Analysis on the quality system and effect of Environmental Hygiene Surveillance in the Prevention and Control of Infectious Diseases

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Abstract. Whether the nature and task of the actual work of environmental sanitation in our country should be changed or adjusted, at present, the coexistence of environmental vehicle science and environmental medicine in our country, how to treat the situation of the coexistence of environmental health work and environmental protection work and how to deal with it correctly in order to facilitate further development and so on. In essence, these problems are the development direction of environmental hygiene and environmental health work in our country. To study the role of public health surveillance in current disease prevention and control. Analyze the literature to clarify the concept, content and specific role of public health surveillance. The main contents of environmental health monitoring are the prevention of sudden accidents, long-term environmental pollution and the detection of environmental hygiene. Through the effective prevention and evaluation of human disease and health, the normal life and health of residents can be guaranteed. Through the development of effective solutions, we can play the role of public health surveillance and improve the effect of disease prevention and control.

1. Introduction

From the perspective of disease prevention and control, through public health monitoring, we can understand the relevant factors affecting people's health. Combined with the monitoring results, interventions can be carried out to protect people's health and the quality of living environment [1].

Since the outbreak of the Covid-19 epidemic, under the leadership of the CPC Central Committee with Comrade Xi Jinping as the core, China's epidemic prevention and control campaign has made significant strategic achievements through arduous efforts. However, we must clearly realize that in the process of dealing with the sudden epidemic, China's major epidemic prevention and control system and mechanism still exist obvious shortcomings and deficiencies [2]. General Secretary Xi Jinping has pointed out that we need to take a long-term view, sum up experience and draw lessons, and improve systems and mechanisms for preventing and controlling major epidemics in light of the shortcomings and shortcomings exposed by the outbreak. Public health emergency monitoring early warning system in China, the problem of insufficient sensitivity, timeliness and efficiency, an urgent need to catch up on a public health emergency monitoring and early warning system of short board, to ensure the public health emergency occurs, to grasp the situation, the first time the first warning, in the first place.
From the perspective of public health monitoring, this paper explores the functions and concepts of public health monitoring, and explores effective working strategies.

2. System index construction

2.1. Data requirements and sources
1. Population census data: which can provide population size, population age, population gender distribution, etc., is the most basic data for population health evaluation. Its disadvantage is that it only contains a small amount of population health-related data, and the granularity of the data may not meet the needs of small-scale evaluation.
2. Civil Registration Data the United Nations Statistics Division defines civil registration as a continuous, permanent, mandatory and comprehensive record of the occurrence and characteristics of vital events, as well as other population-related civil situation events in accordance with national laws [3]. The most significant advantage of civil registration is the continuous and accurate registration of an individual's life events from birth to death.
3. Population Survey Data Population survey is an important single data source for obtaining population health information. In the absence of routine monitoring and reporting systems, population surveys are the main source of data on certain health risk factors, such as chronic disease risk factors, nutritional status, etc.
4. Medical and health data Medical and health data, including personal medical records, health service records and health resource records, are the most important data sources for implementing population health assessment

2.2. Organization system
China has gradually established a public health work pattern with CDC at all levels as the hub, led by the government, led by health departments, coordinated by multiple departments and participated by the whole society [4]. From the perspective of horizontal organization, health administrative departments lead the work of disease control, CDC (including specialized disease prevention and control institutes) is responsible for disease prevention and control, secondary and tertiary medical institutions, especially infectious disease hospitals (ward), play an important supporting role, and grassroots medical and health institutions and village clinics form the base of the prevention and control network [5].

|                          | 2011   | 2012   | 2013   | 2014   | 2015   | 2016   | 2017   | 2018   |
|--------------------------|--------|--------|--------|--------|--------|--------|--------|--------|
| National disease prevention and control agencies at all levels | 3484   | 3490   | 3516   | 3490   | 3478   | 3481   | 3456   | 3443   |
| Specialized prevention and control institution                | 1294   | 1289   | 1271   | 1242   | 1234   | 1213   | 1200   | 1161   |
| Community Healthcare Center                                  | 32860  | 33562  | 33965  | 34238  | 34321  | 34327  | 34652  | 34997  |
| Township health center                                       | 37295  | 37097  | 37015  | 36902  | 36817  | 36795  | 36551  | 36461  |

Table 1. Health system at all levels.
3. The implementation stage

3.1. Preliminary task

(1) Improve the management system, clear personnel responsibilities: clear cleaning personnel for environmental cleaning, disinfection system and process, the department of environmental quality control team control, hospital Conduct supervision and feedback; The hospital infection management quality manual is developed by the hospital infection management department, which lists the job responsibilities of each staff, the frequency and requirements of environmental monitoring in the department, the indicators of various monitoring and control, the monthly continuous improvement record, the implementation of rectification and the problems that need to enter the next PDCA cycle, etc.

(2) Personnel training: the development of personnel training plan, the cleaning staff, sense control nurses repeatedly carry out the theoretical combination of on-site demonstration operation training, early to take centralized training, the second part of the field demonstration, the third part to take video operation training, to ensure that they master the correct cleaning method and disinfection method.

(3) Optimization of tools and processes: the cleaning tools are labeled with partition hanging, and the number of water injection lines and chlorine-containing disinfection tablets are marked in the cleaning bucket according to the usage habits; Replace it with a long microfiber mop that is easy to dry; Formulate the cleaning process of ward and outpatient department, and uniformly formulate the square box for monitoring the distribution table.

3.2. System perfection

Establish a database of human resources and institutional capacity to manage the skills, experience and certification programmes of the international experts of the Response Team; maintain a profile of technical institutions in the Global Outbreak Alert and Response Network, support international outbreak preparedness and capacity, etc. Collect public data and publish information products for Member States, public health officials, the media and the public. Establish a network communication platform with the global epidemic early warning and emergency response, share business information and coordinate work.

Most of the existing monitoring information systems are not fully functional, so it is difficult to obtain complete and accurate health evaluation indexes, or the evaluation indexes obtained are difficult to explain. For example, single disease reporting systems such as tuberculosis and AIDS coexist with statutory infectious disease reporting systems, resulting in inconsistent data. At the same time, due to the lack of master index of cases, only flowing report can be achieved, and long-term tracking and management of cases cannot be achieved. It is also necessary to perfect or reconstruct the existing
information management mode and information system function according to the concept of transformation from disease management to health management. Due to the poor capability of business collaboration and data exchange and sharing among information systems, some important population health evaluation indicators cannot be obtained due to the lack of appropriate basic data.

4. The supporting effect of disease prevention and control information

In terms of information management, the monitoring of health events in the whole life cycle should be changed from disease as the center to human health as the center; in the construction of information system, the transformation from the information chimney of block and non-connection to the integration and unified collection of information. We will actively promote the application of the "three major databases" of population information, electronic health records and electronic medical records in the field of disease control. Residents in electronic health records, electronic medical records cannot meet the demand of information for disease control, by reconstructing the business model and standardize the business information, integration of infectious diseases, chronic diseases, injuries, immunization programmes, severe mental disorders such as bulk data resources, build electronic files (electronic diseaserecord, EDR) disease, realize the unification of the information collection, scattered utilization. At the same time, in accordance with the concept of covering the whole people and monitoring the whole life cycle, the existing information system is integrated and reconstructed, and the core business application information system of disease control, such as monitoring of health hazard factors, is built as a whole, so as to realize the effective support of the information system for all the business of disease control.

We will promote the construction and application of the disease control information system of the national health information platform at provincial, municipal and county levels, covering all medical and health institutions at all levels and of all types, strengthen the business collaboration and data sharing and exchange between medical treatment and disease control, and realize the vertical automatic exchange and horizontal hierarchical management of information.

The hospital infection management department collects and analyzes the quality inspection results, and reports the monitoring situation to the relevant department every quarter. The department records the hospital infection quality manual, conducts analysis in the department, and reports the problems and corrective measures to the hospital infection department; The hospital sensation department will publish the monitoring and rectification situation to the hospital sensation management briefing, and publicize and feedback the existing problems, cause analysis, rectification measures and effect evaluation of each department in the whole hospital. Some unresolved issues move into the next PDCA cycle.

Compile CDC information management standards, information system functional standards, business index system, basic data sets and range codes, and data exchange and sharing standards. It has formed a set of "unified application of standards, unified data collection, unified application integration, unified portal integration, unified customized interface, unified resource management" as one of the construction standards and norms.

Environmental hygiene is the premise of disinfection and isolation. Microorganisms in the hospital environment can lead to the occurrence and transmission of medical related infections. According to the report of the European Centre for Disease Control and Prevention, about 13.4% of the infections of hospital emergency patients were related to hospital environmental hygiene, and the rate increased to 48.7% in intensive care units.

5. Conclusions

To sum up, the role and significance of public health surveillance is significant, which is reflected in every aspect of life. For the potential hazard factors, it is necessary to analyze the relevant data in the first time, understand the causes and forms of existence, and analyze the potential dangerous influencing molecules. In turn, it provides key information for decision-making and prevention to ensure the safety of social groups. At present, the incidence of chronic non-communicable diseases is on the rise, so it is necessary to continuously monitor the health indicators of the population, and combine the changes of
indicators and health data for prevention and control, so as to achieve good results. The introduction of the standard and the implementation of PDCA management enabled clinical nurses to have a more systematic and comprehensive understanding of the disinfection and monitoring of object surfaces. Compared with the pre-implementation sampling, the number of unqualified samples was significantly reduced, and the existing problems were continuously followed up, and the quality of monitoring samples was also improved.

References
[1] Xie Jing, Wu Dong, Zhang Liyang. Application of public health ethical principles in clinical diagnosis and treatment under the background of sudden major epidemic situation [J]. Journal of Concord Medicine, 2021 Journal 12 (01): 141-145.
[2] Xiao Qifu. Evaluation of the impact of public health surveillance on the control of infectious diseases [J]. China Medical Guide, 2020, 18 (35): 235-236.
[3] Zhang Renjie, Shang Xiaopeng, Wang Zhen, Qi Xiaohua, Li Na, Wei Yudong, Hu Sublime, he Fan. Study on the Construction of Evaluation Index system of County Public Health Emergency burden in Zhejiang Province [J]. Chinese Journal of Preventive Medicine, 2020, 21 (12): 1241-1245.
[4] Wei Shiqing, Wang Zhenling, Lai Xiaoquan, Xiong Wei, Xu Min. Application of diversified hand hygiene monitoring in newly-built hospitals [J]. Practical Preventive Medicine, 2020, 27 (12): 1517-1519.
[5] Ji Chengye. Adolescent health risk behavior surveillance: an important frontier of school health work [J]. School Health in China, 2009. 30 (02): 99-105.