

Data S1.

Hospital workflow pattern

Ward design. Physical isolation of the staff and patients was emphasized in the ward design, with areas for the medical staff, patients, and logistics support that were strictly separated. To reduce the possibility of infection, specialized channels of movement were designed in the Huoshenshan Hospital with patients and medical staff entering and exiting through different doors (Fig. S2). Relatively independent areas were established to divide clean areas (green), potentially virus-infected areas (yellow), and infected areas (red). Drugs and food were delivered through double glass channels to prevent direct contact between patients and medical staff.

Establishing protective procedures for medical staff. Based on the patient's actual condition and previous experience in fighting infectious diseases, a series of protective procedures were formulated to ensure the safety of medical staff, including putting on (Fig. S3) and removing protective clothing (Fig. S4), personnel entering and leaving the ward, and the use of instruments and equipment, as well as medical data informatization and process.

Medical staff training. Training programs were delivered for all medical staff based on the first edition of infection prevention and control guidance for health care facilities (China).

Reasonable scheduling. Medical teams were formed comprising one doctor and two nurses. These teams were assigned to potentially polluted and contaminated areas according to the following schedules: A (8:00-14:00), B (14:00-20:00), C (20:00-2 0:00), and D (20:00-8:00) (Fig. S5).

Emphasizing nursing work. At the time of the present study, there were no effective vaccines and drugs against COVID-19. Infected patients receive symptomatic and supportive care. Because of the unique and often patient-oriented nature of hospital nursing work, nurses not only ensure that all patients receive high-quality personalized care, but also communicate with patients to help build confidence and provide patients with explanations of relevant knowledge regarding SARS-CoV-2. This information is important in providing patients with the necessary knowledge after discharge to avoid the spread of SARS-CoV-2 caused by social contact.

Figure S1. Classification criteria for patients with COVID-19. COVID-19, coronavirus disease 2019; ICU, intensive care unit.

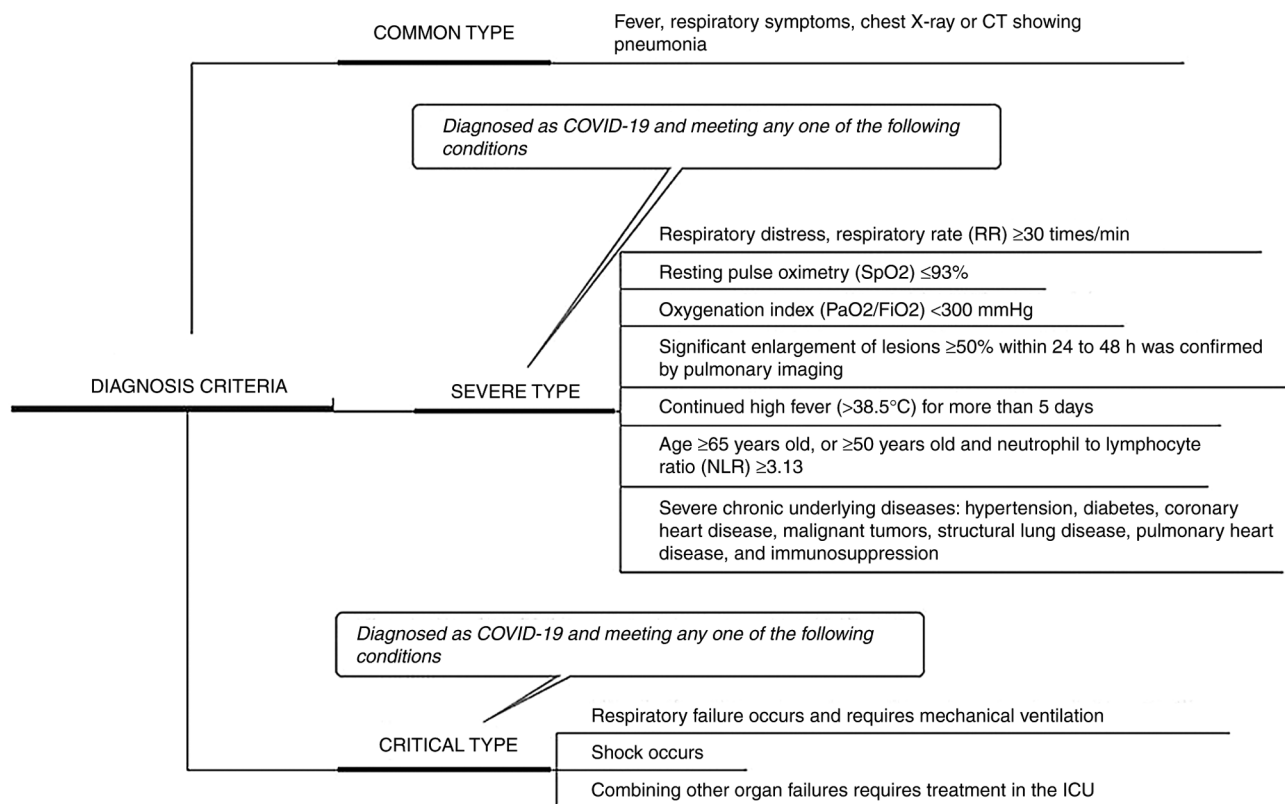


Figure S2. Schematic diagram of the hospital ward. PPE, personal protective equipment.

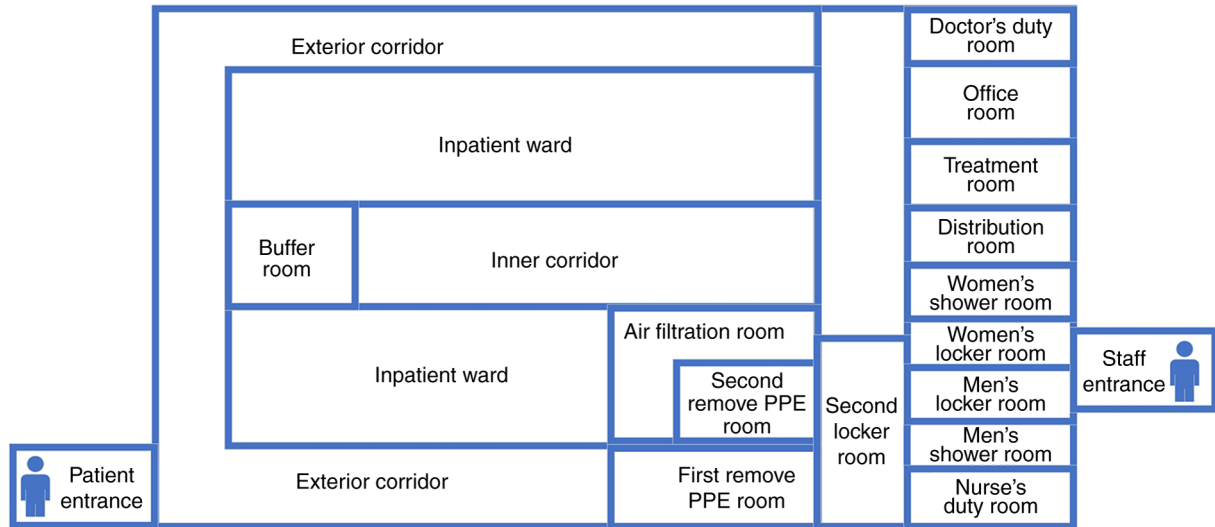


Figure S3. A step-by-step flow chart for putting on protective clothing.

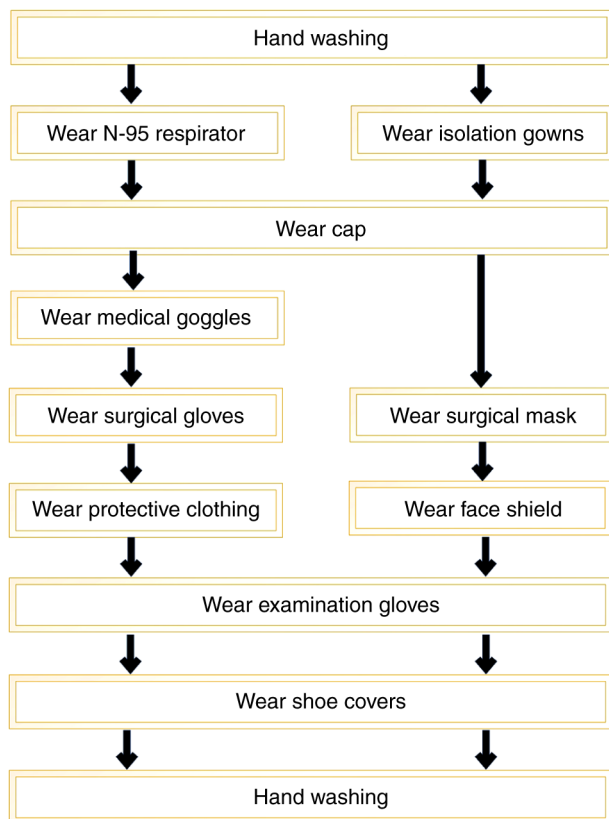


Figure S4. A step-by-step flow chart for removing protective clothing.

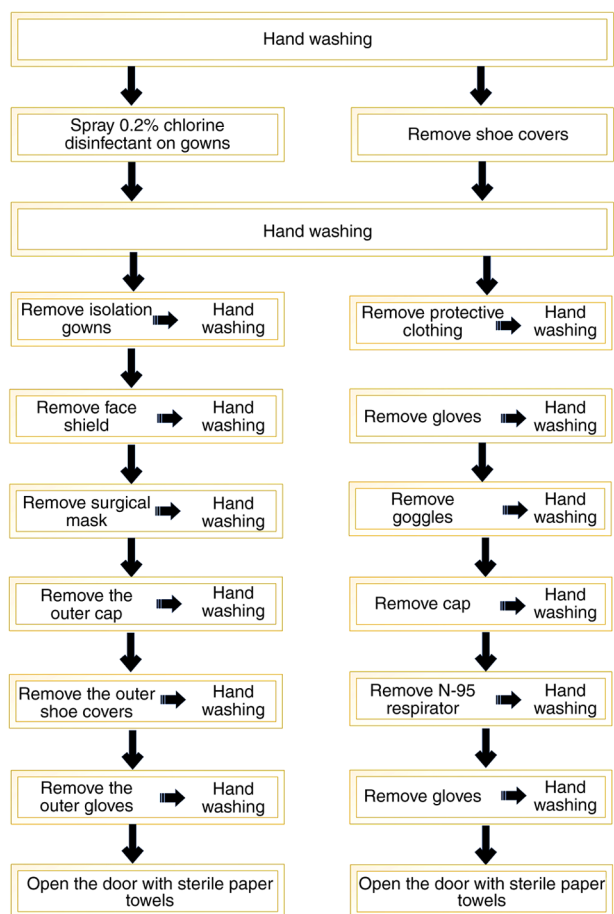


Figure S5. Nurses' work schedules and work content in hospital settings.

Group	Potentially contaminated area (yellow)	Contaminated area (red)
Group A	<ol style="list-style-type: none"> 1. Take over on time (08:00–14:00) 2. Receive various items for the ward treatment vehicle and check the medicines to be delivered 3. Receive and check long-term and temporary medical orders 4. Distribute food to patients 5. Print all long-term and temporary medical orders, check the medical orders and labels again 6. Configure the liquid according to the infusion list, and place the liquid, medicine and various executive commands in the transfer window 7. Information processing of discharged patients and admitted patients 8. Communicate with the staff in the red zone and remind them to pay attention to the abnormalities of patients 	<ol style="list-style-type: none"> 1. Take over on time (08:00–14:00) 2. Make face-to-face handover beside the bed according to the patient's condition, especially for patients with fever 3. Remind patients to eat and take medicine 4. Check new execution orders and complete appropriate treatments 5. Measure body temperature every hour 6. Collect emergency inspection specimens and send them for inspection in time 7. Bed preparation for a admitted patients, education of admitted and discharged patients, and disinfect the ward once 8. Complete the writing of nursing documents, including vital signs, disease changes, special treatment, etc. Critical patients must write a summary 9. Strict handover and leave the ward according to standard procedures
Group B	<ol style="list-style-type: none"> 1. Take over on time (14:00–20:00) 2. Steps 2–7 are the same as described in Group A above 8. Stick the test labels to the collection tube for tomorrow's use, communicate with Red Zone staff and remind them to pay attention to the abnormalities of patients 	<ol style="list-style-type: none"> 1. Take over on time (14:00–20:00) 2. Remaining steps are the same as described in Group A above
Group C	<ol style="list-style-type: none"> 1. Take over on time (20:00–02:00) 2. Remaining steps are the same as described in Group A above except "Distribute food to patients" 	<ol style="list-style-type: none"> 1. Take over on time (20:00–02:00) 2. Remaining steps are the same as described in Group A above
Group D	<ol style="list-style-type: none"> 1. Take over on time (02:00–08:00) 2. Steps 2–7 are the same as described in Group A above 8. Check the information of the labels, communicate with Red Zone staff and remind them to pay attention to the abnormalities of patients 	<ol style="list-style-type: none"> 1. Take over on time (02:00–08:00) 2. Steps 2–8 are the same as described in group A above 9. Strict handover according to standard procedures, ultraviolet disinfection in the ward for 1 hour