

# **The Prevention and Treatment of Communicable Diseases: the Beginning of the Institutionalization of Modern Chinese Medicine**

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The success in the prevention and treatment of communicable diseases is one of the key factors that gave western medicine its leading role in the health care system of China. On the other hand, the operation of the new system, the enactment of medical laws and regulations, the establishment of institutions for epidemic prevention, the development of hygienic movements, for example, further promoted the prevention and treatment of communicable diseases. This paper, via a study on the institutionalization process of China's modern medical science and its correlation with the prevention and treatment of communicable diseases, puts forward the idea that research on the social history of diseases not only enables us to know more about the development of medical science, but also helps us to better understand the great impact social factors exert on disease prevention and treatment.

## **1. Traditional Chinese Medical Institutions and Their Defects**

“Institution”, a concept in the sociology of science, refers to a recognized structure such as a system, a convention, a custom, a public establishment, an organization, and so on. Contemporary sociologist of science P. Weingart believes that a scientific institution is a frame of social organizations. As to medical institutions, there are generally two understandings, namely, establishments such as hospitals, medical schools, institutes, and academies, and the general patterns of medical and health service such as fee collection and professional management. In the opinion of D. M. Fox, medical institutions cover both of the two.<sup>1</sup>

The medical system set up in 1100 BC, or Western Zhou Dynasty, is the beginning of the medical institution of ancient China. This is reflected from three aspects. 1. Medical administrators were appointed to “take charge of medical affairs and collect medicines”. 2. Certain system was organized: doctors were classified into three categories---junior, secondary, and senior;

attached to them were Fu (assistant administrator), Shi (note taker), Tu (nurse), and other auxiliary staff. 3. Different medical branches were formed: doctors specialized in nutrition, internal medicine, surgery, and veterinary medicine. After the Dynasties of Qin and Han, doctors or medical officials were appointed virtually in all dynasties to manage the medical affairs in the court. During the Sui and Tang Dynasties, with the expansion of the royal medical system, local medical officials were assigned to take care of diseased civilians. Religious health care institutions also took shape. **Naliantiliyeshe** (died in 589 AD), a Buddhist in the Sui Dynasty, for example, set up a house for lepers. In the Song Dynasty, the royal medical system shrank while ordinary charitable institutions expanded. During the reign of Zhen Zong, the first primitive “sanatoriums” were established. In the fourth year of the reign of Ren Zong (1037 AD), Su Shunqing proposed that “special land be allotted to establish sanatoriums for the sick”. In the second year of **Yuanyou** (1090 AD), Su Dongpo founded a “mercy” house for the sick in Hangzhou. During the Ming and Qing Dynasties, similar “sanatoriums” were set up to help the poor and sick. Most of these institutions, however, did not last long, thus producing little effect.

The medical management system of ancient China had a long history, yet in all dynasties, its principal function was to serve the royal family: handling medical affairs, selecting medical officials, establishing medical organizations, formulating diagnosis and treatment rules, etc. As a matter of fact, the court had all the medical resources to itself, and very little was enjoyed by the people. A good illustration of the conspicuous defects of this system is the government’s incapability to control serious communicable diseases in the Qing Dynasty. According to *History of the Qing Dynasty*, during the 267 years from 1644 to 1911, there were 98 outbreaks of serious communicable diseases, with one plague every two years and a half. The pernicious effect was so tremendous that in the descriptions of these disasters, expressions such as “numerous people died” and “people died by half” are frequently used. Although the government took some measures, “providing medicines”, “establishing special institutions to offer medicines and treatment”, for example, their effect on the prevention and treatment of those diseases was next to nothing.

Traditional Chinese medicine only had a vague understanding of communicable diseases. They were generally referred to as pestilence. Before the Qin Dynasty, spirits were believed to be

the cause. After the Qin and Han Dynasties, the theory of “miasma” took a leading position. In the Song Dynasty, there was another theory, the theory of “febrile toxin”. The experience accumulated in traditional Chinese medicine, its discovery of contagion, its proposed quarantine measures, for example, is helpful to the prevention and treatment of communicable diseases. However, these theories failed to reveal the real causes of the diseases, thus the overall effect was not so satisfactory.

## **2. The Outbreaks of Communicable Diseases in Modern China**

In modern China, people’s life and health were continuously threatened by various communicable diseases, among which the most serious were cholera, dysentery, typhus abdominalis, variola, typhus exanthemata, scarlatina, diphtheria, pestis, and tuberculosis. From the following figures, we can get a glimpse of their furious attack and tremendous harm.

### **Pestis**

More than 40,000 people suffered from pestis in 1893, 1901, 1907, 1910, and 1917 respectively, and more than 10,000 in other years. From 1893 to 1894, the number of people who died of pestis was as high as 100,000. Between 1910 and 1911, when the epidemic swept across the Northeast to the northern area, more than 10,000 people died of it. During 1917 and 1918, the period when pestis attacked Inner Mongolia, Shaanxi, and Shanxi, the number was also high up to 5,000.

### **Cholera**

Cholera got its way into China when it made the first attack upon the whole world from 1817 to 1823. Before the liberation, the country frequently suffered from this disease. The number of its recorded violent attacks alone was 60. In 1925, the death rate of cholera sufferers was as high as 30%, and in 1931, it was 13% in Shanghai.<sup>2</sup>

### **Typhoid**

From 1926 to 1932, the overall death rate of typhoid in Beijing was 0.1-0.3%, and the death rate of infected people was high up to 30-40%.

## **Diphtherie**

According to the study of Li Qingping, diphtherie attacked China 12 times from 1785 to 1909.<sup>3</sup> During the five years between 1935 and 1940, the leading hospitals in Peking received a total of 1898 cases, among which 476 patients died, the death rate high up to 25%.

## **Variola**

In modern times, China was haunted by variola. To make things worse, there was a disastrous outbreak every several years. As a result, hundreds of thousands of people died of the epidemic. From 1933 to 1944, a total of 380,000 people suffered from it.

## **Scarlatina**

Scarlatina was a serious communicable disease in modern China. 10 out of 43 sufferers died of it. Possibly due to its late entry into the country, Chinese people had not yet built an immune system against it. Consequently, the death rate in China was higher than that of European countries. According to the report of Sh. George Newman, it was 1.1% in England. In China, however, it was high up to 18.2%.

## **Tuberculosis**

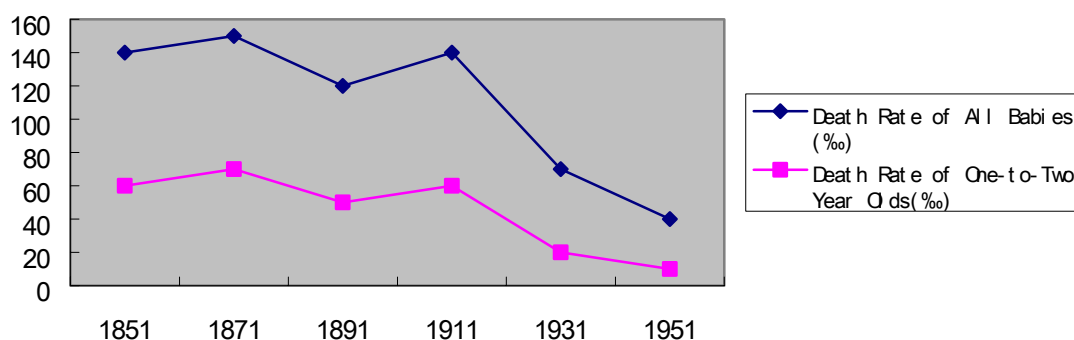
According to the estimation of Yuan Yijin, member of the Tuberculosis Prevention and Control Academy in Nanjing, at the end of the 1930s, tuberculosis was one of the most important causes of deaths in China. The infection rate was 2-3%, and the overall death rate, 2-3%.<sup>4</sup>

## **Conjunctivitis**

In western countries, effective measures were taken to control conjunctivitis. In China, however, nothing was done. The failure to do so resulted in thousands of conjunctivitis sufferers and blind people. A survey on the causes of blindness conducted by W. P. Ling, a doctor from Peking Union Medical University, revealed that 37.5% of blindness in China was caused by conjunctivitis. There were about 868,000 blind people in the country. If active measures had been taken to prevent and treat conjunctivitis, many people would have been saved from blindness.

In the 19th century, after a struggle with various problems such as communicable diseases, occupational diseases, and environmental pollution in their industrialization and urbanization process, western countries came to fully realize that “medical science is closely related to public affairs”. Solomon Neumann, a representative in the reform of medical science advanced the idea that “the core of medical science is social science”. R.Virchow also pointed out that “medical science is a social science rather than a physical science”.<sup>5</sup> In the effort to control communicable diseases, the socialized preventive measures in western countries proved to be very effective. Furthermore, the socialization process of medical science provided an effective mode for the prevention and treatment of communicable diseases as well as other health issues that might affect the whole society. The following graphs give a full demonstration on the relationship between British medical regulations and the death rate of British babies.

**Death Rate of British Babies**



**British Medical Laws**

Year	Medical Law	Year	Medical Law	Year	Medical Law
1848	Law of Public Health	1911	Law of National Insurance	1945	Law of Family Allowance
1875	Law of Public Health	1918	Law of Mother-Child Welfare	1946	Law of National Health Care
1902	Law of Midwifery	1927	Poor Law	1948	Law of National Relief

By the end of the Qing Dynasty and the beginning of the Republic of China (1912-1949), China had gained an understanding of the important role western public sanitation played in the prevention of diseases. In his “Sanitation In China and Other Countries”, Zheng Guanying, a reformist in the late Qing Dynasty, gives a description of the situation in London: “ Canals and ditches are opened up everywhere to discharge waste. Every measure is tried to protect civilians’ health. Among 1,000 people, only 20 die of diseases a year.” Yang Huanzhou, who used to study in Aichi Medical School in Japan, demonstrates in his “Report to the Governor” the contributions of the Health and Sanitation Conference in France, the sterilization stations in Germany, the isolation hospitals in Austria as well as the new medical institutions in Hungary, Italy, and Belgium. He suggests that China should “make every effort to follow suit”.<sup>6</sup> Wu Liande was a celebrated doctor in the history of modern China. In “The Importance for China to Enforce Preventive Measures and Medical Laws Against Diseases”, he proposes that China establish a head office for public health and put up a system, by legal means, for the report of communicable diseases, births, and deaths.<sup>7</sup>

### **3. The Role of the Prevention and Treatment of Communicable diseases in the Establishment of the New Health Care System**

#### **3.1 The Prevention and Treatment of Pestic: the Beginning of Public Health Care**

Pestic is a deadly infectious disease. Human history has witnessed three violent outbreaks of this epidemic. The first one made its appearance in Europe in 6 century AD. The then “Pyreticosis” resulted in the death of about 100,000,000 people. The second one was the “Black Death” in Europe during the Middle Ages. This time, one fourth of the European population died of it. The third one lasted from the end of the 19th century to the end of WWII. 23 countries were involved in it, with about 15,000,000 deaths.

The prevention and treatment of pestis in 1911 marked the beginning of modern preventive medicine in China. From 1910 to 1911, the Northeast was ravaged by pestis. As a result, about 60,000 people died. Unfortunately, traditional Chinese medicine was powerless when confronted with this disease. To make things worse, some doctors, owing to their lack of preventive

knowledge, got infected too while trying to save the sick. Shocked by this fact, the Qing government sent Wu Liande, who returned from abroad, to direct the prevention and treatment work in Harbin. Through autopsy, Wu decided that this was a plague of pestis. With a series of strict isolation and quarantine measures, it was at last effectively controlled. In April 1911, Wu chaired China's first international medical conference, the International Conference on Pestis in Shenyang. Some internationally celebrated medical scientists were invited to it. The greatest achievement of the conference was the establishment of the Epidemic Prevention Station in North Manchuria. In Harbin, the station set up a health Center and an isolation hospital equipped with a modern bacteriological laboratory. When there was no epidemic, the hospital could receive patients as an ordinary one. Similar isolation hospitals were also founded in Tongjiang, Heihe, Niuzhuang (Yingkou) and other places. These institutions proved to be very helpful. Up to 1919, no serious outbreaks of pestis were found in the area. The Epidemic Prevention Station in North Manchuria also played an important role in the prevention and treatment of cholera. In 1922, when cholera was widespread, the death rate in the Northeast was 14%, while that in the rest of China was 16%. Furthermore, the epidemic lasted longer in other areas.

## **3.2 The Introduction of Western Epidemic Prevention System**

### **3.2.1 The Establishment of Prevention and Quarantine Institutions**

As a matter of fact, before the Epidemic Prevention Station in North Manchuria was founded, the Qing government had established a Division of Public Health under the Security Department of the Ministry of Police Affairs. This was the first governmental organization in China to manage public health. In 1906, the Ministry of Police Affairs was changed into the Ministry of Civil Affairs. It had a Department of Public Health with three divisions. The Division of Quarantine was in charge of epidemic prevention, vaccination, mould check, and ship quarantine. Actually, these organizations were managed by the police. When two more positions, class-six and class-seven medical officials, were added, no actual appointment was made.<sup>8</sup> The prevention and quarantine of communicable diseases, therefore, just existed in name. After the revolution of 1911, the Imperial Hospital was abolished, while the Division of Public Health was set up under the Department of Police Affairs, which was in turn under the Ministry of Internal Affairs. In 1916, the Division of

Public Health was reshuffled into the Department of Public Health, taking charge of the prevention and vaccination of epidemics and endemics as well as other medical affairs. Up to then, a central medical system was established. In 1912, Guangdong province set up its own health division headed by Li Shufen, who graduated from the Medical School of Edinburgh University. From his work report of 1913, we can find that the control of communicable diseases was the principal function of the Health Division. Eight points are emphasized in the report, namely, the report on eight communicable diseases, the sterilization and sanitation of epidemic-polluted areas, the collection and test of dead rats, the prevention of pestis, the prevention of cholera, the isolation of lepers, and the report on deaths. Later, medical institutions and isolation hospitals were also founded in Beijing, Tianjin, Fuzhou, Qingdao, Hangzhou, and so on. These new prevention and quarantine institutions played a significant role in the control of communicable diseases.

### **3.2.2 Medical Laws and Regulations on the Prevention of Communicable Diseases**

Demanding the joint effort of the whole society, the control of communicable diseases was a key social problem crying for a prompt solution. In March 1916, the Ministry of Internal Affairs of the Northern Government released its *Rules for the Prevention of Communicable diseases*, specifying eight communicable diseases: cholera, dysentery, typhus abdominalis, variola, typhus exanthemata, scarlatina, diphtherie, and pestis. 25 clauses concerning the report and preventive measures of communicable diseases are stipulated in the Rules. In January 1918, more decrees, *Regulations on the Establishment of Quarantine Commissions*, *Regulations on the Quarantine of Trains*, and *Means of Sanitation and Sterilization*, for Example, were proclaimed. After the establishment of the Nanjing Government, the Ministry of Public Health issued in December 1928 a tentative law, *Outline for the Health Administration System*. Meanwhile, a number of rules and regulations on the prevention of communicable diseases, the management of environmental sanitation, the management of food sanitation, and the management of midwives, were issued. After that, the government set up a group of institutions such as the Central Medical Laboratory, Northwest Epidemic Prevention Division, Mengsui Epidemic Prevention Division, the Training Center for Public Health Workers, and the Quarantine Institute of Customs.



## Laws and Regulations on the Prevention of Communicable Diseases

Laws and Regulations	Issuing Date	Issuing Department
Rules for the Prevention of Communicable Diseases	1916.3	Ministry of Internal Affairs
Regulations on the Establishment of Quarantine Commissions	1918.1.6	Ministry of Internal Affairs
Regulations on the Quarantine of Rail Stations	1918.1.6	Ministry of Internal Affairs
Means of Sanitation and Sterilization	1918.1.25	Ministry of Internal Affairs
Detailed Rules for the Prevention of Communicable Diseases	1928.10.30	
Rules of Waste Disposal	1928.5.30	Ministry of Home Affairs
Detailed Rules of Waste Disposal	1928.6.9	Ministry of Home Affairs
Regulations on Slaughterhouses	1928.8.15	Order of the Health Minister
Detailed Rules on Slaughterhouses	1928.8.15	Order of the Health Minister
Rules of Vaccination	1928.8.29	Order of the Health Minister
Regulations on the Prohibition of Milk Business	1928.10.20	Order of the Health Minister
Regulations on the Prohibition of Food Preservatives	1928.10.20	Order of the Health Minister
Regulations on the Prohibition of Cold Water Business	1928.10.20	Order of the Health Minister
Rules for the Prohibition of Drinks, Food and Articles Concerned	1928.10.20	Order of the Health Minister
Detailed Rules for the Prevention of Communicable Diseases	1928.10.30	Ministry of Public Health
Rules for the Pension of Epidemic Prevention Workers	1929.2.1	Ministry of Public Health
Articles for Provincial and Urban Vaccination Institutes	1929.2.13	Ministry of Public Health
Rules for the Rewards and Punishments of Epidemic Prevention Workers	1929.2.28	Ministry of Public Health

Regulations on the Prohibition of Drink and Food Utensils	1928.10.20	Order of the Health Minister
Regulations on the Sanitation of Food Producers	1929.8.14	Ministry of Public Health
Regulations on the Organization of the Central Epidemic Prevention Office		Ministry of Public Health
Articles of Seaport Quarantine	1930.3.20	Ministry of Public Health
Regulations on the Sterilization, Fumigation, and Charges in Seaport Quarantine	1930.6.28	Ministry of Public Health
Regulations on the Banner and Uniform of Seaport Quarantine	1930.6.28	Ministry of Public Health
Rules for the Prevention of Communicable Diseases	1930.9.18	Ministry of Public Health
Provisional Articles on the Organization of Northwest Epidemic Prevention Division	1933.6.2	Ministry of Home Affairs
Provisional Articles on the Organization of Mengsui Epidemic Prevention Division	1933.6.8	Office of Public Health
Provisional Amendment of the Regulations on the Statistics of Urban Births and Deaths	1934.11.17	Ministry of Home Affairs
Articles on the Organization of Seaport Quarantine Institutes	1936.1.18	Mandatory Bill of Amendment of the National Government

The implementation of these laws and regulations produced a positive effect on the prevention of communicable diseases.

### **3.2.3 The Contribution of the Health Organization of the League of Nations to the Establishment of the Medical Institutions in China**

The League of Nations was an international organization established in 1920 after WWI. The Health Organization was one of its three technological (economic, communicational, and medical) organizations. It had two branches under it, the Consultative Committee and the Public Health Committee. The former exercised its functions and powers through the International Public Health Office in Paris, and the latter served as a standing institution of the League. Aiming to solve difficult medical problems, the Public Health Committee helped to promote the cooperation between different health administrations and dispatched technological groups to direct and advance the public health of all countries.

The statistical institution under the Health Organization of the League of Nations was responsible for collecting and analyzing data concerning the outbreak and development of the legalized communicable diseases of different countries. It had a special committee to which specialists were often invited to carry out prevention work. The work of this kind of organization gave great impetus to the development of public health. The Committee of Epidemics established in 1920, for example, played a significant role in the control of cholera and typhoid in Russia and Poland. As a member of the League of Nations, China, in its effort to establish its own medical institutions, owes its thanks to the instructions and help from the Health Organization of the League.

In September 1929, the Ministry of Public Health of the Nanjing Government presented a request to the Health Organization of the League of Nations, expressing its hope that the Organization would send a group to China to inspect its seaport sanitation and quarantine. In November, an inspection group headed by **Laximan** arrived in China. In addition to the key ports and cities in China such as Nanjing, Hangzhou, Shanghai, Qingdao, Dalian, Shenyang, Tianjin, Peking, Xiamen, Guangzhou, and Hongkong, they inspected some towns and villages. The group left China at the beginning of 1930. After his return to Geneva, **Laximan** submitted a report that was ratified by the Health Organization. There are six proposals in the report. 1. The Health Organization should cooperate with the Ministry of Public Health of China to solve the medical problems in the country. 2. The Health Organization should reshuffle China's quarantine organizations in seaports. 3. A national exemplary hospital should be set up in Hangzhou. 4. Medical education should be systemized in China. 5. The Organization should help China to establish a medical laboratory. 6. China should closely cooperate with the Anti-Epidemic Agency of the Far East in Singapore.

In December 1929, the Nanjing Government approved the laboratory plan jointly drafted by the experts of the Health Organization and the specialists in China. During the six years from its establishment to the eve of the Anti-Japanese War, this organization did a lot of work to push forward the development of the public health in China: conducting surveys, taking measures to prevent and treat serious infectious and parasitic diseases such as malaria, schistosomiasis,

kala-azar, and pestis, setting up a number of anti-epidemic organizations in some cities and counties, preparing for the construction of the medical projects in some areas, carrying out the educational work on woman-infant sanitation and school sanitation, and training various professionals.

### **3.3 The Retrieval of the Right of Seaport Quarantine**

Early in 1863, China established some customs clinics to take charge of seaport quarantine. However, with the quarantine controlled by foreign doctors and their Consul Taxation Department, there was no unified management. Whenever an epidemic broke out, what they cared about was not the health of the Chinese people, but their own safety. Apart from this, since the consuls who managed the customs had different interests, it took a long time for the news about an epidemic to reach another port. When it finally did, the epidemic had flooded many areas. In short, this kind of system not only severely hindered the control of communicable diseases, but also affected the reputation of a sovereign country. In view of this sad fact, Chinese medical experts proposed time and time again that China take back the right of seaport quarantine.

In 1930, the Chinese government set up its own seaport quarantine institutions. The Ministry of Public Health directed the draft of the national *Regulations on Seaport Quarantine*. Wu Liande was appointed dean of the new Division of Seaport Quarantine. On June 28, 1930, the Ministry of Public Health issued China's first national *Articles of Seaport Quarantine*. With 9 chapters and 72 clauses, the Articles precisely stipulate the definition of seaport quarantine, the identification of quarantine areas, the general quarantine rules, various measures against communicable diseases, quarantine procedures, and so on. At the same time, another two decrees, *Regulations on the Sterilization, Fumigation, and Charges in Seaport Quarantine* and *Regulations on the Banner and Uniform of Seaport Quarantine* were proclaimed and ordered to be exercised in all ports. All these facts showed that China had regained its right of seaport quarantine.

## **4. The Prevention of Communicable Diseases under the New Medical Institutions**

### **4.1 The Establishment of Epidemic Control Institutions**

During the 20 years between 1911 and 1930, a system of epidemic prevention was set up in China. Central and provincial organizations for epidemic prevention, epidemic or isolation hospitals in large and medium sized cities, the Medical Laboratory under the central government, the Institute of Tropical Diseases, the Commission of Public Health, and the Association of Public Health Education, the establishment of all these institutions indicated the successful institutionalization of the medical system of China. Meanwhile, it marked the starting point for western medicine to take the leading role in the health care system of the country.

#### **4.2 The Change of Ideas**

The institutionalization of the medical system introduced the preventive medicine of China into the field of modern science. The success in epidemic prevention, on the other hand, gradually aroused Chinese people's interest in public sanitation. Hygienic education was promoted in the secondary and primary schools of large and medium sized cities. Museums of Natural History and Exhibitions of Public Sanitation were opened to the public. Fascinated by the new hygienic knowledge, people realized that as long as they paid enough attention to hygiene, communicable diseases could be eradicated. Additionally, medical organizations published many handbooks and sold them at a low price. These publications cover a large variety of hygienic knowledge: urban sanitation, family hygiene, the prevention of tuberculosis, cholera, and variola... Thanks to all these activities, the Chinese public gradually changed their ideas about hygiene.

#### **4.3 The Achievement in the Control of Communicable Diseases**

In the early 1930s, the overall health level of the Chinese people was promoted. This was mainly demonstrated by the fact that there were fewer serious communicable diseases, and their attacks were not as violent as before. Thanks to vaccination and the supply of clean drinking water, the incidence and death rate of cholera and cholera-related diarrhoea dropped gradually. Since people now drank water from wells rather than rivers, there were much fewer dysentery sufferers too.<sup>10</sup> Besides, people came to realize the importance of vaccination. As a result, although variola was still widespread in the country, it was much less serious than before.

**Death Rate of Serious Communicable Diseases in No. 1 Sanitary Area of  
Beijing (1929---1937)**

	1929	1930	1931	1932	1933	1934	1935	1936	1937
Diphtherie	0.6		0.8	0.6	0.9	1.01	0.2	0.6	0.9
Scarlatina	1.5		12.5	5.0	0.6	0.6	0.9	12.3	1.0
Variola	0.2		0.2	2.5	0.8	0.18	0	3.1	0.2
Pestis	0		0	0	0	0	0	0	0
Typhoid or Typhoid-Like Diseases	2.1		1.6	1.9	0.3	0.3	0.4	0.1	0.4
Cholera	0.2		0	1.9	0	0	0	0	0

Owing to continuous civil wars before 1949, the overall social economy of China and the living standard of the Chinese people developed very slowly, and the control of communicable diseases was not satisfactory. However, enough credit should still be given to medical experts for their effort in the establishment of the new medical institutions in China and their hard work in the prevention and treatment of communicable diseases. Their tentative work and epidemic prevention mode laid a foundation for later epidemic prevention.

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