

Threat of Plagues: *Panic in the Streets* (1950)

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Received 28 May 2006; accepted 29 June 2006

Summary

Panic in the Streets by Elia Kazan is an excellent film that focuses around a case of pneumonic plague that is discovered in a murdered person by a physician. The events that unfold reflect the fear the physician experiences as becomes aware of how severe and highly contagious this disease may be. The well-structured script of this thriller conveys a sense of urgent need within the physician as he attempts to find those in which the murdered person had been in contact. He considers it compulsory to implement all necessary measures to halt the outbreak of the plague, a disease that it is even fearsome in the presence of antibiotic treatment. The measures taken, some of which are still in use, are as follows: treatment of patients, chemoprophylaxis and isolation of patients.

Keywords: Pneumonic Plague, Epidemiology, Prophylaxis, Streptomycin, Anti-Plague Serum, *Yersinia pestis*, Cinematographic Adaptation.

There are a number of films that include plague as part of the script. Considering that pandemics of plague have caused human sufferings and deaths unparalleled to that of any other infectious disease, some of these movies take place where incidence of the disease was greatest. Out of all possible clinical forms of plague, the most commonly presented form in film is that of the bubonic plague, whereas only a small number of them refer to the pneumonic form¹. This journal has published several articles on movies that make reference to the bubonic plague, but not to the pneumonic plague^{2,3}. There are some aspects about the film *Panic in the Streets* (1950) by Elia Kazan that are highly attractive from the medical point of view. The film, a thriller whose "leitmotiv" is the pneumonic plague, is set in the midst of the 20th century and not in the periods in which the greatest pandemics took place.

Plague is a severe and infectious disease with a high direct mortality rate, a fact which is particularly relevant when we consider the case of the pneumonic form, an air-borne infection. Plague is caused by *Yersinia pestis*. This bacterial agent can be considered an important biological weapon (category A agent) because it can infect many people if dispersed by the aerosol route. It is also medically important because of the ever-present risk of its reappearance. Due to this

salient feature it is necessary to analyse the film from a sanitary point of view.

Technical details

Original Title: *Panic in the Streets*

Country: USA

Year: 1950

Director: Elia Kazan

Music: Alfred Newman

Screenwriter: Richard Murphy and Daniel Fuchs's adaptation of stories *Quarantine* y *Some Like 'em Cold* by Edna Anhalt and Edward Anhalt.

Cast: Richard Widmark, Jack Palance, Paul Douglas, Barbara Bel Geddes, Zero Mostel, Tommy Cook, Emile Meyer and H.T. Tsiang.

Color: Black and white

Runtime: 96 minutes

Genre: Thriller, Film-Noir

Production Company: 20th Century Fox

Synopsis: The winner of an intense game of cards played by a group of sleazy mobsters from the underworld is suddenly found murdered. The action gradually transforms into a sanitary issue when the autopsy determines that the dead individual was suffering from the bubonic plague. In order to avoid the occurrence of a harmful epidemic, a physician

from the U.S. Public Health Service and the police undergo an investigation to find those who had been in contact with him.

Awards: Oscar (1950) for Best Writing, Motion Picture Story (Edward Anhalt and Edna Anhalt).

The film

The action occurs in New Orleans, Louisiana during the late 40's. The opening scene takes place one evening in the surroundings of the harbour. Several gamblers are playing a game of cards and among them we find Blackie (Jack Palance), his two buddies, and Kochak, (Lewis Charles), a cousin of one of the buddies, a sailor who had entered illegally the USA (figure 1). In the middle of the game Kochak suddenly feels very ill and, although he is winning the game, decides to go home. Blackie is a sore loser and in the midst of demanding his money back, decides to kill Kochak. However, as determined by the autopsy that was exercised at the forensic mortuary, the death sentence of the sailor was already signed by a more vicious murderer, namely the pneumonic plague.

The medical examiner technician who practised the necropsy strongly suspects something about the severity of the disease so he decides to inform the physician from the U.S. Public Health Service, Captain Clinton Reed (Richard Widmark) (figure 2). After the analysis of the results of the tests, he had no further doubt about the nature of the disease – it was clearly the pneumonic plague. Captain Clinton is fully aware of the danger this presents to the city and starts a frantic race against time to avoid the occurrence of an epidemic outbreak. He will take whatever measures necessary to protect the city against this clear and pre-



Figure 1: Kochak feels sick and leaves the game



Figure 2: Dr. Clinton and his wife



Figure 3: Police Chief Tom Warren together with Dr. Reed

sent danger. To begin, he gives the order to cremate the dead body and burn or sterilize all materials that had been in contact with him. He also calls for the standard protocol based on serum and streptomycin to ensure the protection of the personnel in charge of this case. Afterwards, he meets with the city authorities in order to explain to them how critical of a situation this is and how urgent it is to find all those who had been in contact with the murdered individual. In order to avoid the spread of the disease it is absolutely necessary to find out who he was, where he came from, but most of all who came into contact with him before he was murdered. One needs to take into account that the infected people have the urgent need to be submitted into “preventive treatment” and placed in isolation in order to control a possible outbreak.

Tom Warren (Paul Douglas) (figure 3), who plays a tough policeman, comes to the aid of the physician to investigate both the criminal underworld and the dock workers in the harbour. The investigation takes a turn for the best when they discover that

the murdered man was an Armenian sailor who reached New Orleans by ship. They proceed, obviously, by inspecting the ship and sending its crew to preventive treatment to quarantine them. Once they knew the identity of the murdered individual, the search for the murderer, his pals, and the rest of those who had come into contact with him became increasingly intense as it now was necessary to halt the appearance of an urban epidemic outbreak.

Meanwhile, Blackie surmises that the murdered sailor might have been in the possession of valuable merchandise which he mistakenly thinks the police are looking for. Unaware of the fatal nature of this "merchandise" he tries to scrounge enough information out of the cousin that would allow him to get the "loot". The pneumonic plague, an even more efficient enemy than police, will finally also affect the sailor's relative thus providing enough clues to enable the police to find and finally incarcerate Blackie and his gang.

This film has a happy ending shot in which the physician meets his compassionate, unselfish family; a family that forgives his absence and truly understands how significant his endeavour was.

Plague

Plague is caused by *Yersinia pestis*. The disease in wild rodents (sylvatic plague) serves as a reservoir for infection for domestic rats and they become infected as a result of the fleabite or by ingestion of infected animals. Humans acquire the disease as a result of the fleabite (*Xenopsylla cheopis*) from fleas of domestic rats. The air-borne infection is less frequent and spreads from the infected air of coughs of patients with the pneumonic form of plague and rarely by sick domesticated cats. Individuals may also be infected by working with contaminated dead animals or through laboratory-generated aerosols. After *Yersinia pestis* penetrates the skin through a fleabite, bacteria migrate to local lymph nodes and a marked inflammatory response occurs with enlarged lymph nodes or buboes from which a large number of bacteria gain access to the bloodstream producing bacteraemia. It is a severe, septicemic infection that results in metastatic infection in the lungs (secondary pneumonic plague), meninges or other organs.

Bubonic plague has an incubation period of 2 to 6 days and the onset of symptoms is abrupt with marked prostration, fever, chills and headache; painful buboes may also develop in the zones of lymphatic

drainage, simultaneously or short after. A small eschar may be found at the bite site in roughly 25% of the patients. Bubonic plague may proceed to sepsis, a severe and generalized sepsis and even septic shock. If untreated, the mortality rate is markedly high. There are other clinical varieties such as the primary septicemic form with no previous bubonic disease, and the meningeal form.

Pneumonic plague is a direct consequence of the haematogeneous dissemination that occurs during the course of bubonic plague (secondary pneumonic plague) or by direct contact with infected persons suffering from this clinical form (primary pneumonic plague). The incubation period is very short, lasting anywhere from 1 to 3 days. Plague pneumonia is a fulminant illness with a fatal result in virtually 100 percent of untreated patients. It is highly contagious and patients should be placed in strict isolation for at least 2 days after the end of treatment.

If plague is strongly suspected on clinical grounds, it is imperative to begin treatment with streptomycin or gentamicin as soon as adequate specimens have been taken for microbiologic study. Alternatively, other effective antibiotics include doxycycline and chloramphenicol. Doxycycline and ciprofloxacin are effective chemoprophylactic contact agents^{4,5}.

Plague in *Panic in the Streets*

The disease. When considering pneumonic plague as an infectious disease and what it entails as a public health problem, the film is very well-documented.

The clinical form presented in the film is that of the primary pneumonic form. Symptoms being presented such as marked prostration, fever, malaise, headache, thirst, tachycardia and severe lung problems are perfectly portrayed by the three victims of the illness that appear in the film - namely the murdered sailor, his cousin (figure 4), and the female owner of a Greek restaurant. The film emphasizes two important features of the disease - namely, if left untreated, the condition has a mortality rate of 100% and as an air-borne infection, and the spread of the disease is rapid and easy.

Although the possibility of plague had been already considered by the medical examiner technician, the case was only clear after the tissue and sputum samples were examined microscopically by Dr. Reed. He even adds that in the sputum one could see a pure culture of the bacteria.

Moreover, on the basis of the short incubation period of 2 to 3 days of the pneumonic plague, and its extreme severity (as death may ensue within 2 to 6 days), Dr. Reed deems it necessary to establish a deadline of 48 hours to find and treat all the existing cases.

The film also addresses its prevention and considers that the following measures aimed at the elimination of plague need to be taken: chemoprophylaxis (to date contacts should be given doxycycline and ciprofloxacin but not streptomycin); cremation of the corpse and of all the materials that had been in contact with the dead individual; sterilization of materials that need to be preserved; placement in isolation of cases and contacts; quarantine of the ship and the use of masks in one occasion (figure 5). In order to highlight the importance of isolation time, Dr. Reed comments to one of the policemen that if he is not ready to undergo the prophylaxis treatment, then he should be placed in isolation for 10 days. However, contrary to what is seen in this and other films, the current treatments of plague refrain from serum therapy or serum prophylaxis^{2,3}.



Figure 4: Kochak's cousin suffering from pneumonic plague

The physician of the U.S. Public Health Service believes that the problem is no longer only a clinical-medical issue but instead has now become a public health issue. Therefore he decides to contact local authorities and inform them about the severity of the situation and the urgency in taking the required protective measures aimed at avoiding the risk of an epidemic outbreak.

By the way, the city of New Orleans has a harbour and, as revealed by Dr. Reed, the infected rats hidden in ships are the carriers of bubonic plague (figure 6).

Throughout history, plague has been a source of dread. One of the great pandemics, an event that came to be known as Black Death, swept through Europe during the fourteenth century killing an estimated one-third of the European population. Its easy and rapid spread, along with the fact that no treatment was available until the twentieth century, was responsible for the devastating effects of this disease. It is no wonder the crisis committee and the ship's crew were thrown into a panic when the physician informed them about the potential risk of a plague epidemic.



Figure 5: Masks aimed to protect against air-borne transmission

The action is told to take place between 1948 and 1950, dates that make reference to the year in which streptomycin was introduced in the market and the year of the debut of the film, respectively.

Plague poses a constant threat and *Panic in the Streets* reminds both audience and sanitary personnel that plague is not a menace from the past but instead is a Damocles' sword that hangs over the head of humanity. In the twentieth century plague has been present in almost all countries, not only in countries of the so-called Third World but also in developed countries like the USA, a fact that seems to be surprising for the wife of Dr. Reed.

The physician of the U.S Public Health Service.

The evidence provided by clinical tests supports clinical suspicion of pneumonic plague as being the cause of the sailor's death. Therefore, he proposes an opening strategy aimed at attacking the plague from two fronts:

- Sanitary front: Undertaking of the medical and hygienic-sanitary measures such as cremation of the corpse, cremation or sterilisation of all material that came into contact with him, and initiation of



Figure 6: Harbour of the city of New Orleans, possible way of access of bubonic plague



Figure 7: Questioning of the crew of the ship and prophylaxis of the crew

chemo- or serumphylaxis of the exposed people, including the policemen, the personnel working at the forensic centre, and an informer and the crew of the ship (figure 7). A critical issue in the prevention process is to direct the efforts towards the localization of all the existing cases so that they can be treated and isolated accordingly.

- **Social front:** The physician meets with the crisis committee of the city, whose members include the mayor of the city, the chief of the local police, and other social agents implied in this case. The plague epidemic is a problem concerning the community as a whole and as such raises questions that need to be addressed from a global perspective. Therefore, his job may not prove so easy after all. As a physician he is not only committed to the fight against plague but also must overcome all reticence and ignorance the social agents have about this clear and present danger - namely, if untreated, death may occur within 48 hours and the rapid spread of the disease thereafter. Although social agents were initially reluctant to

support these measures, they became compelled by the weight of the evidence, and end up collaborating with the physician. For example, even the tough police commissary ends up becoming the best ally in this crusade against the epidemic.

Therefore, a closer look at the situation indicates that, in order to face plague from a global perspective, the physician of the U.S. Public Health Service has a double medical assignment: an epidemiologist as well as a specialist in preventive medicine.

Other aspects considered in the film. The film also addresses the issue of how and when information should be provided in these kinds of events: how information should be supplied so as not to generate any kind of social alarm, what role has the press to play and what limits on information should be established. Dr. Reed wants to prevent people from fleeing from the disease as this would prompt the spread of the epidemic; therefore, he decides it would be wise to keep the disease in secret. In support of this idea, a journalist who was claiming for his right to keep the public opinion informed is arrested by the captain of the local police (figure 8). This right, however, will later be acknowledged by the major of the city. But, despite all, the police keep him detained until the case was solved. In relation to public health issues, for example, current Avian Influenza (Bird Flu) protocol calls for conveying reliable and adequate information and intends to avoid not only an excessive alarm, but also a childish ignorance about passing events.

One night, while meeting with the local authorities, Dr. Reed comments how critical of a situation it is and vigorously advocates the importan-



Figure 8: Coercion of press freedom

ce of halting the epidemic; otherwise, the disease would not only spread through the city and nation but also through other countries, as the infection can run long distances in a relatively short period of time. As the world becomes more globalised, it is quite certain that diseases will follow the same epidemic trend.

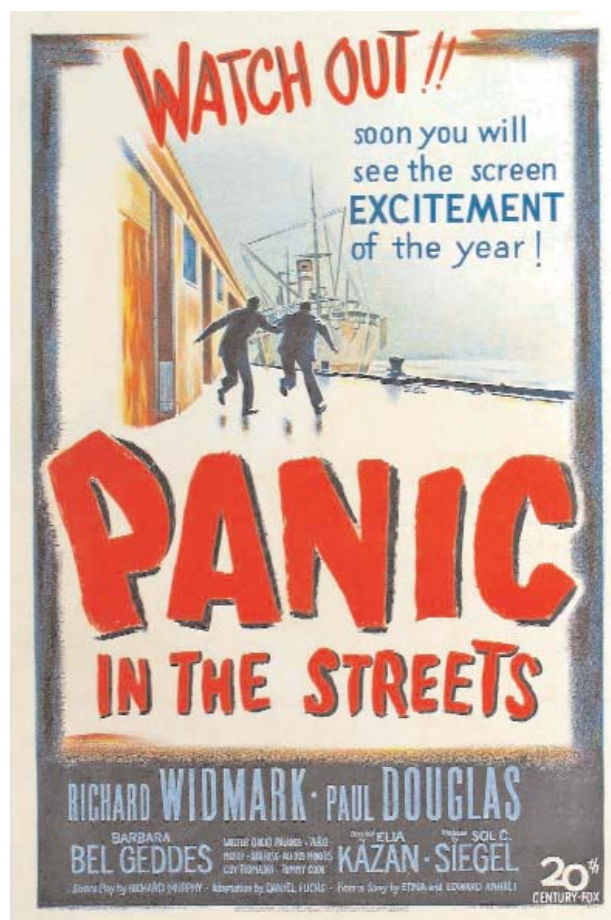
It is almost necessary to make a reference to the novel *The Plague* by Albert Camus, brought to the screen by Luis Puenzo in 1983. In the film by Elia Kazan two basic elements of the novel by Camus are present, namely a city facing an epidemic of plague and the physician who is responsible for the case. However, they differ in the evolution of the plot and the end result. In the novel and in its film version, the inhabitants of the city of Oran are slowly and progressively being affected by the epidemic of the plague and the progression of the disease causes them to suffer some kind of a psychological disturbance that initially leads them to think that everything is apparently normal. But, contrary to appearances, this feeling will later evolve to a sense of isolation, fear, depression and solitude. Plague sweeps through their spirit and their minds respond in to what they are experiencing. It rapidly becomes inevitable to question the meaning of their existence. In the end, although the epidemic has finally subsided, the inhabitants of the city will never be the same, as the disease has transformed them profoundly. The physician in the film squarely faces the disease; however, he will also be affected by the same disease of the spirit that will lead him to evaluate the intrinsic value of human life. As he is being dragged down by the epidemic of plague, a reflection on man and an analysis of his personal situation “before” and “after” the experienced drama are portrayed.

In the film, plague hovers over the city, a passive entity with no overall sense of what is going on. The core of the plot focuses around the menace of a plague outbreak in the city; the Camus’ novel, by contrast, uses the evolution of the epidemic to supply a linking narrative. The film depicts a physician who, with an overview of the present problems, lashes out against the disease and the appearance of an epidemic outbreak. He addresses this daring medical assignment mainly as a clinician; however, he cannot avoid thinking about the importance of his job or about the influence that his professional life might have on his family. The physician is therefore portrayed as a hero: because of his efforts and assumed risks no epidemic of plague took place.

In *Panic in the Streets* we can find some subtle references to the novel by Camus. Members of the crew declare that both the murdered sailor and another stowaway, who died of plague during the course of the voyage, went on board in the city of Oran, the same city where the action of Camus’ novel takes place. Interestingly, Camus was born in Algeria.

In the film it is important to emphasize that, in order to convey a genuine sense of real danger to the viewers, persecutions, treatment of light and shadow, foregrounds (harbour, ships, coffee store, etc) and most action scenes were all filmed in external settings. This perception through images creates a sense of proximity to reality, and such a well-structured and well-documented script create a sense of immediate danger and an urgent need to find those responsible as the plot evolves and tension grows.

Richard Widmark’s performance is outstanding and further enhanced by excellent supporting actors such as Barbara Bell Geddes. If we analyse films in terms of their actors, directors, and scripts, one



must conclude that the films of this decade, considered on the whole, were not only excellent but should also lead us to review the current criteria used for assessing the quality of films today.

Panic in the Streets is an excellent film.

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