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# Lessons and suggestions to travelers and cruise ships in the fight against COVID-19

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We read with great interest the recent article by Sawano *et al.*,[1] which shared their invaluable lessons to be learnt from Japan in the fight against coronavirus disease 2019 (COVID-19) on cruise ship Diamond Princess and provided great assistance in coping with the similar events more scientifically in the world. On 3 February 2020, an outbreak of COVID-19 was reported, and 696 of 3711 persons on the Diamond Princess were tested positive for the causative virus (SARS-CoV-2), 7 patients had died as of March 8.[2] By 26 March, at least 25 other cruise ships have confirmed COVID-19 cases.[3]COVID-19 has been as a challenge for maritime medicine, and effective prevention and control of COVID-19 on ships appeared to be important tasks both to protect the sea workers' and travelers' health and to avoid transmission of the virus worldwide.[4] Sawano *et al.*[1] reported three primary concerns about the quarantine action, which should be learned. First, the isolation on the Diamond Princess was not stringent and effective enough to prevent the contagion of the virus. For the passengers on the Diamond Princess, guidance and video on the appropriate ways to remove masks and to sanitize fingers were provided, and they were quarantined in their cabins. However, the quarantine worked for the passengers but not work for the crew, some of whom were still making regular contact with passengers after viral outbreak. The scientist described 'completely chaotic' conditions aboard the Diamond Princess.[5] Second, the inappropriate quarantine on the Diamond Princess could accelerate a contagion of the virus because of its semi-enclosed space, limited sanitation as well as restricted water and food supply. Third, care for the passengers and crew on the Diamond Princess was poor, especially those elderly with existing with comorbidities who were at serious risk not just from COVID-19 infection, but from physical and psychological stress. In our opinion, epidemic information was not shared publicly in time so that the public couldn't take self-protection measures as soon as possible, which may also lead to the spread of the virus.[6] For example, passengers on the Diamond Princess had not been informed when there were confirmed cases among the passengers who had disembarked. And passengers had also not been informed that there were confirmed patients when they were evacuated on American charter flights from SARS-CoV-2-struck Diamond Princess ship in Japan.[6]

Based on the above lessons, these suggestions may be adopted. First, early detection, disembarkation and evacuation of passengers and crew on a cruise ship are recommended as soon as an outbreak of COVID-19 is confirmed, which would prevent many more passengers and crew from infection and limit travelers requiring quarantine that would not be allowed to travel internationally.[7,8] Second, passengers and crew on the cruise ships should be taken timely quality care, not only physical care but also mental care. Third, epidemic information disclosure should be open and transparent, which would reduce the risk of further spread of infectious diseases on the cruise ships.[6] Fourth, the isolation response focusing on temporary shelter hospital and the disposal procedure of circular disinfection, segmented repeated detection, batched transfer isolation and collaborative medical assistance may be adopted as short-term response measures, and risk emergency management mechanism of cruise lines, health and epidemic prevention

supervision mechanism and international cooperation mechanism for the prevention of infectious diseases may be constructed as long-term mechanism.[9] Finally, concrete operational considerations for managing COVID-19 cases and outbreaks on board the ships are recommended in accordance with the guideline released by the World Health Organization, which mainly includes the following sections: outbreak management plan for COVID-19 disease; prior to boarding; managing a suspected case on board a ship; managing contacts; measures on board the ship; outbreak investigation, and so on.[10] In order to better help the travelers and cruise ships in their fight against COVID-19, Maritime Safety Administration of the People's Republic of China has also launched 'An operation guide to the prevention and control of COVID-19 epidemic on ships (V3.0)' on 16 June.[11]

Additionally, these issues may require our immediate attention. First, asymptomatic carriers of COVID-19 may be a non-negligible population on the cruise ships. Previous studies showed that about 18% of infected individuals on the Diamond Princess were asymptomatic cases, and its proportion could be about 60% in the general population.[12,13] Those asymptomatic cases could pass the virus on to others, and pose a significant infection control challenge, which deserves further studies.[12,14] Moreover, close confines on the cruise ships help the virus to spread, but closed environments are also an ideal place to study how the virus behaves, which are crucial for people making decisions on how to manage the epidemic.[3] Therefore, further research on the virus's spread and severity from the cruise ships are also valuable. Last, but definitely not least, due to the outbreak of COVID-19 globally, and as a new infectious disease with no specific treatment or effective vaccination, it is suggested that nonessential travel should be avoided, especially in those people with serious chronic medical conditions who are more vulnerable to the virus.[15]

In summary, the COVID-19 has spread to many cruise ships and the improvement of the emergency mechanism of cruise epidemic prevention is necessary. 'The Diamond Princess is emerging as an unfortunate but informative experiment that taught scientists much about COVID-19'.[5] We hope our mentioned lessons and suggestions would help improve the situation on the cruise ships and travelers to fight against COVID-19 and other emerging infectious diseases in the future.

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The article does not contain the participation of any human being and animal.

## Verification

All authors have seen the manuscript and agree to the content. All the authors played a significant role in the paper.

## References

1. Sawano T, Ozaki A, Rodriguez-Morales AJ, Tanimoto T, Sah R. Limiting spread of COVID-19 from cruise ships: lessons to be learnt from Japan. *QJM* 2020; **113**:309–10.
2. Yamahata Y, Shibata A. Preparation for quarantine on the cruise ship diamond princess in Japan due to COVID-19. *JMIR Public Health Surveill* 2020; **6**:e18821.
3. Mallapaty S. What the cruise-ship outbreaks reveal about COVID-19. *Nature* 2020; **580**:18.
4. Sikorska K. Coronavirus disease 2019 as a challenge for maritime medicine. *Int Marit Health* 2020; **71**:4–4.
5. Baraniuk C. What the Diamond Princess taught the world about Covid-19. *BMJ* 2020; **369**:m1632.
6. Yuan Y, Wu Z, Sun C. Discussion on risk of outbreak of corona virus disease 2019 in cruise ships. *Occup Health Emerg Rescue* 2020; **38**:133–7.
7. Rocklov J, Sjodin H, Wilder-Smith A. COVID-19 outbreak on the Diamond Princess cruise ship: estimating the epidemic potential and effectiveness of public health countermeasures. *J Travel Med* 2020; **27**:1–7.
8. Mouchtouri VA, Dirksen-Fischer M, Hadjichristodoulou C. Health measures to travellers and cruise ships in response to COVID-19. *J Travel Med* 2020; **27**:1–2.
9. Liu X, Zhang Y. On the improvement of the emergency mechanism of cruise epidemic prevention——taking prevention and control of COVID-19 pneumonia as a reference. *Chin J Marit Law* 2020; **31**:11–9.
10. WHO. Operational considerations for managing COVID-19 cases and outbreaks on board ships. https://www.who.int/publications-detail/operational-considerations-for-managing-covid-19-cases-outbreak-on-board-ships (25 March 2020, date last accessed).
11. Maritime Safety Administration of the People's Republic of China. Operation guidelines for prevention and control of COVID-19 epidemic on ships (Version 3.0). https://www.msa.gov.cn/page/article.do?articleId=24277D6C-DA73-4AF2-B341-A3454C84DFFF (16 June 2020, date last accessed).
12. Qiu J. Covert coronavirus infections could be seeding new outbreaks. *Nature* 2020; doi: 10.1038/d41586-020-00822-x.
13. Mizumoto K, Kagaya K, Zarebski A, Chowell G. Estimating the asymptomatic proportion of coronavirus disease 2019 (COVID-19) cases on board the Diamond Princess cruise ship, Yokohama, Japan, 2020. *Euro Surveill* 2020; **25**:2000180.
14. Al-Tawfiq JA. Asymptomatic coronavirus infection: MERS-CoV and SARS-CoV-2 (COVID-19). *Travel Med Infect Dis* 2020; **35**:101608.
15. ChinaDaily. Cruise industry in US affected by COVID-19. http://www.myzaker.com/article/5e7191268e9f09054c2dba3e (18 March 2020, date last accessed).