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Infection Prevention and Control Management in Large Isolated Medical Observation Sites under the COVID-19

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Abstract: ***The COVID-19 epidemic is rampant all over the world. In order to effectively solve the problem of isolation medical observation for returnees at border ports, the establishment of isolation medical observation sites is an important measure to deal with the COVID-19 prevention and control at border ports. Under the condition of serious shortage of medical personnel, how to realize the rapid, efficient, orderly and safe operation of isolation medical observation sites can effectively play an important role in the import of foreign prevention.***

Keywords: Isolation medicine; Novel coronavirus pneumonia; Infection control management; Isolation ward.

1. Introduction

In order to firmly implement the important idea of "preventing importation from the outside and preventing proliferation from the inside", border ports have established quarantine medical observation sites to isolate and observe incoming personnel, which is an important measure for preventing importation from the outside. Some isolation points can accommodate thousands of people, but due to the fact that many large isolation points are newly built in emergency situations, their design and construction are tailored to local conditions, resulting in deficiencies in design and construction. There is also a lack of a systematic and integrated medical management system in operation and management. There are many hidden dangers in medical management and infection prevention and control. How to utilize limited medical staff to explore medical prevention and control management systems, including isolation site medical management and infection prevention and control, to play a significant role in improving infection control and prevention management, ensuring the safety of isolated personnel, healthcare workers, and the environment. I will now share the medical prevention and control management experience of my Yuxi medical team at 1144 isolation medical observation points in Menglian, Pu'er, to provide experience for the future management of medical infection prevention and control in large-scale isolation medical observation points.

2. Problems Faced by Large-scale Isolation Medical Observation Points

2.1 The Importance of Safety Prevention and Control in Large-scale Isolation Medical Observation Points

Many medical isolation observation points at ports are tailored to local conditions. In emergency situations, they are established in rural or wilderness areas in a short period of time. Despite the rudimentary sanitary and infection control facilities, they also face the problem of a large number of isolated personnel and a serious shortage of medical staff. In the isolated medical observation point, a large number of disinfection and sterilization personnel, security personnel, meal delivery, cleaning personnel, militiamen, etc. serving the isolation area need to enter and exit the isolation area as well as medical staff. These staff often come from surrounding villages, generally lack of medical knowledge and weak sense of infection control, which often become infection prevention and control loopholes in the isolated medical observation point, bringing huge pressure to the infection prevention and control management of the isolation point.

2.2 The Facilities in the Isolation Medical Observation Area are Rudimentary

The isolation points for medical observation were all set up according to the requirements of the Eighth Edition of the novel coronavirus Prevention and Control Plan, and they were all equipped with "three zones and two channels". However, the buffer zone was not set up for the staff channel, and the first and second exit zones were too small, resulting in a large number of staff waiting for a long time at the entrance and exit of the isolation zone, and congestion. The staff even entered the first and second exit zones in groups. The common problem in many isolation medical observation sites is that other sensing and control facilities are rudimentary and inadequate.

2.3 Workflow Needs to be Optimized

Firstly, due to the large number of quarantine personnel, detailed information and changes in quarantine personnel cannot be timely and effectively transmitted to the medical team, resulting in the inability to update nucleic acid sampling and medical security information of the medical team in a timely manner [5,6]. Due to the large size of isolation medical observation points, several batches of isolation observation personnel are often housed at the same time for observation. The mixing of different batches of isolation personnel may lead to different batches of isolation personnel becoming close contacts at the same time, prolonging the isolation observation time and increasing the workload of the isolation observation points. Unable to provide a detailed distribution map of isolation zone rooms, there are many large isolation observation point rooms, and in emergency situations, it is necessary to accurately obtain the location of specific personnel and rooms in order to achieve the goal of timely and effective response.

In summary, after the medical team enters the isolation medical observation point, they not only need to provide basic medical support, nucleic acid sampling, temperature monitoring and other work, but also face the challenge of establishing a medical infection control management system in the isolation medical observation point, improving the infection control awareness of the isolation medical observation point, and establishing and strengthening infection control management [6,7].

3. Methods for Medical Management of Large-scale Isolation Medical Observation Points

3.1 Establish and Improve Management Organizational Structure to Enhance Collaboration Efficiency

At present, most large-scale isolation medical observation points are formed by medical staff from different hospitals in a region or medical staff from different departments of the same hospital. A

management organizational structure needs to be established in order to integrate medical staff from different hospitals and departments together and improve collaboration efficiency [8,9]. Yuxi City supports the medical team of Menglian County in Pu'er. Based on the actual situation, the main focus of medical work at the isolation point is infection prevention and control management. The infection control management work at the isolation observation point is reported as follows [10]. I have set up a team leader for the medical team at the isolation point, who is fully responsible for medical coordination and management, party building, and other work. The team leader is divided into three groups, namely the Medical Security and Comprehensive Information Management Group, the Infection Prevention and Control Group, and the Logistics Support Group. The Medical Security and Comprehensive Information Management Group is responsible for: including medical and nursing personnel, mainly responsible for medical and nursing related work, the formulation of operational plans, process arrangements, information management, personnel coordination, etc. for medical related work in isolation points; Infection prevention and control team: mainly responsible for the formulation and implementation of infection control system, prevention training, infection control inspection and supervision. Logistics Support Team: Responsible for material allocation, living support, equipment maintenance, and other related tasks.

3.2 Establish a Work System, Clarify Job Responsibilities and Workflow

The establishment of isolation medical observation points is often a multi department, cross unit and professional collaboration. In addition to medical staff, a large number of disinfection and sterilization personnel, cleaning personnel, security personnel, militia and other personnel enter and leave the isolation area every day. The large influx of non-medical personnel has brought great pressure to infection control management. The medical team needs to establish relevant work systems, job responsibilities, and work processes based on the specific facilities of the isolation point, in accordance with the requirements of epidemic prevention and control and infection control, standardize the management of medical staff, and strengthen the process management, work systems, and job responsibilities of non-medical personnel entering and leaving the isolation area [6, 11]. Cleaning personnel need to regularly clean the garbage in the first and second separation areas, timely inspect and replenish hand sanitizers and hand sanitizers, regularly manage ultraviolet disinfection, dispose of medical waste, prepare disinfectant, and so on. These seemingly normalized work systems in hospitals have a relatively small proportion of medical staff in newly built isolation points, and a high proportion of non-medical personnel need to enter and exit the isolation area. Corresponding work systems and processes need to be established for them, and dedicated personnel need to be responsible for management.

3.3 Establish a Training Management System

Due to the large number of isolated personnel, large isolation medical observation points require a significant number of staff to serve the isolated individuals. The medical team's infection control management team needs to develop relevant infection control training systems, processes, and job responsibilities for the protection, infection control, and workflow training of the staff entering and leaving the isolation area, and assign dedicated personnel to be responsible, with responsibilities assigned to individuals [11,12]. Ensure that all personnel entering the quarantine area are trained and qualified before taking up their posts, and implement closed-loop management of the quarantine medical observation site.

3.4 Inspection and Supervision Management, Problem Feedback Management

Non medical personnel entering and leaving the quarantine area, despite repeated training, are limited by factors such as the knowledge level, age, and acceptance ability of the staff, resulting in a very weak sense of infection control. Trained staff still frequently wear and take off protective clothing that does not comply with regulations in actual work, and the process of entering and leaving the quarantine area does not comply with infection control management. Medical teams need to send personnel for regular and irregular inspections, promptly provide feedback on any problems found, supervise and guide corrections [3, 11, 12].

3.5 Establish Emergency Plans [3, 8]

As a large-scale isolation medical observation site accommodating over 1000 people, it is necessary to establish corresponding emergency plans based on the specific situation of the isolation site. Including: emergency response plans for detecting positive cases, food poisoning response plans, and emergency response plans for sudden and critical illnesses. For example, in the isolation point where we are located, due to the high temperature, we need to consider the first aid plan for heat stroke among the isolated personnel and internal staff. To handle the handling process, path, and personnel responsibilities in case of emergencies.

3.6 Implementation of Grid Management [13]

There is a situation where people from different occupancy batches live together in large isolation medical observation points. Once an imported case occurs, the isolated people in adjacent rooms and areas become close contacts at the same time, which affects the isolation time of different batches of isolated people and reduces the efficiency of isolation observation. It is recommended to implement grid management within large isolation points, dividing isolation zones into different areas, and allowing residents from different batches to move into different areas in batches, in order to minimize contact between isolated individuals from different batches.

4. Summary

The above is an introduction to the experience of medical infection prevention and control management of the Yuxi medical team at the Pu'er Menglian border isolation medical observation point. Due to the rudimentary conditions of the isolation point, the lack of hardware facilities can only be compensated for by establishing a scientific management system, system, and workflow. With epidemic prevention and control as the main goal, establish an infection prevention and control management system to achieve efficient, orderly, and safe operation of large-scale isolation medical observation points [3,12]. With the emergence of mutated virus strains such as δ and λ and the rampant outbreaks abroad, medical observation in border isolation may become a persistent battle that we must face in the coming years. How to achieve more efficient, orderly, and safe operation of medical infection prevention and control in isolation medical observation points in the future is also a major issue that we will soon face. On the basis of scientific management, if a more complete information management platform can be further established, an integrated intelligent management system using artificial intelligence technology, Internet of Things technology, robot technology, etc. can be used to make up for the shortage of medical staff and homogenize the management of all isolation medical observation points, which can better play a role in improving prevention and control efficiency, controlling hospital infections, ensuring the safety of isolated personnel, medical staff and workers, and the environment [5,6].

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