

Study on the Management of Fever Clinic Renovation Engineering During the COVID-19 Epidemic

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Abstract: COVID-19 is spreading worldwide. The fever clinic in the hospital is the most important area for epidemic prevention and control. The Management of Fever Clinic Renovation Engineering needs to consider the epidemic prevention and control requirements comprehensively. Firstly, the overview and background of fever clinic renovation engineering in the hospital are introduced, and the problems in the management of fever clinic engineering are presented. In view of existing problems, the management of hospital fever clinic renovation engineering is analyzed from five aspects: design management, quality management, personnel management, time management, and construction management. The special requirements of construction management are analyzed in depth from enclosure management, area management, and channel management. Through the study, it is found that the difficulty of fever clinic engineering management is greater than that of conventional engineering management, which will provide new ideas for the study of hospital engineering management.

1. Introduction

In recent years, COVID-19 is spreading worldwide. General hospitals are the top priority for outbreak prevention and control [1]. The main symptom of the COVID-19 patient is the presence of fever, which leads to the fact that the COVID-19 patients usually first present to hospital fever clinics [2]. During the COVID-19 epidemic, the fever clinic in the hospital has strict epidemic prevention and control requirements. The traditional fever clinic arrangement can no longer meet the epidemic prevention and control requirements and needs to be retrofitted according to international fever clinic standards. Good engineering management can be of great help to renovation engineering.

Many scholars have conducted various studies on hospital engineering management. For the problem of smart hospital construction management, scholars [3] have analyzed the whole process framework by using BIM technology and combining the construction industry and digital operation management fields. For the clinical engineering management problem, scholars [4] have developed a score index using questionnaires and conducted systematic validation. For the hospital wastewater treatment pond engineering management problem, scholars [5] introduced the design plan,

construction bidding considerations, and construction process management measures of a hospital wastewater treatment pond engineering, and summarized the risks and countermeasures in the process of engineering management. However, there are relatively few studies related to the management of fever clinic renovation engineering in general hospitals.

This paper first introduces the overview and background of fever clinic renovation engineering in the hospital, and presents the problems in the management of fever clinic engineering. In response to the existing problems, the management of hospital fever clinic renovation engineering is analyzed from five aspects: design management, quality management, personnel management, time management, and construction management. The special requirements of construction management are analyzed in depth from enclosure management, area management, and access management.

2. Engineering Overview

2.1. Engineering Introduction

The hospital where this engineering is located is a provincial large-scale general hospital integrating medical treatment, teaching, scientific study, prevention, health care, rehabilitation and emergency treatment, with 3,326 beds, 6,204 employees, 16,000 average daily outpatient visits and over 3,000 average daily inpatient visits. During the COVID-19 epidemic, the regular fever clinic [6] can no longer meet the requirements of epidemic prevention and control and needs to be renovated. The renovation will expand the hospital's fever clinic, add adult consultation rooms and children consultation rooms, expand the waiting room, and add more functional areas and channels for consultation.

2.2. Problems of Engineering Management

The management of fever clinic renovation engineering in general hospitals is quite different from the conventional engineering management. Since there is only one fever clinic in the hospital, the renovation engineering needs to be carried out under the normal operation of the fever clinic, and it cannot affect the work of medical staff and patients. This will seriously increase the construction difficulty of the engineering and put higher requirements on the whole engineering management. On the other hand, the fever clinic is the most important area for epidemic prevention and control in the hospital. The construction of the fever clinic has higher requirements for the epidemic prevention and control than other areas of the hospital, requiring construction workers to take temperature, perform nucleic acid testing, register epidemic prevention and control information, and wear protective clothing during construction on a daily basis, all of which will have a serious impact on construction. It will be important to study the engineering management of the renovation of fever clinics in general hospitals.

3. Engineering Management

In this paper, we study the management of fever clinic renovation engineering in general hospitals from five aspects: design management, quality management, personnel management, time management and construction management, combined with the COVID-19 epidemic.

3.1. Design Management

The design management of the hospital fever clinic renovation engineering is mainly to design the functional requirements of the fever clinic. The fever clinic requires setting up contaminated

area and clean area, and setting up cache area between contaminated area and clean area. There are tight physical partitions between the zones and no crossover with each other. The contaminated area mainly includes nurse station, treatment room, special channel for patients, pre-screening triage table, waiting area, etc. The clean zone mainly includes the duty room, rest area, dressing room, toilet, etc. Independent staff-specific passages are required. The buffer zone mainly includes the first undressing room and the second undressing room, and the room door opening direction should be opened from the clean zone to the contaminated zone.

3.2. Quality Management

The fever clinic undertakes the most important task of hospital epidemic prevention and control, and the quality management of its renovation engineering is especially important. The renovation of the fever clinic needs to follow the international fever clinic standard design layout and combine with the site requirements of the hospital. The quality management of this engineering mainly includes the functional requirements of the whole fever clinic and the requirements of epidemic prevention and control. Among them, the functional requirements include the entire process from the patients entering the fever clinic to the completion of the consultation needs to be unobstructed and have barrier-free access requirements. The consultation room, waiting room and treatment room of the fever clinic all meet the requirements of patients. On the other hand, nucleic acid testing, space partitioning, and consultation partitioning for medical staff and patients should meet the requirements of epidemic prevention and control to prevent cross-contamination of the COVID-19.

3.3. Personnel Management

The personnel management of the hospital fever clinic renovation engineering includes four parts: medical and nursing personnel management, patient management, construction personnel management, and engineering manager management. Medical and nursing staff management requires medical and nursing staff to do well in the requirements of epidemic prevention and control and complete medical care for patients while overcoming the impact of construction. Patient management is to ensure that patients do well in epidemic prevention and control requirements while keeping others away from the construction area to prevent them from being affected by construction. Construction personnel management is to require construction personnel to meet the epidemic prevention and control requirements, speed up the progress of the engineering, and do emergency disposal works during the epidemic. Engineering manager management is to require the engineering manager to ensure the normal operation of the fever clinic, to do a good job in epidemic prevention and control and temperature registration of construction personnel, and to ensure the quality of the engineering. The personnel management of hospital fever clinic renovation engineering adds epidemic prevention and control management on the basis of traditional personnel management, and at the same time adds the personnel management under the parallel situation of normal operation and construction of fever clinic.

3.4. Time Management

The time management of the hospital fever clinic renovation engineering is demanding because the construction and fever clinic operation take place at the same time. If the construction time is too long, it will increase the cost of the engineering, increase the risk of infection for construction workers and make the work of medical staff more difficult. Night-time construction cannot be used because the hospital has a high number of inpatients and night-time construction will affect the inpatients. The construction time should avoid the peak period of the fever clinic to reduce the

impact on patients' access to care. The construction workers need to spend extra time each day to measure body temperature, register information on epidemic prevention and control, test nucleic acid, and put on and take off protective clothing, which requires comprehensive consideration in time management to prevent disruption to the progress of the project.

4. Construction Management

4.1. Enclosure Management

Before the construction of the engineering, the enclosure management should be done. There are two reasons for this. On the one hand, it is a basic requirement for safe construction to keep construction distance from medical personnel and patients to prevent injuries to medical personnel and patients. On the other hand, according to the requirements of epidemic prevention and control, patients are possible virus carriers, and physical partitions should be established between patients and construction workers to protect construction workers from infection.

4.2. Area Management

In the hospital fever clinic renovation engineering, new containers need to be added outside the fever clinic in order to quickly meet the requirements of the fever clinic layout. The container is the most commonly used building structure under the COVID-19 epidemic and has the advantage of quick installation. Combined with the area management of the container, it can increase the adult consultation room and children consultation room of the fever clinic and add more waiting rooms and detention rooms. The container needs to be managed to reasonably allocate the functional layout of each room to meet the requirements of the fever clinic specification.

4.3. Passage Management

In addition to the construction management of functional areas, the construction management of passageways is also important. On the one hand, the passage requirement is to meet the barrier-free access, whether the patient leads to the fever clinic room or the container room, the barrier-free access is required to prevent the patients in wheelchairs from reaching the consultation room or treatment room. On the other hand, it is required to set up patient access between the contaminated area and the buffer zone, and medical staff access between the clean area and the buffer zone. Such a three-zone, two-access layout can reduce the risk of viral infection.

5. Conclusion

In summary, this paper firstly introduces the overview and background of fever clinic renovation engineering in the hospital and presents the problems in the management of the fever clinic engineering. In response to the existing problems, the management of hospital fever clinic renovation engineering is analyzed from five aspects: design management, quality management, personnel management, time management, and construction management. The special requirements of construction management are analyzed in depth from enclosure management, area management, and access management. Through the study, it is found that the difficulty of fever clinic engineering management is greater than that of conventional engineering management, which will provide new ideas for the study of hospital engineering management.

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