DIPLOMA IN PUBLIC HEALTH

FINAL EXAMINATION IN PUBLIC HEALTH

NAME OF STUDENT:

AGOK MANYUON WANTOK AKOL

REGISTRATION NUMBER:

SN322/05/2019

COUNTRY OF STUDING:

SOUTH SUDAN- LAKES STATE

EMAIL ADDRESS: [agokmanyuon@gmail.com](mailto:agokmanyuon@gmail.com)

COLLEDGE:

STRATEGIA NETHERLAND

1. List the types of people who are most vulnerable to waterborne diseases. Explain your answers why and how to overcome the diseases.

Waterborne diseases are caused by people ingesting water contaminated by human or animal faeces containing pathogens. Such diseases can also be caused by food that has been prepared using water contaminated with pathogens. The diseases are caused only when the infectious agent enters the body. Waterborne diseases include most of the enteric (related to the intestine) and diarrheal diseases caused by bacteria and viruses. *Bacteria* are unicellular organisms (made of one cell) and are very small, ranging from 0.5 to 5.0 micrometres (µm) in size. When seen under a microscope, they have different shapes, such as spheres, rods, or spirals. *Viruses* are microscopic infectious particles, much smaller than bacteria that can only reproduce when inside the living cells of organisms. Waterborne diseases also include some caused by protozoa (single-celled micro-organisms that are much larger than bacteria, usually between 10 and 50 µm) and *helminths*. Helminths is a general term for worms, usually applied to those that are parasites on humans and other animals.

Infants: Infants are of most risky from this deases because their bloods are not too strong to resist from Symptoms through body Exercise

Young children.

Older people

1. Suppose that inhabitants of a village obtain water from a spring. What advice would you give to the users about the prevention of contaminants entering the spring?

The users of the spring should be advised to:-

* avoid open defecation around the spring
* not construct latrines above the spring because of the danger of contaminating the groundwater
* use latrines properly
* Keep animals away from the spring.

1. The following are pollution sources. Give two specific pollutants for each source.
2. A residential area:

Human excreta, wastewater containing dissolved and suspended organic matter, suspended inorganic matter, pathogenic micro-organisms

1. A metal plating plant:

Cyanides, heavy metals

1. Agricultural activities:

Nitrates, phosphates, pesticides

1. An uncontrolled landfill site:

Leachate containing dissolved organic matter, inorganic components and heavy metals

1. Urban surface water run-off

Sediment, metals, hydrocarbons, rubber, detergents, litter

1. Explain 5 reasons why emergencies can put people at greater risk of waterborne disease.

Water-borne diseases are transmitted by water that has been contaminated with human waste (excreta) containing the different types of pathogenic organisms. Knowledge of the route of transmission of waterborne diseases is essential to providing preventive and control measures. The job of Environmental Health Technicians is to design ways to break the chain of water-borne diseases transmission.

Poor water quality becomes inevitable when water gets polluted with industrial waste, human waste, animal waste, garbage, untreated sewage, chemical effluents, etc. Drinking or cooking with such polluted water leads to waterborne diseases and infections such as amoebiasis, giardiasis, and toxoplasmosis.

Contaminated water could carry viruses such as [Hepatitis A and E](https://www.narayanahealth.org/blog/world-hepatitis-day-2019/), bacteria like E.coli (E.coli can be passed from hand to hand, such as via vendors of street food or food handled by someone carrying E.coli bacteria. It can lead to food poisoning). The result: dangerous diseases like cholera and typhoid fever. Other waterborne diseases include diarrhoea, dysentery, polio and meningitis.

Unclean water for washing can cause skin and infectious eye disease such as Trachoma. Trachoma can lead to visual impairment or [blindness](https://www.narayanahealth.org/sudden-blindness).

Rural populations are more at risk from waterborne illnesses, but everyone faces risks of polluted or contaminated water. Waterborne illness can affect anyone, anywhere. The risk is more for infants, younger children, the elderly and patients of diabetes, chronic diseases of heart disease, [kidney](https://www.narayanahealth.org/blog/chronic-kidney-disease/), etc.

1. In your own words, what is your understanding of public health and what are its key elements?

Public health has been defined as "the science and art of preventing disease”, prolonging life ... The concept of health takes into account physical, psychological and social well-being.

The essential elements of public health includes

* 1. Monitor health status: to identify community health problems
  2. Diagnose and investigate health problems and health hazards in the community
  3. Inform, educate, and empower people about health issues
  4. Mobilize community partnerships to identify and solve health problems
  5. Develop policies and plans that support individual and community health efforts
  6. Enforce laws and regulations that protect health and ensure safety
  7. Link People to needed personal health services and assure the provision of health care when otherwise unavailable
  8. Assure a competent workforce for public health and personal health care
  9. Evaluate effectiveness, accessibility and quality of personal and population based services
  10. Research for new insights and innovative solutions to health problems

1. Discuss how environmental health and sanitation affect the nutritional status of the vulnerable groups

Poor Sanitation affects the Nutrition leading into undernutrition in the following Ways mentioned.

* Stunting:

Research shows that inadequate dietary intake alone does not explain the global burden of stunting, and dietary interventions have not been able to normalise growth (Dewey and Adu-Afarwuah, 2008). A recent multiple-country study, for example, found that diarrhoeal diseases, caused by poor sanitation, accounted for 25 per cent of stunting in children up to 24 months (Checkley et al., 2008). Meanwhile, an observational study in rural Bangladesh found that environmental contamination, linked to open defecation.

* Wasting:

Though diarrhoeal diseases could be a predictor of the effects of poor sanitation on weight-for-height scores, there is limited and inconclusive evidence that poor sanitation is associated with wasting. Improvements in sanitation were associated with higher weight-for-height scores in the aforementioned eight country cross-sectional study, this was only the case in the absence of improvements in water supplies.

* Food systems:

The food environment is influenced by all sub-systems of a given food system, as depicted in Figure 5. For example, energy-dense, processed food products which are often low in vitamins and minerals, are much more readily available and often cheaper than more nutrient-rich foods due to technological advances and market liberalization.

1. Paul, a resident in the outskirts of your town, consults you about building a latrine in the compound of his house. He is an open-minded man who is keen to improve life for his family. He has a wife and three young children, and his elderly mother also lives with them. He doesn’t have a tap in his house and gets water from a nearby well. The area has heavy soil and the rock below is impermeable.
2. Which types of latrine are possible choices for him?

Pual cannot install a water carriage system because he does not have a piped water supply; therefore, he has to install a pit latrine of some sort. The possible choices are a single pit latrine, a pit latrine with slab, a VIP latrine with slab, a double pit latrine or one of the ecosan systems, namely an Arborloo or a Fossa Alterna.

1. Which types of latrine would you recommend, and why?

You should not recommend a pit latrine without a slab because this does not provide adequate sanitation. The VIP latrine is preferable to a simple latrine, but an ecosan system would be better because this would produce a useful product as well as protecting the health of the family and the environment. You would need to ask Paul about his attitude to using an ecological sanitation system and whether he would be willing to make use of the composted waste material. He is a farmer so he may be able to use it on his fields and he is open-minded so this system may be attractive to him. If he was reluctant to dig out the compost you could recommend the Arborloo system because that does not require handling; the tree is planted on top of the filled pit.

1. What other advice would you give him about the location, design and construction of the latrine?

You should advise him to consider the location of the pit. It must be at least 15 m away from his well and preferably a greater distance. It must also be at a lower level according to the slope of the land. He should also consider the wind direction and place the latrine downwind and at a convenient distance from the house. He would need to consider the design of the squat hole to ensure it is safe for his children and comfortable for his elderly mother. You could advise him about possible materials to be used for the superstructure and recommend what is available locally. You should also advise him to install a handwashing facility next to the latrine.

1. Explain five ways in which urbanization creates challenges for effective sanitation and solid waste management.

There are several possible answers to this question, but the main challenges from urbanization are caused by many people living very close together which puts pressure on all urban services. The rate of increase in population is very fast and the development of infrastructure for water supply and sanitation services cannot maintain the same pace of change. People arriving in cities often live in informal settlements which are developed without planning or control and lack essential facilities for the people who live there

1. How do good sanitation and waste management practices bring a positive effect to urban inhabitants? Give examples for effects on:
2. Health

* Effects on health: Good sanitation and waste management help to keep people separate from potential sources of pathogens. They reduce the risk of contaminating water supplies with pathogens and discourage the transmission of disease

1. Education

* Effects on education: Healthy children have fewer days off school through illness. When they are at school, healthy children learn better than sick children. Providing good sanitation facilities encourages children to attend school, particularly girls during their menstrual periods

1. Economic conditions

* Effects on economic conditions: The health benefits promoted by good sanitation and waste make for a more productive community. Less money is spent on healthcare and people lose fewer days off work through caring for the sick

1. The environment

* Effects on the environment: Good sanitation and waste management means that there will be less faeces and waste deposited in public places and less pollution of the water and soil

1. List and briefly describe the measures by which the success or otherwise of a public–private partnership providing water supply services can be assessed.

The following criteria may be used to measure the success of a PPP providing water supply.

* Accessibility – the extent of coverage of the population, and the distance to the water point.
* Affordability – the cost of the water needed should be less than 5% of the household’s income.
* Cost recovery – the cost of providing the water should be claimed back from the population.
* Minimization of non-revenue water – this should be reduced to 15% or less.
* Water quality – the water should meet national standards for quality.
* Operational efficiency – the quantity of water supplied per capita, and the duration of water supply per day

REFERENCES:

* + - 1. BLACK, R. E., ALLEN, L. H., BHUTTA, Z. A., CAULFIELD, L. E., DE ONIS, M., EZZATI, M., MATHERS, C. & RIVERA, J. 2008*. Maternal and child undernutrition: global and regional exposures and health consequences. The Lancet*, 371, 243-260.
      2. BROWN, J., CAIRNCROSS, S. & ENSINK, J. H. J. 2013. Water, sanitation, hygiene and enteric infections in children. *Archives of Disease in Childhood*.
      3. Dan Okun Distinguished Professor of Environmental Engineering, *Department of* *Environmental Sciences and Engineering*, Gillings School of Global Public Health.
      4. Schools of Civil and Environmental Engineering, and Material Science and Engineering. Corresponding author may be contacted at Georgia Institute of Technology School of Civil and Environmental Engineering, 790 Atlantic Dr. N.W., Atlanta, GA 30332-0355.
      5. M. I. M. Kaleel. The Impact on Wetlands: A Study Based on Selected Areas in Ampara District of Sri Lanka*. World News of Natural Sciences* 7 (2017) 16-25
      6. S. Sharma, P. Sachdeva, J. S. Virdi. Emerging water-borne pathogens. *Applied Microbiology* *and Biotechnology*, June 2003, Volume 61, Issue 5–6, pp 424–428.
      7. Abram S. Benensar, control of communicable disease manual, 16th edition, 1995
      8. WHO, Fact sheet, child hood diseases in Africa, diarrheal disease, No. 109, March 1996, pp 1.

NB: ALL QUESTIONS CARRY 10 MARKS

BEST OF LUCK!!