

Ebola outbreak – lesson plan

By Katie Gould, PBS NewsHour Extra Teacher Resource Producer

Introduction

The Ebola outbreak in Western Africa has already claimed the lives of thousands since its initial victim died in December and health organizations around the world fear that the number will only continue to rise. Use this lesson plan to help students learn basic concepts about epidemiology in the context of the current outbreak and apply what they've learned to design a strategy to control the epidemic. We suggest taking the following into consideration:

- This lesson may be done together as a whole class, in small groups or individually.
- Depending on your available time you may choose to only go through some of the resources listed in the main activity or even assign them as homework.
- You also may wish to use these resources as standalone activities or resources to enrich your own lessons. For more stand alone recommended resources please visit our PBS NewsHour Extra Ebola resource collection.
- Note: Because of the nature of the topic, some of the content may be upsetting to students and we suggest you preview them and decide what is appropriate for your students.

Subjects

Biology, statistics, geography, current events, English language arts, media literacy, health

Estimated time

Depending on your available time you may choose to only go through some of the resources or even assign them as homework.

Grade level

Middle and high school

Note: Because of the nature of the topic, some of the content may be upsetting to students.

Materials

We highly recommend that you have access to a computer and the Internet for this lesson as many of the resources are videos. If you wish to have students complete the mission on their

own we suggest they have a computer and Internet access. Links to *all* the text are provided as well as answer sheets for specific activities.

All of the materials needed to teach the lesson can be found at the **Ebola outbreak: mission instruction and resources – digital student guide** on the PBS NewsHour Extra website, see link below:

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Link: <http://ec2-54-204-18-44.compute-1.amazonaws.com/newshour/extra/?p=7730>

Once you are on the page scroll down and explore the materials you'd like to use with your class. You can find links for all text-based materials provided in the materials section on the Ebola outbreak –lesson plan page

Link: <http://ec2-54-204-18-44.compute-1.amazonaws.com/newshour/extra/?p=7719>

Warm up activity options

There are several ways to start the lesson or you can go right into **Ebola outbreak: mission instructions and resources – digital student guide**. Our suggested options are below:

- Hand out **Ebola outbreak: mission instructions and resources – student guide** to students and bring up the **digital version** on your projector or other device to walk students through the mission and demonstrate how students can explore the resources on the webpage.
- Read aloud the **excerpt from *The Hot Zone* by Richard Preston** or have students read the excerpt on their own. It provides, in graphic detail, the symptoms experienced by humans infected with the Ebola virus.
- Show the class a PBS NewsHour Daily News Story from our **Ebola in the News Resource Collection** and use the **handouts** included in the support section to start a class discussion.
- Play the **trailer** from the film “Outbreak” to get students thinking about the impact of an epidemic on a population.

Main activities

At this point you may decide to go through the materials either as a class or have the students do it individually/in small groups. Depending on the available you may choose to only go through some of the resources.

The resources are presented in a way that helps to reinforce the organizational strategy the Center for Disease Control uses and the students will need to know in order to complete their mission successfully. The model is described in detail in the first resource and if you plan to use

the assessment at the end of the lesson plan it is highly recommended you have students start with it.

1. If you haven't already, pass out **Ebola outbreak: mission instructions and resources – student guide** and bring up the **digital version** on your projector or other device to walk students through the simulation and demonstrate how to students can explore the resources.
2. Pass out **Ebola outbreak: the Epidemiologic Triangle – informational text** to students. You may choose to read the text as a class aloud or individually. Use the questions on page two to check for understanding.

The rest of the resources will be organized by the sides of the CDC's Epidemiologic Triangle: agent, host and environment.

Agent the microbe that causes the disease

- **NPR | Flu attack! How a virus invades your body | Video clip**
Learn virus basics from National Public Radio (NPR) with this animated video. Come along for the journey of an invading virus from transmission to infection.
- **Sci-Show | What you need to know about Ebola | Video clip**
Watch this engaging and informative four minute video clip from Sci-Show that covers key topics such as the history of Ebola, how it is transmitted, possible cures and more.
- **PBS NewsHour | This is how you get Ebola | Article**
This article by Ruth Tam takes you on a detailed tour of the Ebola virus.

Host the organism harboring the disease

- **The Hot Zone by Richard Preston | Excerpt**
Learn about the devastating symptoms humans infected with Ebola experience in this excerpt from the frightening true story *The Hot Zone* written by Richard Preston.
- **Frontline | Ebola Outbreak | Documentary film**
Ebola Outbreak is a 27-minute documentary film from Frontline that brings the viewer into the center of the health crisis burning through West Africa. The story follows the lives of the patients, doctors and volunteer workers joined together by the deadly virus Ebola in its worst recorded outbreak in history.
- **PBS NewsHour Extra | Ebola outbreak: analyzing the data | Worksheet**
Learn more about the patterns in the outbreak and better understand the spread of the Ebola virus in its human hosts by analyzing the latest data from the World Health Organization. Find the answers to the worksheet in the materials section on the website.

Environment *the external factors that cause or allow disease transmission*

- **National Geographic | Destination: West and Central Africa | Video clip**
Use this culturally-focused background information on Western Africa from National Geographic to learn about the role traditions play in the lives of those currently faced with the deadly Ebola outbreak. Pay special attention to importance of the funeral rites and consider how they may conflict with medical procedures now being used to halt the spread of the virus.
- **World Health Organization | Ebola situation in Liberia: non-conventional interventions needed | Informational text**
Use this situation assessment from the World Health Organization for the most up to date analysis on the crisis.
- **PBS NewsHour Extra | U.S. will ramp up efforts to fight Ebola | Video clip**
Watch this PBS NewsHour video report to hear President Obama's plan to help fight the crisis, and a discussion from public health experts on the rapidly escalating epidemic in Western Africa.
- **PBS NewsHour | WHO: 'Many thousands of new cases' of Ebola expected in Liberia | Article**
Use this PBS NewsHour article written by Larisa Epakto to help contextualize the challenges faced by the affected African country of Liberia and partner health organizations.

Assessment

Once the students have completed their research they will now organize their information and then apply it to create a targeted strategy to contain the Ebola outbreak and save thousands of lives. Pass out **Ebola outbreak: strategic plan - assessment** to students and have them complete it. Students will be asked to do the following:

- Fill out the Epidemiological Triangle for the current Ebola outbreak.
- Organize key facts from your research by agent, host and environment.
- Design a strategy to contain the Ebola outbreak that targets one side of the triangle and support your plan with evidence. Consider what challenges you might face in the implementation of the plan.