

**PGD in WASH**  
**Assignment Two**  
**September 2019**  
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- 1. Consider a disease known as diabetes mellitus, which is characterised by an increase in the blood glucose 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 is a chronic disease characterised by hyperglycemia resulting from defects in insulin secretion<sup>1</sup>. Historically, diabetes has been classified as a non-communicable disease and seen as a lifestyle disease with risk factors including poor diet, obesity and likely genetic factors. Recent studies have challenged this paradigm in two ways. Firstly, new evidence of the possible correlation between individuals colonised with the transmissible bacteria *Staphylococcus aureus* and development of diabetes<sup>2</sup>; and secondly, a shift in thinking about what constitutes noncommunicable diseases (NCD) vs communicable diseases (CD) with the possibility of a grey area between the two<sup>3</sup>.

It is possible with emerging research and changes to what we classify as NCDs and CDs that diabetes could be classified as communicable. Currently, it appears appropriate to call diabetes a chronic NCD with possible CD factors involved in an individual's susceptibility to develop the condition.

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

Tuberculosis is classified as an airborne disease using the epidemiologic method of classification. The importance of recognising the epidemiologic classification lies in its use to prevent, assess, design and implement control measures to avoid transmission among a susceptible population. For example in understanding the transmission route of the disease we may prevent the spread and treat members of the same household where an infected individual has been identified.

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

The following table shows four bacterial vaccine-preventable diseases that can all be classified as airborne diseases according to the epidemiological method.

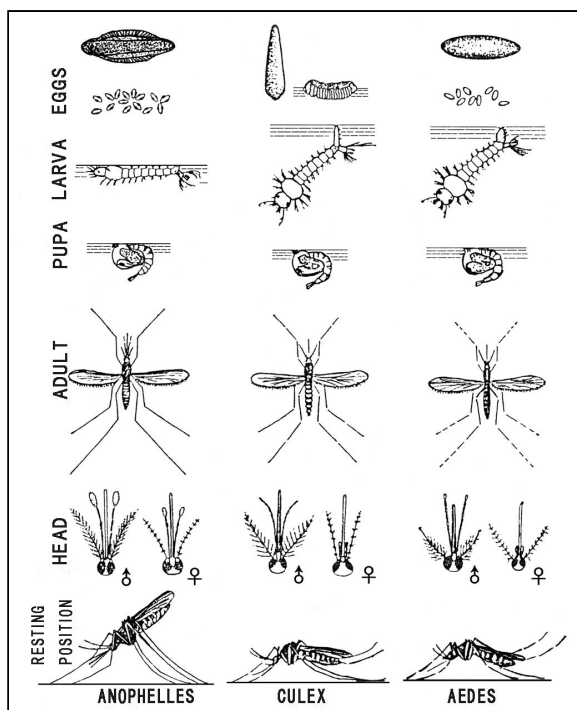
Disease	Bacteria	Vaccine preventable	Mode of Transmission
Diphtheria	<i>Corynebacterium diphtheriae</i>	Yes	Respiratory (cough/sneeze)
Pertussis	<i>Bordetella pertussis</i>	Yes	Respiratory droplets (cough/sneeze)
Pneumococcal pneumonia	<i>Streptococcus pneumoniae</i> / <i>Haemophilus influenzae</i> T2	Yes	Respiratory droplets (cough/sneeze)
Tuberculosis	<i>Mycobacterium tuberculosis</i>	Yes	Respiratory droplets and airborne (cough/sneeze/spit)

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

Cause: Bacteria spread via airborne droplets from person to person

Prevention: Community education; vaccination; early identification of illness; prompt medical treatment with antibiotics; population data collection and monitoring of cases.

**5. Explain two characteristics that illustrate how the anopheles larvae are different from other mosquito larvae. Illustrations advised.**



Two differentiating differences between anopheles and other mosquitos at larvae stage:

1. Breathing tube: the anopheles have a very short breathing area // others have long breathing tubes;
2. Position: the anopheles rest parallel to the water's surface // the others lay at approximatly 45 degrees to the water surface with the breathing tube connecting to the surface.

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1. American Diabetes Association, *Diagnosis and Classification of Diabetes Mellitus*, Diabetes Care 2010 Jan, 33(sup 1), S62-s69  
[https://care.diabetesjournals.org/content/33/supplement\\_1/s62.abstract](https://care.diabetesjournals.org/content/33/supplement_1/s62.abstract)
2. Brown, J. *Bacteria may cause type 2 diabetes*, IOWA now, The University of Iowa,
3. <https://now.uiowa.edu/2015/06/bacteria-may-cause-type-2-diabetes>
4. Kalra, S. & Kumar, A. *Diabetes as a Communicable Disease*, Journal of The Pakistan Medical Association, January 2019, Vol 69, issue 1.  
[https://care.diabetesjournals.org/content/33/supplement\\_1/s62.abstract](https://care.diabetesjournals.org/content/33/supplement_1/s62.abstract)