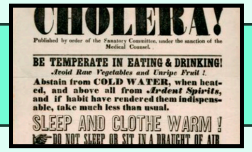


OVERVIEW

BIG IDEA

Epidemics are influenced by factors that can usually be controlled; historically, humans did not understand these factors or know how to prevent them.

OBJECTIVE

9.2: Identify factors shaping historical epidemics & explain their impact on health outcomes.

AGENDA

1. Major Epidemics Throughout Time
2. Epidemics & Pandemics
3. Infectious Disease Team Challenge
4. Patterns & Conclusions

HOMEWORK

Research an epidemic & write a letter to another person describing it. In the letter, pretend you are a person living in the area and time period affected and explain factors you believe influenced the outbreak as well as its impact on society.

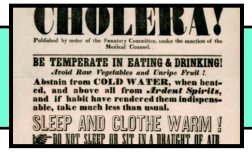
LESSON 9.2
Historical Epidemics

SUMMARY:

This lesson will challenge students to trace the history of epidemics on humanity by studying a timeline of historical epidemics and teaming up and teaching the class about one communicable disease and working to make conclusions based on the collaborative knowledge shared.

STANDARDS:

IL Learning Standard 22.A.5c: Explain how health and safety problems have been altered by technology, media and medicine (e.g., product testing; control of polio; advanced surgical techniques; improved treatments for cancer, diabetes and heart disease; worksite safety management).



MODULE 9: EPIDEMIOLOGY LESSON 9.2

Historical Epidemics

Obj. 9.2: Identify factors shaping historical epidemics & explain their impact on health outcomes.

DO NOW

Major Epidemics Throughout Time

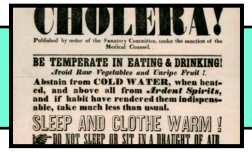
The table shows major epidemics throughout history. Use it to answer the questions on the following page.

Death Toll	Location	Date	Disease	Notes
ca. 40% of population	Europe	541-2	Bubonic plague	Known as Plague of Justinian, due to the name of the Byzantine emperor in power at the time.
30% to 70% of population	Europe	1346-50	Bubonic plague	Known as "Black Death" or "Black Plague," first return of the plague to Europe after the Justinianic plague of the 6th century.
30% to 90% of population	Southern New England	1616–1619	Unknown	Unknown cause. Latest research suggests epidemic(s) of leptospirosis with Weil syndrome. Classic explanations include yellow fever, bubonic plague,influenza, smallpox, chickenpox,typhus, and syndemic infection of hepatitis B and hepatitis D.
280,000	Italy	1629–1631	plague	Italian plague of 1629–1631
100,000	England	1665–1666	plague	Great Plague of London
>>100,000	Asia, Europe	1816–1826	cholera	first cholera pandemic
>>100,000	Asia, Europe, N. America	1829–1851	cholera	second cholera pandemic
1,000,000	Russia	1852–1860	cholera	Third cholera pandemic
616	England	1854	cholera	Broad Street cholera outbreak
1,000,000	worldwide	1889–1890	influenza	1889–1890 flu pandemic
75,000,000	worldwide	1918–1920	influenza	1918 flu pandemic
2,000,000	worldwide	1957–1958	influenza	Asian flu
1,000,000	worldwide	1968–1969	influenza	Hong Kong flu
>30,000,000	worldwide	1981–present	influenza	Hong Kong flu
775	Asia	2002–2003	SARS coronavirus	SARS
14,286	worldwide	2009–2010	influenza	2009 flu pandemic

Source: Wikipedia, List of Epidemics (http://en.wikipedia.org/wiki/List_of_epidemics)

DO NOW: *Questions*

1. Which epidemic in the past 200 years killed the most people?
2. What type of disease has been most prevalent in major outbreaks over the past 200 years?
3. Which two epidemics included in this table had the LEAST number of victims? Why were they significant?
4. Why do you think recent major disease outbreaks seem to be spreading worldwide, rather than just being contained in one or a few continents as outbreaks in the past often were?



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2) What type of disease has been most prevalent in major outbreaks over the past 200 years?

3) Which two epidemics included in this table had the LEAST number of victims? Why were they significant?

4) Why do you think recent major disease outbreaks seem to be spreading worldwide, rather than just being contained in one or a few continents as outbreaks in the past often were?

DISCUSS

In addition to the outbreaks included in the table, what other epidemics or pandemics have you heard of? What factors make the spread of disease considered an epidemic or pandemic?

NEW INFO

Epidemics & Pandemics

What is an epidemic? How is a pandemic different?

epidemic: any unexpectedly large number of cases of an illness, health related behavior, or other health-related event in a particular population at a particular time.

pandemic: an epidemic that is occurring in many parts of the world.

Epidemic or Pandemic?

_____ A. Stomach Flu at our school
_____ B. HIV/AIDS
_____ C. Alcoholism in the Southwest US
_____ D. Obesity

REVIEW:

Communicable disease (infectious): Can be transmitted from an infected person, animal, or object to another person
Noncommunicable disease: Non-transmissible (can't be "caught")
Chronic disease: Lasts longer than 3 months, sometimes for the remainder of one's life
Acute disease: Peak severity of symptoms occurs and subsides within 3 months of onset, usually within days or weeks

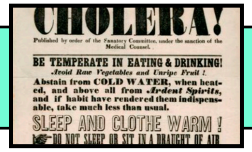
DO NOW: Answers:
1. 1918 Flu Epidemic
2. Influenza
3. The Broad Street Cholera outbreak of 1854 & the SARS outbreak of 2002-03
4. Transatlantic travel is ubiquitous in our time. Planes can carry diseases cross-continent in a matter of hours.

DISCUSS: Ask students if they have heard of H1N1? The obesity epidemic? Ask students the difference between an epidemic of something like influenza and something like obesity.

NEW INFO: Refer students back to the table on page 1 of the lesson workbook. Ask them to circle the pandemics (they should recognize that these are the ones that are affecting multiple continents or listed as "worldwide")

Answers: A) Epidemic; B) Pandemic; C) Epidemic; D) Epidemic, but many scientists expect it to slowly transitioning to pandemic levels as countries become more developed and gain access to cheap processed foods

Lesson 5.4 (in Module 5 – Public Health) introduces these concepts.



Communicable, Noncommunicable, Chronic, Acute? *(List all that apply!)*

_____ A. Stomach Flu at our school
_____ B. HIV/AIDS
_____ C. Alcoholism in the Southwest US
_____ D. Obesity

READ

Infectious Disease Throughout Time

Challenge: You are a medical anthropologist studying the history of major epidemics over time. You and a team of health historians will specialize in one particular infectious disease and make conclusions in terms of:

a. life expectancy
b. causes of death
c. beliefs about illness
d. medical discoveries
e. context of epidemics

Step 1: Write down your team's assigned disease: _____

Step 2: Read about your disease, taking notes on both the **timeline**.

Step 3: Summarize your notes with respect to each focus area in the table on the following page.

Step 4: Present information about your disease to the class

Step 3: Draw **conclusions** once you hear information from all teams.

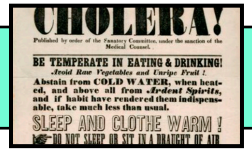
TIMELINE:

Epidemic	Middle Ages (500-1500)	Renaissance (1500 – 1700)	18th Century (1701-1800)	19th Century (1801-1900)	20th Century (1901 – 2000)	21st Century (Today)

Use the space below to continue your notes, using the timeline above as your guide:

NEW INFO: Answers:
A) Communicable; Acute
B) Communicable; Chronic
C) Noncommunicable; Chronic
D) Noncommunicable; Chronic

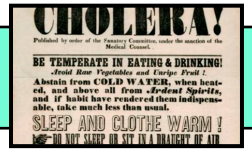
READ: Ask students what they ALREADY know about how these things have changed over time? (Life expectancy, Causes of death, Beliefs about illness, Medical discoveries, and types/context of epidemics). Priming them to the types of trends & conclusions will help them see the "big picture" when they dig into information about their particular disease pattern over time, rather than getting lost in the details.



Focus Area/ Questions	Cholera	Smallpox	Plague	HIV/AIDS	Tubercu-losis
Life Expectancy: How did your disease affect life expectancy? What time period did it cause the most death? At what point was your disease less of a threat to humanity?					
Causes of Death: Is the disease communicable, noncommunicable, chronic, acute? How is it spread? How does it kill people?					
Beliefs about Illness: What did people believe about the disease? Did these beliefs change over time? If so, how?					
Medical Discoveries: What breakthroughs affected the likelihood of epidemics in your time period?					
Context of Epidemic: What happened during or after your epidemic?					

THINK: Break the class into five groups (or ten with two groups focusing on each disease). Assign each to one of the five diseases (cholera, smallpox, plague, HIV, or TB) or allow them to choose as long as all are represented. Have students navigate to the Disease Detectives website.

The website is:
www.diseasedetectives.org/timeline



ASSESS

Patterns & Conclusions

1) Life Expectancy: In what time period did life expectancy increase the most? Why?

2) Causes of Death: How did the types of diseases people commonly fell ill from change over time? Over what decade(s) did this change occur?

3) Medical Discoveries: What were the major types of medical discoveries that reduced epidemics of communicable disease and increased average life expectancy?

4) Beliefs about Illness: How did beliefs about the causes of illness and outbreaks change over time?

5) Epidemics: In what ways have the the patterns and trajectories of epidemics changed over time?

HOME WORK

Research an Epidemic

Choose any epidemic that you have not yet studied in class. Research the epidemic so that you understand its history in terms of:

a. life expectancy
b. causes of death
c. beliefs about illness
d. medical discoveries
e. context of epidemic

Then pretend you are a survivor of the epidemic (in any country, at any period of time!) and write a letter to a friend living on another continent, explaining the epidemic and it's impact on yourself, you family and friends, your community and your nation.

ASSESS: POSSIBLE ANSWERS

1) Life Expectancy: Increased by more than 30 years in 20th century (47 to 78)
2) Causes of Death: communicable (infectious) to noncommunicable (chronic) shift began in 1920's
3) Medical Discoveries: Antibiotics, vaccines, diagnostic & treatment tools
4) Beliefs about Illness: Divine intervention—people were being punished for their sins then… Miasmas theory: diseases spread by miasmas or "bad air"then… Germ theory: diseases cause by microorganisms
5) Epidemics: History of uncertain explanations of origin and patterns; Changed with transportation patterns; Scientists began collecting & analyzing data

HOMEWORK: The purpose of this homework assignment is to challenge students to learn more about epidemics in an intimate way, by imagining themselves in that time period and situation.