**Assignment-2**

1. Consider a disease known as diabetes mellitus, which is characterized by an increase in the blood sugar level. Infectious agents may contribute to the development of the disease in early childhood, but are not the main cause of the disease. Can it be classified as communicable? Explain your reasons

Diabetes mellitus is a noncommunicable diseases, A non-communicable disease (NCD) is a medical condition or disease that is not caused by infectious agents and thus it is non-infectious or non-transmissible (WHO). Major four noncommunicable diseases includes cardiovascular disease, diabetes, cancer and chronic respiratory diseases (WHO). Noncommunicable diseases can refer to chronic diseases which last for long periods of time and progress slowly (WHO). Diabetes mellitus is a chronic disease that occurs because the body does not produce insulin or the insulin is insufficient (WHO). Insulin is a hormone produced in the body by pancreatic cells to regulate blood sugar levels.

Due to weak immunity among children, infectious diseases are more frequent and/or serious in patients with diabetes mellitus, which potentially increases their morbimortality. The greater frequency of infections in diabetic patients is caused by the hyperglycemic environment that favors immune dysfunction (e.g., damage to the neutrophil function, depression of the antioxidant system, and humoral immunity)

1. How would you classify pulmonary tuberculosis using the epidemiologic method? What is the main importance of such classification?

Pulmonary tuberculosis (TB) is considered as one of the major public health problems in developing countries, with an estimated 8.7 million new cases worldwide annually(WHO).

Epidemiological information on pulmonary tuberculosis (TB) is required to plan control and prevention strategies and to inform service delivery systems.

Several studies have been conducted to investigate pulmonary TB and its different aspects. The current evidence suggests that numerous factors have effect on pulmonary TB such as drug resistance pattern, diagnosis delay, pattern of reported TB cases (6–8). With regards to demographic factors which include ethnicity and gender; for example, a study conducted in southern Iran reported that Afghan immigrants were at high risk for TB infected and women were also more affected (WHO).

It is not possible to conduct a suitable program without sound evidence on epidemiology status of TB disease. Epidemiological information on TB is required to plan control and prevention strategies and to inform service delivery systems. Assessment of the epidemiological indices within a specific period can also help planners to focus on the main problems of a community and to assess the efficacy of preventive programs (WHO)

1. Describe four or more bacterial vaccine-preventable diseases that have the same modes of transmission.

Introduction:

Bacterial vaccination is the administration of a vaccine to stimulate a protective immune

response that will prevent disease in the vaccinated person if contact with the corresponding infectious agent occurs subsequently. Thus vaccination, if successful,

results in immunization: the vaccinated person has been rendered immune to

disease caused by the infectious pathogen. Vaccination is a highly effective method of preventing certain infectious diseases (WHO)

For the individual, and for society in terms of public health, prevention is better

and more cost-effective than cure. Vaccines are generally very safe and serious

adverse reactions are uncommon. Routine immunization programmes protect

most of the world’s children from many infectious diseases that previously

claimed millions of lives each year (WHO)

Four bacterial vaccine-preventable diseases that have the same modes of transmission includes the following;

Pulmonary tuberculosis: The vaccine for TB is called BCG, or bacille Calmette-Guerin. Many foreign-born persons have been BCG-vaccinated. BCG is used in many countries with a high prevalence of TB to prevent childhood tuberculous meningitis and miliary disease (CDC)

Whooping cough: The best way to prevent pertussis (whooping cough) is to get the vaccine. There are vaccines for babies, children, preteens, teens, and adults. DTaP is the childhood vaccine, and Tdap is the pertussis booster vaccine for preteens, teens, and adults (CDC)

Tetanus: Tetanus vaccine, also known as tetanus toxoid (TT), is an inactive vaccine used to prevent tetanus. During childhood five doses are recommended, with a sixth given during adolescence. Additional doses every 10 years are recommended. After three doses almost, everyone is initially immune (CDC)

Diphtheria: Diphtheria vaccine is a vaccine against Corynebacterium diphtheriae, the bacterium that causes diphtheria. Its use has resulted in a more than 90% decrease in number of cases globally between 1980 and 2000 (CDC)

1. What are the causes and methods for preventing bacterial meningitis?

Introduction: Meningitis is inflammation of the membranes covering the brain and spinal cord (WHO)

Causes: Meningitis may be caused by infection, such as by bacteria or viruses. Non-infectious meningitis is often referred to as “aseptic meningitis “. Bacterial meningitis. Bacteria that enter the bloodstream and travel to the brain and spinal cord cause acute bacterial meningitis. But it can also occur when bacteria directly invade the meninges. This may be caused by an ear or sinus infection, a skull fracture, or, rarely, after some surgeries (WHO).

Prevention of bacterial meningitis: The most effective way to prevent meningitis is to get vaccinated against the disease. There are vaccines for three types of bacteria that can cause meningitis: Neisseria meningitidis. Streptococcus pneumoniae. Avoid sharing personal items, keeping distance from infected people, washing hands vigorously with soap, boosting of immune system and getting prompt treatment.

1. Explain two characteristics that illustrate how the Anopheles larvae are different from other mosquito larvae. Using illustration is advised

There are two common types of mosquitoes that lay their eggs in water: anophelines, which can be vectors of malaria, and culicines, which do not carry malaria. It is very important that you know the difference in the morphology (structure and shape) of these mosquitoes to identify the exact breeding habitats that support the development of the potential vectors Now study the differences in the body structure and resting position in water collections of the anopheline and culicine larvae. It doesn’t need magnifying or other equipment to distinguish anopheline and culicine larvae. A person can tell the difference by looking at the larvae in the vector breeding waters. Your mentor will show you the difference between the two during your practical training. This will be a very important part of your task as a Health Extension Practitioner: identifying water collections that shelter anopheline larvae and acting to eliminate such breeding grounds or kill the larvae.

There are four stages in the mosquito life cycle, and three of them — eggs, larvae and pupae — are to be found in water.

Distinguishing features of anopheline mosquitoes (potential malaria vectors) and culicine and aedes mosquitoes (which don’t transmit malaria). (WHO, 1997)

