

Letter to Editor



Lessons Learned from COVID-19 for Future Pandemics: Infection Prevention in Health Care Workers

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Dear Editor,

Since the beginning of the pandemic in late December 2019 in Wuhan, China, and the rapid spread of the coronavirus disease 2019 (COVID-19) virus, until May 31, 2022, there were 6.9 million reported deaths and 17.2 million estimated deaths from COVID-19.¹ Due to the unique genetic structure of coronaviruses, as well as their ability to reproduce and easily spread, the emergence of COVID-19 has not been unexpected for virologists. Based on the information collected to-date on COVID-19, due to the complex structure of the virus, high risk of inter-human transmission, presence of asymptomatic or mildly-symptomatic carriers, and progression of the condition to respiratory distress and 5-10% mortality, the occurrence of COVID-19 pandemic can be defined as a kind of perfect storm.²

The COVID-19 pandemic, in addition to its negative economic, social, political implications, has posed many challenges for the healthcare sector: dramatic increase of the need for medical staff, the cost of personal prevention and protection equipment, cost of diagnosing and treating patients, need for more intensive care unit and ventilated beds, and in the mortality rate in the community.³ Nurses, as the largest group of medical staff, spend more time with patients than other health care workers (HCWs). For many emerging diseases, there is no standard treatment, and nurses have the key role in the supportive care of the patients infected with emerging diseases.² In the critical situation of emerging diseases, all social organs, even close relatives and the patient's family, distance themselves from the patient, and it is the duty of the medical staff to take care of the patient despite the dangers that exist for them. 50% of those who died in the severe acute respiratory syndrome (SARS) epidemic were HCWs who became infected in hospital through caring of

the infected patients.⁴ The prevalence of hospitalization among HCWs was 15.1% and mortality rate was 1.5 %.⁵ According to the Executive Director of the International Council of Nurses (ICN), "The fact that the number of nurses who died during the epidemic is similar to the number of people who died during World War I is a giver. We have been calling for standard and systematic data collection on infection and deaths of HCWs, but the fact that we do not yet have accurate statistics is a major scandal"⁶ as the actual statistics are about 60% higher than reported.⁷ It is estimated that the rate of virus transmission within hospitals from patients to HCWs is about 29%.⁸ According to the Deputy Minister of Nursing of the Ministry of Health of Iran, more than 200 000 nurses are working in wards where patients with coronavirus have been hospitalized; since the outbreak of corona in Iran, more than 125 000 nurses have been infected with COVID-19.⁹ The COVID-19 pandemic makes it even more important to talk about the safety of all HCWs. As a result, maintaining the health and safety of staff is a key principle in promoting patient safety.¹⁰ Focusing on the safety of patients should not cause neglect of the safety of HCWs. This article tried to highlight the importance of implementation of new and flexible infection prevention methods based on the characteristics of the disease agent.

This letter was written with the aim of prevention of infection in HCWs to infectious diseases, maintaining human resources, increasing nurses' work efficiency, increasing the quality of care and patient safety, and using health care capacity for education, psychological support, and prevention. Therefore, based on the opinion of experts and the evidence obtained from the review of literature and considering the potentials available in Iran, the following options were proposed to be considered at the next possible pandemics.

Implementation of Evidence-Based Modified Infection Prevention Systems Based on the Characteristics of the Infectious Disease Agent

Successful experiences of different countries in relation to innovations in the infection control system of medical centers during the occurrence of infectious diseases^{8,11} showed positive effects in controlling the transmission of virus from patient to staff. Some suggested interventions for this option are: obtain feedback from infection prevention control nurse at the patient zone entrance, avoid unnecessary contact with surfaces, use of runner personnel, as the person responsible for providing the equipment needed by two or more nurses working in isolated rooms, rearrange of the medical equipment, reduce the number of people and the number of times they enter the isolated area, modify and manage the registration of medical documentation, use the spotter as a person who checks how to put on and take off personal protective equipment at the entrance to the isolated room and divide the hospital space based on the severity of the virus infection into an area that is clean, contaminated, and isolated, and designate areas for hand washing and Donning & Doffing personal protective equipment.

Psychological Support to HCWs

Studies show that during pandemics, in terms of the impact of mental health, HCWs are among the most vulnerable groups due to the high risk of infection, increased work stress and fear of transmitting the disease to their families¹¹. Overall, most studies have highlighted the need for psychological interventions with more emphasis on psychosocial support with effective strategies and careful psychological care for nurses at the frontline of the COVID-19 struggle.⁸ Suggested strategies include the use of psychiatrists in the main referral centers for psychological support and implementation of psychiatric interventions required for vulnerable personnel, use of the cyberspace platform to teach psychological issues related to work stress such as video counseling, consider daily or weekly exercise programs tailored to pandemic conditions such as mountain climbing, increase staff motivation by providing medical expenses, considering rewards and cash rewards, and allocating non-cash points to communicable diseases front-line personnel.

Logical and Scientific Scheduling of Nursing Shifts

The COVID-19 pandemic has created a challenging situation for nurses, increasing workload, stress, and nursing mortality which has reduced the quality of nursing care.¹² Therefore, the shift schedule and working hours of nurses in the center of COVID-19 should be considered to reduce their workload.¹³ Lack of nursing staff and long hours of nursing shifts have led to problems for nurses. In addition, long-term use of personal protective equipment causes blood complications, increased nursing error, adverse patient outcomes,¹⁴ mental and physical

fatigue, increased stress levels, decreased job performance and quality of care.¹⁵ It seems kind of allocation nursing workforce can directly affect the safety and quality of patient care.¹⁶ Therefore, scheduling of nurses' shifts in pandemics based on science and in a logical and flexible manner can be necessary to optimize and effectively use the nursing staff, as well as reduce the workload and improve the quality of nursing care. Suggested strategies include the adjust nurses' shifts flexibly according to staff requests as much as possible, simultaneous use of an experienced and expert nurse with a novice nurse as a mentor and to prevent the physical and mental complications of working with a patient with coronavirus, the best type of shift adjustment in infected areas, if there is no personal protective equipment (PPE) deficiency, is 4-hour shifts (Gear method).

Vaccination of HCWs Against Infectious Diseases

General vaccination is one of the most effective methods to control the disease and reduce mortality during an epidemic of infectious diseases.^{17,18} Even with access to the COVID-19 vaccine, the willingness to use it is a major challenge for health systems. Vaccine hesitancy, known as a behavior, has delayed the acceptance or refusal to use the vaccine. According to the World Health Organization, the three main factors influencing Vaccine hesitancy behavior are: Uncertainty about the vaccine and its effectiveness, lack of understanding of the need for the vaccine and lack of access to a suitable vaccine.^{17,18} Recent studies show that more than one-third of respondents reported uncertainty or reluctance to receive the COVID-19 vaccine.¹⁹ Therefore, one of the most important interventions to reduce the incidence of personnel is to inform them about the benefits of vaccination and thus increase their desire to receive the vaccine. Some suggested interventions for this option are: consultation with relevant authorities to prepare and allocate a valid vaccine for use with priority coronavirus, provide personnel with the necessary information and knowledge about the vaccine and identify barriers to acceptance of vaccines by nurses and address staff concerns by holding evidence-based workshops.

In general, the COVID-19 pandemic is another important alarm and reminder added to the world health history archive which indicate that the prevalence of emerging diseases due to frequent mutations of the virus, high replication power, rapid spread and increased resistance to the vaccines detected, can be an important challenge for the international health system. This global crisis has created fear among HCWs who are concerned about their health, their co-workers, their families and their friends. Despite these fears and anxieties, they continue their efforts on the front lines against COVID-19. As HCWs continue to struggle, health systems must help them stay safe from the damage caused by the disease. This requires the implementation of effective measures to prevent them from becoming infected with infectious

diseases. Therefore, it seems that the proposed options can be used to maintain an effective workforce in similar crises.

Competing Interests

There are no conflicts of interests.

Ethical Approval

None to be declared.

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