zoster (shingles), human papillomavirus (HPV), pertussis (whooping cough), hepatitis A and hepatitis B. Vaccinations against less common diseases such as measles, mumps, rubella (German measles), tetanus (lockjaw), diphtheria and varicella (chickenpox) are also needed by some adults. The Centers for Disease Control and Prevention's (CDC) recommendations clearly identify people who are at risk for these diseases and who should be immunized to prevent these diseases and their complications. Consult your healthcare provider or local health department regarding your own immunization status as well as current immunization recommendations.

All adults require tetanus and diphtheria (Td) immunizations at 10 year intervals throughout their lives.

Women 26 years of age or younger should be immunized against human papillomavirus (HPV).


All adults 65 years of age or older, as well as persons 2 to 64 years of age who have diabetes or chronic heart, lung, liver or kidney disorders need protection against pneumococcal disease, and should consult their healthcare providers regarding this vaccine.


Influenza vaccination is recommended for all adults 50 years of age or older, women who will be pregnant during influenza season, and residents of long-term care facilities, as well as for all children 6 months through 18 years of age, and persons who have certain chronic medical conditions. Other individuals who should seek annual influenza immunization include healthcare workers and those who live with or provide care for high-risk persons, including those who live with or who provide care for infants younger than 6 months of age.

Hepatitis B vaccine is recommended for adults in certain high-risk groups, such as healthcare workers and public safety workers exposed to blood on the job, household and sex contacts of persons with chronic hepatitis B virus (HBV) infection, sexually active people who are not in long-term, mutually monogamous relationships, people seeking evaluation or treatment for sexually-transmitted disease (STD), men who have sex with men, injection drug users, travelers to countries where HBV infection is common, people with end-stage renal disease and HIV-infected persons. Hepatitis B vaccine is also recommended for anyone seeking protection from HBV infection.

Recommended adult immunization schedule, by vaccine and age group

VACCINE ▼	AGE GROUP ►	19–26 years	27–49 years	50–59 years	60–64 years	≥65 years
Tetanus, diphtheria, pertussis (Td/Tdap)		Substitute one-time dose of Tdap for Td booster; then boost with Td every 10 years				Td booster every 10 years
Human papillomavirus		3 doses (females)				
Varicella		2 doses				
Zoster					1 dose	
Measles, mumps, rubella		1 or 2 doses		1 dose		
Influenza				1 dose annually		
Pneumococcal (polysaccharide)		1 or 2 doses				1 dose
Hepatitis A		2 doses				
Hepatitis B		3 doses				
Meningococcal		1 or more doses				

 Recommended if some other risk factor is present (e.g., based on medical, occupational, lifestyle, or other indications)

 For all persons in this category who meet the age requirements and who lack evidence of immunity (e.g., lack documentation of vaccination or have no evidence of prior infection)

 No recommendation

Personal hygiene means keeping the body and all the external (outer) organs clean, starting from head to toe.

Hands and Nails: Hands and nails are important causes of infection in an individual and also for others. Dirty hands take germs to food, to children and to an individual's own mouth.

- Nails should be cut short and cleaned while bathing.
- Adults, especially mothers caring for children and those who cook food, should keep their nails short. Those with long nails must keep under the nails clean.
- Hand washing is VERY IMPORTANT. The method to be followed for proper hand washing is:
 - Adequate water. Running water from tap is best. If water is stored in a utensil, the quantity MUST be adequate.
 - Use soap.
 - The hands should be rubbed well. It is important to clean the nails, between the fingers and on top of the hands. Soap should be washed off well and the hands dried with a clean cloth.
- When do we HAVE to wash hands?
 - After using the toilet
 - When handling foods, before and after eating.
 - After caring for sick persons and small children.
 - When hands are dirty.
 - When arriving home from work or from outside

Skin: The skin is important because it protects our bodies. Keeping the skin clean keeps a person healthy.

Simple ways of keeping the skin clean are:

- Regular bathing at least once a day. Adults should pay special attention to clean in the folds of the skin – under the breasts, the armpits, the groin, between the toes. Adolescents (children between 11 and 18 years) should wash their faces more frequently to keep the skin clean, and free of oil to prevent pimples. The private parts of both men and women must be cleaned properly while the person is having a bath. Men should pull back the foreskin (prepuce) and clean the area. Boys must be taught to do this.
 - For infants, the mother should clean the folds in the neck. Milk runs down the neck while feeding and collects in the folds. This leads to infection.
 - One must wear clean clothes after taking bath.

Hair: Hair is considered a sign of beauty by all. But it has to be clean. How can this be done? Hair should be washed with soap or any other local cleaning agent once a week or more often, as needed. Combing hair at least two times daily will keep it clean. Children who go to school should comb their hair. Children should be checked for head lice.

Eyes: Eyes are one of the important sense organs of the body. They must be kept clean and healthy

- Eyes should be washed daily with clean water. This should be done when washing the face.
- It is important to protect the eyes from strong sunlight, wind or dust.
- An infant's eyes should be cleaned with clean cotton balls soaked in clean water. Wash your hands before doing this.

Ears: Ears must be looked after and kept clean.

- Ears must be cleaned when bathing. Ears can be cleaned with a cotton swab (a piece of cotton) wrapped round a blunt-edged small stick. One should not use sharp objects in the ears to clean them.
- It is also important that ears be properly dried after a bath.
- Exposure to loud noise including music can damage your hearing.

Mouth and Teeth: Clean mouth and teeth are important for health and for social reasons. Unclean mouth and teeth can give you bad breath. The teeth must be kept clean and gums massaged. This is important as the gums support the teeth. Hygiene of the mouth has to be maintained right from birth.

Infants and children

- The mouth, tongue and gums must be gently wiped at least 2-3 times a day, using a finger wrapped with a soft, clean, damp cloth. This will prevent formation of white deposit seen on the tongue and mouth of infants taking milk.
- When the teeth begin to appear, the gums should be gently massaged using clean finger with glycerin or a little vegetable oil.
- Once the child is old enough, he/she should be taught to brush the teeth using a soft toothbrush with toothpaste or tooth powder after every meal and at night. The child can be taught to massage the gums with the fingers. Toothbrushes should not be shared.
- Regular dental check-ups for children should be done to detect early tooth decay.
- Children should not be allowed to eat too many sweets or starchy foods.

These stick in the teeth and cause tooth decay.

Adults

- Adults must follow the same routine of brushing. They can also use traditionally accepted methods to keep teeth clean.
- False teeth must be removed, cleaned, and stored in a clean container at night.
- Children and adults should NOT initiate the use of any tobacco product, smoking or smokeless. These are hazardous as they can cause oral and other types of cancer.
- Regular dental check-ups are advised as the person grows older.

Menstrual hygiene: Menstruation is the monthly bleeding from the vagina, which starts when a girl is around 11 years of age. The bleeding can last for 3-6 days and the amount varies from one girl to another.

During menstruation, a girl/woman must:

- Keep herself and her genitals clean.
- Use clean cotton cloth pieces or cotton pads to absorb the blood. Avoid using soiled cloth.
- Change cloth/pads, depending upon the amount of bleeding.
- Wash her private parts with clean water every time a change is made.
- Wear clean underwear. Frequent changes may be necessary in case of stain.
- Dispose used cloth/pad by wrapping it in paper into a dustbin. Soiled pads should not be disposed in the toilet or thrown simply anywhere.
- Wash hands with soap and water after changing.

Keeping feet healthy

- Feet should be kept clean and washed daily while taking a bath.
- It is advisable to wear shoes when one is going out. Shoes that fit comfortably should be worn.
- Feet should not be cramped or pushed inside fashionable but very uncomfortable shoes.
- If one is diabetic or loses sensation in the foot, one should regularly examine feet for cuts and wounds. If there are cuts or wounds on the feet, seeking medical help immediately from health staff is important.

Sleeping: Ideally, 6-8 hours of sleep a day is necessary for adequate rest in adults and proper growth in children. While sleeping, it is important to avoid mosquito and insect bites. Bedrooms should be screened to prevent insects and mosquitoes. If the room is not screened, one should sleep under a mosquito net.

Coughing and Spitting: Cough can be dry or productive, which means that sputum is formed and brought out when one coughs. In both types, coughing sprays droplets from the mouth. This is not always visible, but the droplets contain the germs that have caused the cough. Other persons can get infected by the germs if they breathe it in. This can be prevented by covering the mouth with the hand or a clean cloth when coughing.

No one should spit. Often when sputum is formed and the person coughs, it comes into the mouth and has to be spat out. Sputum contains germs which can spread. It can cause disease to others who come in contact with it. Sputum should be spat into a closed tin which can be disposed in the dustbin. Outside the house, one should take care to cough into a tissue paper, which can be disposed in a dustbin.

Tobacco use kills:

- All forms of tobacco, smoking or smokeless, are addictive and dangerous to health.
- Smoking cigarettes and bidis causes lung cancer, which requires expensive, long-term treatment, is painful as well as traumatic.
- Chewing tobacco products such as gutka and pan masala with tobacco are addictive. They cause cancer of the tongue, mouth, oesophagus and oral cavity. The community must be made aware of the harmful effects of tobacco use.
- It is important to remember that it is never too late to stop, so tobacco use **MUST** be stopped immediately.

Alcohol use is hazardous to health:

Alcohol use is addictive and excessive use increases the risk of:

- Violence against women
- Accidents, falls and injuries
- Risky sexual behaviour
- Miscarriage and still births among pregnant women; birth defects among children
- Chronic diseases, such as cancers, liver ailments, depression and suicide

Water Hygiene

Unclean water and food have germs, which enter the body and lead to a number of diseases. Some of these are: diarrhoea, typhoid fever, cholera, hepatitis A (jaundice), food poisoning or intestinal worms. It is important to pay attention to water and food hygiene to prevent sickness..

Water that is used for drinking and cooking purposes must be safe from both germs and chemicals (arsenic and fluoride which is common in Bangladesh, India, Myanmar, Nepal, Thailand). This means it must be:

- Taken from safe sources.
- Collected in a clean manner.
- Stored in a clean vessel.
- Taken from the vessel in a hygienic manner (with clean hands).
- Consumed in a hygienic way.

FOOD HYGIENE

Important elements of food hygiene include cleanliness in preparing, cooking, storing, serving, and eating food.

Accidents & Trauma:

Accidents at home

Many types of accidents can occur at home. Most of them occur in children and elderly people. The common accidents are:

- Fire and Burns
- Poisoning
- Suffocation
- Drowning
- Falling from a height/stairs
- Slipping on a wet, uneven floor
- Injuries from sharp objects

Fire and burns:

- Children can burn themselves when they play with a match box, or a lighted candle or if there is a utensil with hot water on the ground. All such articles should be kept out of reach of children.
- Women should wear fitting clothes and be careful while cooking or handling hot liquids.

Poisoning: Common poisons in households

- Kerosene oil
- Rat poison
- Insecticides, pesticides

- Medicines
- Cleaning agents.
- Acid used for cleaning

All these items should be kept out of reach of children; they are best stored in closed cupboards. Sometimes, floor-cleaning agents or insecticides are stored in ordinary bottles or in medicine bottles. These bottles should be correctly labeled and kept separately, so that the contents are not mistaken for other fluids. After use, the bottles should be returned to the storage place and not left lying around.

Suffocation:

- Plastic bags are the most important cause for suffocation in children. They should be kept in a safe place out of reach of children.
- In cold weather, people light a small fire in the room/courtyard at night to keep warm. The fire should be put out before going to sleep.

Drowning:

- Toddlers can drown in a bucket of water, so they should not be left alone near a bucket of water or in the bathroom. The bathroom door should not be closed with a baby inside alone.
- Young children going to swim should be under adult supervision. An adult who knows how to swim, how to rescue a drowning person, and who will stay close to the swimming area, should accompany them. Swimming should not be allowed in rivers or the sea during the rainy season.

Falling/slipping from a height/stairs:

- Falling from the roof/terrace commonly occurs during kite flying season if the boundary wall is not built high enough. The roof should have a sufficiently high boundary wall.
- Young children and elderly people can slip and fall down stairs. Stairs should have a railing to hold on to, children and the elderly should be helped when they are walking up or down the stairs.

Injuries from sharp objects:

Knives and sharp objects can cause serious cuts and injuries. These objects must be kept in safe places away from children. Adults should use them carefully.

- A common accident, which occurs among people working in farms, is with the fodder cutter while people feed in the fodder to be cut. The cutter has a protection for the blade but this is not used as it slows down cutting. As a result, workers can get seriously injured while loading the fodder. Children are also at

risk as the fodder cutter is usually kept in the house. A blade protector must be used.

- Agriculture workers must observe precautions while handling various implements and machines, and follow the instructions for machines.

First Aid

As mentioned earlier, no matter how careful we are, mishaps happen sometimes. Most people don't know what to do when someone gets injured. It is important that everyone should know what needs to be done when a person suddenly becomes sick or hurt .

This immediate help given to an injured or sick person is called First Aid.

It can:

- Prevent the condition of the injured or sick person from getting worse
- Save a life
- Helps to keep the person comfortable till proper medical help is given

However, it is important to know when to give first aid and when not to. For example, one should give first aid in case of a small injury, such as a burn, a cut, a scratch or bruise. But if the person's condition looks serious, there is lot of bleeding or pain, or if the injury seems to be inside the body, it is best to get medical help.

What to do in case of a cut or scratch

- One must wash one's hands well before giving first aid
- If the cut or scratch is small, it should be washed with soap and plenty of water using cotton or clean cloth.
- The wound should then be dried after which an antiseptic cream should be applied.

If the wound is deep and the bleeding is heavy, it should first be washed with soap and water and then, the aid giver can try and stop the bleeding. One way is to press down over the wound with a clean pad of cotton or cloth, till the bleeding stops. If the bleeding doesn't stop, a bandage called a "tourniquet" can be used.

It is a wide strip of cloth that is wrapped tightly around the cut two or three times and knotted. It should be kept in place till the patient reaches the doctor.

What to do in case of sprains

Sometimes, joints such as the ankle or wrist can get twisted. The joint gets swollen and may be quite painful. Children may sprain themselves while playing.

- Ice should be applied immediately, if it is available, to reduce the swelling.
- The joint should not be moved if possible, till medical help is reached.
- A tight bandage should be wrapped around the sprained area to give support to the joint and prevent unnecessary movement.
- It is advisable not to rub or massage a sprain. For relief from pain, one may take a painkiller such as paracetamol or crocin.

Nose Bleed

Bleeding from the nose is quite common in children or even in adults during summer. There are two important things to do when this happens.

- A cloth wrapped in 1-2 ice cubes should be applied on the nose for some time.
- A piece of cotton can be placed gently inside the nostril after smearing a little Vaseline around and just inside the nostrils.
- Another method is to avoid bending forward or down. Instead the head and neck should be tipped back and rested on a pillow or the back of a chair for 10-15 minutes.
- The nose can be pinched between the thumb and forefinger for about 7-10 minutes, while the person breathes through the mouth. This may be helpful to control and stop the blood flow as it will put pressure on the bleeding portion.

What to do in case of a poisonous snake or cobra bite

- Since the poison can spread through the blood, the person should not be moved.
- The body part, which was bitten, should be kept in a lower position than the heart.
- A tight cloth or bandage can be tied tightly just above the bite to slow down the blood flow towards the heart. This can even save the life of a person.
- The person should be taken to a hospital immediately for an anti-venom injection.

Road Accidents

Common causes of road accidents are:

- a. Fast-moving vehicles
- b. People running across the road or on the edge of the road
- c. Animals that wander along the road
- d. Roads in a bad condition
- e. Insufficient road lighting; traffic signals not working properly

- f. Traffic rules violations
- g. Drunk driving
- h. Using mobile phone while driving

Vehicle should be driven only at the age legally permitted. Traffic rules should be strictly followed.

Correct signals should be given for turning or stopping at the correct time.

- When driving a motorcycle or a scooter, the driver and the person sitting at the back should both wear helmets. The helmet should be properly fastened so that it stays on and protects the head if one falls off.
- Only one passenger should be allowed to sit on the two-wheeler.
- When driving a car, the driver and the person sitting in the front seat should wear seat belts. This prevents one from being thrown out of the car in an accident. Children should always sit on the back seat of the car with seat belt on.
- One must not drive after having alcohol.
- One must not use mobile phone while driving.
- Roads should be crossed only when it is clear of traffic. Where displayed, people should cross on crosswalks.
- Adults should hold the hands of children when crossing a road. Children should be taught to cross the road safely.
- People should walk on the footpath. If there is no footpath, one should walk on the opposite side of on-coming traffic.
- One should not get angry while driving on the road.

'Road rage' kills.

Self-Care for Common Diseases: Communicable Diseases

Tips for Managing COVID-19 at Home for Adults

The Coronavirus pandemic has led to an unprecedented public health emergency in India making it difficult for most people to access the healthcare system. The infographic on this page provides concise practical advice for the management of COVID-19 in adults at home (current as of April 25, 2021). The following narrative expands on the principles in the infographic

1. Symptoms of COVID-19

Symptoms of COVID-19 include fever, sore throat, dry cough, headache, body aches and loss of smell or taste. If you have these symptoms

- Try to get tested for COVID-19 and stay at home
 - Given the high number of cases in India, if you have **one or more** of these symptoms, and live in a highly affected state, you very likely have COVID-19.
 - While waiting for your coronavirus test results **OR** if you are not able to get tested
 - Stay home
 - Wear a mask that fits snugly against the side of your face and that completely covers your nose and mouth. Have all household members wear a mask to prevent spread of infection.
 - Keep windows in the house open for ventilation.
 - Drink plenty of fluids (not just water, but fluids with salt and sugar)
 - Take Paracetamol (also called Crocin, Calpol, Metacin, Paracin etc) to reduce fever, headache, and body pain as needed. You can take these medicines up to 4 times per day.
 - Get a pulse oximeter (from a pharmacy or via online stores) and check oxygen saturation levels 3-4 times/day or more often if you feel you are having difficulty breathing.
2. If you test positive for COVID-19 or are waiting for test results **AND** oxygen saturation levels are 92% or higher
- **Do not panic.** Most people with COVID-19 will recover completely.
 - You do **NOT** need to go to a hospital.
 - Continue to monitor oxygen level 3-4 times/day or more often if you are having difficulty breathing.
 - Drink fluids
 - Lie on your stomach or side, especially if you have difficulty breathing. This can help to improve oxygen levels.
 - You can continue to take Paracetamol as needed.
 - Steroid pills are not helpful at this stage and may be harmful. Other medications like Remdesivir and Tocilizumab are not helpful at this stage
 - You do not need a chest X-ray or CT scan

- If you are over the age of 50, [steroid inhalers \(budesonide\) may be useful](#)
 - Use two puffs of steroid inhaler (budesonide) twice a day for 5-7 days if you have it available; if the puff inhaler version is unavailable, you can also buy dry powder inhalers.
3. If you test positive for COVID-19 or are waiting for test results **AND** oxygen saturation levels are less than 92%
- Consult with a doctor and get admitted to a hospital if this is what they recommend
 - The following are scientifically proven, effective interventions and should be done under medical supervision:
 - Use the minimum amount of oxygen needed to keep your oxygen saturation above 92%.
 - Take a steroid medication. Any of the options listed below can be used. Oral forms are preferred if you are at home, intravenous forms may be used in the hospital
 - Dexamethasone 6 mg once a day
 - Methylprednisolone 32 mg once a day
 - Prednisolone or Prednisone 40 mg once a day
 - Hydrocortisone 50 mg three times a day
 - Steroids are usually given for 5 – 10 days and can be stopped once oxygen is no longer needed. There is no need to taper them down.
 - If you have diabetes, monitor your blood sugar while on steroids and if they are higher than normal make sure to let your doctor know
 - Lie flat on your stomach or on your side alternating with lying on your back to help improve oxygen levels.
 - Stay in touch with a doctor and seek help if your oxygen needs increase to more than 4L/minute
 - For severely ill patients, hospitals might use drugs such as Remdesivir or Tocilizumab (these are not to be used at home and not to be used without expert supervision)
4. The following medicines are not proven and not routinely advised for the treatment of COVID-19:
- Azithromycin
 - Baricitinib
 - Bevacizumab
 - Convalescent Plasma
 - Doxycycline
 - Favipiravir
 - Fluvoxamine
 - Hydroxychloroquine
 - Itolizumab
 - Interferon alpha-2b
 - Ivermectin
 - Lopinavir-Ritonavir
 - Vitamin C
 - Vitamin D

COVID-19 Vaccination in India

On January 16th, 2021, India has launched world's largest COVID-19 vaccination programme. In the first phase, the government has planned to vaccinate approximately 03 crore health workers and frontline workers. On 1st March 2021, government announced to include citizens >60 years and individuals >45 years with comorbidities in the COVID-19 vaccination programme. From 1st April, all individuals >45 years became eligible to receive the vaccine and from 1st May onwards, govt. has allowed all the citizens above 18 years of age to take the vaccine.

COVID-19 Vaccines in India:

India gave Emergency Use Authorization to three vaccines

1. COVISHIELD

Company: Serum Institute of India

Type: Recombinant Chimpanzee Adenovirus vector vaccine encoding the SARS-CoV-2 Spike (S) glycoprotein

Doses: Two doses (12-16 weeks apart)

2. COVAXIN

Company: Bharat Biotech International Ltd.

Type: Whole Virion Inactivated Corona Virus Vaccine

Doses: Two doses (4-6 weeks apart)

3. Sputnik V

Company: Dr. Reddy's Laboratories

Type: Heterologous Recombinant Adenovirus Vector Vaccine encoding SARS-CoV-2 spike protein

Doses: Two doses (3 weeks apart)

Common adverse effects of these Vaccines:

Covishield	Covaxin	Sputnik-V
<p>Most common:</p> <ul style="list-style-type: none"> • Pain & tenderness at injection site • Headache • Tiredness • Muscle or joint aches • Fever • Chills • Nausea <p>Rarely:</p> <ul style="list-style-type: none"> • Demyelinating disorders 	<p>Most common:</p> <ul style="list-style-type: none"> • Injection site pain • Headache • Tiredness • Fever • Bodyache • Abdominal Pain • Nausea and vomiting • Dizziness • Sweating • Tremors • Cold and cough 	<p>Most common:</p> <ul style="list-style-type: none"> • Fatigue • Joint Pain • Headache • Muscle Ache • Chills • Fever • Nausea • Vomiting

Myths	Facts
COVID-19 Vaccine will give me COVID-19.	The vaccine does not use live virus, and only a component to spur antibody production.
COVID-19 vaccines cannot be trusted as they were rushed and not tested properly.	Vaccines underwent thorough safety and efficacy trials as per protocols.
Since I have already had COVID-19 infection, I do not need vaccine.	Immunity from natural infection may not last very long, hence vaccine is important.
Vaccination means Goodbye to Masks	No, vaccines provide an additional layer of protection but are not a replacement to masks or other COVID appropriate behaviour.
Vaccines will tweak your DNA	None of the vaccines used can modify the DNA in the recipient. They only stimulate antibody response.
Vaccine will give lifelong immunity.	Duration of immune response varies for different vaccines. It is not yet known for COVID-19 vaccines.
Vaccine's adverse effects are worse than COVID-19 infection.	Most common side effects of vaccine are minor and wont cause any long term harm.
Vaccine can cause infertility.	Such claims are false and there is no relation between COVID-19 vaccine and infertility.

Covid-19 Associated Mucormycosis

Mucormycosis is a fungal infection that mainly affects people who are on medication for other health problems that reduces their ability to fight environmental pathogens. Sinuses or lungs of such individuals get affected after fungal spores are inhaled from the air.

Sign & Symptoms

- Pain and redness around eyes and/or nose
- Fever
- Coughing Shortness of breath
- Bloody vomits
- Altered mental status

Predisposing Factors

- Uncontrolled diabetes mellitus
- Immunosuppression by steroids
- Prolonged ICU stay
- Co-morbidities - post transplant/malignancy
- Voriconazole therapy

When to Suspect

(In Covid19 patients, Diabetics, Patients on Immunosuppressants)

- Sinusitis - nasal blockade or congestion, nasal discharge (blackish/bloody),
- local pain on the cheek bone
- One sided facial pain, numbness or swelling
- Blackish discoloration over bridge of nose/palate
- Toothache, loosening of teeth, jaw involvement
- Blurred or double vision with pain;
- fever,
- skin lesion; thrombosis & necrosis (eschar)
- Chest pain, pleural effusion, haemoptysis, worsening of respiratory symptoms

Prevention:

Use masks

Wear shoes, long trousers, long sleeve shirts and gloves while handling soil (gardening), moss or manure

Maintain personal hygiene including thorough scrub bath

Dos

- Control Hyperglycemia
- Do regular blood sugar level monitoring post covid and in Diabetics
- Use Steroids judiciously, correct timing, correct dose and duration
- Use clean, sterile water for humidifiers during oxygen therapy
- Use antibiotics/antifungals judiciously

TUBERCULOSIS (TB)

Tuberculosis of the lungs is a **chronic** (long-lasting), **contagious** (easily spread) disease that anyone can get. But most often it strikes persons between 15 and 35 years of age, especially those who have AIDS, are weak, are poorly nourished, or live with someone who has the disease. Germs of TB spread through the air.

Tuberculosis is curable. Yet thousands die needlessly from this disease every year. Both for prevention and cure it is very import to **treat tuberculosis early**

Most frequent signs of TB:

- Chronic Cough with or without sputum especially just after waking up for more than 2 weeks
- Mild Fever in the afternoon and sweating at night.
- Coughing out of blood (hemoptysis).
- Chest Pain
- Chronic loss of weight, increasing weakness and loss of appetite.

In serious or advanced cases:

- Coughing up blood (usually a little, but in some cases a lot)
- Pale, waxy skin, gradual weight loss and death.
- Voice grows hoarse (very serious)

Sign of TB in children:

Children with TB often do not cough or have a mid fever in the afternoon. The most important sign in children is **loss of weight even if they are eating well**. They may also have swelling in the neck, lighter skin colour, and/or difficulty in breathing. **If a child who eats well does not gain weight for two successive (one after the other) months, always suspect TB**. In a small child, TB is very dangerous and can quickly kill the child.

Tuberculosis most commonly affects the lungs. But it can also affect any part of the body such as the bones, joints, lymph nodes, brain, eyes, kidneys, skin, fallopian tubes in women and the male genitals. In young children it may cause meningitis (see p.264); in older people it may affect brain causing seizure or fits.

HOW CAN TUBERCULOSIS BE DIAGNOSED?

- The best way to diagnose lung TB is by examining the sputum under microscope. Germs of TB can be seen with a microscope. Sputum examination is available at all Primary Health Centers
- Three samples of sputum (spot-morning-spot) should be examined for accurate diagnosis
- For TB diagnosis an X-ray is more expensive and less accurate than the sputum examination, but may be necessary in some patients.

Tuberculosis of other parts of the body:

Tuberculosis can affect any part of the body apart from lungs. This includes TB in the glands of the neck, TB of the abdomen, TB of skin < TB of brain (Tubercular Meningitis) and TB of a joint (like the knee). It is important to know the signs of tuberculosis affecting other parts of the body so that early referral and treatment can be started.

TB of the lymph node:

This usually affects the lymph nodes located high at the sides and back of the neck (see p. 295). A single enlarged lymph node that is not painful is often seen in children. However, more lymph nodes can get affected.

TB of spine or backbone:

This affects the backbone usually in the middle part, thus causing this kind of deformity. If this is not treated, the bones may collapse, affecting the nerves and paralysis of both legs can occur.

TB of the fallopian tubes in women:

TB is one of the causes of pelvic inflammatory diseases in women. This can cause sterility, if not treated.

TB affecting the brain:

TB which affects the brain can cause fits or convulsions, loss of consciousness and death, if not treated immediately.

TB of the larynx or voice box:

This is highly infectious and should be suspected in a person who has severe TB and developed voice hoarseness.

WHAT IS THE TREATMENT FOR TUBERCULOSIS?

Tuberculosis can be cured completely with proper medicines. Directly Observed Treatment Short-Course (DOTS) is the most effective way to ensure cure. The patient can get medicines for TB free of cost from the DOTS-Center.

SIDE EFFECTS OF ANTI-TB DRUGS

Anti-tuberculosis drugs are generally safe. In some cases side effects may occur. If any of the following side effects, is noticed, stop the drugs and the patient must meet the doctor immediately.

- Yellow coloration of the skin and eyeballs (Jaundice)
- Blurry vision during the Intensive Phase.
- Dizziness or hearing loss during the Intensive Phase

Supportive Management

Eat as well as possible: plenty of food rich in proteins and vitamins, as well as energy foods (see chap. On Nutrition)

Rest is important. You should stop working and take it easy until you begin to get better. From then on, try not to work so hard that you become tired or breathe with difficulty. Try to always get enough rest and sleep.

Tuberculosis in any other part of the body is treated the same as TB of the lungs. For children with severe tuberculosis of the backbone, surgery may be needed to prevent paralysis.

Prevention: It is better to prevent TB than to cure it.

Tuberculosis is very contagious. Persons who live in the same house with someone who has TB, especially children, run a great risk of catching the disease.

If someone in the house has TB:

- *If possible, see that the whole family is tested for TB.*
- Have the children vaccinated against TB.
- Everyone, especially the children, should eat plenty of nutritious food (see p. 151).
- A person with TB should be careful to cover his mouth when coughing and sneezing and not to spit on the floor.
- Take the child to a DOTS center at the first suspicion of TB or if he gets a cough that lasts more than two weeks.
- Treat Tuberculosis at once. A person who no longer has TB will not spread it.
- The person with TB who taking regular treatment need not to eat or sleep separately from others in the family.

Watch for weight loss and other signs of TB in the family. If possible, weigh each person, especially children, once a month, until the danger is passed.

MALARIA

Malaria is an infection of the blood that causes chills & high fever. Malaria is spread from one person to another by the bite of a mosquito. The mosquito sucks up the malarial parasites from the blood of an infected person and injects them into the next person it bites (see p. 203 & 204).

Signs of malaria:

- The typical attack strikes every 2 or 3 days and lasts several hours. It has 3 stages:
- It begins with chills and often headache. The person shivers or shakes for 15 minutes to an hour.
- Chills are followed by fever, often 40° or more. The person is weak, flushed (red skin), and at times delirious (not in his right mind). The fever lasts for several hours.
- Finally the person begins to sweat, and his temperature goes down. After an attack, the person feels weak, but may feel more or less OK.
- Usually malaria causes fever every 2 or 3 days (depending on the kind of malaria), but in the beginning it may cause fever daily. Also, in small children and person who have had malaria before, the fever pattern may not be regular or typical. **For this reason, anyone who suffers from unexplained fevers should have his blood tested for malaria.**
- Malaria can cause anemia because it destroys the red blood cells.
- The liver may be enlarged and painful and there may be jaundice.
- The *spleen* is also enlarged and painful and there may be jaundice.
- A serious and life threatening form of malaria is cerebral malaria. This affects the brain. If a person who has an attack of chills, fever and sweating suddenly becomes sleepy and difficult to wake up or suddenly develops jerky movements (convulsions) and unconsciousness, bring him to a hospital at once. The person will die if not treated immediately.

Diagnosis and treatment:

- If you suspect malaria, or have repeated fevers, go to a health center for a blood test. In areas where an especially dangerous type of malaria called *falciparum* occurs, seek treatment immediately.
- If there is no health center nearby, and if malaria is common in your area, treat any unexplained high fever as malaria. Take the malaria medicine known to work best in your area. Using Chloroquine tablets with 150 mg of base, adult should take 4 tablets once a day for 3 days. For children's dosage, consult doctor.
- If you get better with Chloroquine, but after several days the fever starts again, you may need a different medicine, like primaquine. Get advice from the nearest health center.
- If a person who possibly has malaria begins to have fits or other signs of meningitis), he may have *cerebral* malaria. This is dangerous. If possible, inject Chloroquine and rush to health centre to **seek medical help** at once.

HOW TO AVOID MALARIA

Malaria is a problem in many of the hot or tropical parts of the world. If everyone cooperates, it can be controlled. All these control measures should be practiced at once.

1. Avoid mosquitoes by sleeping underneath a sheet and using a mosquito net. Cover the baby's cradle with mosquito netting or a thin cloth.
2. Co-operate with the malaria programme workers when they come to your village. Tell them if anyone in the family has had fevers and let them take blood for testing. Also get your houses sprayed so that mosquitoes are killed (when spraying, keep all food and water covered).
3. If you suspect malaria, get treatment quickly. After you have been treated, mosquitoes that bite you will not pass malaria on to others.
4. Destroy mosquitoes and their *larva* (young). Mosquitoes breed in standing water. Clear the neighbourhood of ponds, pits, old cans, or broken pots that collect water. Drain or put a little oil on pools or marshes where mosquitoes breed. Organize children to fill the cut off fops of the bamboo poles (of fences, etc.) with sand.
5. Malaria can also be prevented, or its effects greatly reduced, by taking anti-malaria medicines available free at Health Centre. .

DENGUE

Dengue is caused by a *Virus* belonging to genus *Flavivirus*. This first infection produces a self-limiting disease (Classical Dengue) with about a week's course of illness. This never leads to death. However, subsequent infection in recovered persons with a different stereotype may produce classical dengue or at times, in a few persons, produce severe form of illness (Dengue Haemorrhagic Fever or Dengue Shock Syndrome) that needs appropriate case management to prevent death.

Dengue Transmission:

- The female Aedes mosquito transmits the dengue virus which enters human body through mosquito bites.
- When mosquito bites a person to suck blood, virus circulating in blood is also sucked if person is having infection.
- Virus multiplies in body of mosquito. After 8-10 days they are matured and ready to be passed on to a healthy human being.

- When such a mosquito bites a healthy person, the dengue virus enters the body of healthy person and cause disease.
- Not all mosquitoes transmit Dengue. In India *Aedes aegypti* is the major vector. Capable of transmitting dengue in different areas. In Kerala, *Aedes albopictus* play a role in transmission.

Where mosquitoes breed:

- *Aedes aegypti* breeds in vast variety of domestic man-made water receptacles found in and around households, construction sites, factories etc. like water coolers, water storage containers, flower vases, cement tanks & pots, wooden and discarded barrels, cisterns, tyres, bottles, tin cans, plastic cups, plastic containers, wet-cell batteries, drums, glass containers, drain pipes, ant traps, ground water storage tanks, overhead tanks, fountains etc.
- *Aedes albopictus* also breeds prolifically in water collected in the container. used for collection of latex in rubber plantation areas.

Above mentioned are only examples. This mosquito is capable of breeding in very little water available in any type of artificial container.

How to recognize Dengue/Dengue Hemorrhagic Fever (DHF)

Symptoms to suspect Dengue Fever

- Fever usually indistinguishable from other viral fever in case of primary dengue infection; may be with rash.
- Acute fever (sudden sharp rise in temperature) associated with headache and flushed face.
- Pain around eyes particularly on eye movement (retro-orbital pain), fever from strong light (Photophobia)
- Backache, severe pain in muscles and joints/bones of the extremities (Break-bone fever)
- Rash-diffuse or fleeting pinpoint eruptions of face, neck and chest followed by conspicuous rash on 3rd or 4th day.
- Other symptoms may include altered taste sensation, sore throat, vomiting, general depression, etc.

Signs of Dengue Hemorrhagic Fever

- Sudden rise in temperature (high fever) with flushing face and other symptoms of dengue fever like headache, muscle or joint pain, vomiting etc.
- Rash, easy bruising and bleeding.

- Fine petechiae (scattered, pale and round areas on skin) on the extremities, axillae, face and soft palate.

Treatment:

There is no specific anti-viral medicine for Dengue. The patients need symptomatic medicines based on presentation of disease. Dengue fever can be managed with general medicines available with all medical care agencies like PHCs/CHCs/hospitals.

For Dengue Hemorrhagic Fever, patient must report to the medical care agency for proper management.

How To Prevent Dengue

- Prevent mosquitoes from biting (they bite in day time)
- Screen all windows and doors in the house.
- Use mosquito repellents.
- Sleep under mosquito nets (insecticide treated or ordinary) even when resting under mosquito nets (insecticides treated ordinary) even when resting during day time, insecticide treated nets provide additional benefit of mosquito killing effect.

Control mosquito breeding

- Keep surroundings clean and improve basic sanitation measures, collect, remove and dispose by buying or burning all unusable containers that can collect or hold water.
- Keep tyres, metal/wooden/plastic/glass boxes, discarded appliances, sinks, basins, drums, etc. which may collect water, in shattered areas to prevent collection of rain water.
- Turn water storage containers upside down and drain water from coolers, etc. at least once a week, dry and scrub before refilling with water, dry flower vases etc. at least once a week.
- Cover cisterns, water tanks, etc. with proper lids/nets to prevent entry of mosquitoes for egg laying.
- Clean and drain roof gutters, water logged tree holes, etc. and place salt in anti-traps at least once a week.
- Turn sap containers used in rubber plantation upside down when not in use. Reclaim land by filling and draining.
- Put anti-larval chemicals to kill mosquito larvae if feasible.

TYPHOID FEVER

Typhoid is an infection of the gut that affects the whole body. It is spread from feces-to-mouth by contaminated food and water and often comes as an *epidemic* (many people get sick at once).

Signs:

First week:

- It begins like a cold or flu.
- Headache and sore throat.
- The fever rises a little more each day until it reaches 40 degrees or more.
- In some persons, pulse is often relatively slow for the amount of fever present. Take the pulse and temperature every half hour. **If the pulse gets slower when the fever goes up, the person probably has typhoid.**
- Sometimes there is vomiting, diarrhoea or constipation with abdominal pain.
- Nose bleeding may be present.

Second week:

- High fever, pulse relatively slow.
- A few pink spots may appear on the body.
- Trembling.
- Delirium (person does not think clearly or make sense).
- Weakness, weight loss, dehydration.



Third week:

- If there are no complications, the fever and other symptoms slowly go away.

Complications:

This may appear in the 3rd or 4th week when the sick person seems to be improving.

- a. Bleeding from the gut. The person passes blood in stool. He may die of severe blood loss. Immediately seek medical help.
- b. The person suddenly develops severe abdominal pain or signs of peritonitis. The gut may be perforated. Seek medical help immediately.

If there are signs of complications, immediately bring the person to the hospital. He will need blood transfusion or he may need an operation.

Treatment:

- Seek medical help immediately.
- Chloramphenicol: adult: 250 mg. capsule 4 times a day. Or Ciprofloxacin 250-750 mg twice daily for 5-7 days are usually given for the treatment. However these medicines should be given only after consulting a trained health worker or Medical doctor and should not be used indiscriminately. (see p. 500).
- Lower the fever with cool wet cloths (see p. 109).
- Give plenty of liquids: soups, juices, and Rehydration Drink to avoid dehydration (see p. 236).
- Give nutritious foods, in liquid form if necessary.
- The person should stay in bed until the fever is completely gone.
- If the person passes blood in stool or develops signs of peritonitis (p. 138) or pneumonia (p. 327), he should be sent to hospital to seek medical help at once.

Prevention of typhoid:

- **To prevent typhoid**, care must be taken to avoid contamination of water and food by human feces. Follow the guidelines of personal and public hygiene given in Chapter 12. Make and use latrines. Be sure latrines are at safe distance from where people get drinking water.
- Do not eat food exposed to flies and other insects, especially during fairs and festival season.
- Cases of typhoid often appear after a flood or other disaster, and special care must be taken with cleanliness at these times. Be sure that drinking water is clean. If there are cases of typhoid in your village, boil all drinking water. Look for the cause of contaminated water or food.

- To avoid the spread of typhoid, a person who has the disease should stay in a separate room. No one else should drink or eat from the dishes he uses. Maintain his personal cleanliness by bathing him or cleaning his body with wet cloth everyday. His stools should be burned or buried in deep holes. Persons who care for him should wash their hands right afterwards.
- After recovering from typhoid, some persons still carry the germs of the disease and can spread it to others. For this reason, anyone who has typhoid should be extra careful with personal cleanliness and should not work in restaurants or where food is handled. Sometimes ampicillin is effective in treating typhoid carriers.
- A shallow tube well less than 60 feet (20 meters) deep can be the cause of contamination of typhoid. If you dig a tube well in your village, ensure it is at least 60 feet (20 meters) deep. Also do not have latrines within 60 feet radius of the tube well.

Typhoid Vaccine; For prevention of typhoid two types of vaccine is available: (1). Injectable Vaccine: Primary immunization consist of 2 dosage (each of 0.5ml and 0.25 ml for children 1-10 year of age) given at an interval of 4-6 weeks. The usual site for injection is outer aspect of upper arm. Booster dose is required every 3 years. (2). Oral Typhoid Vaccine: Available in capsule form one capsule is given on days 1, 3 and 5 irrespective of age recommended for immunization of adults and children above 6 years of age. Booster of same 3 capsules is required every 3 years.

Non Communicable Diseases

Non-Communicable Diseases (NCDs) are diseases of long duration. These are non-infectious conditions that cannot be transmitted to other individuals. Some NCDs progress slowly or cause chronic symptoms requiring long term care and control while others progress rapidly. They affect adult men and women but children are vulnerable as well. People may appear healthy but still suffer from these conditions.

One of the most serious concerns about Non-Communicable Diseases is that they affect people in the productive years of their life. They also cause “premature deaths”- that is, a death occurring before the average life expectancy. Though NCDs can affect a person at any age, older individuals are more vulnerable to NCDs.

Risk Factors for Non Communicable Diseases

A risk factor is a condition or behaviour that increases the chances of developing a particular disease.

Non-Modifiable risk factors- These risk factors are inherent to an individual and cannot be changed, such as age, family history and sex (as seen in the case of Rafia and Shabnam).

- **Age-** With increasing age, our body undergoes changes. As we grow older, there is an increase in the risk of developing high blood pressure, (Hypertension), high blood sugar levels, (Diabetes), high levels of body fat and blood fats. These conditions can lead to Non-Communicable Diseases like- heart and blood vessel diseases (stroke), diabetes, cancer, respiratory problems, etc.
- **Sex:** Both women and men are at risk of developing Non-Communicable Diseases. Men are at a higher risk of developing Non-Communicable Diseases. However, women who have reached menopause are more likely to suffer from heart attacks than pre-menopausal women. Some risk factors for developing Non-Communicable Diseases such as high blood pressure or high blood glucose can affect women even during pregnancy.
- **Family history-**The chances of getting some NCDs are higher if a close family member- parents, siblings also have the disease. This is called Family History. If a person has a family history of NCDs she/he has a high chance of getting the disease.

Modifiable risk factors-These are risk factors that can be changed by specific action,. The harmful effect can be reduced with changes in lifestyle and treatment. Risk factors may affect the individual such as unhealthy diets, lack of physical activity, tobacco and alcohol consumption (as seen in the case of Nawab, Rani and Shyam). Population level risk factors such as air pollution, food preservatives, adulterants, artificial colours, indoor smoke (from fuels) can also cause NCDs.

At the individual level, some modifiable risk factors can be changed if the person changes her/his individual behaviours. However, some factors also require changes at the level of laws. For eg. Law against selling of tobacco products near educational institutions or by reducing air pollution by imposing fines on industries set-up in residential area.

Having one or more of these conditions such as- high blood pressure, high blood glucose levels, high blood fat levels and excess body fat (being overweight) can result in Cardiovascular diseases (Heart disease, Stroke), Diabetes, Cancers and Chronic Respiratory Diseases (Asthma, difficulty in breathing).

Hypertension

High blood pressure or hypertension is a condition when your blood pressure, the force of blood flowing through your blood vessels, is consistently more than 140 mm and/or more than 90 mm of Mercury

Range of Blood Pressure (BP)

Normal: Blood Pressure Less than 120 mm of mercury/less than 80 mm of mercury

Pre - Hypertensive: BP 120-139/ less than 90 mm of mercury

Hypertension stage 1: BP 140-159/ 90-99 mm of mercury

Hypertension stage 2: BP 160 mm or higher/ 100 or higher mm of mercury

Hypertensive Crisis: BP Higher than 180 / more than 120 mm of mercury

Risk Factors for Hypertension

The following are some common factors that can lead to high blood pressure

- Family history
- Unhealthy diet- A diet especially high in salt, fat and low in vegetables/fruits
- Lack of physical activity (or sedentary lifestyle)
- Being overweight
- Tobacco use in any form (smoking and chewing tobacco)
- Excessive alcohol consumption
- Chronic conditions such as kidney and hormone problems, diabetes, and high levels of harmful blood fats
- Stress

Management of Hypertension

- Stop the use of tobacco in any form (smoking or chewing), also avoid exposure to second-hand smoke
- Reduce the intake of alcohol
- Reduce the amount of salt- maximum of 1 teaspoon (5 gms) of salt for the whole day.
- Decrease consumption of refined cereals, high fat/oily foods, sugary foods.
- Decrease excess amount of tea, coffee, cola drinks (rich in caffeine) increase fresh fruits, vegetables and whole grains and whole pulses
- Maintain healthy weight; people who are overweight need to lose weight
- Ensure regular physical activity
- Ensure monthly monitoring of blood pressure
- Compliance to treatment plan for drugs
- Check-up by a qualified medical practitioner
- Strict adherence to treatment as advised
- Don't discontinue medicines without consulting your doctor

Basic Lab tests to be done before initiating treatment

Urine Test mainly for presence of Albumin and sugar

Lipid Profile

Kidney Function tests

HEART ATTACK

A person who has hypertension is at risk for having a heart attack and stroke. These are complications of hypertension.

Heart attack is defined as severe chest pain for more than 30 minutes, radiating to left arm and not relieved by pain killers. It is associated with nausea, vomiting and sweating.

Risk factors of Heart attack:

- High blood pressure/hypertension
- High blood glucose level/diabetes

- Excess alcohol intake
- Unhealthy foods
- Smoking
- Being overweight

Reasons for heart attack:

The heart pumps blood through blood vessels to supply oxygen to all parts of our body. Factors such as age, family history and eating high fat diets can cause fat to settle in the walls of the blood vessels. This can cause the vessel to become narrow or blocked and reduce the blood flow. This leads to a heart attack.

Warning signs:

- Pain, pressure or constriction in the centre of the chest for more than 30 minutes.
- Nausea,
- Unconsciousness.
- Pain in jaw, neck, arms, shoulders or back.
- Shortness of breath.

STROKE

Stroke is defined as paralysis or numbness of one side of the body. It can also cause, difficulty of speech, hearing, reading or writing. Stroke is due to a lack of blood supply to the brain. The lack of blood supply may be due to a blood clot/break in the blood vessel. A stroke is a medical emergency.

Risk factors for Stroke

Major factors	Secondary factors
<ul style="list-style-type: none"> • High BP/hypertension • Diabetes • Heart diseases • Smoking • Alcohol 	<ul style="list-style-type: none"> • Increased levels of harmful blood fats • Lack of physical activity • Being overweight

Warning signs

- Sudden weakness, paralysis or numbness on face, arm and leg on one or both the sides of the body.
- Loss of speech or difficulty speaking or understanding speech.
- Dimness or loss of vision, particularly in only one eye.
- Unexplained dizziness, unsteadiness or sudden falls.
- Sudden severe headache or loss of consciousness.

Prevention of Heart Attack and Stroke

Knowing the warning signs of heart attack and stroke and seeking immediate medical help can improve the outcomes. Individuals with any of the signs of heart attack and stroke should be referred immediately to a CHC for assessment and management.

Simple ways of preventing heart attack and stroke are

- Ensure to undergo annual screening for hypertension and diabetes after 30 years of age.
- Blood pressure and blood sugar should be monitored regularly by high-risk individuals – including those with a family history of stroke or heart attack.
- If suffering from high blood pressure and high blood sugar change lifestyles and regularly take medicines.
- Avoid refined cereals, sugar, salt and fats in the diet; and eat foods that are high in fibre like fruits, vegetables, whole grains, whole pulses with outer covering and their products
- Incorporate regular and adequate amount of physical exercise in their daily routine
- Avoid the use of tobacco and alcohol
- Maintain healthy weight; people who are overweight need to lose weight
- Adopt strategies to cope with stress
- If there are any signs of heart attack or stroke, she/he should seek immediate medical attention by a qualified health professional at the higher facilities
- Follow medical advice provided by a qualified health professional and ensure compliance to treatment.

Diabetes Mellitus

Introduction

Diabetes Mellitus or diabetes is an illness in which the body cannot automatically control the level of sugar (glucose) in the blood.

Many people think that it comes from eating too much sugar. But that is not the case. In a healthy body, the pancreas releases the hormone insulin, which converts blood sugar into energy. Diabetes interrupts this process. A diabetic fails to produce enough insulin – a hormone made by the pancreas needed to transport glucose to muscles and other tissues to provide energy – effectively.

Diabetes is classified into three types namely Type 1, Type 2 and Gestational Diabetes.

Types of Diabetes	What is it?	Who gets it?
Type 1 Diabetes	Body does not produce insulin at all. People with this form of diabetes require daily injections of insulin in order to control the levels of glucose in their blood.	The disease can affect people of any age, but usually starts in childhood or young adults.
Type 2 Diabetes	This is the most common type of diabetes. The body produces some insulin, but not enough.	This type of diabetes used to be seen only in adults but it is now also occurring increasingly in children and adolescents. It is seen in those with a family history of diabetes, excess body weight, lack of physical activity, and as people grow older.
Gestational Diabetes	Diabetes which occurs among women during pregnancy.	Has a risk of complications during pregnancy and delivery The children of women with Gestational Diabetes are at an increased risk of type 2 diabetes in the future

Risk Factors for Type 2 diabetes

- Family history of diabetes
- It occurs most frequently in adults, but is seen increasingly in adolescents as well
- Being overweight
- Unhealthy eating habits
- Lack of physical activity
- High Blood Pressure
- High levels of harmful blood fats
- Addictions like tobacco use, drug and harmful use of alcohol
- If the woman during pregnancy had diabetes or even mild elevation of blood sugar level during pregnancy

Common Signs and Symptoms of Type 2 Diabetes

- Frequent urination
- Increased hunger
- Excessive thirst
- Unexplained Weight loss
- Lack of energy, extreme tiredness
- Blurred vision
- Repeated or severe infections such as vaginal infections
- Slow healing of wounds

If the blood glucose stays too high, it can cause damage to the

- Kidneys - causing kidney failure
- Heart and blood vessel disease- causing heart attack and stroke
- Nerves damage- causing numbness, tingling in hands and/or feet, foot ulcers and infections
- Eyes- causing blindness
- Oral cavity - causing gum diseases

Management and Control of Diabetes

Change in lifestyle behaviours is effective in preventing or delaying the occurrence of Type 2 diabetes or the onset of complications. They include

- Maintaining a healthy body weight - avoid excess weight gain
- Regular physical activity of at least 30 minutes of regular activity for at least 5 days a week. Higher levels of activity are required for weight control
- Take regular small frequent meals. Skipping a meal can lead to low blood sugar level. Eat a balanced and healthy diet-avoiding sugar, salt and fats in the diet
- Eat foods that are high in fibre like fruits, vegetables, whole grains, cereals, whole pulses with chilka and their products
- Avoid tobacco in any form
- Avoid drinking alcohol
- Regularly check the blood sugar levels
- Follow medical advice of the doctor

Tips on eating right

- Eat at about the same time every day. This helps to keep your insulin or medicine and sugar levels steady.
- Try to eat thrice a day. Have a snack at bedtime if you're taking medicine or insulin. Avoid other **snacking** unless you're exercising or treating **hypoglycaemia**.
- If you're overweight, lose weight. Even losing just a little weight, such as 5 to 15 pounds, can lower your blood sugar levels.
- Eat plenty of green leafy vegetables, grains and fruits. Fiber helps you feel full.
- Eat fewer "empty" calories, such as foods high in sugar and fat, and alcohol.

Ayurvedic Solutions for Self-Care

Ayurveda, which is originated in India, is the oldest documented health care system. Ayurveda is made of up two syllables - Ayu meaning life and Veda meaning knowledge. Hence, Ayurveda is a system of healthcare which concentrates on maintaining the health of a healthy person first and then treats the imbalances of a sick person. Ayurveda mentions what is good and what is not good for health and what causes happiness and sadness in an individual. It also, importantly, indicates measures for self-evaluation of health status.

According to Ayurveda, a perfect balance between three factors are responsible for health and imbalance or ill health. They are Vata, responsible for all kinds of movements in the body like respiration, movement of joints and movement of bowels; Pitta, responsible for all metabolic/digestion, absorption/assimilation of nutrients and excretion of waste and toxic materials out of the human body; and Kapha, responsible for maintaining joints and providing lubrication to all joints. Any over, under or irregular activity of either one of these factors leads to ill health. This imbalance happens due to our faulty food habits, activities, seasonal variations, improper application of sense organs and thought process.

As per Science, the manifestation of any disease in an individual including pandemic manifestation is dependent on his physiology, as it's noticed that not all Coronavirus infected individuals succumb to pneumonia or respiratory failure. Thus there are definite personalized factors that determine the fate of any illness. Host immune responses are very much distinctive and thus personalized therapeutic measures are decisive to sustain in a highly contagious outbreak such as CoVID-19. Immune homeostasis is distinctive or individualistic. Factors such as genes, gender, nutrient status, age, gut flora, dietary habits, physical activity, alcoholism and other substance abuse, pregnancy etc highly determines the cross sectional immune status of individuals. Hence personalized medicine is the key for achieving better host homeostasis in pan immune system ailments afflicting humans, infectious or otherwise.

Dinacharya - Ayurveda Daily Routine

Dinacharya is the Sanskrit term for daily Ayurvedic rituals which, when practiced regularly, help to support a life of optimal wellness through routine, detoxification and nourishment. When we are healthy and balanced, we are able to fulfill our dharma, our essential life's purpose, allowing us to feel our best and share our gifts with the world.

By implementing the fundamental self-care practices of dinacharya into your life, with our easy-to-follow printable daily routine chart, you will become equipped with the necessary tools to cultivate balance, bliss and overall long term health. Each of the following practices are discussed in the general order in which they can be implemented into your daily ritual.

The word Dinacharya is derived from two words; 'dina' meaning day and 'acharya' meaning activity. Dinacharya, according to Ayurveda, is a daily routine that promotes self-care through different daily activities.

Ayurveda Dinacharya consists of two daily cycles: Sun cycle & Moon cycle

During these two cycles, there are 4 hour periods of Vata dosha, pitta Dosha and kapha dosha energies also known as Ayurvedic Body Types. These energies are also present in our body with varying intensity and combinations. Thus, you should prevent activities that aggravate the cycle of the three energies.

First cycle: Sunrise to Sunset-(6:00 am - 6:00 pm)

6:00 am - 10:00 am - Kapha

10:00 am - 2:00 pm - Pitta

2:00 pm - 6:00 pm - Vata

Second cycle: Sunset to sunrise (6:00 pm - 6:00 am)

6:00 pm - 10:00 pm - Kapha

10:00 pm - 2:00 am - Pitta

2:00 am - 6:00 am - Vata

Here are some major practices that Dinacharya promotes for a healthy lifestyle and body:

1. Rise and shine

According to Dinacharya, it is important to wake up before the sun rises. The time between 4:30 - 5:00 am is considered to be an ideal time to wake up. This pre-dawn time is when the Vata dosha is dominant, and the energy present in the environment will make it easy for you to wake up. Moreover, it is that time of the day when there is a certain amount of peace and freshness that is necessary for the body and soul. Before getting out of bed you should say a prayer since it will induce positive energy into your mind and soul.

2. Rinse

Rinse your face with cold water to become alert for the coming day. You should also perform 'Jalneti' a technique prescribed by Ayurveda, which involves cleaning your sinus, nasal passage and mouth with the help of a tea pot like vessel called neti pot.

3. Cleansing of your senses

To enhance all your senses in the morning, your sense organs should be cleaned thoroughly. Wash your eyes with rose water and ears with sesame oil. Brush your teeth and clean your tongue to enhance your taste buds and to stimulate digestive responses.

4. Drink warm water

Though most people consume caffeine in the morning, Ayurveda recommends the consumption of warm water. It enhances peristalsis and also flushes the kidney of any harmful toxins and free radicals.

5. Evacuation

Evacuation is one of the most important pillars of health according to Ayurveda. If this does not occur regularly, or is delayed, it slows down digestion and causes constipation.

6. Oil massage

Massaging your body with essential oils daily will keep your body moisturised and will prevent your tissues from getting dry. This ensures that there is good blood circulation in your body for a calmer and healthier nervous system.

7. Exercise

This can be done in any form, be it Yoga ex. Surya Namaskar or jogging. Exercise will remove stagnation and fat from your body and will strengthen your muscles.

8. Bathe

Bathing will remove excess oil from the surface of your skin and will make you feel fresh and energized to take on the tasks for the day.

9. Meditate

Meditation will help you concentrate on your goals, by maintaining a balance between your mind, body and soul. It will also calm your nervous system and will make you feel peaceful and steady.

10. Unwind

After finishing the day's work, it is important to unwind and relax your body. Shut your eyes, lie down, light some scented candles and listen to soulful music. This will not only make you feel at peace, but will also release all the stress and tension from

your body. Another effective way of relaxing after a day's hard work is spending time with loved ones.

11. Sleep

Proper sleep is one of the Three Pillars of Life in Ayurvedic medicine. Sleep is an essential time for healing the body from daily stress. As our minds rest during sleep the body is able to focus on digesting, metabolizing and regenerating. Not only do the tissues of the body replenish and heal, but our minds and emotions have an opportunity to digest and release stress, as well.

Millions of Americans suffer from chronic diseases like depression, obesity, hypertension and diabetes. An unhealthy sleep cycle can contribute to such diseases because our bodies and minds become more fragile without proper rest. Eventually, lack of sleep catches up with us, making us less productive at work and feeling less vital and alive.

So, what is considered proper sleep? Ayurveda believes that sleep patterns should be in accordance with the sun; thus, the best time to sleep is from 10 pm-6 am. As the sun sets, the pineal gland, located in the brain, receives information from the eyes that it is becoming dark and evening has arrived; thus, it is time for the pineal gland to produce melatonin, a serotonin derived hormone, which prepares the body for sleep. When we are still on our phones, watching television or have overhead lights on as evening rolls in, the pineal gland is unable to produce an appropriate amount of melatonin; thus, it becomes harder to fall asleep at 10 pm.

Benefits of Dinacharya

1. Connection with nature

This Ayurveda daily routine helps you connect with nature by making you conscious of your natural surroundings. In fact, it ensures that you live in harmony by aligning your body with the rhythm of nature.

2. Prevention of diseases

It promotes a healthy lifestyle since it strengthens your immunity and protects you from diseases.

3. Release of stress

Meditating and massaging yourself with essential oils, releases all the stress and tension from your body and mind.

4. Digestion and absorption

By following a pattern of meal timings and by regulating the amount of food being eaten, it helps your body to digest and absorb the nutrients from food effectively.

5. Discipline

It also helps in maintaining a certain discipline in the mind and body which is beneficial in several other aspects of life.

6. Peace

Meditating and absorbing the positive vibes in your surroundings helps you achieve a peaceful state of mind.

7. Happiness

Following Dinacharya every day, removes all the stress and worries in your life. This, in turn, brings you happiness.

8. Longevity

It ensures a healthy lifestyle and promotes longevity.

Ritu Charya

The year according to Ayurveda is divided into two periods Ayana (solstice) depending on the direction of movement of sun that is Uttarayana (northern solstice) and Dakshinayana (southern solstice). Each is formed of three Ritus (seasons). The word Ritu means —to go. It is the form in which the nature expresses itself in a sequence in particular and specific in present forms in short, the seasons. A year consists of six seasons, namely, Shishira (winter), Vasanta (spring), and Grishma (summer) in Uttarayan and Varsh (monsoon), Sharada (autumn), and Hemanta (late autumn) in Dakshinayana. As Ayurveda has its origin in India, the above seasonal changes are observed predominantly in Indian subcontinent.

Regimen of different season

Shishira (winter)

General condition: Mid-January to mid March (approximately) is considered as Shishira Ritu (winter). During this season, the environment remains cold, along with cold wind. The predominant Rasa and Mahabhuta during this season are Tikta (bitter)

and Akasha, respectively. The strength of the person becomes less, deposition of the Kapha Dosha occurs and Agni (catabolism) remains in a higher state.

Diet regimen: Foods having Amla (sour) as the predominant taste are preferred. Cereals and pulses, wheat/gram flour products, new rice, corn, and others, are advised. Ginger, garlic, Haritaki (fruits of Terminalia chebula), Pippali (fruits of Piper longum), sugarcane products, and milk and milk products are to be included in the diet. Foods having Katu (pungent), Tikta (bitter), Kashaya (astringent) predominant Rasa are to be avoided. Laghu (light) and Shita (cold) foods are advised to be prohibited.

Lifestyle: Massage with oil/powder/paste, bathing with lukewarm water, exposure to sunlight, wearing warm clothes is mentioned to follow. Vata aggravating lifestyle like exposure to cold wind, excessive walking, sleep at late night, are to be avoided.

Vasanta (spring)

General condition: The approximate time is from mid-March to mid-May. This season is considered as season of flowering and origin of new leaves. Predominant Rasa and Mahabhuta during this season are Kashaya (astringent), and Prithvi and Vayu, respectively. Strength of the person remains in medium degree, vitiation of Kapha Dosha occurs and Agni remains in Manda state.

Diet regimen: One should take easily digestible foods. Among cereals, old barley, wheat, rice, and others are preferred. Among pulses, lentil, Mugda, and others, can be taken. Food items tasting Tikta (bitter),Katu (pungent), and Kashaya (astringent) are to be taken. Besides those, honey is to be included in the diet. Meats like that of Shahsa (rabbit), which are easy to digest can be taken. Foods which are hard to digest are to be avoided. Those which are Sheeta (cold), Snigdha (viscous), Guru (heavy), Amla (sour), Madhura (sweet) are not preferred. New grains, curd, cold drinks, and so on, are also to be prohibited.

Lifestyle: One should use warm water for bathing purpose, may do exercise during Vasant Ritu. Udvaartana (massage) with powder of Chandana (Santalum album), Kesara (Crocus sativus), Agaru, and others, Kavala (gargle), Dhooma (smoking), Anjana (collyrium), and evacuative measures, such as Vamana and Nasya are advised. Day-sleep is strictly contraindicated during this season.

Grishma (summer)

General condition: Mid-May to mid-July (approximately) is considered as Grishma (summer) season. Environment is prevalent with intense heat and unhealthy wind. The river-bodies dried and the plants appear lifeless. The predominant Rasa is Katu (pungent) and Mahabhuta are Agni and Vayu. The strength of the person become less, deposition of Vata Dosha occurs, but the vitiated Kapha Dosha is pacified during this season. Agni of the person will remain in mild state.

Diet regimen: Foods which are light to digest—those having Madhura (sweet), Snigdha (unctuous), Sheeta (cold), and Drava (liquid) Guna, such as rice, lentil, etc, are to be taken. Drinking plenty of water and other liquids, such as cold water, buttermilk, fruit juices, meat soups, mango juice, churned curd with pepper, is to be practiced. At bedtime milk with sugar candy is to be taken. Lavana and food with Katu (pungent) and Amla (sour) taste and Ushna (warm) foods are to be avoided.

Lifestyle: Staying in cool places, applying sandal wood and other aromatic pastes over the body, adorning with flowers, wearing light dresses and sleeping at day time are helpful. During night one can enjoy the cooled moonrays with breeze. Excessive exercise or hardwork is to be avoided; too much sexual indulgence and alcoholic preparations are prohibited.

Varsha (monsoon)

General condition: Mid-July to mid-September (approximately) is considered as Varsha Ritu. During this season the sky is covered by clouds and rains occur without thunderstorm. The ponds, rivers, etc., are filled with water. The predominant Rasa and Mahabhuta during this season are Amla (sour), and Prithvi and Agni, respectively. The strength of the person again becomes less, vitiation of Vata Dosha and deposition of Pitta Dosha, Agni also gets vitiated. Diet regimen: Foods having Amla (sour) and Lavana (salty) taste and of Sneha (unctuous) qualities are to be taken. Among cereals, old barley, rice, wheat, etc., are advised. Besides meat soup, Yusha (soup), etc. are to be included in the diet. It is mentioned that one should take medicated water or boiled water. Intake of river water, churned preparations having more water, excessive liquid and wine are to be avoided. The foods, which are heavy and hard to digest, like meat, etc., are prohibited.

Lifestyle: Use of boiled water for bath and rubbing the body with oil properly after bath is advised. Medicated Basti (enema) is prescribed as an evacuative measure to expel vitiated Doshas. Getting wet in rain, day-sleep, exercise, hard work, sexual indulgence, wind, staying at river-bank, etc., are to be prohibited.

Sharat (autumn)

General condition: The period between mid-September to mid-November is Sharat Ritu (autumn). During this time the Sun becomes bright, the sky remains clear and sometimes with white cloud, and the earth is covered with wet mud. The predominant Rasa is Lavana (salty) and predominant Mahabhutas are Apa and Agni. The strength of the person remains medium, pacification of vitiated Vata Dosha and vitiation of Pitta Dosha occur, and activity of Agni increases during this season.

Diet regimen: Foods are having Madhura (sweet) and Tikta (bitter) taste, and of Laghu (light to digest) and cold properties are advised. Foods having the properties to pacify vitiated Pitta are advised. Wheat, green gram, sugar candy, honey, Patola (Trichosanthes dioica), flesh of animals of dry land (Jangala Mamsa) are to be included

in the diet. Hot, bitter, sweet, and astringent foods are to be avoided. The food items, such as fat, oils, meat of aquatic animals, curds, etc., are also to be not included in the diet during this season.

Lifestyle: Habit of eating food, only when there is a feeling of hunger is recommended. One should take water purified by the rays of sun in day time and rays of moon at night time for drinking, bathing, etc. It is advised to wear flower garlands, and to apply paste of Chandana (*Santalum album*) on the body. It is said that moon rays in the first 3 h of night is conducive for health. Medical procedures, such as Virechana (purging), Rakta-Mokshana (bloodletting), etc., should be done during this season. Day-sleep, excessive eating, excessive exposure to sunlight, etc., are to be avoided.

Hemanta (late autumn)

General condition: Mid-November to mid-January is considered as Hemanta (late autumn) Ritu. Blow of cold winds starts and chillness is felt. Predominant Rasa during this season is Madhura and the predominant Mahabhutas are Prithivi and Apa. The strength of a person remains on highest grade and vitiated Pitta Dosha gets pacified. Activity of Agni is increased. Diet regimen: One should use unctuous, sweet, sour, and salty foods. Among cereals and pulses, new rice, flour preparations, green gram, Masha, etc., are mentioned to be used. Various meats, fats, milk and milk products, sugarcane products, Shidhu (fermented preparations), Tila (sesame), and so on, are also to be included in the diet. Vata aggravating foods, such as Laghu (light), cold, and dry foods are to be avoided. Intake of cold drinks is also contraindicated.

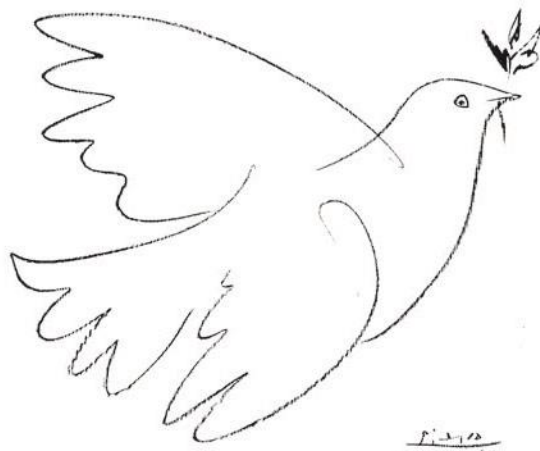
Lifestyle: Exercise, body and head massage, use of warm water, Atapa-sevana (sunbath), application of Agarar on body, heavy clothing, sexual indulgence with one partner, residing in warm places is recommended. Exposure to strong and cold wind, habit of day sleep, etc., are mentioned to be avoided.

How to increase immunity during pandemic?

1. Follow physical distancing, respiratory and hand hygiene, wear mask
2. Gargle with warm water added with a pinch of turmeric and salt. Water boiled with Triphala (dried fruits of *Emblica officinalis*, *Terminalia chebula*, *Terminalia bellerica*) or Yashtimadhu (*Glycyrrhiza glabra*) also can be used for gargling.
3. Nasal instillation/application of medicated oil (Anu taila or Shadbindu Taila) or plain oil (Sesame or Coconut) or nasal application of cow's ghee (Goghrita) once or twice in a day, especially before going out and after coming back to home.
4. Steam inhalation with Ajwain (*Trachyspermum ammi*) or Pudina (*Mentha spicata*) or Eucalyptus oil once a day
5. Adequate sleep of 6 to 8 hrs.
6. Moderate physical exercises
7. Follow Yoga Protocol for Primary Prevention of COVID-19

Dietary measures

1. Use warm water or boiled with herbs like ginger (*Zingiber officinale*) or coriander (*Coriandrum sativum*) or basil (*Ocimum sanctum* / *Ocimum basilicum*), or cumin (*Cuminum cyminum*) seeds etc., for drinking purpose.
2. Fresh, warm, balanced diet
3. Drink Golden Milk (Half tea spoon Haldi (*Curcuma longa*) powder in 150 ml hot milk) once at night. Avoid in case of indigestion.
4. Drink Ayush Kadha or Kwath (hot infusion or decoction) once a day.



P. S. Rao
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Voluntary Health Association of India
B-40, Qutab Institutional Area, New Delhi 110016
Email: admin@vhai.org Website: www.vhai.org
Phone: 011-47004300