

## Problem Based Learning Exercise

### “Mal de la Rosa”

#### Scenario Part 1

In 1735, Don Gaspar Casal described a condition in the Spanish town of Aveida in the Asturias region. The local term was “mal de la rosa” from the peculiar red necklace-like rash around the exposed regions of the neck. The condition was later described in other countries, including Northern Italy, Southern France, Romania, Russia and Egypt. It was often mistaken for leprosy, and was associated with poverty and the production of corn. The disease had a progressive course and was characterized by dermatitis, diarrhea, dementia and death, coined the “4 D’s”.

The condition was not conclusively identified in the United States until 1907, but there were reports of similar types of illness as far back as the 1820’s. By 1912, the state of South Carolina alone reported 30,000 cases and a mortality rate of 40%. In 1914, Surgeon General Rupert Blue assigned an officer from the US Public Health Service (PHS) to investigate the cause. Given below is some of the investigator’s findings.

From the Georgia State Sanitarium for the treatment of insanity:

Group	Total Number	Cases	Percentage
Inmates	418	32	7.65
Employees	293	0	0.00

Note: The number of cases refers to those who developed the condition after admission to the sanitarium.

From the orphanage at Jackson, MS on Jul 1, 1914, 68 of 211 orphans had the disease, giving a prevalence of 32%. A further categorization by age group yielded the following:

Age Group (yrs)	Total	Affected	Percentage
< 6	25	2	8.0
6-12	120	65	54.2
> 12	66	1	1.5

#### Tasks

1. What hypotheses might the investigator have proposed to account for the cause of the disease?
2. What experiments might he have conducted to prove or disprove the hypotheses?
3. How does epidemiologic data help in identifying the cause or source of disease?

## Scenario Part 2

In the U.S., the disease was called pellagra. Other physicians of the time were searching for a germ as the cause, but the PHS investigator theorized that diet was a crucial factor. He studied children in two Mississippi orphanages and made several observations. Children fed a diet of fresh meat, milk and vegetables recovered from pellagra. Those who ate the customary corn based diet did not. Orphans without the disease who were fed the new diet did not contract pellagra.

The investigator also experimented on prisoners in Mississippi. He hypothesized that pellagra could be induced when the existence of a particular substance was removed from the diet of healthy individuals. In exchange for pardons from the Governor, eleven prisoners ate a corn-based diet. After five months, six of the eleven prisoners developed pellagra rashes.

### Tasks

1. What hypotheses might the investigator have made about observed differences between those eating fresh food and those eating the corn based diet?
2. What are the ethical issues related to the types of studies he conducted?
3. What other studies might the investigator have conducted to disprove the hypothesis that a microorganism caused the disease?

## Scenario Part 3

In 1916, the investigator began a study to prove that there was no “pellagra germ,” conducting what he called “filth parties.” He injected his assistant with 5 mL of blood from a pellagrin and was injected by his assistant with 6 mL of the same blood. They rubbed their noses and throats with swabs taken from the nose and throat of a pellagrin. They made capsules containing scabs from pellagrin’s sores and swallowed them. Others joined the filth parties, including the investigator’s wife. None of the volunteers developed pellagra.

### Tasks

1. What conclusions can be drawn from these studies?
2. What are the ethical implications of these types of studies?
3. What types of epidemiological studies might be done today?
4. Who discovered the cause of pellagra and what is it?

## Scenario Part 4

In 1920, a dramatic drop in cotton prices significantly decreased income among Southern farmers. The resulting poverty dramatically increased the number of pellagra cases. The PHS investigator made public predictions that as many as 100,000 pellagra cases would develop in 1921 resulting in 10,000 deaths, and that 1922 would be even worse. Blaming the sharecropper system and the resulting poverty and poor nutrition, he advocated social reform, recommending crop diversification and public assistance for the poor.

The Public Health Service (PHS) appealed to the government and President Harding approved an increased budget for hospitalization and supplies. The PHS also appealed to Southerners to provide local relief for the poor. The response from the South was unexpected. Southerners were angered by these directives and complained that Northerners had characterized the South in a defamatory manner that would stymie economic development of the region. Led by a South Carolina Congressman, a group of Southerners publicly condemned the North and refused to comply with PHS recommendations.

The increasing poverty ultimately did result in dramatic increases in pellagra-related deaths. The destruction of cotton crops by boll weevils in the following years forced farmers to diversify their crops, improving their diet and reducing the incidence of pellagra.

### **Tasks**

1. What social reform issues are raised in this scenario?

### **Author Information**

Laurine T. Charles, MHS  
Coordinator of Academic Affairs  
College of Health Professions  
Medical University of South Carolina  
45 Bee Street  
P.O. Box 250701  
Charleston, SC 29425  
(843) 792-4103 (Phone)  
(843) 792-4024 (FAX)  
[charlelt@musc.edu](mailto:charlelt@musc.edu)

Adapted from Rangachari, P.K. (1998). A southern tale. In *Writing Problems: A Personal Casebook*. Programme for Faculty Development, Faculty of Health Sciences, McMaster University, Hamilton, Ontario, Canada, p. 27.

Funding provided by the South Carolina Sustainable Universities Initiative, Patricia Jerman, Program Manager. Information available at: [pjerman@environ.sc.edu](mailto:pjerman@environ.sc.edu)