

Name: _____

Score: _____ / 100

Disease Detectives Tryout Test

Section 1: Background & Surveillance

Fill in the blank:

1. Distinguish between the following terms and provide one example of each situation. (10 points)

Sporadic disease:

Endemic disease:

Hyperendemic disease:

Pandemic disease:

Epidemic disease:

2. After the disease process has been triggered, pathological changes then occur without the individual being aware of them. This stage of subclinical disease, extending from the time of _____ to onset of disease symptoms, is usually called the _____ for infectious diseases, and the _____ for chronic diseases. During this stage, disease is said to be _____ (no symptoms). The onset of symptoms marks the transition from subclinical to _____ disease. (5 points)

3. List the chain of infection: (6 points)

4. Define the following terms: (7 words)

Zoonosis:

Fomite:

Infectivity:

Pathogenicity:

Pandemic:

Sequelae:

Enzootic:

5. List the 4 functions or critical characteristics of public health surveillance and briefly explain each characteristic. (8 points)

6. Distinguish between the following modes of transmission. (5 points)

Direct contact:

Droplet spread:

Airborne:

Vehicleborne:

Vectorborne:

Section 2: Outbreak Investigation

1. What are the components of the epidemiology triad? (3 points)
2. Explain the pros and cons of each type of epidemiological study: (6 points)

Cross sectional:

Case control:

Cohort:

3. List Hill's Criteria for Causation: (10 points)

4. List three types of biases that could limit the validity of an epidemiological study. Briefly explain each in one sentence. (6 points)

5. Distinguish between Type I and Type II error. (2 points)

6. Are the following diseases caused by bacterial, viral, or parasitic agents? (4 points)

Hepatitis A:

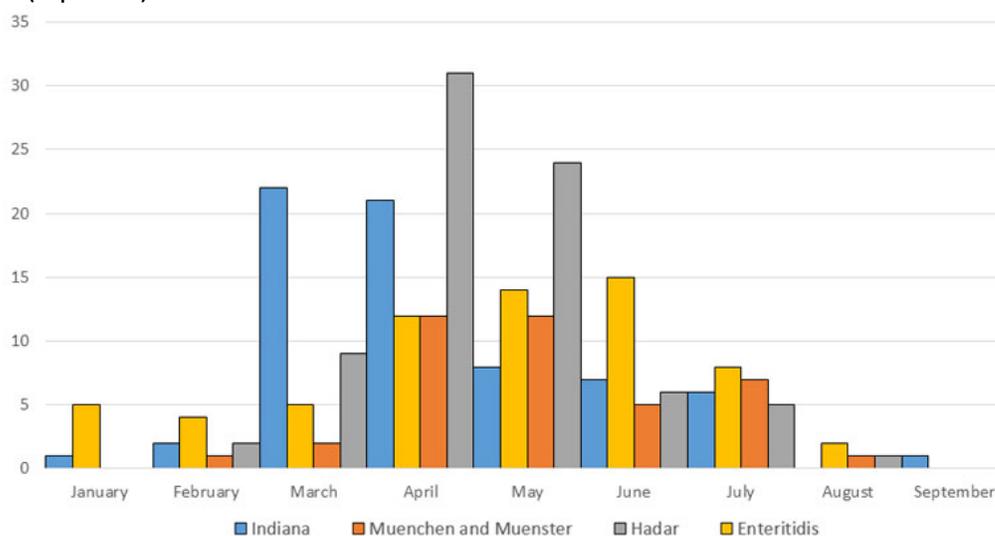
Salmonella:

Cyclosporiasis:

Listeriosis:

Section 3: Patterns, Control, and Prevention

1. Label the x-axis and y-axis of the following epidemic curve. Title the graph appropriately. (3 points)



2. Identify and briefly explain the three levels of disease prevention. (9 points)

In 2017, CDC's Division of Viral Hepatitis (DVH) designed a case-control study with 50 case patients and 70 controls to investigate the causes of a Hepatitis A outbreak in several U.S. states. Among the 50 Hepatitis A patients, 35 reported use of injection drugs and 20 reported use of non-injection drugs. Among the 70 controls, 11 reported use of injection drugs and 15 reported use of non-injection drugs.

3. Calculate the odds ratio for the association between injection drug use and Hepatitis A. (1 point)
4. Calculate the odds ratio for the association between non-injection drug use and Hepatitis A (1 point).
5. Is there a correlation between injection or non-injection drug use and Hepatitis A? Explain. (4 points)

Section 4: Case study

In 2018, a worldwide epidemic of a previously unrecognized syndrome occurred. This condition was characterized by shield-shaped rashes, greenish skin discoloration, and an elevated number of a particular type of white blood cell called eosinophils. The illness was given the name Dragon Pox. Public health officials initially used the following case definition:

Eosinophil count $\geq 2,000$ cells/mm³ and greenish skin in the absence of any other known cause of discoloration (in particular, Wizard Cold and drug reactions).

Table 6.3 Line Listing of 7 Persons with Suspected Dragon Pox

Patient #	Eosinophils (per mm ³)	Greenish Discoloration	Other Known Cause
1	535	Yes	No
2	12,100	Yes*	No
3	2,310	Yes*	No
4	2,064	No	No
5	2,250	Yes	No
6	1,670	Yes*	No
7	2,115	Yes	Wizard Cold

*Severe discoloration affecting > 20% of skin surface

A. Using the information in the line listing above, determine whether or not each should be classified as a case, according to the initial case definition above. (7 points)

B. Eventually, public health officials agreed on the following revised case definition:(26)

A peripheral eosinophil count of $\geq 1,000$ cells/mm³;
Severe greenish skin discoloration affecting > 20% of skin surface
No infection or neoplasm that could account for #1 or #2.

Reclassify each patient using the revised case definition. (7 points)