

UNIT-2

xxx

Preventive medicine

Preventive medicine is medical specialty recognized by the American Board of medical specialties (ABMS) which focused on the health of individual and communities. The goal of preventive medicine is to promote health and well-being and prevent disease disability and death.

⇒ The aim of preventive medicine is the absence of disease, either by preventing the occurrence of a disease or by halting a disease and averting resulting complications after its onset.

General Principles of prevention and control of disease:

Principles of prevention of spread of Communicable disease.

In order to prevent the spread of Communicable diseases, the immunisation of persons shall be organised, medical examinations shall be carried out and other measures to ensure safety from infection shall be applied.

Cholera

xxx

Cholera is an infection of large intestine characterised by severe diarrhoea, which is causes dehydration and loss of electrolytes.

Causes: — It is caused by eating food or drinking water contaminated with a bacterium called *Vibrio Cholera*.

Vibrio Cholera is a gram-negative comma shaped, flagellated bacterium usually found in ~~food~~ contaminated food & water by feces from a person with the infection.

Common sources include

- ⇒ Municipal water supplies
- ⇒ Ice made from municipal water
- ⇒ Foods and drinks sold by street vendors
- ⇒ Vegetables grown with water containing human wastes
- ⇒ Raw or under cooked fish and sea food. Caught in water polluted with sewage

Incubation Period — A few hours to 5 days.

Mode of transmission:—

- ⇒ It spreads by ingestion of contaminated water, food, milk, milk products with discharge of patient.
- ⇒ by careless handling of excreta and vomites of infected person.
- ⇒ Flies can act as mechanical carriers.
- ⇒ Contact with clothes and utensils used by infected persons.

Sign & Symptoms:— When a person consumes the contaminated food or water, the bacteria release a toxin in the intestine that produces severe diarrhoea.

- ⇒ Diarrhoea passing loose or watery stool more frequently than usual.
- ⇒ Nausea and vomiting
- ⇒ Dehydration, sunken eyes, dry mouth, extreme thirst, dry skin
- ⇒ muscle cramps (due to loss of electrolyte)

Treatment:— Detecting of the case as early as possible and immediately notify to health authorities.

- ⇒ Immediately start oral Rehydration Therapy (ORS)
- ⇒ Antibiotics are given to combat germs
- ⇒ Vaccine

- Prevention:**— washing fruits and vegetables
- ⇒ Wash Hands with soap and water frequently
 - ⇒ Milk must be boiled before use
 - ⇒ All the foods, drinks and sweet meats must be protected against flies.
 - ⇒ Special care must be taken regarding the cleanliness of the surrounding as well as personal hygiene.

SARS

—xxx—

(Severe Acute Respiratory Syndrome)

SARS is an airborne virus and can spread through small droplets of saliva in a similar way to the cold and influenza. It was first severe and readily transmissible.

Symptoms—

Fever over 100.4°F

dry cough

sore throat

Problems breathing, including shortness of breath

headache

body aches

loss of appetite

malaise

Loss of taste and smell

Rash on skin, or discolouration of fingers or toes.

Causes:— SARS was a zoonotic disease it was of animal origin but passed on to humans.

Some animals can carry a virus without becoming sick because their bodies are accustomed to the virus. This fact means they are likely to have immunity.

Way to transmitting the virus may include—

- ⇒ hugging and kissing.
- ⇒ Sharing utensils for eating and drinking.
- ⇒ touching someone directly. etc.

Diagnosis:— A chest X-ray or CT scan may also reveal signs of pneumonia characteristic of SARS.

- ⇒ Polymerase chain reaction (PCR)

Treatment:— There is no confirmed treatment that works for every person who has SARS.

Antiviral medications and steroids are sometimes given to reduce lung swelling, but are not effective for everyone.

- ⇒ Supplemental oxygen or a ventilator may be prescribed if necessary.

- ⇒ In severe cases blood plasma from someone who has already recovered from SARS may also be administered.

Precautions:— Wash your hands frequently.

- ⇒ wear disposable gloves if touching any infected bodily fluids

- ⇒ wear a surgical mask when in the same room with a person with SARS.

- ⇒ Disinfect surface that may have been contaminated with the virus.

Ebola Virus

-XX-

Ebola Virus disease formerly known as Ebola haemorrhagic fever is rare but severe often fatal illness in humans.

- ⇒ The virus is transmitted to people from wild animals and spreads in the human population through human-to-human transmission.
- ⇒ A virus that causes severe bleeding, organ failure and can lead to death.

Symptoms: — During the initial stage symptoms similar to flu.

High fever

Headache

Muscle and joint pain

Extreme weakness

Abdominal pain

Appetite loss

~~In the acute stage~~
Chronic Stage: — Internal bleeding
bleeding from the nose, ear, eyes.

Diagnosis: — The usual test to diagnose Ebola virus is blood test

- ⇒ Antibody-capture enzyme-linked immunosorbent assay (ELISA)
- ⇒ Antigen-capture detection tests
- ⇒ Serum neutralization test
- ⇒ Reverse transcriptase polymerase chain reaction (RT-PCR) assay
- ⇒ electron microscopy.

Treatment:— At present there is no cure for ebola virus although studies are going on to try to find a vaccine or a medication for its treatment including a serum which is said to kill the infected cells.

Supportive Care— Rehydration with oral or intravenous fluid and treatment of specific symptoms improves survival.

- ⇒ Fluid & electrolyte
- ⇒ Oxygen supplement
- ⇒ Blood pressure medication
- ⇒ Blood transfusion.

Influenza

—xxx—

A Common viral infection that can be deadly, especially in high-risk groups.

The flu attacks the lungs, nose and throat. young children, older adults, pregnant women and people with chronic disease ~~at~~ or weak immune systems are at high risk.

Symptoms:— Fever
 Chills.
 muscle aches
 Cough
 Congestion
 runny nose
 headache and fatigue. etc.

Causes: - Influenza virus travel through the air in droplets when someone with the infection coughs, sneezes or talk.

Risk factors - Age - 6 months to 5 years
65 years old or older
Living, or working, condition
weakened immune system
Chronic illness
Race
Aspirin use under age 19
Pregnancy
obesity.

Complications: - Pneumonia
Bronchitis
Asthma
Heart problems
Ear infections
Acute respiratory distress syndrome

Prevention: - Use influenza vaccines

Control - Early detection and notification to the health authorities

- ⇒ Isolate the suspected cases
- ⇒ Avoid overcrowding of the places
- ⇒ Gargling with normal saline
- ⇒ Sneezing, spitting, coughing, coughing in public places should be avoided
- ⇒ The clothes, bedding, fomites and rooms used by the patient should be thoroughly disinfected.
- ⇒ Used of antiviral drugs like amantadine.

Acute Respiratory Infections.

xxx

Acute respiratory infection is an infection that may interfere with normal breathing. It can affect just upper respiratory system, which starts at sinuses and ends at your vocal cords, or just lower respiratory system, which starts at vocal chords and ends at lungs.

Causes of Acute respiratory infection:—

Acute Pharyngitis

Acute ear infection

Common Cold

bronchitis

Pneumonia

bronchiolitis

Symptoms:—

Congestion, either in the nasal sinus or lungs

runny nose

cough

sore throat

body ache

fatigue

Fever over 103°F (39°C) and chills

difficulty breathing

dizziness

Loss of Consciousness

Diagnosis: — CT chest
Blood test

Treatment: — Pain relief medications — acetaminophen
ibuprofen
anesthetic sprays and lozenges

Decongestants

Antihistamines — brompheniramine
chlorpheniramine
diphenhydramine

Home remedies: — Echinacea supplements
honey, especially in hot tea with ginger, lemon, or both
green tea.

Prevention: —

Covering the mouth and nose when sneezing and coughing
avoiding cigarette smoke
avoiding crowded, enclosed space when possible
avoiding sharing drinking glasses and utensils
having a healthy diet
exercising regularly

Malaria

xxx

Malaria is caused by Plasmodium parasites. The parasites are spread to people through the bites of infected female Anopheles mosquitoes, called "Malaria vectors". There are 5 Parasite species that cause malaria in humans, and 2 of these species - P. falciparum and P. vivax pose the greatest threat.

Cause:— Plasmodium vivax
 Plasmodium ovale
 Plasmodium malariae
 Plasmodium falciparum.

Symptoms:— Shaking chills that can range from moderate to severe
 high fever
 Profuse sweating
 headache
 nausea
 Vomiting
 abdominal pain
 muscle pain
 Convulsion

Diagnosis:— blood test
 MP test

Treatment:— Antimalaria drugs.

Chicken guinea

Chikungunya is a viral disease transmitted to humans by infected mosquitoes. It is caused by the chikungunya virus (CHIKV). Chikungunya is found worldwide, particularly in Africa, Asia and India.

Symptoms:— The virus causes a ~~fever that~~ fever that lasts a few days and joint pain that can last weeks or months.

The common symptoms are.

- ⇒ fever
- ⇒ joint pain
- ⇒ Headache
- ⇒ muscle pain
- ⇒ Rash
- ⇒ Swelling around the joint

Causes:— Chikungunya caused by chikungunya virus (CHIKV).

Diagnosis— blood test

Treatment:— There is no vaccine to prevent or medicine to treat chikungunya virus

- ⇒ get plenty of rest of rest
- ⇒ Drink fluid to prevent dehydration.
- ⇒ Take medicine such as acetaminophen or paracetamol to reduce fever & pain.

Dengue

Dengue fever is a mosquito-borne tropical disease caused by the dengue virus.

Causes:— Dengue is caused due to four viruses namely-DENV-1, DENV-2, DENV-3, and DENV-4.

The virus enters a mosquito when it bites an already infected person. and the illness is spread when it bites healthy person and the virus spreads through the person's bloodstream.

Symptoms— Dengue causes a fever of 104°F
Headache
Muscle, bone and joint pain
Nausea
Vomiting
Pain behind the eyes
Swollen glands
rash

Treatment:— Medication
Stay hydrated
Hygiene

Dengue Prevention:— Lesser skin exposure
mosquito repellent
Personal Hygiene
Disinfect stagnant water.

Lymphatic filariasis

xxx

Lymphatic filariasis is a tropical, parasitic disease that affects the lymph nodes and lymph vessels.

Lymphatic filariasis is spread by infected mosquitoes. Their bites deposit a parasite that travels to the lymph system.

Lymphatic filariasis, commonly known as elephantiasis.

Cause and transmission:—

Lymphatic filariasis is caused by infection with parasites classified as nematodes (roundworms) of family Filariodidae. There are 3 types of these thread like filarial worms.

- ⇒ *Wuchereria bancrofti*, which is responsible for 90% of the cases.
- ⇒ *Brugia malayi*
- ⇒ *Brugia timori*

Adult worms nest in the lymphatic vessels and disrupt the normal function of the lymphatic system. The worms can live for approximately 6-8 years.

Symptoms:— A symptomatic infection still cause damage to the lymphatic system and the kidneys and alter the body's immune system.

Chronic condition it leads to lymphoedema (tissue swelling) or elephantiasis (skin/tissue thickening) of limbs and hydrocele (scrotal swelling). Involvement of breast and genital organ is common.

Diagnosis:— The standard method for diagnosing active infection is the identification of microfilariae in a blood smear by microscopic examination.

antifilarial IgG4 in the blood and these can be detected using routine assays.

Treatment:— Elimination of lymphatic filariasis is possible by stopping the spread of the infection through preventive chemotherapy.

The WHO recommended preventive chemotherapy strategy for lymphatic filariasis elimination is mass drug administration.

WHO recommends the following MDA regimens

⇒ albendazole (400 mg) twice per day year for areas co endemic

⇒ ivermectin (200 mcg/kg)

Precautions— Clinical severity and progression of the disease including acute inflammatory episodes, can be reduced and prevented with simple measures of hygiene, skin care, exercise and elevation of affected limbs.

mosquito control is a supplemental strategy supported by WHO

Pneumonia

xv

Pneumonia is an infection in one or both lungs. Bacteria, viruses and fungi cause it. The infection causes inflammation in the air sacs in your lungs, which are called alveoli. The alveoli fill with fluid or pus, making it difficult to breathe.

Causes of pneumonia: — There are several types of infectious agents that can cause pneumonia.

Bacterial pneumonia — The most common cause of bacterial pneumonia is *Streptococcus pneumoniae*.

Viral pneumonia — Respiratory viruses are often the cause of pneumonia. Some examples include:

⇒ influenza (Flu)

⇒ ~~rhinoviruses~~ rhinoviruses (Common Cold)

Fungal pneumonia — Fungi from soil or bird droppings can cause pneumonia.

example — *Cryptococcus* species.

Symptoms of pneumonia: — Pneumonia symptoms can be mild to life threatening.

- ⇒ Coughing
- ⇒ fever
- ⇒ Sweating or chills
- ⇒ Shortness of breath
- ⇒ Chest pain
- ⇒ feeling of tiredness or fatigue
- ⇒ Nausea or vomiting
- ⇒ headaches.

Diagnosis:— Blood test
Chest x-ray.
Pulse oximetry.
Sputum test
CT Scan
Pleural fluid Culture

Treatment:— Antibiotics
Cough medicine
Fever Reducers/pain Relievers.

Precautions:— Wash your hands regularly
Eat right with plenty of fruits and vegetables
Exercise
Get enough sleep
Quit smoking
Stay away from sick people.

Hypertension

xxx

Hypertension is a condition in which the force of blood against artery walls is too high.

Usually hypertension is defined as blood pressure above 140/90 and is considered severe if the pressure is above 160/120.

The WHO defined hypertension in adult as "a systolic pressure equal to or greater than 160 mmHg and a diastolic pressure equal to or greater than 95 mmHg"

Types of Hypertension:-

xxxx

- ① **Primary Hypertension (essential hypertension):-** It is the type of hypertension of which exact cause is not known but there is generally a narrowing of blood vessels.
- ② **Secondary hypertension:-** It may be caused due to secondary disorders like renal disorders, endocrine disorders, toxemia of pregnancy.

Causes of Hypertension (Risk factors)

- ⇒ Renal disorders
- ⇒ Endocrine disorders
- ⇒ Age, genetic factors
- ⇒ Obesity, high salt intake
- ⇒ Consumption of fatty diet
- ⇒ Consumption of alcohol
- ⇒ Lack of physical activity
- ⇒ Smoking

Anxiety or stress

Consumption of oral contraceptives

Noise and handling of vibrating tools.

Treatment: — ⇒ Stress reduction

⇒ Medication

- Betablockers
- alphablockers
- Vasodilators
- Calcium channel blockers
- diuretics etc.

⇒ Reducing salt intake.

Prevention & Control of Hypertension: —

xxx

Restriction of saturated fat in diet

Reduce high weight by promoting exercise

Reduce alcohol consumption and smoking

Reduce intake of salts.

Avoid stress, tensions etc.

Avoid consumption of excess of oral contraceptives

Early detection and treatment

Health education and self care.

Diabetes mellitus

XXX

Diabetes mellitus (DM) is a group of metabolic disorders characterized by high blood sugar level over a prolonged period of time.

⇒ Diabetes is a chronic, metabolic disease characterized by elevated levels of blood glucose which leads over time to serious damage to heart, blood vessels, eyes, kidneys and nerves.

Symptoms:—

- Frequent urination
- hunger
- fatigue
- increase thirst
- blurred vision
- weight loss

Causes:—

- Insulin deficiency
- Excessive intake of alcohol
- High intake of sugar
- viral infection
- Chemical agents like alloxan which destroy β cells
- Stress, surgery can also cause disease development
- Genetic defect.
- Low exercise, rest
- Renal failure.

Type:—

Insulin dependent diabetes mellitus (IDDM) Type I

Noninsulin dependent diabetes mellitus (NIDDM) Type II

Diagnosis of Diabetes:— Random blood sugar test
Fasting blood sugar test
Oral glucose tolerance test.
Glycated hemoglobin (A1C) test

Treatment:— Insulin
Oral or other medications

Prevention and control of Diabetes mellitus:—

- ⇒ To avoid consumption of alcohol
- ⇒ To take care of obesity
- ⇒ To Control on diet
- ⇒ To do maximum exercises
- ⇒ To maintain blood glucose level within normal limit
- ⇒ To maintain ideal body weight
- ⇒ Glucose level should be checked at suitable intervals.
- ⇒ Be free from stress and strains
- ⇒ Use of antidiabetic drugs like, insulin, phenformin
● metformin etc

Cancer

— xxx —

Cancer is a group of disease characterized by abnormal and uncontrolled growth of cells with ability of invade and destroy adjacent tissue and even distant organs.

⇒ Cancer is the uncontrolled growth of abnormal cells anywhere in a body.

Causes of Cancer:—

⇒ Use of tobacco leads to cancer of lungs, pharynx, mouth etc.

⇒ Use of alcohol causes liver cancer, stomach cancer.

⇒ High diet leads to breast cancer.

⇒ Lifestyles, habits, customs also have some relationship with cancer.

⇒ Exposure to chemicals like benzene, arsenic, cadmium may cause cancer.

⇒ Sunlight, radiations are related with cancer of skin.

⇒ Air pollution, water pollution also develops cancer.

⇒ Hepatitis B virus can produce cancer of the liver.

⇒ Genetic factors are responsible for developing cancer.

⇒ Use of drugs such as oral contraceptives may produce breast cancer in females.

Symptoms:—

Fatigue

Lump or area of thickening that can be felt under the skin

Weight changes, including unintended loss or gain

Skin changes such as yellowing, darkening or redness of the skin

- ⇒ Changes in bowel or bladder habits.
- ⇒ Persistent Cough or trouble breathing.
- ⇒ Bleeding or bruising
- ⇒ Eating problem
- ⇒ Neurological problems < Headache
Seizures
- ⇒ weight gain or loss