4. Occupational exposure

Occupational exposure includes skin and mucosa, respiratory exposure, and needle sticks from confirmed patients. For skin exposure, disinfection with 0.5% iodine or H_2O_2 for 3 minutes is performed then wiped off with clean water. For mucosal exposure, HCP are required to rinse the exposure site with 0.9% saline or 0.05% iodine. For needle sticks, HCP squeeze the blood out and rinse the wound with flowing water then sterilize with 75% EtOH or 0.5% iodine. For respiratory exposure, the mouth and nose of HCP are protected by a facemask within 1 m of an unmasked confirmed patient. For damaged gloves, HCP should are required to disinfect the hands with 0.5% iodine or H_2O_2 for 3 minutes and then rinse with copious water. Finally, HCP are required to leave the contaminated area and to report exposures to infection control personnel.

By following all of the strategies listed here, we successfully prevented HAIs at shelter hospitals, which have >900 patients per open area in each hospital. Up to now, there has been no occurrence of HCP infection by COVID-19 at shelter hospitals. Therefore, our experience has proven efficacious and successful for hospital infection management and prevention during the COVID-19 outbreak.

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Lessons learned from Korea: COVID-19 pandemic

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To the Editor—The World Health Organization (WHO) declared COVID-19 a pandemic on March 11, pointing to >118,000 cases of coronavirus pneumonia worldwide.[1] On the last day of 2019, China reported some cases of pneumonia with unknown etiology in Wuhan. Approximately 7 days later, gene sequencing revealed that the etiologic agent was a coronavirus, which was subsequently named SARS-Cov-2.[2] As of March 18, 2020, >218,000 infected patients and 8,900 deaths had been reported, and the virus had reached 173 countries.[3]

To control an outbreak, every country needs to have preparedness, alert, and response plans.[4] Preparedness comprises activities that began before the crisis; its goal is to create infrastructure and to empower public health workers. Alert plans comprise activities conducted to detect and verify the outbreak, and response activities during the crisis focus on controlling the problem.[5]

The first individual with COVID-19 in Korea was detected on January 20, 2020.[6] Today, 60 days after the first case, statistics show that the peak of infection has passed. A total of 8,413 cases have been confirmed, and the number of new cases has reached <100 for the fourth day in a row.[3] In this study, we describe the outbreak response and preparedness activities that Korea implemented to control the COVID-19 epidemic.

The outbreak alert system in Korea has 4 levels: (1) attention to the outbreak, in which the government began to monitor and prepare; (2) caution when the outbreak entered the country and the government operates cooperation system; (3) alerts regarding the spread of infection to other areas and initiation of the response system; and (4) mobilization of a nationwide response system as the outbreak spread and became severe.[7]

Four days after the notification of new cases in China,[8] while the source was not yet clear, Korea started screening and implemented a quarantine plan at the airports. Those who had visited Wuhan in the previous 14 days were required to complete a health questionnaire and to self-quarantine for 14 days. If fever or respiratory symptoms appeared, they were required to call the Korea Centers for Disease Control and Prevention (KCDC).[3]

On January 20, the first case of COVID-19 pneumonia, which was detected in the airport screening station, was confirmed,[6] resulting in the elevation of the infection alert level from blue (attention) to yellow (caution). In-depth epidemiological studies were conducted, and all contacts were followed for 14 days. These individuals were isolated and tested if any symptoms appeared, and all of the places where the case patients had gone (eg, hotels, markets, and health facilities) were disinfected.[3] On February 21, when epidemiologic studies revealed 2 main sources of transmission, those places were defined as "special care zones" where a specialized team focused on controlling transmission,[9] and the alert level was elevated to the highest (severe).[10]

Rapid diagnosis and widespread testing were other areas of focus in Korea. The proportion of confirmed to suspected cases varied from 0.5 in the initial days to 3.9 in the peak days. Early detection helped Korea eliminate the infection from the community and restrict it to health facilities, which is an essential aspect of outbreak response. Also, research teams started their work in the very early days to develop rapid tests, treatments, and vaccines. From January 31 onward, the 6-hour test was distributed in some health facilities, and from February 7 onward, all health facilities all around the country had this test.[10]

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Moreover, the KCDC started reporting the situation from January 20 onward to provide accurate and real-time data. These reports included the number of confirmed cases and patients under investigation, history of confirmed cases, and prevention advice for the public. The number of the KCDC call center has been mentioned in almost every report, and Koreans were asked not to travel to China and Wuhan, to avoid public outdoor activities, to cough or sneeze safely, and to wear masks when visiting a health center. Besides, the guideline for management and screening get updated whenever needed; travel to Wuhan which was in the definition of suspected cases where changed to travel to china, and finally omitted.[10]

Altogether, the main goal of outbreak response in Korea was prevention of entrance of COVID-19 and at the same time, inhibition of the spread of the virus throughout the country. These goals were achieved through 3 main strategies: (1) containment and mitigation based on outbreak situation; (2) Risk communication to attract community participation; and (3) science-based and fact-driven actions.

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The novel coronavirus (COVID-19) infection in Hangzhou: An experience to share

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To the Editor—Hangzhou, the capital of Zhejiang province in China, was confronted with the pandemic of a novel coronavirus (COVID-19) that originated in Wuhan, Hubei province.[1] According to the Health Commission of Zhejiang Province,[2] 6 cases were first reported on January 19, 2020, and the cumulative cases reached 169 as of February 20, 2020. The situation in Hangzhou was once rather severe—it was the top-ranking city with respect to the number of confirmed cases in Zhejiang province at the beginning of the epidemic. Since the Hangzhou government took rigorous measures to contain the epidemic, positive trends have been observed. The daily number of newly confirmed cases has sharply decreased within the last week, and only 1 case was confirmed from February 17 to 20. Similarly, Hangzhou reported no deaths in its administrative region. We used a regression of log-incidence over time model[3] to provide a fitted trajectory for the actual daily incidence to verify the control effect. As shown in Figure 1, the optimal splitting point, defined as the peak number of daily new cases simulated by the model, occurred on January 25. This peak occurred about a week after launching the highest level of emergency public health alert and response in Hangzhou, which indicates that the prevention and control measures may have been effective.

Overall, 6 major measures were taken to control and prevent the spread of COVID-19 in Hangzhou. First, aware of the seriousness of the situation, on January 23, 2020, the Zhejiang province authorities launched a Level I Public Health Incident Alert, the highest level of emergency public health alert and response in the nation's public health management system. As the top level of China's public health alert system, this measure imposed the maximal limit on movement by people. Second, further action was taken on February 3, 2020, when most districts of Hangzhou announced that every community would be kept under closed management and that only 1 family member was allowed to leave the house to buy daily living supplies every 2 days. Third, "noncontact delivery," a new delivery method, was adopted by many express delivery companies to reduce contagion risk. Fourth, to reduce the concentration of personnel to avoid the risk of cross infection, online working and network teaching were encouraged for workers and students, respectively. These measures were supported by mobile technology companies. Fifth,

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