

Board of Audit and Inspection of Korea

Notice

Title	Insufficient Information Sharing Between National Fire Agency (NFA) and Korea Centers for Disease Control and Prevention (KCDC)
Organization concerned	NFA
Organization providing corrective actions	NFA

I. Overview of Duties of NFA and KCDC

Article 13 of the “Act on 911 Rescue and Emergency Medical Services” prescribes the responsibilities of NFA as protecting the lives and property of the people. In the case of an emergency, the agency should be ready to promptly dispatch a rescue and emergency squad to the scene to save lives, perform first aid, and administer other necessary care.

The KCDC has been delivering its services to stem the outbreak and spread of communicable diseases in accordance with the “Infectious Disease Control and Prevention Act” (hereafter referred to as “Infectious Disease Prevention Act”).

II. Related Laws and Guidelines

According to Article 23 (1) of the “Act on 911 Rescue and Emergency Medical Services (EMS),” the Fire Commissioner of the NFA must establish and implement measures for rescuers and first responders to avoid safety hazards, prevent exposures to infectious diseases, and manage health risks. As stated in Article 25 (1) of the Enforcement Decree of the said Act, the Commissioner must have standard guidelines for safety management in place to protect 911 rescue teams from work-related injuries.

The “Standard Guidelines on Infection Control for Emergency Medical Services Personnel” stipulates that the 911 rescue team leader of each fire department is required to submit a report to the chief fire officer if there is an emergency worker exposed to transmissible diseases. If deemed necessary, the chief officer shall have the staff concerned undergo an immediate medical examination.

Meanwhile, the KCDC gathers and manages data on patients with confirmed infections in accordance with Article 11 to 13 of the “Infectious Disease Prevention Act,” which mandates reporting of suspected or confirmed cases. Those responsible for reporting must inform the occurrence of disease within a fixed-time period. Time frames for reporting vary depending on the grade of the disease, as determined by Korea’s National Notifiable Infectious Diseases Classification System (hereafter referred to as “NNIDCS”). While the occurrence of any transmissible disease classified as Grade 1-4 by the NNIDCS must be reported immediately, that of Grade 5 contagious disease or designated infectious diseases must be reported within seven days.

Medical workers are duty-bound to inform on newly identified cases of diseases to the head of the medical center to which they belong. Other persons obligated to report—medical practitioners who do not belong to medical centers, cohabiting householder, and manager or executive of places where many people gather, such as restaurants, accommodation—must report the presence of disease to the head of the community health center.

As specified by Article 6 (1) of the Enforcement Rule of the said Act, the persons—those enumerated in Article 11 to 13 of the said Act who assume the responsibility of reporting certain notifiable diseases—must submit a case notification report to the Director of the KCDC or the community health center.

Pursuant to Clauses 2 and 3 of Article 4, the State and local governments are under obligation to collect, analyze, and provide information on communicable diseases, as well as to establish and operate information systems for the prevention and control of transmissible diseases. Also, they should mutually

cooperate and share information on the overview, outbreaks, and trends of the disease(s) to deliver efficient patient care and to prevent the spread of contagious diseases.

The NFA should provide information on patients being transported by ambulance, and the KCDC should provide information regarding those with infectious diseases to protect first aid responders and impede the spread of epidemic diseases. Once the 911 emergency call center receives a call, the KCDC should provide the NFA with information on the patient that the first responders will transport to the hospital. Then, the NFA needs to relay the information to the dispatched first responders, allowing them to take proper and subsequent measures, such as wearing protective equipment, depending on the diagnostic status of the patient. If a patient with no history of past infection with a disease listed in the NNIDCS tests positive after arriving at the hospital, the NFA should notify the ambulance personnel of the fact and have the personnel receive confirmatory testing for the disease.

It is essential for KCDC to convey information to the NFA not only about the severity of the disease (such as its fatality rate), but also about the patient with the epidemic disease. The information conveyed should also include the disease's incidence rate and its ability to spread in the community so that the ambulance team can properly determine the appropriate measures to approach the patient at the scene.

III. Major Audit Findings

On November 3, 2016, the KCDC and NFA agreed to share information regarding infected patients by bridging their systems: the "Infectious Disease Surveillance System," and the "Ubiquitous Safety Call Service System." This agreement was to ensure the safety of emergency responders and to contain the spread of transmissible diseases.

Since March 2017, the two agencies have been sharing information¹ on confirmed cases on a daily basis. However, the KCDC only provided the NFA with information on patients (contact information, name/group of the disease, etc.) who contracted one of the 11 types of respiratory diseases² caused by high-risk pathogens among the 22 respiratory infectious diseases.

In this respect, during the audit period (from November 18 to December 13, 2019), the BAI has examined the medical records of patients transported to medical centers by 911 ambulance personnel between 2017 and September 2019. The BAI inspected the causes behind why these patients were transported to the hospital through 2 categories: either by any of the 11 diseases caused by high-risk pathogens, or by any of the 11 respiratory contagious diseases,³ such as tuberculosis.⁴ As shown in Table 1, only 11 patients experienced infections caused by high-risk pathogens, while it was found that 2,263 patients had contracted tuberculosis, and 449 patients were transported due to other respiratory

¹ After the audit on “Status of MERS-CoV Prevention and Response,” the BAI urged the KCDC and the NFA (formerly the Ministry of Public Safety and Security, MPSS) to work more closely, especially on sharing information on people subject to quarantine control or those who had close contact with the infected. The BAI notified the two organizations to connect two information systems: the comprehensive infectious diseases information system under construction by the KCDC and the 911 rescue operations-related system for emergency patients.

² Eleven respiratory infectious diseases comprise one type of Grade 3 disease (anthrax) and ten types of Grade 4 diseases, such as Severe Acute Respiratory Syndrome (SARS), Middle East Respiratory Syndrome (MERS), and novel influenza.

³ The Minister of Health and Welfare installed and operated the “comprehensive tuberculosis control system” in accordance with Article 7 (2) of the “Tuberculosis Prevention Act.” Tuberculosis and HIV/AIDS Control Division of the KCDC was in charge of tuberculosis infection control, as tuberculosis infection requires distinctive management plans compared to other diseases. For instance, tuberculosis differs from other acute respiratory infections in that it is a chronic infectious disease. On account of these reasons, in 2016, tuberculosis was not on the table when Infectious Diseases Control Division (formerly Infectious Diseases Management Division) outlined the list of infectious diseases for information sharing purposes.

⁴ The “Infectious Disease Control and Prevention Act” was amended and put into effect on January 1, 2020. The Act enumerated 86 types of infectious diseases classified in 4 different grades based on the National Notifiable Infectious Diseases Classification System of Korea. One type of Grade 1 disease and ten types of Grade 2 diseases compose 11 out of 22 respiratory infectious diseases, excluding the remaining 11 illnesses caused by high-risk pathogens. Grade 1 infectious diseases refer to those spread through bio-terrorism or those requiring immediate reporting and intense isolation methods (e.g., placing patients in negative-pressure rooms) due to a high fatality rate or high risk of a mass outbreak. Given the risk of transmission of Grade 2 diseases, reporting of confirmed cases must be pursued within 24 hours of occurrence/prevalence. Isolation is requested, as well.

diseases. Given these numbers, one can infer that the range of information on patients provided by the KCDC to the NFA is far limited.

[Table 1] No. of patients transported by 911 emergency workers and those with respiratory infections among these patients

(Unit: person)

Year	Number of patients transported to hospital	Number of patients with respiratory infections		
		Infectious diseases caused by high-risk pathogens	Tuberculosis	Other (10)
2017	1,652,603	3	783	73
2018	1,814,544	8	807	174
2019. 9.	1,550,824	0	673	202
Total	5,017,971	11	2,263	449

Source: Reorganized the data submitted by KCDC

The NFA linked its "Ubiquitous Safety Call Service System" with the "Integrated Emergency Rescue System," which receives emergency calls and informs the 911 emergency crew of the real-time location of the caller. The agency then checks if the phone number of the caller matches that of the infected patient, as provided by the KCDC. If so, the NFA communicates this information immediately to the ambulance team, allowing them to take necessary preventive measures before the patient arrives on the scene.

Despite these preventive measures, first aid responders may still experience exposure to contagious diseases from patients. The NFA could have supported the emergency workers in receiving diagnostic tests and medical care by providing information about patients with whom the workers had come into contact. However, the NFA put the health and safety of the emergency crew on the line, failing to link the "Emergency Rescue Operations Information System," which ambulance workers use to record patient information (name and contact information, and name of destination hospital) and the "Ubiquitous Safety Call Service System."

With limited information about a patient who needs transportation to the hospital, ambulance personnel face a range of health hazards by being in close contact with persons confirmed with or are possibly carrying an infectious disease. If a transported patient had a contagious disease that does not fall under the surveillance list shared by the NFA and KCDC, the ambulance personnel would presumably continue performing first aid without realizing that they were exposed. Accordingly, the emergency medical services providers may miss their chance for early detection and contribute to an increasing number of people who contract the disease.

IV. Recommendations

The BAI requested the Fire Commissioner to develop measures to link the "Emergency Rescue Operations Information System" and the "Ubiquitous Safety Call Service System" so that emergency responders can obtain the medical history of patients regarding emerging infectious diseases.

To minimize the risk of unintended transmission of respiratory diseases between patients and paramedics, the BAI notified the Director of KCDC to provide the NFA with a more comprehensive range of information on infectious diseases, including tuberculosis.

V. Proposals from Audited Entities

The NFA stated that it will establish measures to link the "Emergency Rescue Operations Information System" with the "Ubiquitous Safety Call Service System." The KCDC proposed that it will deliver information on certain transmissible diseases to the NFA to afford the safety of emergency responders.