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Perspective

One Health Bulletin

"One Health" perspective and public health management strategies

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"One Health" perspective has now been upheld and advocated by many countries and international institutions such as the World Health Organization, the Food and Agriculture Organization of the United Nations, and the World Organization for Animal Health, and the World Bank Groups.

At present, 19 countries, 5 international institutions and 4 regional organizaitons are working jointly to promote "One Health" perspective, with two important development trends. First, it should be put into practice with legal support, government will, and cooperation among multiple disciplines and departments; second, it not only covers zoonotic diseases, food safety and antibiotic resistance, but has now been extended to address environmental pollution, biosecurity, public health risks at ports and other fields.

Taking the global fight against the COVID-19 pandemic as an example, the world now is facing unprecedented challenges, urgently calling for an exploration into institutional innovation, agency innovation and means innovation from the perspective of "One health" so as to enhance the governance efficiency of public health management.

1. Challenges

1.1. A daunting task in containing a pandemic in a world with ever increasing migration

The ever-expanding globalization of the economy, as well as visa-free entry policy and large-scale international exchanges among various countries has greatly promoted the movement of global populations, posing a high risk factor for the outbreaks and public health emergencies.

1.2. Prominent biosafety issues

Since the 21st century, the emerging viruses such as SARS, Ebola and Zika have brought an increasingly complex and severe international biosafety situation. Meanwhile, the world is widely open with a high-level integration of popuation migration, logistics and information, and biosafety risks in any place can easily spread into any country as a result of rapid internationalization and globalization. Inevitably, the biosafety threats are also getting more serious and prominent.

1.3. Intensified public health risks at various ports

With large-scale population migration against the backdrop of globalization, ports are the only legal channels for national entry and exit. Railways, airports and sea transport keep those ports fully engaged with cross border trade and travel, which increase imported public health risk by large-scale people flows, shortly after which the public health security crises caused by major infectious diseases can be then imported into a country with high frequency and large-scale flow of population and goods.

1.4. Present outdated public health management

In the current COVID-19 pandemic, the application of big data has been highly concerned by all parties, and the collection of basic data and the establishment of databases are of vital importance. Smart helmets, drones, intelligent robots, etc. have also been widely used in the fight against the epidemic, which sets higher demands for management and governance of traditional public health.

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2. Suggestions and recommendations for governance

2.1. Establish prevention and control management system and operating mechanism

Government should actively promote the "One Health" perspective and establish a disease prevention and control management system and operating mechanism with clear concept and accurate positioning.

2.2. Normalize the joint prevention and control mechanism

The joint prevention and control mechanism shall be normalized with the government leadership as a core. Presently, the pandemic is at different stages across the globe; relevant government agencies and public health workers should initiate discussion on the responding measures and effectiveness in different countries in order to properly handle the dynamic epidemic situation[1].

A public health committee, overseen by the health ministry, shall be set up as a permanent policy discussing and decision-making organ within the administrative structure, which will cover and involve health, agriculture, forestry, animal husbandry, drug supervision, environmental protection, transportation, port quarantine, market supervision and medical insurance departments, integrate resources, coordinate comprehensively, and prepare timely supplements. In addition, as much as possible, a joint response by non-governmental organizations (NGOs) should be mobilized. NGOs may act faster in epidemic surveillance, early containment of infectious diseases, and provision of medical services, which will play a complementary role in government-led epidemic prevention and control[2].

2.3. Reconstruct the disease and medical treatment system

The proper system reconstruction of disease control and medical treatment, with the public health emergency system as the axis, should break the single-line mechanism of prediction and early warning of the disease control system, and employ the unified layout of the two-line operation system of disease control centers and medical institutions, with medical institutions playing the role of sentinel surveillance. The present disease control center would be divided into two departments with administrative department recombining with health departments, integrating the port quarantine functions; public health clinical centers at all levels directly supported by the CDC shall be set up by focusing on strengthening the allocation of professionals for the departments such as infectious diseases, severe illness rescue, respiration, and hospital infection etc.

2.4. Improve "treatment and prevention integration" mechanism

"Treatment and prevention integration" working mechanism shall be further improved. The transformation of the medical and health service model should highlight "prevention first and treatment second", and public health and medical teams should exchange resources and integrate information. The policy coordination mechanism, organizational cooperation mechanism and personal responsibility mechanism of "treatment and prevention integration" shall also be integrated and optimized from the perspectives of systems, organizations and individuals.

2.5. Complete port quarantine inspection mechanism

Port quarantine inspection mechanism should be further completed with an innovative quarantine model and optimized quarantine process. In addition, an accurate quarantine, and a timely inspection of every suspicion and prompt reaction against every epidemic should be actively carried out.

2.6. Build up public health risk monitoring and early warning systems

Public health risk monitoring and early warning systems shall be built up and completed.

First, a reporting criteria and relevant standards for public health emergencies in accordance with the regional characteristics should be carried out.

Second, the standard threshold of early warning for public health emergencies should be lowered, and the early monitoring of emerging events should be carried out. With the early detection, the incidents could be promptly handled at the first place, hence being nipped in the bud.

Third, according to the "Regulation on the Urgent Handling of Public Health Emergencies", the scope of monitoring and reporting of public health emergencies should cover terrorist attacks (biology, chemistry, nucleus and radiation), the outbreak of contagious diseases, the colonial disease with unknow causes, severe toxicosis incident, poison leakage incidents affecting public safety, radioactive hazard incidents, or public health emergencies that have not yet been defined.

Fourth, the information source of monitoring shall be enlarged. On the basis of the information reporting management system of the infectious disease and its automatic early-warning information system and medical institution reports, close attention shall be paid to other information sources, such as the monitoring system for schools and kindergartens, the information notification of the joint prevention and control mechanism, the public consultation and reporting hotline, the public opinion monitoring system, and the pharmacy monitoring system etc.

2.7. Deepen international cooperation mechanism of public health

The international cooperation mechanism of public health shall be deepened. With the increasingly frequent flow of people and logistics in

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the world, international cooperation in the field of public health should be further strengthened. The first is to enhance information sharing, effectively exercise the mechanisms such as joint prevention and control at borders or ports, and spare no effort to prevent and control the spread of the epidemic. The second is to reinforce cooperation in the aspects including health education and talent training, and jointly carry out public health talent training programs. The third is to deepen international cooperation in health quarantine and consolidate the work mechanism of joint prevention and control. The fourth is to encourage multilateral participation, effectively play the role of NGOs in health cooperation, and build multi-level and diversified public health security partnerships.

2.8. Improve construction system and mechanism of public health talent teams

The construction system and mechanism of public health talent teams shall be improved with the talent training based on intersection and innovation. Some experts deem that in some countries, at present, the emphasis of medical and health personnel training and government investment still have been featured by the irrational model of "emphasizing medical treatment and neglecting prevention", and the transformation from surrounding treating diseases to health has yet to be completed [3].

To realize this transformation, the first is to innovate the talent training mechanism.

1) The goals and positioning of public health talent training should be first defined and clarified, and skills training and discipline span should be then enhanced together with the exploration in cultivation of prevention and clinical compound talents with the schedule of "One Health"-related majors in the medical colleges and universities.

2) Medical colleges of higer education, clinical institutions, and professional institutes of public health are encouraged to establish and improve the coordinative mechanism for talent training, strengthen the proportion of practical teaching while ensuring a good quality of it, and jointly cultivate practical talents who can provide systematic, independent and effective public health services.

3) The construction of the public health physician system shall be strengthened together with the launch and advances of the mechanism designed for the access, training, employment and incentive of public health physicians.

4) An academic exchange and scientific research platform for professionals in clinical medicine, epidemiology, inspection and quarantine, animal husbandry and veterinary medicine, food nutrition and environmental health shall be built up relying on the research institutes of "One Health" established by colleges and universities, along with the integration of scientific research forces, and major special projects spurring a multidisciplinary joint research.

The second is to perfect talents employment mechanism.

1) Strictly implement a personnel access system of disease prevention, and control institutions shall be carried out while appropriately introducing interdisciplinary talents in information science and management science.

2) A two-way flow mechanism for personnel from disease prevention and control institutions and medical institutions should be set up.

3. Conclusions

The innovative perspective and acts of "One Health" in the public health crisis can provide effective solution and lessons for tackling the upcoming challenges, so as to improve the governance efficiency of responding to public health crises.

Disclaimer

The author contributed to this article in his personal capacity. The views expressed are his own and do not necessarily represent the view of the institutions he is affiliated with.

Conflict of interest statement

The author claims there is no conflict of interest.

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