**AFRICA CENTRE FOR PROJECT MANAGEMENT STUDIES (ACPMS)**

**ASSIGNMENT FOR THE MONTH OF JULY 2018.**

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| COURSE: | POST GRADUATE DIPLOMA IN WASH |
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| STUDENT REG NO. | ACPM/47/3/2018 |
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| MODULE: | TWO |
| MODULE NAME: | COMMUNICABLE DISEASE. |

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 reason.**

Diabetes mellitus is one of the four major types of non-communicable diseases (cardiovascular disease, diabetes, cancer and chronic respiratory diseases). It is a chronic condition that occurs when the body either does not produce enough insulin or cannot effectively use the insulin it does produce. Insulin is a hormone that regulates the blood sugar (glucose) formed from the food consumed by a person. Diabetes therefore results in raised blood sugar levels which, if not controlled, over time lead to serious damage to many of the body's systems (WHO).

Therefore, Diabetes mellitus is not a communicable disease since it cannot be transmitted from one person to other through infectious agents.

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

Pulmonary tuberculosis (TB) is a contagious bacterial infection that involves the lungs. It may spread to other organs. Pulmonary TB is caused by the bacterium called Mycobacterium tuberculosis (M tuberculosis). TB is contagious. This means the bacteria is easily spread from an infected person to someone else through coughing, sneezing and spitting.

Pulmonary tuberculosis is classified under the epidemiological classification because of its mode of transmission which is through air.

This classification is based on the main mode of transmission of the infectious agent. The importance of this classification to enables you to select prevention and control measures which are common to (shared by) communicable diseases in the same class, so as to interrupt the mode of transmission.

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

The following are the four bacterial vaccines –preventable diseases that have the same mode of transmission**.**

# Meningococcal meningitis.

Bacterial meningitis is an acute purulent infection within the subarachnoid space. It is associated with a CNS inflammatory reaction that may result in decreased consciousness, seizures, raised intracranial pressure (ICP), and stroke. The meninges, the subarachnoid space, and the brain parenchyma are all frequently involved in the inflammatory reaction (meningoencephalitis) (Fauci and Longo, 2008).Meningitis can present as either an acute fulminant illness that progresses rapidly in a few hours or as a sub-acute infection that progressively worsens over several days.The classic clinical triad of meningitis is fever, headache, and nuchal rigidity.A decreased level of consciousness occurs in >75% of patients and can vary from lethargy to coma. Nausea, vomiting, and photophobia are also common complaints (Fauci and Longo, 2008).

**Pertussis**

Pertussis is a highly contagious disease of the respiratory tract caused by *Bordetella pertussis*, bacteria that live in the mouth, nose, and throat. Many children who contract pertussis have coughing spells that last four to eight weeks. The disease is most dangerous in infants and spreads easily from person to person, mainly through droplets produced by coughing or sneezing. The first symptoms generally appear 7–10 days after infection, and include mild fever, runny nose, and cough, which in typical cases gradually develops into a paroxysmal cough followed by whooping (hence the common name of whooping cough). In the youngest infants, the paroxysms may be followed by periods of apnea. Pneumonia is a relatively common complication; seizures and encephalopathy occur more rarely. Untreated patients may be contagious for three weeks or more following onset of the cough. Pertussis can be prevented by immunization

# Pneumococcal disease

*Streptococcus pneumoniae* is a bacterium that causes a number of common diseases, ranging from serious diseases such as meningitis, septicemia and pneumonia to milder but commoner infections such as sinusitis and otitis media. Pneumococcal diseases are a common cause of morbidity and mortality worldwide, though rates of disease and death are higher in developing countries than in industrialized country settings, with the majority of deaths occurring in sub-Saharan Africa and Asia. Disease is most common at the extremes of age, i.e, in young children and among the elderly. The organism is transmitted mainly through respiratory droplets and colonizes the back of the nose (nasopharynx). Infection of other parts of the body, resulting in disease, occur through direct spread or through invasion of the blood stream.(WHO).This disease can be prevented through immunization.

# Diphtheria

Diphtheria is an infectious disease caused by the bacterium *Corynebacterium diphtheria*, which primarily infects the throat and upper airways, and produces a toxin affecting other organs. The illness has an acute onset and the main characteristics are sore throat, low fever and swollen glands in the neck and the toxin may, in severe cases, cause myocarditis or peripheral neuropathy. The diphtheria toxin causes a membrane of dead tissue to build up over the throat and tonsils, making breathing and swallowing difficult. The disease is spread through direct physical contact or from breathing in the aerosolized secretions from coughs or sneezes of infected individuals.

# Tuberculosis

Tuberculosis (TB) is a disease that is caused by a bacterium called Mycobacterium tuberculosis (Mtb). It is transmitted by people infected with pulmonary (lung) TB who release Mycobacterium tuberculosis into the air through coughing, sneezing or spitting.

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

Meningitis is the inflammation of the membranes that surround and protect the brain and spinal cord. Bacterial meningitis is very serious and can be deadly. Death can occur in as little as a few hours. Most people recover from meningitis. However, permanent disabilities (such as brain damage, hearing loss, and learning disabilities) can result from the infection.

Bacterial Meningitis is cause by the following bacterias

* Streptococcus pneumoniae
* Group B Streptococcus
* Neisseria meningitidis
* Haemophilus influenzae
* Listeria monocytogenes.

However, there are also some risk factors that can lead to bacterial meningitis and this includes the following.

**Age**

Babies are at increased risk for bacterial meningitis compared to people in other age groups. However, people of any age can develop bacterial meningitis. See section above for which bacteria more commonly affect which age groups.

**Community setting**

Infectious diseases tend to spread where large groups of people gather together. College campuses have reported outbreaks of meningococcal disease, caused by N. meningitidis.

**Certain medical conditions**

There are certain medical conditions, medications, and surgical procedures that put people at increased risk for meningitis.

**Working with meningitis-causing pathogens**

Microbiologists routinely exposed to meningitis-causing bacteria are at increased risk for meningitis.

**Travel**

Travelers may be at increased risk for meningococcal disease, caused by N. meningitides, if they travel to certain places, such as:

The meningitis belt in sub-Saharan Africa, particularly during the dry season

Mecca during the annual Hajj and Umrah pilgrimage

## Prevention:

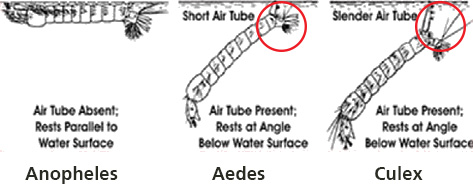
* The most effective way to protect you and your child against certain types of bacterial meningitis is to get vaccinated. There are vaccines for three types of bacteria that can cause meningitis, Neisseria meningitides, Streptococcus pneumoniae and Hib.
* To prevent the spread of bacterial meningitis and other diseases, it is important to practice good hygiene, such as frequent handwashing.
* Being aware of the signs and symptoms of bacterial meningitis will make it easier to take immediate action can be taken if necessary.
* If someone has bacterial meningitis, a doctor may recommend antibiotics to help prevent other people from getting sick. Doctors call this prophylaxis.  CDC recommends prophylaxis for:
* Close contacts of someone with meningitis caused by Neisseria meningitides
* Family members, especially if they are at increased risk, of someone with a serious Hib infection
* Don’t smoke and avoid cigarette smoke
* Get plenty of rest
* Avoid close contact with people who are sick

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

The following are the characteristics that differentiate anopheles larvae from other mosquitos.

* The Anopheles larvae are surface feeder while other mosquito’s larvae are bottom feeder on the water surface.
* The respiratory siphon of the anopheles mosquito larvae is short while other mosquito larvae their respiratory siphon is long.
* The anopheles mosquito larvae remain parallel to the water surface while other mosquito’s larvae form an angle inside the water surface.

**Diagrammatic illustrations:**



**(Source : WHO)**.

**Reference**

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