

**II M.Sc FOODS AND NUTRITION**

**NUTRITION IN  
EMERGENCISSUBJECT  
CODE: DEFN 34A UNIT-3**

Communicable diseases: Surveillance and treatment.

Control of communicable diseases in emergencies

Role of immunisation and sanitation.

Public nutrition approach to tackle nutritional problems in emergencies.

### **Introduction to the Communicable Diseases :**

- Communicable diseases caused by bacteria, viruses, protozoa, fungi and parasites, make a huge contribution to the burden of disease, disability and death in low- and middle-income countries like Ethiopia.
- The emergence of HIV/AIDS as a global pandemic, the resurgence of tuberculosis co-infection with HIV, and the rapid spread of fatal outbreaks of influenza, have also brought communicable diseases back onto the agenda of health services in high-income countries.
- The six leading groups of infectious diseases (acute respiratory infections, HIV/AIDS, diarrhoeal diseases, tuberculosis, malaria and measles) together cause over 11 million deaths worldwide every year, and blight the lives of tens of millions more who are living with their chronic or recurrent effects.
- These high-profile diseases are relatively well publicised across the world and are subject to major research into vaccines and treatments.
- By contrast, at least 1 billion people are affected by the so-called ‘neglected tropical diseases’, including leprosy and schistosomiasis, and/or by intestinal parasites such as tapeworm and hookworm.
- Some communicable diseases are easily preventable through simple measures such as vaccination and changes in human behaviour (for example, handwashing with soap).
- However, the transmission of infectious agents will be difficult to reduce to the levels seen in wealthier nations without significant reductions in the proportion of people living in impoverished social circumstances, with poor nutrition that leaves them more vulnerable to infection, without housing that is secure from disease-carrying pests, and without access to clean drinking water, improved sanitation or the safe disposal of household waste.
- Strenuous efforts are being made to address these problems in Ethiopia, as elsewhere in Africa and in other developing countries.

- To prevent or control the major communicable diseases in Ethiopia, a concerted effort by the nation's health workers, the government, development partners and community members is crucial.
- Together with the practical skills training associated with this Module, Communicable Diseases will help you to acquire the basic skills and knowledge to reduce the burden of mortality and morbidity in your community through the detection, prevention and treatment of common infections.

### **Prevention and control measures:**

- The health problems due to communicable diseases can be tackled by the application of relatively easy measures at different levels of the health system.
- Some measures can be applied before the occurrence of a communicable disease to protect a community from getting it, and to reduce the number of cases locally in the future. These are called prevention measures.
- For example, vaccination of children with the measles vaccine is a prevention measure, because the vaccine will protect children from getting measles. Vaccination refers to administration of vaccines to increase resistance of a person against infectious diseases.
- Once a communicable disease occurs and is identified in an individual, measures can be applied to reduce the severity of the disease in that person, and to prevent transmission of the infectious agent to other members of the community. These are called control measures.
- For example, once a child becomes infected with measles, treatment helps reduce the severity of the disease, and possibly prevents the child's death, but at the same time it decreases the risk of transmission to other children in the community.

### **Factors involved in the transmission of communicable diseases:**

- Transmission is a process in which several events happen one after the other in the form of a chain. Hence, this process is known as a chain of transmission .
- Six major factors can be identified:
- infectious agent, the reservoir, the route of exit, the mode of transmission, the route of entry and the susceptible host.
- This is an example of how infectious agents are named scientifically, using a combination of two words, the 'genus' and the 'species' names. The genus name is written with its initial letter capitalised, followed by the species name which is not capitalised. In the example above, Plasmodium is the genus name and falciparum refers to one of the species of this genus found in Ethiopia. There are other species in this genus, which also cause malaria, e.g. Plasmodium vivax.
- Many infectious agents can survive in different organisms, or on non-living objects, or in the environment.
- Some can only persist and multiply inside human beings, whereas others can survive in other animals, or for example in soil or water.
- The place where the infectious agent is normally present before infecting a new human is called a reservoir.

- Without reservoirs, infectious agents could not survive and hence could not be transmitted to other people.
- Humans and animals which serve as reservoirs for infectious agents are known as infected hosts.
- Two examples are people infected with HIV and with the bacteria that cause tuberculosis; these infectious agents persist and multiply in the infected hosts and can be directly transmitted to new hosts.
- Animals can also be reservoirs for the infectious agents of some communicable diseases.
- For example, dogs are a reservoir for the virus that causes rabies (Figure 1.3). Diseases such as rabies, where the infectious agents can be transmitted from animal hosts to susceptible humans, are called zoonoses (singular, zoonosis).
- Non-living things like water, food and soil can also be reservoirs for infectious agents, but they are called vehicles (not infected hosts) because they are not alive.
- Bacteria called *Mycobacterium bovis* can be transmitted from cattle to humans in raw milk and cause a type of tuberculosis.

#### **Route of exit:**

- Before an infectious agent can be transmitted to other people, it must first get out of the infected host.
  - The site on the infected host through which the infectious agent gets out is called the route of exit. Some common examples are described below.
- Respiratory tract**
- The routes of exit from the respiratory tract are the nose and the mouth. Some infectious agents get out of the infected host in droplets expelled during coughing, sneezing, spitting or talking, and then get transmitted to others. For example, people with tuberculosis in their lungs usually have a persistent cough; *Mycobacterium tuberculosis* uses this as its route of exit.
  - Infectious agents in the respiratory tract can exit from infected hosts during coughing and be transmitted to others.
- Gastrointestinal tract**
- The anus is the route of exit from the gastrointestinal tract (or gut). Some infectious agents leave the human body in the stool or faeces (Figure 1.5). For example, the infectious agents of shigellosis, a disease which can cause bloody diarrhoea, use this route of exit.
- Skin**
- Some types of infectious agents can exit the body through breaks in the skin. For example, this route of exit is used by *Plasmodium* protozoa, which are present in the blood and get out of the human body when a mosquito bites through the skin to suck blood.

## **Modes of transmission**

- Once an infectious agent leaves a reservoir, it must get transmitted to a new host if it is to multiply and cause disease.
- The route by which an infectious agent is transmitted from a reservoir to another host is called the mode of transmission.
- It is important for you to identify different modes of transmission, because prevention and control measures differ depending on the type.

### **Mode of transmission**

1. Direct
2. Indirect

Direct transmission refers to the transfer of an infectious agent from an infected host to a new host, without the need for intermediates such as air, food, water or other animals. Direct modes of transmission can occur in two main ways:

- Person to person: The infectious agent is spread by direct contact between people through touching, biting, kissing, sexual intercourse or direct projection of respiratory droplets into another person's nose or mouth during coughing, sneezing or talking. A familiar example is the transmission of HIV from an infected person to others through sexual intercourse.
- Transplacental transmission: This refers to the transmission of an infectious agent from a pregnant woman to her fetus through the placenta. An example is mother-to-child transmission (MTCT) of HIV.

### **Indirect modes of transmission**

Indirect transmission is when infectious agents are transmitted to new hosts through intermediates such as air, food, water, objects or substances in the environment, or other animals. Indirect transmission has three subtypes:

- Airborne transmission: The infectious agent may be transmitted in dried secretions from the respiratory tract, which can remain suspended in the air for some time. For example, the infectious agent causing tuberculosis can enter a new host through airborne transmission.
- Vehicle-borne transmission: A vehicle is any non-living substance or object that can be contaminated by an infectious agent, which then transmits it to a new host. Contamination refers to the presence of an infectious agent in or on the vehicle.
- Vector-borne transmission: A vector is an organism, usually an arthropod, which transmits an infectious agent to a new host. Arthropods which act as vectors include houseflies, mosquitoes, lice and ticks.
- Contaminated food, water, milk, or eating and drinking utensils. For example, the infectious agent of cholera can be transmitted to a person who eats food or drinks water contaminated with faeces containing the organism.

- Contaminated objects such as towels, clothes, syringes, needles and other sharp instruments. For example, sharp instruments contaminated with HIV-infected blood can transmit HIV if they penetrate the skin of another person.
- Soil is a vehicle for some bacteria. For example, a person can be infected with bacteria that cause tetanus if contaminated soil gets in through broken skin.

### **SURVEILLANCE AND CONTROL OF COMMUNICABLE DISEASES:**

There are five fundamental principles for the control of communicable disease in emergencies:

- Rapid assessment – identify and quantify the main disease threats to the population and determine the population's health status
- Prevention – provision of basic health care, shelter, food, water, and sanitation
- Surveillance – monitor disease trends and detect outbreaks
- Outbreak control – control outbreaks of disease. Involves proper preparedness and rapid response (confirmation, investigation, implementation of controls)
- Disease management – prompt diagnosis and effective treatment

Rapid assessment has been dealt with elsewhere in this book as have the prevention aspects of disease control (adequate shelter, clean water, sanitation, and food, together with basic individual health care).

### **Disasters and Disease:**

- Disasters, particularly conflicts, by damaging or destroying the infrastructures of societies (health, sanitation, food supply) and by causing displacement of populations, generally lead to increased rates of disease.
- Outbreaks and epidemics are not inevitable in these situations and are relatively rare after rapid-onset natural disasters, but there is a severe increase in the risk of epidemics during and after complex emergencies involving conflict, large-scale population displacement with many persons in camps and food shortages.
- In most wars more people die from illness than from trauma.
- Preventing such problems, or at least limiting their effects, falls on those responsible for the health care of the population affected by the emergency. They must be able to assess the health status of the population affected and identify the main health priorities monitor the development and determine the severity of any health emergency that develops (including monitoring the incidence of and case fatality rates from diseases, receiving early warning of epidemics and monitoring responses)

- plan and set up programs identify and take action to prevent or control outbreaks and epidemics monitor the progress of health interventions and their impact and modify them if required ensure the provision of appropriate aid (and prevent inappropriate aid)
- provide information for relevant agencies (e.g., national Ministry of Health (MOH), UN, NGOs, donors) for use in planning, funding applications, etc.
- At first sight, undertaking public health activities in emergencies, especially in conflicts, may seem to be difficult or impossible.
- The destructive nature of warfare may prevent or inhibit the provision of adequate food and shelter, of clean water and sanitation and vaccination programs.
- Despite the difficulties that warfare imposes, it is generally possible to undertake at least limited public health programs, including disease surveillance and control activities.

**The surveillance and control of communicable disease require data which can be collected in one of three ways:**

- Surveillance systems – covering all or at least a significant proportion of the population
- Surveys – in which data are collected from a small sample of the affected population considered to be representative of the whole
- Outbreak investigations – in-depth investigations designed to identify the cause of deaths or diseases and identify control measures

Although the latter two can provide valuable information for disease control and form part of the surveillance process, proper control of disease requires regular monitoring of the overall disease situation, which in turn requires the establishment of a properly designed health surveillance system.

**Treatment for communicable diseases**

- Some communicable diseases cause only mild symptoms that disappear without treatment. Others may cause severe symptoms or potentially life threatening complications.
- Patients require different treatment depending on disease process and clinical presentation.

**Viral infections**

- Vaccines are a highly effective method for preventing specific viral infections. There are several different types of vaccines.



- When a person receives a vaccine, they are receiving a form of the virus. The immune system responds by producing antibodies capable of killing an active form of the virus in the future.
- If a person already has a virus, they may require antiviral medications to keep the virus under control.

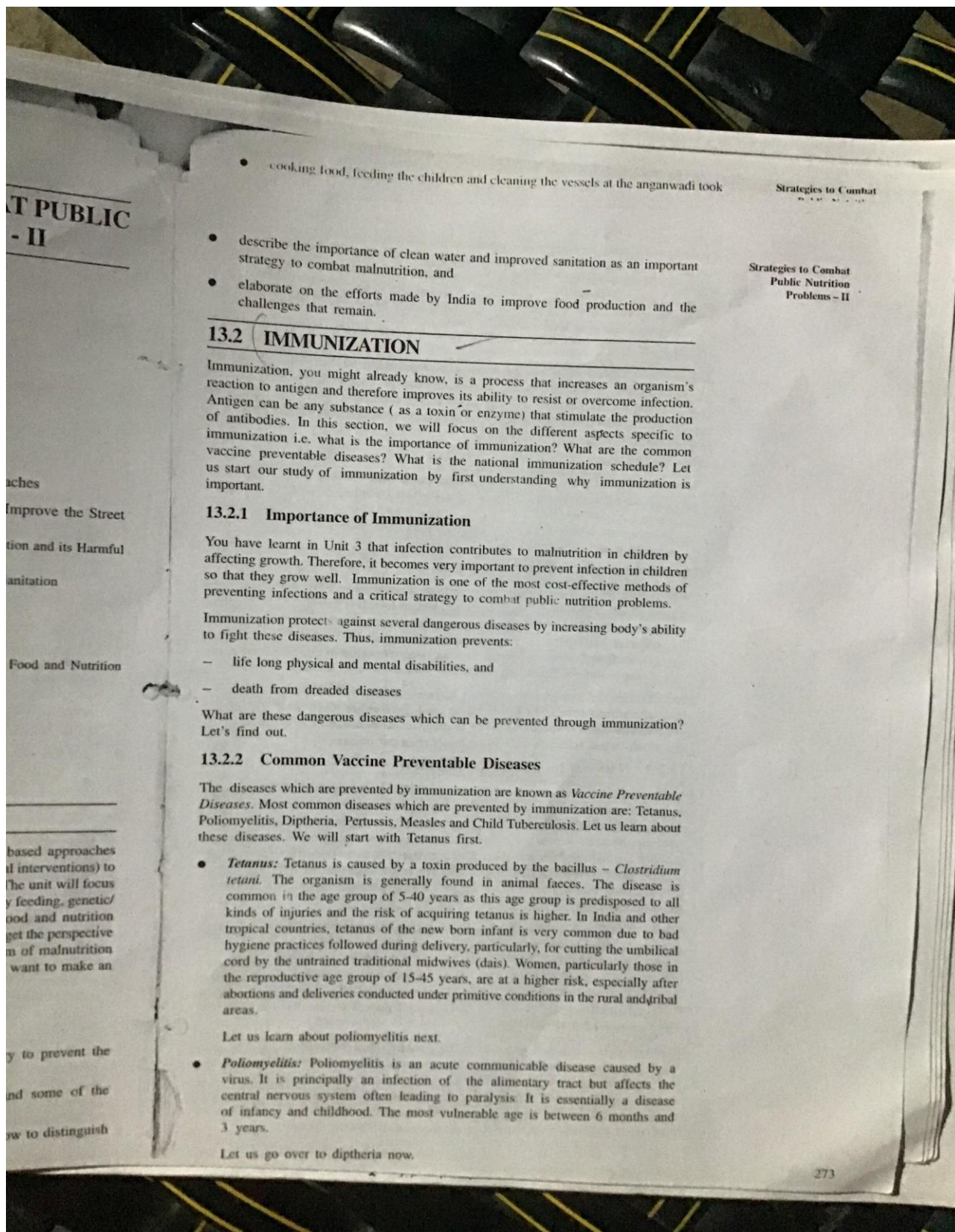
### **Bacterial infections**

- Bacterial infections can range from mild to life threatening. A person who has a bacterial infection may require a course of antibiotics to help control the infection. These medications can help to kill bacteria or slow them down so the immune system can counteract them.
- However, many bacteria are developing a resistance to antibiotics, which poses a major health risk. More than 2.8 million Trusted Source antibiotic-resistant infections occur in the U.S. every year.
- A person should only ever take antibiotics on a medical recommendation.

### **Fungal infections**

- A severe or chronic fungal infection may require prescription antifungal medications and, in rare cases, intravenous medication.
- However, people can treat many mild infections, such as ringworm and athlete's foot, with over-the-counter topical ointments.

# IMMUNISATION:



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Strategies to Combat

- describe the importance of clean water and improved sanitation as an important strategy to combat malnutrition, and
- elaborate on the efforts made by India to improve food production and the challenges that remain.

Strategies to Combat  
Public Nutrition  
Problems - II

## 13.2 IMMUNIZATION

Immunization, you might already know, is a process that increases an organism's reaction to antigen and therefore improves its ability to resist or overcome infection. Antigen can be any substance (as a toxin or enzyme) that stimulate the production of antibodies. In this section, we will focus on the different aspects specific to immunization i.e. what is the importance of immunization? What are the common vaccine preventable diseases? What is the national immunization schedule? Let us start our study of immunization by first understanding why immunization is important.

### 13.2.1 Importance of Immunization

You have learnt in Unit 3 that infection contributes to malnutrition in children by affecting growth. Therefore, it becomes very important to prevent infection in children so that they grow well. Immunization is one of the most cost-effective methods of preventing infections and a critical strategy to combat public nutrition problems.

Immunization protects against several dangerous diseases by increasing body's ability to fight these diseases. Thus, immunization prevents:

- life long physical and mental disabilities, and
- death from dreaded diseases

What are these dangerous diseases which can be prevented through immunization? Let's find out.

### 13.2.2 Common Vaccine Preventable Diseases

The diseases which are prevented by immunization are known as *Vaccine Preventable Diseases*. Most common diseases which are prevented by immunization are: Tetanus, Poliomyelitis, Diphtheria, Pertussis, Measles and Child Tuberculosis. Let us learn about these diseases. We will start with Tetanus first.

- **Tetanus:** Tetanus is caused by a toxin produced by the bacillus - *Clostridium tetani*. The organism is generally found in animal faeces. The disease is common in the age group of 5-40 years as this age group is predisposed to all kinds of injuries and the risk of acquiring tetanus is higher. In India and other tropical countries, tetanus of the new born infant is very common due to bad hygiene practices followed during delivery, particularly, for cutting the umbilical cord by the untrained traditional midwives (dais). Women, particularly those in the reproductive age group of 15-45 years, are at a higher risk, especially after abortions and deliveries conducted under primitive conditions in the rural and tribal areas.

Let us learn about poliomyelitis next.

- **Poliomyelitis:** Poliomyelitis is an acute communicable disease caused by a virus. It is principally an infection of the alimentary tract but affects the central nervous system often leading to paralysis. It is essentially a disease of infancy and childhood. The most vulnerable age is between 6 months and 3 years.

Let us go over to diphtheria now.



- **Diphtheria:** Diphtheria is an infection of the throat, nose or larynx and is caused by the bacteria, *Corynebacterium Diphtheriae*. It is most common in infants and children but adults can also be infected with the disease. In the most common form of disease, a thin membrane is formed in the throat. The infection can cause complications in heart and nervous system.

Let us now discuss pertussis.

- **Pertussis:** Pertussis or Whooping cough is caused by the microorganism *Bordetella pertussis* or the *pertussia bacillus*. Whooping cough is an acute highly communicable infection of the respiratory tract. It is primarily a disease of infants and children. The disease takes a serious form in malnourished children and may lead to death.

Let us move on to measles.

- **Measles:** Measles is an acute communicable viral disease, and is the most serious of the common childhood diseases. Usually it causes a rash, high fever, cough, runny nose and watery eyes lasting 1 to 2 weeks. It is responsible for many child deaths because of complications from pneumonia, diarrhoea and malnutrition.

Lastly let us get to know about tuberculosis.

- **Tuberculosis:** Tuberculosis is a chronic disease caused by *Mycobacterium tuberculosis*. It causes cough, fever and weight loss. It is transmitted by droplets from sputum of infected persons particularly during coughing. Although it can occur at any age, it is more prevalent among males over 45 years of age belonging to low income group. It is an important cause of disability and death in many parts of the world.

From the description about the common diseases you can see that these can be very fatal. Therefore, vaccines against these dreaded diseases are given to all the infants and children. Tetanus vaccine is given to pregnant women. Let us now get to know the immunization schedule as is being adopted in our country.

### 13.2.3 National Immunization Schedule

You must have heard about your friends and relatives taking their children to the doctors or health centers for immunization. There is a certain schedule of immunization which they have to follow. So what do we mean by an immunization schedule. *The schedule that tells us when and how many doses of each vaccine should be given is called an immunization schedule.* It is important for us to know that the vaccines must be given to individuals (infants, children and women) at the right age and in the right dose. Full course must be completed to give the best possible protection to the beneficiaries.

You would realize that each country follows its own immunization schedule depending upon the disease/disorders prevalent in that country. In India, we follow an Immunization schedule, as is given in Table 13.1, under which two doses of tetanus toxoid (TT) are given to pregnant women, three doses each of oral polio vaccine (OPV) and a triple injection of diphtheria, pertussis and tetanus (DPT) and one dose each of BCG and measles are given to infants. Look up Table 13.1 carefully and check the age, vaccine and dose provided.

In Table 13.1, you would also notice few booster doses included at specific ages. What is a booster dose? *A booster dose is an additional dose that makes sure that the first dose was effective.* Booster doses of vaccines are given to children to ensure full protection. Booster doses of OPV and DPT is given around the age of 16-24 months and a booster dose of DT is given around 5-6 years of ages. In addition, two TT doses are given at the ages of 10 and 16 years.

Besides the vaccines for infectious diseases, oral prophylactic dose to prevent

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To Whom	When
Women	Pregnant
Infants	At birth
	6 weeks
	10 weeks
	14 weeks
	9 months
	9-18 months
Children	16-24 months
	5-6 years
	10 years & 16 years

\* Given 6 monthly till

Another aspect, we need to be aware of is that certain illnesses, including measles, are contraindications to immunization. Children who are seriously ill or have a fever should not be immunized until they recover. The long-term risk of immunization is exposed to the risk of infection.

In this section you learn that children are protected less likely to become ill. A second strategy to control disease is to we move on to this



- cooking food, feeding the children and cleaning the vessels at the anganwadi took

dose of vitamin A is given at 9 months along with measles vaccine. Thereafter, 6 monthly dose of vitamin A is given to children till 3 years of age. You may recall reading about administration of Vitamin A doses under "National Prophylaxis Programme for Prevention of Blindness due to Vitamin A deficiency" earlier in Unit 10 of this course.

Table 13.1: National immunization schedule

To Whom	When	Vaccine	Number of doses
Women	Pregnancy	TT	2 (one in early pregnancy and other one month later)
Infants	At birth	BCG	1
		OPV	"0" dose
	6 weeks	DPT	1
		OPV	1 <sup>st</sup>
		BCG (if not given at birth)	1
	10 weeks	DPT	2 <sup>nd</sup>
		OPV	2 <sup>nd</sup>
	14 weeks	DPT	3 <sup>rd</sup>
		OPV	3 <sup>rd</sup>
	9 months	Measles	1
		Vitamin A prophylaxis*	1 <sup>st</sup>
	9-18 months	Measles, Mumps, Rubella (MMR)	1
16-24 months	DPT	1 <sup>st</sup> booster	
	OPV	1 <sup>st</sup> booster	
Children	5-6 years	DT	2 <sup>nd</sup> booster
	10 years & 16 years	TT	2

\* Given 6 monthly till 3 years of age (total 5 doses)

Another aspect, we need to highlight is that immunization is absolutely essential. Minor illnesses, including mild fever coughs and colds, as well as, malnutrition, are not a contraindication to immunization. Immunization should be postponed only if children are seriously ill or have high fever as any aggravation in the condition of the child may be attributed to immunization. The children should, however, be immunized as soon as they recover. The longer the immunization is delayed, remember the longer the child is exposed to the risk of infection.

In this section you learnt about, immunization as a strategy to combat malnutrition. If the children are protected from diseases by immunization, they would be healthier and less likely to become malnourished. In the next section, we would learn about the second strategy to combat malnutrition, that is, supplementary nutrition. Now before we move on to this section let us recall what have learnt so far.

## **PUBLIC NUTRITION APPROACH TO TACKLE NUTRITION PROBLEM IN EMERGENCY:**

- Public health nutrition is the field of study that is concerned with promotion of good health through prevention of nutrition-related illnesses / problems in the population, and the government policies and programmes that are aimed at solving these problems.
- Public health nutritionists / professionals use large scale, organised and multidisciplinary approaches to solve the problems that affect the population i.e., large number of people for whom group action is necessary.
- Therefore, this field is multidisciplinary in nature and is built on the foundations of biological and social sciences.
- It differs from other fields of nutrition e.g. clinical nutrition and dietetics, because the professionals are required to address problems of the community / public specially the vulnerable groups.
- Public Nutrition is a special body of knowledge derived from the nutritional, biological, behavioural, social and managerial sciences. It can also be described as the art and science of promoting health and preventing diseases, prolonging life, through the organised efforts/action of society.
- Any professional in the field of public nutrition has to promote good nutrition and /or to prevent nutritional problems, for which it is important to identify the problem and its magnitude , understand how and why these problems occur and then plan strategies and actions to implement them and evaluate their impact.
- While poverty is often the underlying cause, the situation becomes worse when a substantial proportion of families do not have access to basic amenities. Rural households have less access to toilets.
- Poor sanitation results in loss of work days and further economic loss. Further, considerable proportion of the population does not have safe drinking water. Working days are lost each year due to water borne diseases.
- factors related to nutritional problems range from economic factors (availability of financial resources), agricultural policy (production, price of various food stuffs), health care facilities/ services, their availability and access to the government policies, political will and socio-cultural factors.

## **Nutritional Problems in India:**

It is important to have knowledge about the nutritional problems in our country.

### **a) Protein- Energy Malnutrition(PEM) :**

- Can be found in every society, even in developed and industrialised countries, although the numbers are fewer in the latter as compared to developing countries.
- It is caused by inadequate food intake vis-a-vis the requirements, i.e., insufficient intake of the macronutrients (energy and protein).
- Children are at greatest risk although PEM can occur in adults especially the elderly, as well as in some diseases e.g. T.B., AIDS, etc. It is assessed by evaluating the anthropometric measurements (weight, height, head- chest circumference, etc.).
- Severe undernutrition due to deficiency of food and energy is termed as 'marasmus' and that caused by protein deficiency is termed 'kwashiorkor'.

### **b) Micronutrient deficiencies:**

- If the diet is deficient in energy and protein content it is also likely to contain inadequate amounts of other nutrients especially micronutrients viz. minerals and vitamins.
- The term "hidden hunger" is used to refer to micronutrient deficiency. The deficiencies of iron, vitamin A, iodine, zinc are of major public health concern. In addition, there is growing concern about deficiency of vitamin B12, folic acid, calcium, vitamin D and riboflavin.

### **C) Iron-deficiency anaemia (IDA):**

- It is the most common nutritional disorder in the world and is prevalent in both developed and developing countries.
- The vulnerable groups are women in child-bearing age, adolescent girls, pregnant women and school age children.
- IDA occurs when hemoglobin production is considerably reduced and it results in low levels of hemoglobin in blood.
- Symptoms depend on the rate of fall in hemoglobin. Since hemoglobin is required for carrying oxygen in the body, any physical exertion leads to shortness of breath (breathlessness on slight exertion) and the person complains of fatigue and may feel lethargic.
- Manifestations of IDA include general pallor, paleness of conjunctiva of eyes, tongue and nail beds and soft palate. In children, cognitive functions (attention span, memory, concentration) are adversely affected.

### **D) Vitamin A deficiency (VAD):**

- Vitamin A is necessary for maintenance of healthy epithelium, normal vision, growth and immunity.

- Deficiency of vitamin A results in night blindness which progresses to complete blindness if corrective measures are not taken. Also, there is less resistance to infection and growth may be adversely affected.
- There is a vicious cycle between vitamin A deficiency and infection. Vitamin A deficiency is the most common cause of childhood blindness.

**E) Iodine deficiency disorders (IDD):**

- Iodine is required for normal mental and physical growth and development. IDD is an ecological phenomenon, largely due to deficiency of iodine in the soil.
- Some of the states in India where IDD is common are– Jammu and Kashmir to Arunachal Pradesh in the Himalayan belt, Andhra Pradesh, Karnataka, Kerala, Maharashtra and Madhya Pradesh.
- The term ‘Iodine Deficiency Disorders’ refers to a spectrum of disabling conditions that affect the health of humans, from fetal life through adulthood due to inadequate dietary intake of iodine.
- Deficiency of iodine results in insufficient amount of thyroid hormone which is synthesised by the thyroid gland.
- Enlarged thyroid known as ‘goitre’ is the most common manifestation of iodine deficiency in adults.
- In children it manifests as cretinism. Iodine deficiency in adults during pregnancy has several adverse effects specially resulting in mental retardation and congenital abnormalities of the fetus.
- Unfortunately this effect is irreversible.
- IDD is estimated to affect about 13 per cent of the world’s population and about 30 per cent are at risk.

**Strategies/intervention to tackle Nutritional Problems:**

- As our former Prime Minister Dr. Manmohan Singh stated in one of his speeches “The problem of malnutrition is a matter of national shame I appeal to the nation to resolve and work hard to eradicate malnutrition in 5 years”.
- There is a need to adopt a multi-disciplinary approach to solve nutritional problems.
- Government is making considerable efforts to solve the problems. POSHAN Abhiyaan or the PM’s Overarching Scheme for Holistic Nutrition was launched in Jhunjhunu, Rajasthan in March 2018. It targets stunting, under-nutrition, anaemia (among young children, women and adolescent girls) and low birth rate.
- It is meant to monitor and review the implementation of all such schemes. Its large component involves gradual scaling-up of interventions to all districts in the country by 2022.

- The Ministry of Women and Child Development (MWCD) is implementing POSHAN Abhiyaan in 315 districts in the first year, 235 districts in the second year and remaining districts will be covered in the third year.
- Through robust multi-ministerial convergence mechanism and other components POSHAN ABHIYAN strives to create the synergy. Some direct short term interventions are:

- (a) Integrated Child Development Services (ICDS )to cover all vulnerable children in the age group of 0-6 years and all pregnant and lactating mothers,
- (b) fortification of essential foods (salt fortified with iodine),
- (c) production and popularisation of low cost nutritious foods from indigenous and locally available raw material by involving women in this activity and
- (d) control of micronutrient deficiencies among vulnerable groups, namely deficiencies of iron, vitamin A, folic acid and iodine among children, pregnant women and nursing mothers by supplementing these nutrients, distributing free tablets, etc.

**There are various strategies that can be used to combat public nutrition problems. They are broadly classified as:**

**a) Diet or food-based strategies**

**b) Nutrient-based approach or medicinal approach**

**Diet or food-based strategies:**

- They are preventive and comprehensive strategies that use food as a tool to overcome nutritional deficiencies.
- They can play an important role in preventing micronutrient deficiencies by increasing the availability and consumption of micronutrient-rich foods.
- One of the important advantages of this strategy is that it is sustainable and will have long-term benefits.
- Other benefits are that they are cost- effective, can be adapted to different cultural and dietary traditions and very importantly they do not carry risk of overdose or toxicity which may happen in case of nutrient-based / medicinal approach.
- Some important food-based approaches include dietary diversification and modification, horticulture interventions e.g., home gardening, nutrition and health education, food fortification.

**Nutrient-based or medicinal approach :**

- In this approach nutrient supplements are given to vulnerable groups i.e., those who are at risk of deficiency and those who have deficiency.



- It is a short term strategy particularly used for vitamin A, iron and folic acid in India. Supplementation programmes are often expensive and there may be problems with coverage.
- Key target groups are different for various nutrients.

**Role of Public Nutritionist:**

- Nutrition is an important determinant of health.
- The changing health scenario globally has increased the challenges for public nutritionists.
- The public nutritionist (also called community nutritionist), who is well trained and equipped in key areas, is eminently suited to participate in all the strategies of health promotion and prevention.
- The key areas include nutritional science, nutritional needs throughout the life cycle, nutritional assessment, nutritional care, food science, educational methods, mass media and communication and programme management.