

## The Positioning of and Challenges for the Administration Department of Healthcare-Associated Infection in the Post-Epidemic Era

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### Background

The Administration Department of Healthcare-Associated Infection (ADHI), established with the intention of controlling healthcare-associated infection (HAI) and ensuring patient safety. Combined with clinical work, upholding scientific management, and rational monitoring, an infection prevention and control (IPC) system suitable for the development of hospitals was established. As an important auxiliary and functional department that supports first class clinical work, the ADHI has always had the role of a rear guard, in charge of monitoring infection levels in hospitals and developing the HAI administration system. Since the outbreak of the atypical pneumonia (SARS) pandemic in 2003, the functional role of the ADHI has evolved from that of a single backstage monitor to that of a frontier unit with multisectoral collaboration, which also carries out initial research into a regionalized IPC system. The sudden outbreak of the novel coronavirus (COVID-19) in late 2019 and the subsequent global pandemic led the ADHI to the next level of development.

### The Functions and Positioning of the ADHI in Times of Epidemics

With COVID-19, Humanity experienced the worst global public health emergency since World War II. In the early stages of the outbreak, because of the failure in the early warning of HAI, the lag in the emergency response, public panic, deficiencies in the material reserves, and the incidence of HAI, the previous weaknesses of ADHI were exposed. As the epidemic moves into a normalized phase, the ADHI faces huge challenges in strengthening the control of HAI, repairing shortcomings, and enhancing multisectoral collaboration. The main aspects can be summarized as follows [1]:

#### 1. Establishment and application of fever clinics

Since their establishment during the SARS pandemic in 2003, fever clinics have provided great convenience for the rapid diagnosis and diversion of the majority of fever patients, serving as an extremely successful working model for IPC [2]. The establishment of fever clinics enabled hospitals to respond positively and to control flexibly when the COVID-19 epidemic suddenly emerged, because the clinics served as the outposts for HAI and became the first line of defense for IPC in healthcare facilities [3]. During the COVID-19 epidemic, fever clinics fully utilized the regional coordination mechanism, following the principles of regional coordination and a graded response. Hardware appliances and elastic isolation areas equipped for maximum capacity have been provided. A sufficient medical team has been set up as emergency reserve personnel, which greatly reduces the pressure on IPC [4]. In addition, fever clinics also have a primary emergency response function. In the event of abnormal epidemic trends or unknown infectious diseases, fever clinics should report such trends and diseases to the ADHI and the Center for Disease Control and Prevention as soon as possible and then initiate the response isolation procedures and

the preparatory teams. In this way, the waste of medical resources can be cut, the ability to respond to sudden infections can be strengthened, and the occurrence of HAIs can be reduced.

#### 2. Strengthening training in the use of Personal Protective Equipment (PPE)

As one of the most important guarantees of the safety of healthcare worker (HCW) during an epidemic, PPE can directly reduce the probability of exposure for HCW and plays an important role in controlling HAIs. In the early stages of the COVID-19 epidemic, it was quite common for HCW to contract the infection because of the poor use of PPE [5]. In order to ensure the safety of HCW, the ADHI has organized training in the use of PPE many times, and only those who pass the test on this training course can continue to work. Diversified training methods and systematic and comprehensive assessment have led to an improvement in the use of PPE. As a result, the safety awareness of HCW has been enhanced, and the risk of exposure has been lowered.

#### 3. Coordination of multisectoral cooperation

In order to achieve effective control of HAIs, the full cooperation of the ADHI and other departments is essential. The cooperation between different departments, such as the Logistics Department, the Disinfection Center, and the Nursing Department, is also one of the crucial links in IPC. Environmental disinfection conducted by cleaning staff, screening of staff in risk areas executed by security staff, ward management, and sterile operations carried out by the Nursing Department are all important components of hospital IPC. In addition, the ADHI has formulated a management system for medical waste and is responsible for supervising, training, and providing the corresponding technical guidance. By working with various departments to scientifically dispose of medical waste, problems can be identified quickly, and rectification can be carried out under supervision. During the epidemic, the collaboration between departments has greatly reduced the occurrence of HAIs.

### The Future and Challenges of the ADHI in the Post-Epidemic Era

With the advent of the post-epidemic era and the implementation of the Class B infectious disease policy, which is subject to less stringent preventive and control measures, the main work of the ADHI has changed from prevention to control. In other words, the ADHI has moved from preventing the emergence of contracted cases in hospitals to controlling the outbreak and the level of HAI. This change has led to certain changes in the functions of the ADHI. In order to better standardize and improve the infection management of medical institutions, the role and challenges of the ADHI in the post-epidemic era are reflected in the following aspects:

## 1. Management reform

The functional of the ADHI in the post-epidemic era is mainly reflected in the concept of horizontal diffusion and vertical syncing. In other words, the ADHI's role is to build hospital-based early warning centers for infectious diseases and to sync the infection control technology with the hierarchical diagnosis and treatment model. First, an early warning treatment, IPC system will be built, based in hospitals, and a responsive network platform will be established. Urban (regional) early warning centers for infectious diseases will be set up to strengthen contact between medical institutions at all levels and disease prevention and control centers. This, in turn, will facilitate the real-time release of infection information and will help to monitor infection dynamics. Second, IPC technology will be decentralized to grassroots medical organizations by using the hospital as IPC hub and uniting it with the community grid management model. In this way, co-prevention and co-management at different levels can be achieved, and IPC model can be synchronized with the hierarchical diagnosis and treatment model.

## 2. Habit reform

First, the fundamental elements of IPC will be consolidated. With the normalized management of COVID-19, clinical-related departments, especially the Intensive Care Unit, Blood Purification Department, Endoscopy Department, and other key departments, should focus on strengthening daily infection control training and promoting management of standardization, normalization, professionalization, and refinement [6]. Second, the culture of IPC will be developed. Scientific IPC still requires good implementation by HCW. Whether it is pre-prescription, in-process disposal, or post-event prevention and control, IPC always run throughout the whole process. Multidepartmental cooperation is required. Therefore, it is essential to establish IPC culture that prioritizes the concepts of "Patient Safety First" and "Zero Cases of HAI."

## 3. Conceptual reform

First, hospitals should pay more attention to HAI and change the concept of prioritizing medical care over HAI. At the beginning of the epidemic, because of poor infection management and delayed responses, a large number of people contracted COVID-19, exposing the problems of weak IPC by HCW and insufficient awareness of HAI management. Second, a multidisciplinary IPC team will be organized. The nursing sector, as the main subject of HAI management in the past, has gradually been unable to meet the growing demand for IPC. Today's IPC departments should contain diversified scientific teams that include specialists in clinical medicine, microbiology, statistics, lemmology, and public health to adapt to the evolving discipline construction in HAI management.

## 4. Technological reform

In the post-epidemic era, HAI technology will no longer rely only on passive monitoring by the ADHI. With the popularization of informatization and the advent of the era of the Internet of Things, the real-time monitoring system of HAI will play a greater role. In addition to conventional environmental health monitoring and multidrug-resistant bacteria monitoring, a patient's medical instructions, tests, medical records, image reports, and other clinical diagnostic and treatment data will be analyzed from multiple angles. This will allow the IPC staff to have a more comprehensive and detailed understanding of IPC situation across the whole hospital, thus providing real-time data support for the accurate prediction of trends in the incidence of the relevant infectious diseases and reducing the level of HAI, as well as providing a decision-making basis for hospitals to formulate relevant policies.

The arrival of the post-epidemic era and the adjustment of epidemic prevention policies do not mean that we can be less vigilant. Instead, we need to continue to move forward and adjust the focus of HAI management. The future direction of the work of the ADHI can be summarized as follows. First, the groundwork for IPC will be carried out efficiently, in accordance with laws, regulations, and departmental rules. Second, greater importance will be placed on the spread of acute respiratory infectious diseases, such as COVID-19, in hospitals. Third, active measures will be implemented to prevent the occurrence of HAI among patients, including endogenous infections and exogenous infections. Finally, the protection of HCW against infections will be strengthened. Protective measures should be implemented to avoid not only the occurrence and development of respiratory infectious diseases in hospitals but also family transmission and social transmission.

The job of preventing and controlling HAI is complicated and difficult to manage, and it is still necessary for IPC staff to continue to learn from and persevere with this challenge.



Picture of ADHI team

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## 日本語要約

### アフターコロナにおける医療関連感染管理部門の位置づけと課題

ゼロから出発した医療関連感染管理部門(以下、ADHI)はSARSやCOVID-19のパンデミックを経験し、臨床での補助的役割から、最前線で地域全体の感染対策を行う多職種から成る組織へ進化した。COVID-19流行下では、発熱外来の設置、PPE着脱訓練の強化など部門間の垣根を超え、病院一体となって感染対策に注力した。

パンデミック後、中国ではCOVID-19はクラスB感染症に分類され、感染対策規制を緩和、これをきっかけにADHIは院内感染のレベル管理とアウトブレイク予防が主業務となった。今後は病院、地域でレベルごとに診断、治療を行うシステムの確立、「感染ゼロ」目標の雰囲気づくり、臨床医学、微生物学、統計学、公衆衛生学など様々な専門家を交えたチーム作り、リアルタイムデータ収集のための技術見直しなどを積極的に実施していく。