
Panama Canal Constructions: Review of Healthcare Issues That Accompanied the Process

22,000 laborers died during the French effort to build a canal through the Isthmus of Panama in the 1880s. Most of these workers died after contracting yellow fever or malaria. The French were forced to abandon the project in 1889 after spending \$287 million. In 1904, the United States gained control of the land and began the process of building the canal. Many of the American laborers came down with yellow fever and the American led project was facing many of the same problems the French had faced. Dr. William Gorgas led the charge to eradicate mosquitos in the Panama Canal Zone, which led to the eradication of yellow fever and dramatically reduced the number of malaria deaths.

Before the germ theory of disease became widely accepted, miasma theory was widely believed to be the cause of epidemics. It was believed that “night air” or poisonous vapors from swamps were the cause of diseases like yellow fever and malaria. As early as 1848, in a paper published in the New Orleans Medical and Surgical Journal, Dr. Josiah Nott stated his belief that insects may be the vector in which diseases like malaria and yellow fever are transmitted. In 1881, Cuban physician Carlos Finley identified a specific species of mosquito that was spreading yellow fever in Cuba. Without concrete evidence, these reports were mostly ignored by the medical community. In 1901, Havana experienced a yellow fever epidemic while the city was under American occupation as a result of the Spanish-American War of 1898. Dr. Walter Reed, head of the American medical corps in Cuba, began to buy into the idea that mosquitos may be the vector for yellow fever. With the help of Army Colonel Dr. William Gorgas, they instituted a plan to eradicate mosquitos in Havana. In just eight months, cases of yellow fever fell by 95 percent.

The United States took over the Panama Canal project in 1904. A few months into the project, yellow fever began to take its toll on the American workforce. Many of the native workers had gained childhood immunity from yellow fever and other tropical diseases, but the white American workers were not immune and nearly 75 percent of American workers returned home. American workers would write letters home warning about yellow fever and imploring their friends and family to stay home, no matter how bad their job prospects were in the U.S. Hundreds of men would die each year due to yellow fever, which paralyzed construction. Dr. William Gorgas was assigned to be the medical officer overseeing the project. With his successful mosquito eradication protocol in Havana, Gorgas was convinced that yellow fever was transmitted by mosquitos and laid out a systematic plan to eradicate mosquitoes in the Panama Canal Zone.

Gorgas proposed a comprehensive plan to eradicate mosquitos in the canal zone, which would require \$1 million in funding. The Panama Canal Commission, who was responsible for approving any plans in the canal zone, approved only \$50,000 to be used by Gorgas for his mosquito eradication efforts. Most of the Panama Canal Commission, including chief engineer John Walker believed the mosquito vector theory to be hogwash, referring to it as the “veriest balderdash.” When the Panama Canal Commission attempted to oust Gorgas, President Roosevelt directed new chief engineer John Stevens to give Gorgas the green light and funding to carry out his plans. Gorgas used \$90,000 on mosquito screens alone to protect living

quarters and government buildings. He directs fumigation of worker's housing, drainage of all pools around living quarters, and the use of oiling to destroy mosquito larvae in standing water sources. As a result of this program, yellow fever was virtually eradicated and the death rate of malaria among the workforce fell to 1.23 per 1,000 by the end of 1909.

The construction of the Panama Canal faced many engineering obstacles. The engineering difficulties were compounded by the tropical diseases that were decimating the workforce. It wasn't entirely clear how disease like malaria and yellow fever were transmitted at the time, but Dr. William Gorgas was convinced that mosquitos were the vectors that were carrying these deadly tropical diseases. Gorgas carried out a successful plan to eradicate mosquitos, which led to the eradication of yellow fever and a dramatic reduction in malaria cases in the Panama Canal Zone.

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