

PUB 101 – Dr. Amato
Spring 2021
Writing Assignment #9
Due Monday 4/19/2021 by 11:59 pm EST

Instructions: Be sure to answer all parts of each question and respond in your own words. Your response should not be mostly quoting from other sources. Please provide a reference or works cited page for any references or citations you use throughout this written assignment. Expected word counts are provided for each question.

Question: We discussed the connections among human health, animal health, and ecosystem health (i.e., One Health) a few times throughout this semester – in infectious disease (Chapter 10 – lectures week 5), COVID-19 (lectures week 5, podcast reading week 5 day 2), and environmental health (Chapters 20-23 – lectures week 10).

1. Describe how human health is impacted by animal health – go back to your notes from infectious disease chapter 10 and week 5 lectures, as well as your notes from environmental health chapters 20-23 and week 10 lectures. (*Length: approximately 150 words*)

Animals and humans often can be affected by many of the same diseases and environmental issues. Zoonotic diseases are the kinds of disease that can be spread between animals and people. More than half of all infections people can get can be spread by animals including salmonella, rabies and leprosy. As Earth's population grows, it is easier for diseases to spread between animals and people. Thus, animals can be an indication of potential human outbreaks. Tracking diseases in animals helps to keep domestic and wild animals' health and also can prevent outbreaks in people. For example, wild water birds are hosts to Influenza A viruses and some of these bird viruses can be passed to humans by consuming or having contact with those birds. These viruses can be deadly to immunocompromised individuals including diabetes patients. Thus, it is important to keep tracking animals' health status.

2. Describe how animal health is impacted by ecosystem health – go back to your notes from Environmental Health chapters 20-23 and week 10 lectures. (*Length: approximately 150 words*)

Since wild animals consume plants and animals in lower hierarchy, they are highly influenced by ecosystem. Environmental issues like harmful algal blooms or lead contamination also can affect the health of animals. For example, oil spill in the ocean deteriorates insulating ability of fur-bearing mammals and water repellency of bird's feathers, which eventually lead to death. Also, if producers such as plants in food chain are contaminated via heavy metals created by human beings, they are bound to getting diseases that can be transmitted to animals in higher hierarchy. Thus, it is important to control waste levels in our environment by filtering waste water or recycling plastic

goods for animals to consumer healthier producers. Otherwise, it would be harder to sustain certain levels of population of animals that are beneficial to human society. For example, bees would not be able to pollinate flowers, leading to extinction of certain species of flower in the world.

3. Describe how human health, animal health, and ecosystem health all converge to impact overall public health. Provide at least one example of a public health issue that is affected by animal and ecosystem health at the population level. Remember to connect your answer to a population or community health level outcome relevant to public health, not just individual health as discussed in Questions 1 and 2. (Length: approximately 150 words)

Ecosystem in this world has a food chain comprised of consumers and producers. Animals in lower hierarchy, also known as herbivores, consume plants that are able to grow by consuming nutrients from soil and water. Animals in higher hierarchy, then, consume those animals in lower hierarchy. If certain number of food chain in each hierarchy is not maintained, it would be harder for animals including humans to sustain its population in the long term. Since we humans produce extraordinary amount of wastes every year, it contaminates our environment such as soil, water and air, which can negatively influence the health of plants and population of animals. For example, lead-contaminated dust from older building lead to lead poisoning in soil, making it harder for plants to fully or healthily grow to become edible to animals. Animals such as humans that consume those ill plants or animals that consumed those plants are exposed to risks of developing illnesses, increasing infection and mortality rate.

To help with your response, here are some additional resources on One Health:

- CDC page on One Health: <https://www.cdc.gov/onehealth/index.html>
- WHO page on One Health: <https://www.who.int/news-room/q-a-detail/one-health>
- One Health Commission: <https://www.onehealthcommission.org>

