

COVID-19 Prevention and Control Practice in Departments of Cancer Hospital during the Outbreak of the Epidemic

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Abstract: **Objective:** Tumor patients, who are physically vulnerable than ordinary patients, are more susceptible to COVID-19 during the outbreak of COVID-19. Therefore the wards of tumor hospital need to optimize the work flow as well as the prevention and control further. **Methods:** Put forward suggestions on the work process of departments and epidemic prevention and control during the outbreak of COVID-19 according to the plan for COVID-19 diagnosis and treatment issued by the National Health Commission and by considering the realities and working characteristics of departments. **Results:** Formulate the work flow in face of COVID-19 as well as the management process of infection prevention and control according to the characteristics of the department wards. **Conclusion:** The medical safety of both doctors and patients during the outbreak of COVID-19 can be ensured by improving and strengthening the work flow and management plan of the department.

1. Introduction

On January 20, 2020, the National Health Commission of the People's Republic of China included the COVID-19 into the Class B infectious diseases stipulated in the *Law of the People's Republic of China on the Prevention and Control of Infectious Diseases*, and adopted prevention and control measures against Class A infectious diseases^[1]. Some researches indicate that COVID-19 is more harmful and lethal to the elderly, those physically vulnerable as well as patients with diseases such as tumors^[2-3]. For the purpose of reducing the spread risk of COVID-19 in the hospital and its relevant departments effectively, the hospital has actively launched *Level 1 Response to Major Public Health Emergencies* and set up a team for COVID-19 prevention and control based on the actual medical working realities; formulated relevant systems such as *Process for the Management of COVID-19 Prevention and Control*, the *Disinfection Measures of the Hospital against COVID-19*, and the *Screening Procedures for Patients and Family*, all of which are further adjusted and optimized based on the latest dynamics of the epidemic and its realities. Although COVID-19 has been somewhat contained, the time when it exists is still uncertain. If patients suffering from malignant tumors cannot receive effective treatment in time, the diseases will probably recur and even become worse, exerting negative impact on their prognosis. Tumor patients, who have a low immunity, are

more susceptible than ordinary people to COVID-19, which is extremely contagious and everything will become worse once they are infected with COVID-19. Therefore, hospital should take stricter prevention and control measures for tumor patients when they come back to the hospital for medical treatment and arrange treatment for them timely. To address the issue on “how to treat tumor patients safely and efficiently, prevent and control them and their families from being infected”, strategic analysis was made in this paper on the department’s work process and prevention and control based on the COVID-19 diagnosis and treatment plan promulgated by the National Health Commission and the relevant prevention and control procedures of the hospital, and by considering the realities and work features of the department so as to provide certain reference for medical staff.

2 Response Strategies and Prevention and Control Management of Departments during the Outbreak of COVID-19

According to the hospital’s *Screening Process for Patients Returned in Advance and Their Families*, all patients returning to the hospital for radiotherapy or chemotherapy earlier than the schedule specified should be screened strictly in terms of epidemiological history, symptoms, and return routes, and the abnormal results shall be reported to the public health department timely. See Figure 1 for the specific diagnosis and treatment screening process.

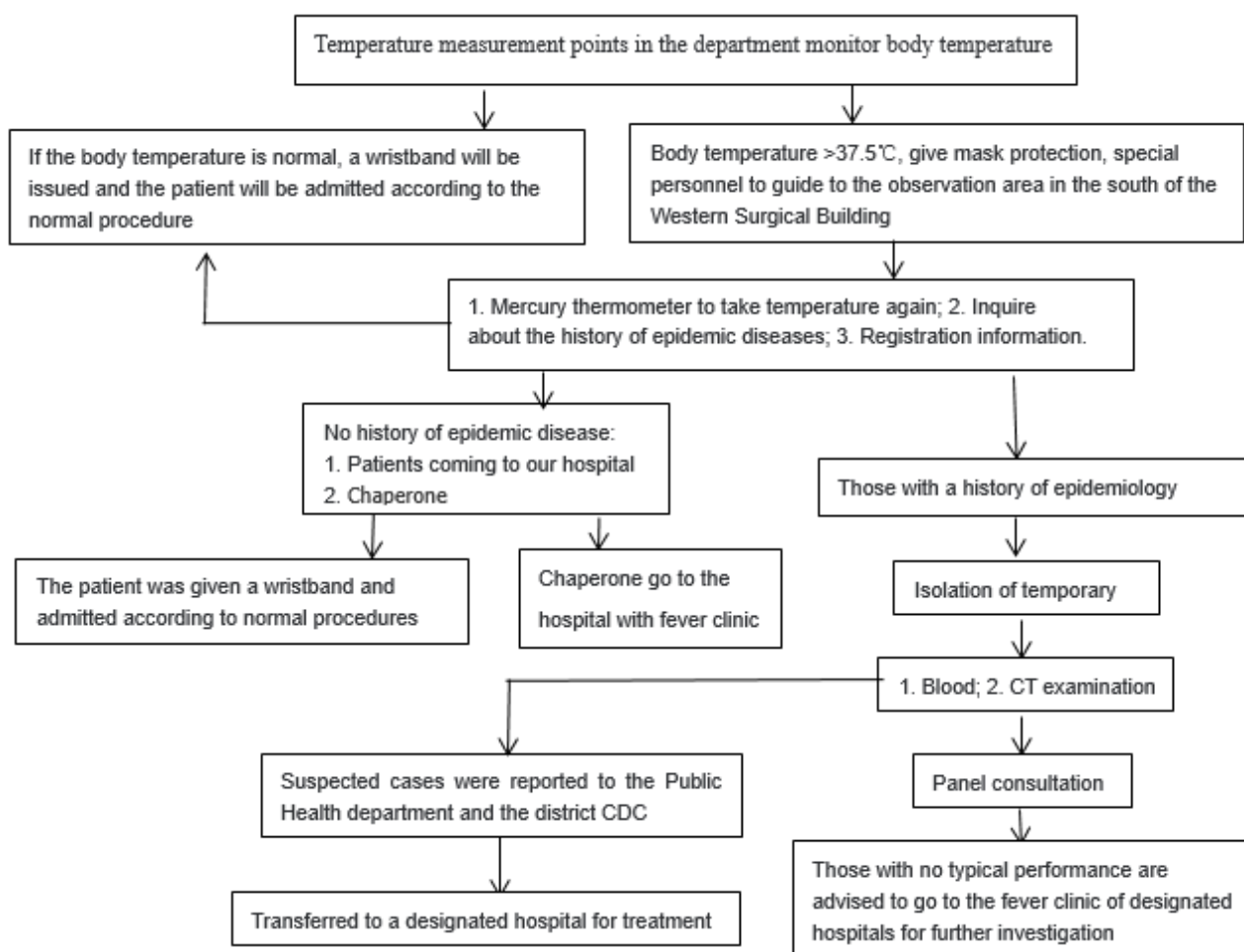


Figure 1 Flow Chart of Department Diagnosis and Treatment Screening

3 Emergency Management Mechanism for Department Medical Staff during Epidemic Prevention and Control Period

By complying with the spirit in the document issued by the Health and Family Planning Commission of Shandong Province, the department decided to cancel the Spring Festival holiday, during which they would work on epidemic prevention and control work. To respond to unexpected infections, the department has set up an emergency response team based on the comprehensive conditions of both doctors and nurses, reviewed its work flow and reorganized its shifts. The department selected 1 experienced doctor and 4 nurses, including 2 physically healthy nurses below 35, 1 nurse for epidemic prevention volunteer and 1 for department pre-examination and triage. See Table 1 for details.

Table 1 Data results

Medical Staff	Gender	Age	Educational Background	Working Years	Level	Title	Management
Doctor 1	Male	42	PhD	15	-	Deputy Chief Doctor	Doctor for emergency
Nurse 1	Female	38	Undergraduate	12	N3	Head nurse	Nurse for emergency
Nurse 2	Female	30	Master	4	N2	Head nurse	Nurse for emergency
Nurse 3	Female	35	Undergraduate	10	N2	Head nurse	Anti-epidemic volunteer
Nurse 4	Female	28	Undergraduate	2	N1	Nurse	Pre-examination and triage

4 Department's Epidemic Prevention and Control during the Epidemic Prevention and Control Period

4.1 Establish a Three-level Screening Mechanism for Pre-examination and Triage

To screen suspected cases of COVID-19 more effectively, arrange patient treatment in a reasonable and orderly manner and avoid cross-infection, the hospital has formulated a three-level screening mechanism for pre-examination and triage based on the hospital's realities: Level 1 screening was set at the department's entrance, where a nurse was arranged to measure the temperature of anyone entering the ward and to ask the patients and their companions to fill out the *Notice of Pre-examination and Triage Information*. Those that have no the experience of getting closed to the area affected by COVID-19, and no symptoms such as fever or dry cough would be allowed to enter the ward after disinfecting hands. One patient could only be accompanied by one person only, and both of them must wear masks before entering the ward. Level 2 screening was set up at the temporary doctor's consultation office with good ventilation and an open space, where the doctor in charge would inquire patients and then fill out the *Investigation Notice of COVID-19*. Level 3 screening was set up at the nurse station, where main nurses checked the *Notice of Pre-examination*

and Triage Information signed by the nurse and the Investigation Notice of COVID-19 signed by the doctor, before issuing an accompanying card, and the responsible nurse there would explain the hospitalization precautions to them.

4.2 Management of Fever Patients in Department

Those suffering from fever or suspected symptoms discovered through any of the three levels of screening will be reported to the hospital's public health department immediately and sent to the designated epidemic prevention hospital by a dedicated person via a special route. Inpatients of the department will undergo temperature monitoring twice a day. Patients suffering from a fever during treatment will receive temperature monitoring and treatment according to their symptoms. If there was no obvious cause of fever, the doctor in charge will issue a CT sheet for CT examination and get rid of the reasons by testing biochemical indicators such as blood routine examination.

4.3 Management of the Quarantine Wards in the Ward

The ward has been designed with quarantine wards of single rooms that meet the specific quarantine requirements so as to receive suspected cases found during hospitalization period. Also, the quarantine wards were in charge of designated personnel and equipped with special diagnosis and treatment supplies. New patients hospitalized would stay in transition wards, where they will be observed for 3 days before transferring to general wards by confirming no respiratory symptom such as fever and dry cough. The transition wards and quarantine wards could avoid cross-infection effectively.

4.4 Strengthen the Department System Training

On January 21 ~ February 25, 2020, the department organized internal training according to the training materials issued by the hospital. In the morning meeting, the department explained the information related to COVID-19, hand hygiene, correct use of masks and caps, and standard protection knowledge to medical staff, nurses, and cleaners. All employees studied the *COVID-19 Diagnosis and Treatment Plan (six editions in total at present)* issued by the National Health Commission through Huayi.com, and obtained certificates after passing the exam. The department also organized various forms of health education to popularize prevention knowledge. The hospital broadcast and distributed publicity materials via lobby TVs to explain COVID-19 related knowledge to patients and their families, including hand hygiene, correct use of masks and caps, and standard protection knowledge, so that all staff and patients in the department knew about the prevention and control knowledge.

5 Infection Prevention and Control in the Department's Wards during Prevention and Control Period

5.1 Infection Prevention and Control in Department's Wards

Medical staff responsible for tumor patients with a low immunity should undergo stricter infection prevention and control. For medical staff: According to the *Technical Guidelines for the Protection of Medical Workers During the COVID-19 Period(Trial)*^[4] issued by the National Health Commission, they shall take appropriate protection measures in the principle of standard prevention idea and adopt Level 1 protection against different exposure risks in clinical diagnosis and treatment operations for the purpose of ensuring safety. For patient's companion: One patient can be

accompanied by one person, and the distance between beds should be at least 1.5 m. According to the current status of the department, wards that cannot meet the requirements were temporarily left unused. Each bed is equipped with a hand sanitizer, and the patients and companions are required to disinfect their hands and wear masks correctly. Disposable medical protective equipment should be discarded in a yellow garbage bag in time, before the central disposal by the department.

5.2 Prevention and Control of Inpatients during Epidemic Prevention and Control Period

To further intensify epidemic prevention and control in the department, minimize transmission risk, and ensure the safe and smooth operation of the department's medical treatment, the department has implemented 24-hour access control system as per the hospital's *Process for the Management of COVID-19 Prevention and Control and Management System for Inpatients in Ward* it formulated based on ward's realities, and set up a temperature screening station at the entrance of the ward so as to measure the temperature of each patient and their companions entering the department. Patients and their companions passing temperature check could enter the ward after disinfecting hands. The department also manages companion strictly by allowing one for each patient and stops companion from entering the ward without wearing a mask. Any companion who has a cold or fever must undergo investigation and be reported in time and replaced by another one. Patient's companion should wear a wristband marked with the "department name", which serves as a voucher for accessing the department. The other family members of patients are forbidden from visit. To avoid gatherings, the department accepts the admission application of only 6 patients in an hour, and will not accept the next batch until the current batch finishes admission check. In order to avoid the movement of people and effectively prevent and control the spread of COVID-19, the department doctors inform the patients they are responsible for. If these patients' time for review is up but they have no symptoms, the review time could be postponed based on the severity of the epidemic. The medical staff in the department, the patients and the companions should monitor their own temperature twice a day and report to the Public Health Department. The department would also arrange staff to check the wearing of masks and the hand hygiene on a daily basis. In the hospital's enterprise WeChat, a health reporting platform has been designed, from which employees receives remainder every day and submit it after completion. The department has arranged shifts reasonably and assigns a special person to monitor and report the temperature of the patients and companions every day.

5.3 Nosocomial Infection Control Management in Wards during Epidemic Prevention and Control Period

It is of great importance to manage the nosocomial infection control of department wards during the epidemic prevention and control period and the work above is also a vital part for prevention and control management. According to the Guideline of Infection Prevention of the National Health Commission, such as: "Notice on the Management of Medical Waste in Medical Institutions During the Outbreak of COVID-19", the *Regulations on Medical Waste Management*, etc., the following work should be carried out based on the features of the department and wards: Diagnosis and treatment supplies: Dedicated diagnosis and treatment supplies for suspected or confirmed patients. Disposable items should be placed in puncture-proof double-layer medical and waste bags, and treated as infectious waste. The effective chlorine concentration of reusable supplies contacting blood or body fluids of suspected or confirmed patients should be increased to 1,000 mg/L. Diagnosis and treatment facilities: 500-1,000mg/L chlorine-containing disinfectant should be prioritized to wipe and disinfect the surface of frequently contacted equipment and surface, such as bed rails, bedside tables, call buttons, monitors, micro pumps, door handles, etc. In case that any contamination occurs, use 1,000-2,000mg/L chlorine-containing disinfectant for disinfection at all times. Pollutants should

be treated as per the criteria of medical waste. Ground disinfection: For visible pollutants, use disposable absorbent materials first to remove them and then wipe and disinfect with 2,000mg/L chlorine-containing disinfectant for 1-2 times a day. Air disinfection: For a suspected or confirmed case, stop using the air-conditioning system until effective cleaning and disinfection measures are taken. Ensure good ventilation of the entire ward. Disposal of medical waste: All wastes of patients are treated as infectious wastes, which should be stored in double-layer medical waste bags. When the bag is 3/4 full, seal it immediately, mark it clearly and transport it in a sealed manner. Medical observers' clothes should be treated as medical waste, once they are attached with visible contamination. For clothes with no visible contaminants, which need recycling, disinfect them with circulating vapor or boil them for 30 min, or disinfect them with ethylene oxide [5-7].

6 Conclusion

According to the research data in the journal *Lancet Oncology* published on February 14, 2020 [8-9], 18 cancer patients among the 1,590 recorded infection cases in 575 hospitals of 31 provincial administrative regions suffered a greater risk of severe illness in comparison to COVID-19 patients without suffering from cancer. In summary, in the defining moment for the prevention and control of COVID-19, it is of great necessity to adopt comprehensive and all-round prevention and control measures, strengthen all measures in the admission process, and refine and implement the department's infection prevention and control measures. Pursuant to relevant policies and regulations of the National Health Commission, and by considering the features of tumor patients, the hospital is trying to enhance the work process and the prevention and control plan to ensure the safety of doctors, nurses and patients during treatment and minimize cross-infection.

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