

Application of Information Technology in Statistics Work of Major Disease Control and Prevention under the Background of New Era

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Abstract: With the continuous development of information network technology in recent years, all walks of life have begun to use modern big data. The scientific use of big data, "Internet+" and other technical means in disease prevention and control can better count the data and scientifically predict the future development trend of diseases, which is conducive to the development of appropriate prevention and control measures. This paper mainly explores the direction of applying big data in the statistical work of major disease prevention and control.

Keywords: Big Data; Disease Control; Statistics

1. Introduction

The spread of major diseases will have a significant impact on people's health, economic development, and social stability. Doing a good job in epidemic prevention and control is directly related to people's life safety and physical health, and directly affects the overall stability of the economy and society [1]. Under traditional disease prevention and control methods, information transmission is slow, which can lead to delays in prevention and control due to information lag, or can delay the optimal control period for disease transmission, seriously affecting public health safety. In the new era, the Centers for Disease Control and Prevention can make reasonable use of big data to scientifically predict the outbreak period of diseases through rich data information, and then deploy disease prevention and control plans in advance to effectively compensate for the deficiencies in real-time performance of traditional disease control.

2. The Direction of Applying Big Data in Major Disease Prevention and Control

2.1 To Identify Unknown Diseases in Advance and Strive for Time for Disease Control

When the hospital fails to find the same case for the patient's clinical symptoms after applying traditional testing or based on historical data statistics, it indicates that the patient has no clinical treatment experience in the hospital. At this point, through applying big data technology, it is possible to query shared information between different hospitals, summarize and analyze disease monitoring system network report data, and analyze high-frequency search keywords specified by different network monitoring engines for users in a certain region, so as to effectively detect abnormal situations such as multiple people experiencing diarrhea and vomiting in a certain region, as well as unexplained pneumonia in a certain region. Then the relevant staff will effectively compare and analyze this information with the viruses in the virus database of the Centers for Disease Control and Prevention, search for disease viruses that match clinical symptoms, and identify the unknown disease, in order to buy more time for disease diagnosis [2]. In another word, big data technology enables the Centers for Disease Control and Prevention to quickly identify the source of the virus and take effective measures to control the spread of the disease.

2.2 To Realize the Judgment of Personnel Flow and Effectively Control the Spread of the Disease

When a major infectious disease occurs, although the country can timely control the spread of the local disease, it cannot avoid personnel mobility. But in the new era, the

staff can use network technology to determine the flow of personnel. For example, if a serious infectious disease suddenly appears in place A, the staff can use big data monitoring to clarify the main flow of personnel, that is, to clarify that the flow of personnel is in places B and C. At this time, the Centers for Disease Control and Prevention can prepare corresponding treatment vaccines, drugs, and medical technology to rush to places B and C to provide disease vaccination for local people, in order to achieve precise control and improve the efficiency of disease transmission and control [3].

2.3 To Rapidly Develop Disease Treatment Drugs and Vaccines

After the occurrence of a major disease, the country needs to promptly research and develop therapeutic drugs for the disease. In the past, the country would first conduct small-scale research and development, and then conduct large-scale research and production after successful research. But in the new era, the scientific application of big data technology can achieve the interconnection of patient's condition data and drug use. Patient medication can be compared with the drugs entered in the database. When a certain drug is found to have a good therapeutic effect on a key indicator, it can be quickly included in the research and development reference range, effectively supporting the development of vaccines to prevent disease transmission [4].

2.4 To Build a Dynamic Model for the Spread of Major Diseases

The dynamics model of major disease transmission is a mathematical model that can reflect the dynamics characteristics of infectious diseases by combining the occurrence of diseases, population growth characteristics, development patterns, intra population transmission, and related social factors [5]. Mathematical models can effectively analyze the development process of major diseases, reflect the epidemic patterns of major diseases, predict the changing trends of major diseases, and analyze the key factors and causes of the epidemic effectively, in order to find effective strategies for preventing and

controlling major diseases, and to provide theoretical basis for the Centers for Disease Control and Prevention to formulate disease prevention and control measures.

2.5 To efficiently collect epidemic data

In order to timely grasp first-hand data on the epidemic, the Centers for Disease Control and Prevention need to first collect information on various types of personnel involved in the epidemic. They can use big data technology to build community-based epidemic prevention and control (personnel) entry and exit registration system. Such system can take the form of questionnaire surveys and QR codes to effectively assist community management personnel in quickly collecting information about community residents. Then, community management personnel can summarize and analyze the information to ensure that the community can dynamically monitor and control the entry and exit of residents. In this way, the community can provide good data support for analyzing the travel trajectory of returning personnel and online monitoring of their physical health in the first time, promote the efficiency of community collection of epidemic prevention and control information, and increase the accuracy of information collection, avoid community workers from being infected due to door-to-door collection of information, and improve the level of community prevention [6].

2.6 To Strengthen Personnel and Vehicle Control

During the spread of major epidemics, in order to block the transmission channels of the disease virus, many regions develop scientific travel restrictions. Each region can control personnel and vehicle travel through basic information facilities such as street video surveillance [7]. For instance, an area can use the new control method of "open the door by knowing the code". Residents in this area can conduct real name authentication on WeChat and Alipay and add family members to the applet. When residents scan the QR code and pass the verification, they can enter and exit the relevant area. Compared with traditional manual verification, the new control method

only requires residents to scan the code with their mobile phones, it is possible to scientifically generate QR codes based on the local public information base resources, which can achieve rapid verification of personnel information, dynamically track personnel flow, and prevent disease transmission. For inbound personnel from outside the area, the combination of real name authentication and big data comparison can be used. If the personnel meet the relevant conditions, they can be issued with a valid QR code for the day, to prevent unnecessary movement of personnel to the greatest extent possible. This method can further improve traffic efficiency, achieve accurate identification of people's identities, effectively prevent cross infection between personnel, and also prevent false information from being fabricated. In addition, some areas can also use unmanned aerial vehicle to patrol dangerous areas with large gathering and high traffic, so that public broadcasting can be used to evacuate people in a timely manner and early warning measures can be taken to effectively eliminate hidden dangers of disease transmission.

3. Problems When Applying Big Data Technology in The Centers for Disease Control and Prevention

3.1 Paying Attention to the Need to Change Management Thinking

When using big data, the Centers for Disease Control and Prevention should transform data management and analysis. In the past, when small data was prevalent, small-scale sample analysis was mainly used to analyze the data. The core object of analysis was static data, and people paid more attention to the causes behind the data. In the era of big data technology development, all data can become samples for analysis. For dynamic, multiple, and structurally rich data, people are more concerned about whether the data has a macro presentation, which can reduce the accuracy of the data to a certain extent. People hope to clarify the correlation between data through analysis, rather than just clarifying the cause of the data. The Centers for Disease Control and Prevention

needs to respect the characteristics of big data, scientifically and reasonably analyze the macro trend of disease transmission, conduct in-depth research on the correlation between search terms, reasonably predict disease trends, and achieve dynamic analysis of data, in order to obtain continuous and real-time disease transmission analysis results, and effectively make up for the shortcomings of traditional disease prevention and control.

3.2 Paying Attention to Privacy Protection

In the rapid development of big data in the new era, people will encounter the problem of personal privacy leakage. Big data can predict people's behavior and status, which requires individuals to pay attention to privacy protection. Data service providers, suppliers, and platform users need to pay special attention to the protection of personal privacy in different stages of data processing. In the era of big data, the Centers for Disease Control and Prevention not only need to regulate their own information security and confidentiality work, but also need to supervise cooperative companies through measures such as signing confidentiality agreements to ensure that there is no leakage of patients' personal privacy.

3.3 Paying Attention to the Shortcomings of Big Data Applications

The Centers for Disease Control and Prevention should not rely too much on big data prediction and judgment in their work. Big data technology can effectively supplement and assist disease prevention and control work, but cannot replace it. Comparing with data obtained through surveys, research, statistics, or scientific experiments, big data places greater emphasis on presenting data in a macro form, which can appropriately reduce the accuracy of the data. The data obtained from surveys, research, statistics, or scientific experiments place greater emphasis on accuracy of the data. So the Centers for Disease Control and Prevention can assist big data to effectively predict and judge the spread of diseases, but cannot directly treat big data prediction results as official data.

4. Conclusion

Based on the above content, it can be concluded that the use of big data technology plays a significant role in the prevention and control of major diseases. The Centers for Disease Control and Prevention can compare statistical databases with disease viruses to identify unknown diseases in advance, and efficiently collect information on personnel and vehicles with big data technology, as well as building personnel entry and exit registration system with information technology, in order to enhance the control of personnel and vehicles, block the path of virus transmission to the greatest extent, and improve control effectiveness.

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