

**Risk Assessment for Post-disaster Infectious Diseases Caused by the 2024 Noto Peninsula Earthquake in Ishikawa Prefecture
(as of February 1, 2024)**

National Institute of Infectious Diseases, Japan

	①	②	③	Rationales
	Probability of outbreak in affected area/evacuation center	Public health importance	Overall risk	
	1. Low, 2. Medium, 3. High			
Infectious diseases associated with group living/overcrowding in evacuation centers				
Acute Respiratory Infections (Influenza ¹ and COVID-19 ¹ included)	3	3	3	Several outbreaks have been reported in evacuation centers. According to sentinel surveillance report, influenza and COVID-19 activity is high in the prefecture and nationwide. Data from the prefecture after the disaster require caution in interpretation ² , but COVID-19 in particular is on the increase in the prefecture during the first three weeks of 2024. The previous research on the Great East Japan Earthquake suggests the coldness, dehydration, and stress can be risk factors of pneumonia. In evacuation centers, hand hygiene and cough etiquette should be maintained, including wearing masks, whenever possible. During the volunteer activities, it is important to take all possible infection control measures, including the use of masks, to prevent the introduction of infectious diseases ³ .
Tuberculosis	1	2	1	The risk of tuberculosis in Ishikawa prefecture is not relatively high, considering the incident rate of 8.7 per 100,000 population. However, if the cough persists for more than two weeks, it is advisable to consider possible tuberculosis as a differential diagnosis.
Scabies	1	2	1	The risk of scabies outbreaks is not high, but the burden of response is significant in the event of outbreaks at evacuation centers and facilities. Initial symptoms include itching and a red rash, which tends to appear on the fingers, chest, and abdomen. Prolonged skin-to-skin contact and the sharing of bedding can cause the spread of infection. After direct contact with people due to caregiving, etc., it is important to wash hands with running water and soap whenever possible, avoid sharing bedding and clothing, and, if suspected, take rapid responses to prevent the spread of infection.
Waterborne/Foodborne Diseases				
Infectious gastroenteritis/acute diarrhea (Noro virus-Rotavirus ¹ , etc.)	3	2	3	Several outbreaks of infectious gastroenteritis have been reported in evacuation centers. The risk of the spread of infection is high in evacuation centers where access to safe water is difficult and sanitary conditions cannot be maintained due to water outages and other factors. Given the potentially high risks of infectious gastroenteritis/acute diarrhea in evacuation centers, it should be noted that, as well as strengthening hand hygiene measures, management of food hygiene and sanitary conditions in toilets be maintained. Evacuees, supporters, and other stakeholders in evacuation centers are encouraged to report any vomiting or diarrhea to those responsible for health issues in the evacuation centers. Although supplies may be limited in some cases, isolation of patients and environmental disinfection using chlorine disinfectants are desirable whenever possible.
Bacterial enteric Infectious Diseases (Staphylococcus aureus-Salmonella-Campylobacter-EHEC, etc.)	2	2	2	An outbreak of infectious gastroenteritis/acute diarrhea may occur due to difficulty in access to safe and clean water. It should be noted that as well as strengthening hand hygiene measures, management of food hygiene and sanitary conditions in toilets be maintained. Evacuees, supporters, and other stakeholders in evacuation centers are encouraged to report any vomiting or diarrhea to those responsible for health issues in the evacuation centers.
Hepatitis A ¹ , Hepatitis E	1	1	1	As living in evacuation centers continues for longer periods, the risk of infectious diseases with incubation periods of several weeks or longer will increase. There is a possibility of the spread of infection through unsanitary toilets, etc., due to water shortage and lack of disinfectants. In particular, pregnant women are reported at high risk of fulminant hepatitis E, with a fatality rate of up to 20%.
Infectious diseases during post-disaster outdoor activities³				
Tetanus ¹	2	3	3	An injury with exposure to mudflows or soil due to debris removal can pose a high risk of tetanus. Prompt vaccination with tetanus toxoid should be considered for individuals who have not had opportunity to receive routine vaccination (Especially, those who were born before 1968). Including volunteer activities, when working on debris removal, wear gloves, long sleeves, long pants, and clothing that completely covers hands and feet to minimize exposure of skin and prevent injury.
Wound-related skin and soft tissue infections	2	3	3	An injury with exposure to mudflows or soil due to debris removal can pose a risk of wound-related skin and soft tissue infections. Special attention should be paid to severe infections, such as streptococcal toxic shock syndrome. Including volunteer activities, when working on debris removal, wear gloves, long sleeves, long pants, and clothing that completely covers hands and feet to minimize exposure of skin and prevent injury.
Legionnaires' disease	2	2	2	Exposure to aerosols and dust from unclean water or soil during post-disaster outdoor activities, such as debris removal, can pose a risk for Legionnaires' disease. Circulating baths and humidifiers with inadequate sanitation can become contaminated with the bacterium <i>L. pneumophila</i> and become a source of infection. Circulation baths should be cleaned regularly to remove dirt and slime, and humidifiers should be sanitized by replacing the water and washing the humidifier every day.
Leptospirosis	1	2	1	It is transmitted percutaneously through direct contact with water or soil contaminated with the urine of vector animals (rodents including rats). As a countermeasure against infection, when working on debris removal, etc., do not expose the skin, wear gloves and boots. In addition, proper food disposal should be conducted to prevent rodent infestation in evacuation centers and affected areas.
Tick-borne infection (Tsubugamushi disease-Japanese spotted fever-SFTS, etc.)	1	1	1	The risk of tick-borne infection in winter is not necessarily high, but caution should be kept from spring through fall. When working in mountain forests, grassy areas, or other places where ticks are known to be abundant, minimize skin exposure and wear long sleeves and long pants.
Infectious diseases at high levels under the National Infectious Diseases Surveillance				
Pharyngoconjunctival fever	3	2	3	The level in Ishikawa prefecture has been the highest in the past six years (Sentinel surveillance data ²). In evacuation centers, hand hygiene and cough etiquette should be maintained, including wearing masks, as much as possible considering the limitation in supplies.
Group A streptococcal pharyngitis	2	2	2	The level in Ishikawa prefecture has been high before the disaster (Sentinel surveillance data ²). In evacuation centers, hand hygiene and cough etiquette should be maintained, including wearing masks, whenever possible, considering the limitation in supplies.
Keratoconjunctivitis	2	2	2	The trend in Ishikawa prefecture has been observed in the sentinel surveillance ² . The virus can be transmitted through contact with contaminated tissue paper, towels, washcloths, etc. Although there is a shortage of supplies in some cases, it is advisable to practice hand hygiene whenever possible and to avoid sharing towels and other items that come into contact with the eyes.
Vaccine-preventable diseases (VPDs)				
Measles	2	3	3	In 2023, only a few measles cases were reported nationwide, and none were in Ishikawa prefecture. However, even if a single case of measles (e.g. an imported case) could have a significant impact on an evacuation center due to its transmissibility by airborne and severity particularly among susceptible individuals such as infants or those who are unvaccinated. It is crucial for the person in charge of an evacuation center to consider isolation of the affected individual.
Rubella	2	2	2	In 2023, only a few rubella cases were reported nationwide, and none were in Ishikawa prefecture. However, rubella can affect unvaccinated individuals including adults. It is essential to note that unvaccinated pregnant women are at risk of causing congenital rubella syndrome in their newborns (rubella vaccination during pregnancy is contraindicated).
Chickenpox	2	2	2	Chickenpox outbreaks may occur at an evacuation center by airborne transmission. It should be noted that susceptible adults and pregnant women are at high risk of severity.
Pertussis	2	2	2	A pertussis outbreak may occur at an evacuation center by droplets and contact transmission. Infants are at a high risk of severe pertussis. When any person with a persistent cough is observed at an evacuation center, it is recommended to keep distance from infants and young children in addition to keep cough etiquette. Please refer to the preventive measures for Acute Respiratory Infections.
Pneumococcal disease	2	2	2	Pneumococcal disease can be transmitted by droplets. Following the Great East Japan Earthquake, many cases of pneumococcal pneumonia occurred within three weeks after the disaster. Please refer to the preventive measures for Acute Respiratory Infections.
Invasive meningococcal disease	1	3	2	Invasive meningococcal disease can lead to rapid and severe illness in some cases. It can be transmitted by droplets and may cause an outbreak in group-life settings. In evacuation centers, hand hygiene and cough etiquette should be maintained, including wearing masks, whenever possible, considering the limitation in supplies.
Mumps	1	2	1	The mumps activity is low at both nationally and prefectural level. However, the transmission could occur if the infection is brought into susceptible people staying at an evacuation center. Please refer to the preventive measures for Acute Respiratory Infections.

1 It is also classified as a "vaccine-preventable infectious disease". For "vaccine-preventable infectious diseases," vaccination should be considered when available, not only to prevent infection or serious illness, but also to prevent the spread of infection.

2 Since some sentinel institutions may have been unable to report to the sentinel surveillance due to the earthquake, sentinel surveillance data from Ishikawa prefecture after week 52 in 2023 should be interpreted carefully.
<https://www.pref.ishikawa.lg.jp/hokan/kansenho/index.html>

3 Infectious Diseases Prevention for Volunteers planning visitation to the Disaster-affected area and Evacuation centers (The 2024 Noto Peninsula Earthquake)
<https://www.niid.go.jp/niid/ja/disaster/12476-saigakiji-2-volunteer.html>

[reference]

Information on the 2024 Noto Peninsula Earthquake (headquarters for countermeasures, status of damage)

<https://www.pref.ishikawa.lg.jp/saigai/202401ishin-taisakuonbu.html#kaiken>