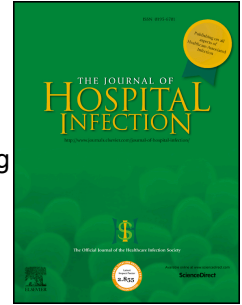


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Practical experiences and suggestions on the eagle-eyed observer, a novel promising role for controlling nosocomial infection of the COVID-19 outbreak

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The outbreak of 2019 novel coronavirus disease (COVID-19) has so far gained intense attention not only within China but internationally^[1,2]. We report a novel infection control measure, the eagle-eyed observer. This originated from the national emergency

medical team in field rescue, and has been reported to minimize the risk of nosocomial infection and provide psychological protection of medical workers in the fight against COVID-19^[3,4]. This innovation has been highly recommended by the frontline medical staff^[5]. By Feb 23, 2020, our hospital had admitted 35 confirmed cases of COVID-19 and 233 suspected cases. There have been thousands of person-times of medical staff entering isolation wards, but none developed nosocomial infections. By contrast hospital-related transmission of COVID-19 was recently suspected in up to 29% of health-care workers^[6]. Here our practical experiences and suggestions are discussed.

The eagle-eyed observer operates at three stages.

Before medical workers enter isolation wards

1. Measure body temperature, record related information, and instruct them to enter changing room I (Entrance, clean area).
2. Guide medical workers to wear personal protective equipment (PPE) properly and give them detailed instruction on precautions, especially for staff entering the isolation wards for the first time.

When medical workers are in the isolation wards

1. Observe the disease status and mood of patients via computer monitors, respond to the call needs of patients and on-duty staff, communicate with medical staff timely and assist them in their work.
2. Remind medical staff when occupational exposures may have occurred, and guide their quarantine and management if necessary.
3. Coordinate specimen transportation, patient access and inspection, and supervise

the implementation of disinfection.

4. Receive drugs, food and medical equipments and transfer them to the isolation wards through delivery windows.

5. Record the negative pressure parameters and airflow operation parameters, and maintain the normal operation of the negative pressure isolation wards.

After medical workers leave isolation wards

1. Monitor the process of removing PPE by medical staff using a monitoring system, that can identify and correct problems.

2. Measure body temperature, record related information, and instruct staff to leave the isolation wards.

3. Check, replenish, distribute and keep the inventory of PPE to ensure a sufficient supply of equipment.

4. Prepare a handover record.

The eagle-eyed observers also made some practical suggestions that were adopted. Spectacle legs of medical staff were tied firmly with elastic ties, and the head band of the protective mask was placed outside the legs of the glasses, to prevent spectacles falling off. Equipment was arranged in the order it was required, and diagrams outlining steps of use were created and displayed. Isolation wards were equipped with automatic disinfectant dispensers and taps. Finally, to improve the observation system, regular video conference between the observer team and medical staff team in the isolation wards were organized.

Staff with abundant infection control experience were preferentially appointed as observers by the Department of Infection Control and Nursing. Observers also received intensive training to become familiar with the requirements for infection control in the isolation wards, and had to pass theoretical and practical tests so that they could truly be described as guardians of medical staff^[4].

In future, artificial intelligent technologies applied in the eagle-eyed observer system might detect problems earlier and provide automatic warning. Automatic robotic devices for the diagnosis and treatment, nursing care in patients, and goods transfer, medical waste packaging and transportation in the isolation wards may be the development direction. Additionally, internet-based real-time monitoring technologies applied in this system can help overcome space limitations. Currently, the severe situation in COVID-19 has not been effectively controlled. Our experiences and suggestions on the eagle-eyed observer may be valuable for controlling nosocomial infection of the COVID-19 outbreak and other acute infectious diseases.

Conflict of interest statement

None.

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