Throughout the history of the world, pills man has strived to complete tasks in the fastest possible way and travel is no different. Think of the ever elusive Northwest Passage to Asia or the Silk Road to China. But these routes pale in comparison to the best shortcut in the world: the Panama Canal. It saves 18,000 miles of trans-oceanic travel for San Francisco bound freighters from New York and is hands down one of the greatest engineering feats of all time. But the history of this canal has been a bumpy one fraught with many deaths, triumphs, and power struggles. The story all starts when a former pig salesman from Spain named Vasco Nunuz Balboa discovered the Pacific Ocean from the Darien and claimed all of the adjacent land for Spain. Some years later in 1529, King Charles V of Spain recommended that a large ditch be cut through the isthmus in order to make the journey for galleons carrying gold from Peru and Ecuador much safer and faster. But bloody conflicts in Europe made funds difficult to come by, so for the next 300 hundred years the dream was put on hold. It wasn't until the gold rush of 1849 that people began to take notice of the profitability and need for such a canal. The French jumped on the opportunity and in 1880 the Geological Society of Paris signed a treaty with the Colombian government to start working on the canal first.

The French attempt was led by Ferdinand de Lesseps, who was the chief engineer for the Suez canal. This is where we have a problem. Lesseps seems to have been a stubborn old man with a big head full of arrogance. He thought that just because he built a canal in the desert, he could build one through the jungle. Wrong! Between the years 1880 and 1888 the French worked on the Canal and lost over 20,000 workers mainly to Malaria and Yellow fever, but some to mudslides. When you drive on the road towards Gamboa rainforest you can see a cemetery on the left hand side of the road where an untold number of workers are buried.

The project was also grossly under funded and support began to wane in France. When the French decided to fold, President McKinley didn't buy the rights since he was convinced the best route for a canal would be through Nicaragua. A little bit later McKinley was assassinated by a nutjob anarchist and Roosevelt took over the presidential office. Roosevelt knew that the control of Malaria was critical to the completion of the Panama Canal so in 1904, the Isthmian Canal Commission was created and included Maj. Louis A. LaGarde, Medical Corps, U. S. Army, Col. W. C. Gorgas, Medical Corps, U. S. Army, Capt. C. E. Gillette, Corps of Engineers, U. S. Army, and John W. Ross, Medical Director, U. S. Navy. They prepared a detailed plan for the sanitation of the Canal Zone and the cities of Panama and Colon.

Major John Ross proved to be the most knowledgeable out of all of these characters because he discovered that malaria was transmitted through mosquitoes. But Gorgas was also indispensable since he was the one who vanquished Yellow Fever from the isthmus. These advances in Medicine occurred during the American occupation of Havana, Cuba where regulations were put into effect by the United States Army for the control of yellow fever. These consisted of the screening of houses and extensive drainage to reduce breeding of mosquitoes. Not only was yellow fever eliminated, but malaria transmission was also greatly reduced.

The CDC cites the following bullet points as the critical steps taken place to control mosquitoes. canal and the French did not. They represent a sophisticated regimen of mosquito control which included 7 rigorously enforced programs. I believe this is the reason why we succeeded and the French did not.
1. Drainage: All pools within 200 yards of all villages and 100 yards of all individual houses were drained. Subsoil drainage was preferred followed by concrete ditches. Lastly, open ditches were constructed. Paid inspectors made sure ditches remained free of obstructions.

2. Brush and grass cutting: All brush and grass was cut and maintained at less than one foot high within 200 yards of villages and 100 yards of individual houses. The rationale was that mosquitoes would not cross open areas over 100 yards.

3. Oiling: When drainage was not possible along the grassy edges of ponds and swamps, oil was added to kill mosquito larvae.

4. Larviciding: When oiling was not sufficient, larvaciding was done. At the time, there were no commercial insecticides. Joseph Augustin LePrince, Chief Sanitary Inspector for the Canal Zone developed a larvicide mixture of carbolic acid, resin and caustic soda that was spread in great quantity.

5. Prophylactic quinine: Quinine was provided freely to all workers along the construction line at 21 dispensaries. In addition, quinine dispensers were on all hotel and mess tables. On average, half of the work force took a prophylactic dose of quinine each day.

6. Screening: Following the great success in Havana, all governmental buildings and quarters were screened against mosquitoes.

7. Adult killing: Because the mosquitoes usually stayed in the tent or the house after feeding, collectors were hired to gather the adult mosquitoes that remained in the houses during the daytime. This proved to be very effective. Mosquitoes that were collect in tents were examined by Dr. Samuel T. Darling, Chief of the Board of Health Laboratory. Cost of adult mosquito killing was $3.50/per capita/per year for whole population of the strip. (Courtesy of the CDC, www.cdc.gov/malaria/history/panama_canal.htm)

The malaria program had such fantastic results that malaria was close to eradicated in Panama. Death rates due to malaria in employees dropped from 11.59 per 1,000 in November 1906 to 1.23 per 1,000 in December 1909. It reduced the deaths from malaria in the total population from a maximum of 16.21 per 1,000 in July 1906 to 2.58 per 1,000 in December 1909.

Among the work force, the percentage of employees hospitalized due to malaria was 9.6% in December 1905, 5.7% in 1906, 1.8% in 1907, 3.0% in 1908, and 1.6% in 1909. Malaria continued to be a challenge throughout the entire construction program (courtesy of the CDC, www.cdc.gov/malaria/history/panama_canal.htm)

It has been said that the Panama Canal was the cornerstone of the American century. It also was a great demonstration of disease control based on an integrated mosquito control program enforced by the military. Malaria was not eliminated. However, under these most difficult
conditions, the disease was controlled to the extent that the construction work could be completed. Sadly when the canal was officially opened on August 15, 1914 nobody seemed to care with all of the action going on in Europe in relation to the World War I. Today the canal brings in a ton of money to Panama, but soon it will need to be revamped since many ships these days are far to large to pass through it's locks.