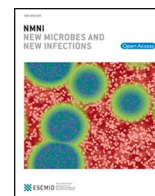


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Letter to the Editor

Enhancing infectious disease prevention in emergency shelters: Lessons from the Noto earthquake and the imperative of vaccination strategies for vulnerable populations

Dear Editor, at 16:10 on January 1st, a major earthquake with a maximum intensity of 7 struck the Noto Region of Ishikawa, Japan. As of January 18, 2024, the earthquake has resulted in 232 fatalities, 21 individuals reported missing, and 15,130 evacuees. The area is characterized by a high aging rate of 48.7%. Consequently, many elderly individuals are currently compelled to stay at emergency shelters. A critical issue that emerges in such scenarios is the risk of infectious diseases.

Indeed, in local welfare shelters that accommodate those requiring advanced support, where we work, elderly residents frequently develop fevers, necessitating prompt medical attention. On January 13, a welfare shelter where the first author volunteered witnessed a scenario where several elderly individuals coughing developed fevers the following morning. Fortunately, these cases improved with symptomatic treatment, but they could have led to severe outcomes.

Originally, Noto is located on the Sea of Japan side, and being winter, the minimum temperatures often fall below freezing. This complicates adequate and regular ventilation in shelters. Additionally, the immune status of evacuees might be compromised due to fatigue and stress from the evacuation. The welfare shelters are equipped with simple cardboard beds and futons, placed close together at a distance of about 50 cm, and water supply is inadequate. These conditions are conducive to the spread of infectious diseases.

Especially since the outbreak of the novel coronavirus diseases, preventing the spread of infectious diseases in shelters has gained critical importance [1]. Various proposals, like redesigning shelter layouts, have been suggested but may not function effectively when the number of evacuees is high [1]. There is undoubtedly a need for more universally applicable infection prevention methods.

In this context, the use of vaccines should be considered. The effectiveness of vaccination in preventing and mitigating the severity of coronavirus and influenza infections among vulnerable populations, such as the elderly and children with special care needs, is well-documented [2,3]. Promoting vaccinations is crucial not only for the elderly in shelters but also for the staff working there and other evacuees, to prevent the spread of infections.

However, there are various barriers to implementing vaccination programs smoothly in shelters immediately after a disaster, such as the preparation of supplies and personnel availability, given the impact of the disaster on local healthcare providers and facilities. Further, it is generally challenging to grasp the vaccination status of the evacuees in the immediate chaos following disasters. In the past, our team conducted an outreach influenza vaccination program in temporary housing in Fukushima after the 2011 Great East Japan Earthquake. However, this was a longer-term initiative, and the current situation in Noto demands more rapid response.

To realize effective post-disaster vaccination, it is vital to immediately spread this issue's importance and secure supplies and personnel from outside sources. Facing the unprecedented disaster of the Noto Earthquake, thorough and swift vaccination is essential to ensure safe and healthy living conditions in shelters. It is time for government agencies, medical institutions, and the local community to unite in establishing a vaccination framework and devote their utmost efforts to protecting the vulnerable populations in shelters.

CRediT authorship contribution statement

Michioki Endo: Conceptualization, Data curation, Formal analysis, Investigation, Writing – original draft, Writing – review & editing. **Akihiko Ozaki:** Conceptualization, Project administration, Supervision, Writing – review & editing. **Ryo Ikeguchi:** Investigation, Resources, Writing – review & editing. **Chika Yamamoto:** Investigation, Writing – review & editing. **Toshiki Abe:** Investigation, Writing – review & editing. **Tianchen Zhao:** Investigation, Writing – review & editing. **Masa-hiro Kami:** Conceptualization, Supervision, Validation, Writing – review & editing. **Hiroyuki Beniya:** Supervision, Writing – review & editing.

Declaration of competing interest

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