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# Research and Prevention and Control Countermeasures of Imported Medical Vector Biology Nationwide

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**Abstract:** The research and prevention and control of imported medical media is one of the important topics in the field of public health. With the acceleration of globalization, the transnational spread of various medical media organisms through travel, trade and population migration has become a major challenge for public health. This paper summarizes the research status and main problems of imported medical media in China, and focuses on the countermeasures and prevention and control measures, including strengthening monitoring and early warning, improving quarantine, and strengthening international cooperation. It is hoped that the discussion of this paper can provide reference for the research and prevention and control of imported medical media in China.

**Keywords:** Imported medical media; Public health; Research status; Prevention and control countermeasures; Monitoring and early warning; International cooperation

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## Introduction

In recent years, with the acceleration of the globalization of human society, the links and exchanges between countries have become increasingly close, but it has also brought about a series of public health problems, among which the spread of imported medical media has attracted wide attention. Input medical media organisms are organisms that do not exist in a region but can enter the region through human activities and cause disease transmission. These organisms may be vectors or potential disease hosts or vectors. As a country with a large population and a large tourism country, China faces many challenges in the prevention and control of imported medical media. On the one hand, the frequent movement of people and increasingly active import and export trade, which provide convenient conditions for the spread of imported medical media; on the other hand, China is vast and ecologically diverse, and many imported medical media may multiply under appropriate environment conditions and pose a threat to human health. Therefore, it is of great significance to strengthen the research and prevention and control countermeasures for ensuring the national public health security.

### 1. The concept and classification of imported medical media organisms

An imported medical vector is an organism that can enter a region through human activities and may cause disease transmission. These organisms are usually from other regions and may be vectors, disease hosts or vectors. According to their characteristics and the association of potential infectious diseases, it can be divided into two main categories: insects and rodents. Insect imported medical vectors include all kinds of mosquitoes, flies, ticks, fleas, etc. , which usually serve as vectors or vectors to carry and transmit various disease pathogens. For example, *Aedes aegypti* and *Aedes albopictus* are the vectors of diseases such as dengue and malaria, whereas ticks are the communicators of diseases such as brucellosis and leishmaniasis. In addition, parasites such as fleas may also act as vectors, triggering outbreaks of diseases such as plague. Rodents are also an important part of the imported medical vector organisms, mainly including all kinds of rodents, squirrels, marmots and so on. These animals may be potential reservoirs for disease, carrying disease pathogens to humans through the body surface or body fluids. For example, rodents are the main dispersers of plague, squirrels may carry *Leptospira*, marmots may carry *Bacillus anthracis*, etc.

In addition to classification, imported medical vector organisms can be divided according to their origin. Some imported medical media come from epidemic areas or epidemic areas, so the pathogens carried may be highly pathogenic or virulent, and the resulting diseases caused may be more threatening. Other imported medical media may come from non-epidemic areas, but due to their transmission routes, they may become a potential threat to trigger disease transmission. The data of common medical media can more fully explain the harm of imported medical media and the importance of prevention and control. There are more than 1, 600 species of murine animals in the world, of which

about 20 species are known to spread diseases, involving bacteria, viruses, Rickettsia, spirochetes, parasites and other pathogens. On an international scale, these vectors can transmit more than 60 diseases involving six different pathogens. These data highlight the potential threat to public health, emphasizing the importance of scientific monitoring and effective prevention and control.

## 2. Research status of imported medical media organisms nationwide

Order to prevent the transmission of imported medical media through personnel and articles, the monitoring of inbound personnel and articles has been carried out throughout China. These surveillance efforts include quarantine and screening of people and articles coming from affected areas or who may carry the disease to prevent the importation and spread of the disease. The monitoring data can reflect the transmission risk and transmission path of the imported medical media, and provide an important reference basis for the prevention and control work. The species and distribution of imported medical media have been investigated and monitored in many places. These surveys and surveillance efforts usually include the collection, identification and statistics of insects and rodents to understand their species composition, quantitative distribution and seasonal changes. The systematic research on the types and distribution of the imported medical media can provide scientific basis and technical support for the prevention and control work.

Although some progress has been made in the research status of imported medical media organisms nationwide, it is still facing challenges and problems. In the future, the research and monitoring of imported medical vector organisms should be further strengthened, especially in the monitoring and control of insects and rodents. At the same time, we should strengthen international cooperation to jointly address global public health challenges and make greater contribution to human health and safety. Common medical vectors, such as mosquitoes, are widely distributed, with more than 3, 500 species worldwide, involving 38 genera. They may spread more than 80 diseases, including yellow fever, dengue fever, West Nile fever, chikungunya fever, Oriental horse encephalitis, western horse encephalitis, St. Louis encephalitis, Japanese encephalitis, malaria, filariasis and so on. These data highlight the importance of mosquitoes in spreading diseases and are crucial to strengthen their surveillance and control efforts.

China actively participates in international organizations and international cooperation projects, shares the research results and experience of imported medical media with other countries and regions, and jointly formulate and implement prevention and control strategies and measures, and jointly address global public health challenges<sup>[2]</sup>. Some progress has been made in the research status of imported medical media organisms, but it still faces many challenges and problems. In the future, further research and monitoring of imported medical media are needed, and international cooperation to jointly address global public health challenges.

## 3. The main problems and challenges existing

Although China has established the corresponding monitoring and early warning system, there are still deficiencies in terms of coverage, monitoring means and early warning efficiency. In some areas, the monitoring and early warning capacity is relatively weak, the monitoring means and technical equipment are not advanced enough, and the early warning mechanism is not flexible enough. As a result, the monitoring and early warning of imported medical media is not timely and accurate, which affects the effective control of disease transmission. Although China has implemented a series of quarantine measures for inbound and outbound personnel and articles, some imported medical media may still spread through import and export channels due to factors such as large mobility of personnel and articles and insufficient quarantine strength, thus causing the risk of disease transmission.

The spread of imported medical media is a global problem, which requires stronger and stronger international cooperation between countries and regions to jointly formulate and implement prevention and control strategies and measures. However, there are some problems in the current international cooperation mechanism, such as poor information sharing and not flexible cooperation mechanism, which limit the cooperation and exchanges among countries and affect the maintenance of global public health security. The types and quantity of imported medical media are increasing, and their potential transmission routes are becoming more and more diversified, which brings new challenges to the prevention and control work. Some new imported medical media may have strong adaptability and transmission ability, which is difficult to detect and control in time, which increases the difficulty and complexity of prevention and control work. The national imported medical vector biology research is faced with a series of problems and challenges, such as the imperfect monitoring and early warning system, the insufficient quarantine intensity, the imperfect international cooperation mechanism and the increase of new biological species. To solve these problems and challenges, it is necessary to strengthen the construction of domestic monitoring and early warning system, improve the intensity and precision of quarantine, strengthen international cooperation, actively respond to the challenges of new biological species, and jointly guarantee the global public health security<sup>[3]</sup>.

## **4. Biological control countermeasures of imported medical media Strengthen monitoring and early warning**

### **4.1 Strengthening monitoring and early**

Warning is an important measure to deal with the transmission of imported medical media, which is of great significance for timely detection of abnormal conditions, prevention of disease transmission and guarantee of public health security. Through the establishment of a sound monitoring and early warning system, the abnormal situation of imported medical media can be found in time, and the spread of diseases may be warned and prevented, so as to effectively protect the health and safety of the public. The establishment of the monitoring and early warning system can help to detect the signs of the disease transmission in advance and take targeted control measures to minimize the harm caused by the disease transmission. Strengthening monitoring and early warning is an important means to improve the ability to respond to public health emergencies. On a global scale, public health events may cause imported medical agents, posing great challenges to the response capacity of countries. Strengthening monitoring and early warning work can timely understand the dynamics of the spread of the disease, respond quickly, organize and coordinate all forces, effectively control the spread of the disease, and minimize the spread and impact of the epidemic.

Warning is a key measure to achieve precise prevention and control. With the development of science and technology and the application of data analysis technology, the monitoring and early warning system can realize the accurate monitoring and prediction of imported medical media by the help of big data and artificial intelligence. Through the analysis and mining of a large amount of data, the law and trend of disease transmission can be found, providing scientific basis for the formulation of prevention and control measures, and improving the effect and accuracy of prevention and control. Strengthening monitoring and early warning can also promote information sharing and international cooperation. In the context of globalization, information sharing and cooperation among countries are of vital importance. Strengthening monitoring and early warning work helps to strengthen international exchanges and cooperation. By sharing monitoring data, technical experience and prevention and control measures with other countries and regions, we can jointly address the challenges of imported medical media and promote the maintenance and promotion of global public health security.

### **4.2 Enhance quarantine efforts**

We will improve quarantine Improving quarantine is a key measure to prevent and control the transmission of imported medical media, which is of great significance to effectively block the transmission route of disease and ensure public health safety. Improving quarantine efforts is the first line of defense to prevent the transmission of imported medical media. By strengthening the quarantine of people and articles entering and leaving China, people and articles carrying pathogens can be found in time to prevent the spread of disease through the import and export of personnel and articles. In particular, for people and articles coming from epidemic areas or who may carry pathogens, quarantine efforts should be strengthened and strict quarantine measures should be taken to ensure that the disease does not spread through import and export routes. Improving quarantine efforts is an important means to improve the response capacity of public health. Globally, the public health events that may be caused by imported medical agents are endless, posing a serious threat to the public health security of various countries<sup>[4]</sup>. Strengthening quarantine efforts can effectively block the transmission route of the disease, reduce the chance of the disease transmission, improve the public health response capacity, and ensure the health and safety of the people.

Disease transmission will not only endanger the health and safety of the people, but also have a serious impact on the national economic development. The outbreak of the epidemic will restrict the movement of people, stagnate trade and damage tourism, and bring huge losses to the country's economic development. Strengthening quarantine efforts can effectively prevent and control the spread of diseases and ensure the stable development of the national economy. Improving quarantine efforts can also promote international cooperation and information sharing. In the context of globalization, exchanges and cooperation between countries have become closer, and strengthening quarantine efforts will help to strengthen international cooperation and jointly meet the challenges of imported medical media. By sharing quarantine experience, technical means and prevention and control measures with other countries and regions, we can jointly improve the level of global public health security and ensure the health and safety of people all over the world. Improving quarantine is an important measure to prevent the transmission of imported medical media, which is of great significance and value.

## **5. Conclusion**

To sum up, the national imported medical media biological research and prevention and control countermeasures need on the basis of solving the existing problems, to further strengthen cooperation at home and abroad, improve the level of technology, optimize the prevention and control measures, in order to realize the effective monitoring of imported medical media biological transmission, early warning and control, ultimately ensure the security of public health and national economic stable development.

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