Title: Dealing with Epidemics and Infectious Disease: The Rockefeller Foundation and the Mexican Hookworm Epidemic of the 1920s.

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Historical Background:

In the early twentieth century, The Rockefeller Foundation made great strides in the identification, treatment, and prevention of Hookworm both in the United States and abroad. On October 26, 1909, John D. Rockefeller Sr. provided a monetary gift of $1,000,000 for the establishment of the Rockefeller Sanitary Commission for the Eradication of Hookworm. Over the course of the next five years it was John D. Rockefeller’s intention to help state and local officials work to end a parasitic disease that “is by no means confined to one social class; it takes its toll of suffering and death from the highly intelligent and well-to-do as well as from the less fortunate.”

Following John D. Rockefeller’s philosophy of philanthropy, the Rockefeller Foundation’s fight against hookworm was designed to remove a setback that would keep the individual from living up to their own potential. Ever fearful of having donations perceived as an endless handout from which an individual could be financially supported, the Rockefeller Sanitary Commission for the Eradication of Hookworm was given a timeline of five years in which local governments and medical physicians could learn about this disease and continue the efforts that the foundation has started. As promised, the Sanitary Commission’s funding ended on December 31, 1914 in the United States after great strides in population awareness and treatment were made. On a global scale, the Rockefeller Foundation’s International Health Commission (later named the Rockefeller Foundation’s International Health Board) began a program for hookworm eradication beginning in 1913. Between 1924 and 1928, a similar treatment program took place in the Republic of Mexico under the leadership of Dr. Andrew J. Warren. Although treated by various nations in the past, the hookworm parasite continues to afflict approximately 576 to 740 million people in the world as of the year 2011.

Rationale:

This lesson is designed primarily for use in the New York State Global History curriculum as a modern example to compare to the Bubonic Plague that impacted Asia and Europe in the 1400s. Additionally, this lesson can also be utilized in the curriculum of early twentieth century American History or Science lessons focusing on parasites.

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4 “Rockefeller Archives Center,” http://www.rockarch.org/collections/rockorgs/hookwormadd.php
5 “General Plan for Campaign Against Hookworm in the Republic of Mexico” September 24, 1923, Rockefeller Archives Center.
Connections to the New York State Curriculum Standards:

**Standard 2: World History:** use a variety of intellectual skills to demonstrate their understanding of major ideas, eras, themes, developments, and turning points in world history and examine the broad sweep of history from a variety of perspectives.

**Key Idea 1:** analyze changing and competing interpretations of issues, events, and developments throughout world history

**Key Idea 2:** explain the importance of analyzing narratives drawn from different times and places to understand historical events.

**Time:** This lesson can be completed in approximately three forty minute classes. This lesson can be easily condensed or further modified depending on the teacher’s particular class needs.

**Essential Questions:**
1. How does the Mexican Hookworm Epidemic of the 1920’s compare to the Bubonic Plague in Europe during the 1400’s?
2. How did the Rockefeller Foundation impact the prevention and treatment of hookworm disease in Mexico during the 1920’s?
3. What is the role of private organizations in the eradication, treatments, and prevention of disease?
4. How does society respond to outbreaks of infectious disease?
5. Is it justifiable to continue use a medicine to successfully treat the masses if it produces dangerous side effects in a few individuals?

**Student Objectives:**
1. Students will be able to identify how humans become infected with the Hookworm parasite.
2. Students will be able to formulate an understanding of how the improvement of sanitary living conditions can reduce the spread of communicable diseases.
3. Students will be able to evaluate world maps, eyewitness accounts, and scientific data to determine the military, political, and social conditions surrounding the Rockefeller Foundation’s campaign to eradicate hookworm disease in 1920’s Mexico.
4. Students will create a Venn Diagram to compare the Bubonic Plague of 1400’s Europe to the Hookworm Disease.
Procedure / Instructional Plan:

I) Preparation Phase / Motivation:
   • Students will complete a “Do Now” activity in which they will analyze the symptoms of a patient named John Doe. John is exhibiting some of the possible symptoms experienced by individuals suffering from Hookworm. (It is also important to note that in some patients no symptoms are exhibited.)

II) Cooperative Group Learning Activity:
   • Students will work together in cooperative groups to analyze a series of documents and answer accompanying scaffolding questions located in the student question packet.
   • Each station will allow students to explore another aspect of the Hookworm Disease in 1920’s Mexico.
   • Five stations are included in this lesson.
     ▪ Station 1: “Hookworm Outbreaks in the Republic of Mexico.”
     ▪ Station 2: “Treatment Plan for the Eradication (Destruction) of Hookworm”
     ▪ Station 3: “The International Health Board’s Financial Policy with the Mexican Government in Politically Unstable Times.”
     ▪ Station 4: “Who was infected in the Mexican City of Alvarado?”
     ▪ Station 5: “Why is Hookworm spreading through Alvarado, Mexico?”

III) Summary Activity
   1. Students will re-examine the case of John Doe that was discussed during the “Do Now” activity in this lesson. They will then hypothesize the causes of the hookworm disease as learned through the documents provided during the cooperative group learning activity.
   2. Students will compare their hypotheses to the causes and effects illustrated in the 10 minute film entitled “Unhooking the Hookworm” (1920) that was developed by the Rockefeller Foundation’s International Health Board to assist in the prevention of the disease. http://www.rockarch.org/feature/hookworm.php
   3. Students will complete a Venn Diagram homework assignment to compare and contrast the Hookworm Disease to the Bubonic Plague of 1400’s Europe.
“The Fight to Eradicate (Destroy) Hookworm Disease in 1920’s Mexico”

Do Now: Read the following scenario:

The Date: January 1924

The Place: Alvarado, Mexico

The Disease: Last Wednesday, John Doe started to feel an itching sensation between the toes on his right foot. Days later, he began to cough up phlegm and blood occasionally followed by nausea, vomiting, diarrhea, and an overall sense of being tired. As the months progressed, John Doe had less and less energy to accomplish the daily tasks that he once completed even though he still continued eating the same diet that he always had. From friends and family members who were also feeling lethargic just as he was, rumors began to spread that the entire village had succumbed to “the germ of laziness.”

Do Now Question: List three ways that John Doe suffered (was sick or in pain).

1. ____________________________________________________

2. ____________________________________________________

3. ____________________________________________________
Station 1

Hookworm Outbreaks in the Republic of Mexico

Directions: Answer the following questions based on the documents provided:

1. According to the documents, when did the International Health Board’s hookworm campaign begin in Mexico?

_______________________________________________________________________

_______________________________________________________________________

_______________________________________________________________________

2. Identify how many people lived within zones A, B, and C.

_______________________________________________________________________

_______________________________________________________________________

_______________________________________________________________________

3. Which zone located on the map was considered the highest priority for treatment?

_______________________________________________________________________

_______________________________________________________________________

_______________________________________________________________________

4. Using your textbook and the given map, how did climate and topography impact the spread of hookworm?

_______________________________________________________________________

_______________________________________________________________________

_______________________________________________________________________
Station 2

Treatment Plan for the Eradication (Destruction) of Hookworm

Directions: Answer the following questions based on the documents provided:

1. According to the report, how many cases of infection exist?

   ________________________________________________________________

   ________________________________________________________________

   ________________________________________________________________

2. Why is the mass treatment of patients considered the best course of action when an outbreak of hookworm is located?

   ________________________________________________________________

   ________________________________________________________________

   ________________________________________________________________

3. Identify the medications used for the treatment of hookworm.

   ________________________________________________________________

   ________________________________________________________________

   ________________________________________________________________

4. Did any side effects exist in the use of these medications on patients as well as physicians? Explain your answer using at least two examples from the documents.

   ________________________________________________________________

   ________________________________________________________________

   ________________________________________________________________
The International Health Board’s Financial Policy with the Mexican Government in Politically Unstable Times

Directions: Answer the following questions based on the documents provided:

1. Identify one nation located in the Americas who also is working in partnership with the Rockefeller Foundation’s International Health Board to eradicate (destroy) hookworm?

   ________________________________
   ________________________________
   ________________________________

2. How does the International Health Board’s payment plan ensure that the Mexican Government will one day take over complete financial responsibility for the program?

   ________________________________
   ________________________________
   ________________________________

3. Why is it difficult for the International Health Board to treat Mexicans in the most infested areas of the country?

   ________________________________
   ________________________________
   ________________________________

4. Identify three areas of the country that were considered difficult to access?

   ________________________________
   ________________________________
   ________________________________
Station 4

**Who Was Infected in the Mexican City of Alvarado?**

*Directions: Answer the following questions based on the documents provided:*

1. Using a dictionary, define the term “Uncinaria.”

______________________________________________________________________

______________________________________________________________________

______________________________________________________________________

2. How did doctors test humans for any signs of the Hookworm disease?

______________________________________________________________________

______________________________________________________________________

______________________________________________________________________

3. During which ages were males and females most infected in Alvarado?

______________________________________________________________________

______________________________________________________________________

______________________________________________________________________

4. How many boys and girls were examined during the course of examinations in Alvarado?

______________________________________________________________________

______________________________________________________________________

______________________________________________________________________
Station 5

Why is Hookworm Spreading through Alvarado, Mexico?

Directions: Answer the following questions based on the documents provided:

1. How many people live in the city of Alvarado, Mexico?

______________________________________________________________________
______________________________________________________________________
______________________________________________________________________

2. What is one thing in common between boys and girls in Alvarado?

______________________________________________________________________
______________________________________________________________________
______________________________________________________________________

3. Why is there a marked increase in hookworm eggs on the ground around Alvarado?

______________________________________________________________________
______________________________________________________________________
______________________________________________________________________

4. Identify another country in the Americas in which the Rockefeller Foundation’s International Health Board has worked to eradicate (destroy) hookworm.

______________________________________________________________________
______________________________________________________________________
______________________________________________________________________
“Lesson Summary Activity”

The Causes of the Hookworm Disease

Directions: Based on the documents, determine the causes for John Doe’s “germ of laziness.”

1. __________________________________________
   (#1 should be the most important cause)

2. __________________________________________

3. __________________________________________

4. __________________________________________
Homework Assignment

Directions: On a separate piece of paper, create a Venn Diagram (see below) that compares and contrasts the Hookworm Disease to the Bubonic Plague.

Be sure to include the following categories in your comparison:

- Personal Hygiene habits.
- The disease’s spread from person to person or town to town.
- Medical treatments available for the sick.
- Political responses to outbreaks.
- Social changes implemented to prevent further outbreaks.
- Climactic influences on the disease’s outbreak.
- Locations in which infection rates were highest.
- Scientific causes for the infection of humans.
"Hookworm Outbreaks in the Republic of Mexico."

(General Plan for the Campaign against Hookworm in the Republic of Mexico, September 24, 1923, R.A.C.)

PROBABLE AREAS OF GREATEST INFECTION: According to information at hand the Zone of greatest infection is "B"; the next "A" and the least "C". Zone "A" contains a population of 1,184,400 and the least "C". Zone "B" 6,340,300 or about 50% of the population of Mexico. It is therefore considered advisable to begin operations in Zone "B" and later to extend them to Zones "A" and "C".

(General Plan for the Campaign against Hookworm in the Republic of Mexico, September 24, 1923, R.A.C.)
“Treatment Plan for the Eradication (Destruction) of Hookworm.”

(General Plan for the Campaign against Hookworm in the Republic of Mexico, September 24, 1923, R.A.C.)

(Memo from Dr. A.J. Warren to the International Health Board, July 26, 1924, R.A.C.)
“The International Health Board’s Financial Policy with the Mexican Government in Politically Unstable Times.”

I am not sure of the exact figures but they are more or less as above. My personal recommendation would be that, even from the beginning of the work, the higher salaried Mexican officials or employees of the Department be paid by the Mexican Government. As well as I can foresee at present there should not be many high salaried officials.

(F - That the I.H.B. could send as many of their hookworm staff as they desired to take part in the work it being understood that the salaries of these men would be paid by the I.H.B.)

The impression you have regarding the peacefulness of the entire Republic should be modified. Those areas in which exist the highest rates of infestation are not yet accessible for work. The State of Veracruz, the isthmus and those States on the Gulf are not pacified. I am very anxious to enter the State of Veracruz and some days ago I addressed an official letter to the Departamento requesting their opinion as to the advisability of such action. I was called in and told personally that officially the area in question was pacific, and any official reply to my letter must necessarily be in that tone. But actually the area was not calm and I was requested to not enter the area for a month.
“Who was infected in the Mexican City of Alvarado?”

The most accurate method of determining if a person was infected with Hookworm was to count worm eggs that would be passed through human feces.

- **0 – 25 worms**: no symptoms
- **26-100 worms**: light disease
- **101-500 worms**: moderate disease
- **501-1000 worms**: severe disease
- **1001-3000 worms**: very severe disease

(Severe Hookworm infestation in Alvarado, Mexico, An Urban Community: The Epidemiology Of Which Was Not Influenced By Agricultural Occupations, July 20, 1925, R.A.C.)
“Why is Hookworm spreading through Alvarado, Mexico?”

Alvarado is a town of fifty six hundred inhabitants situated in the State of Veracruz and on the coast of the Gulf of Mexico. The town is located on the point of a peninsula.

The girl does not wear shoes or other article for the protection of her feet as is the case when she becomes older. As the result of her daily contact with the polluted earth she acquires a very definite increase in the egg output. By the age of ten to twelve this stage of metamorphosis is more or less complete and with.

During this stage of transition dress it is the universal custom to wear shoes or some other article for the protection of her feet. The article most often worn is a wooden sandal that costs a few centavos. These sandals protect well the foot against the ground and in consequence the increase in the egg output is abruptly terminated. The effect of shoes on the infestation with Uncinaria has been shown by Smillie in Brazil.

The men and boys do not wear shoes. Those engaged in the fishing trade say shoes are not compatible with their occupation. Aside from the reason of economy another probable reason why shoes are not worn is on account of the heavy sand which is not uncomfortable to bare feet. The wearing of shoes by the old men is fairly common.