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**Berlinda Batista, Drew Dickenson, Katharine Gurski, Malick Kebe\***  
(malick.kebe@bison.howard.edu) and **Naomi Rankin**. *Minimizing disease spread on a  
quarantined cruise ship: A model of COVID-19 with asymptomatic infections.*

On February 5 2020, the Japanese government ordered the passengers and crew on the Diamond Princess to start a two-week quarantine after a former passenger tested positive for COVID-19. During the quarantine, the virus spread rapidly throughout the ship. By February 20, there were 651 cases. We model this quarantine with a SEIR model including asymptomatic infections with differentiated shipboard roles for crew and passengers. The study includes the derivation of the basic reproduction number and simulation studies showing the effect of quarantine with COVID-19 or influenza on the total infection numbers. We show that quarantine on a ship with COVID-19 will lead to significant disease spread if asymptomatic infections are not identified. However, if the majority of the crew and passengers are immune or vaccinated to COVID-19, then quarantine would slow the spread. We also show that a disease similar to influenza, even with a ship with a fully susceptible crew and passengers, could be contained through quarantine measures. (Received February 02, 2021)