

Why Bat Viruses Are So Dangerous

Student Discussion Worksheet

Directions:

After reading "[We may be on the brink of a coronavirus pandemic. Here's what that means](#)," originally published on the *Science News* website in late February, answer the questions below.

Individual questions

1. Define the following terms using your own words:

Outbreak
Epidemic
Pandemic

2. What are some characteristics of a disease that could make it likely to cause an outbreak?

3. When is an outbreak considered an epidemic? Are the two words interchangeable? Explain.

4. Can you think of an example of an epidemic that was not caused by a disease? If so, what was the epidemic and what caused it? If not, brainstorm conditions other than disease that could cause an epidemic.

5. What makes an epidemic become a pandemic? What factors might contribute to an epidemic becoming a pandemic? Can you think of an example of a pandemic that has occurred in your lifetime?

Partner work

Working with a partner, choose a disease from the following list: Ebola, H7N9 bird flu, Zika virus, coronavirus (SARS-CoV-2)

1. Do research to answer the following questions:

What causes the disease?

What are its symptoms?

How is the disease typically treated in humans?

2. Search for news articles on the [Science News website](#) about a time when your disease caused an outbreak. Find at least three articles about a single outbreak and construct a timeline that tracks the progression of the outbreak. Be sure to consider an appropriate scope of time. Include in your timeline the dates the articles were published and the most important findings they report. Try to answer as many of the following questions as possible within your timeline.

Where did the outbreak originate?

Where and how did it spread?

What was the approximate rate of spread?

How many people were infected?

What measures were put in place to try to prevent the spread of the disease?

How many people died from the outbreak?

What was the approximate death rate?

Did the outbreak affect certain groups of people more than others?

3. Using evidence from your timeline, did your outbreak become an epidemic? A pandemic? If so, when did it progress from one stage to another? If not, what prevented it from progressing?

Class discussion

After sharing key points about your research with your classmates, discuss the questions that follow.

1. According to [an article](#) by researchers at the University College London and London School of Hygiene and Tropical Medicine, the frequency of reported infectious disease outbreaks has increased in the past three decades and is predicted to continue increasing in the future. What factors might be contributing to the increase in the number of outbreaks reported? Does an increase in the number of reported outbreaks necessarily mean that there are more outbreaks? Explain.

2. Based on your class's research about infectious diseases, what factors may contribute to an outbreak reaching epidemic or pandemic status? For the outbreaks the class chose, was it always clear when an outbreak became an epidemic or pandemic? What factors could affect how and when the status of an outbreak is elevated? Who makes the decision about an outbreak's status and what are the potential implications?