Improving CDC Quarantine Station Network's Response to Emerging Threats

Effective Interventions in Disease Control

Over the past two decades, the pace and variance of global infectious disease emergence have accelerated at an alarming rate. This rise is the reflection of a range of factors, including mass travel and migration, close animal–human interchange, and climate change. As of May 23, 2022, the COVID-19 pandemic has caused more than 520 million reported cases and more than 6.2 million reported deaths worldwide, including more than 83 million documented cases and 1 million reported deaths in the United States alone. These figures are likely significant underestimates of the true burden.

The Centers for Disease Control and Prevention's (CDC's) Division of Global Migration and Quarantine (DGMQ) is responsible for preventing the entry, transmission, and spread of communicable diseases in the United States. DGMQ has played an active role in the response to the COVID-19 pandemic. Its suite of infectious disease control tools includes public health travel restrictions and contact investigations, and the issuance of public health orders for quarantine, isolation, or conditional release when necessary. In response to a request from CDC, the National Academies of Sciences, Engineering, and Medicine have conducted an analysis of the U.S. federal quarantine station network and made recommendations to strengthen its response and identify innovative measures to reduce domestic and international transmissions of infectious diseases.

With large increases in international travel and threats posed by emerging infections, the role of DGMQ and the federal quarantine station network are more important than ever.

BEST PRACTICES

MEASURE	FINDINGS
Border Closures and Travel Restrictions	In the beginning of the COVID-19 pandemic, the United States, like many other countries, enacted a border closure to prevent the spread of disease. Border closures and travel restrictions may be effective if they are used for symptomatic infections and implemented early. Research studies indicate travel restrictions can delay the spread of outbreaks, though the lengths of delay were variable.
	Overall, the early detection and isolation of cases have the potential to prevent more infections than targeted travel restrictions and contact reductions, though a combination of these approaches can achieve the strongest and most rapid effect.
Border Health Screening	The number of international arrivals in U.S. airports increased from about 80 million in 2006 to about 120 million in 2019, increasing the difficulty of passenger screening. Health screenings can include temperature checks, answering health questions, or visual assessment for illness. CDC issued an order requiring proof of a negative COVID-19 test or documentation of recently having recovered from COVID-19 for all air passengers arriving from a foreign country to the United States.
	Evidence suggests that mandatory testing, both before departure and upon arrival, increases accuracy in case detection compared to predeparture testing alone. Additionally, vaccine-related measures—such as requiring travelers to be fully or partially vaccinated—reduced the likelihood of importing cases.
Contact Investigation	During the COVID-19 pandemic, barriers such as incomplete traveler information transmitted to federal officials and states, the number of follow ups required, and potential presymptomatic and asymptomatic transmission reduced the effectiveness of contact tracing. However, countries that have standardized traveler data systems and digital contact tracing were more successful.

RECOMMENDED ACTIONS

- A large-scale study should be commissioned to evaluate the effectiveness of travel restrictions and active screening and monitoring of all international travelers in preventing and mitigating disease transmission in the United States during both the COVID-19 pandemic and the 2014–2015 Ebola outbreaks in West Africa.
- DGMQ needs support in finding potential sites for large-scale isolation and quarantine facilities in all U.S. Department of Health and Human Services' regions.
- The adaption of innovative technologies and data systems, such as digital health certificates and interoperability of passenger data should be prioritized in order to target disease control strategies for a large number of incoming travelers.
- DGMQ should ensure that all uses of digital technologies, novel data streams, and interoperative public health information systems follow a careful consideration of their ethical aspects.

CONCLUSION

With large increases in international travel and threats posed by emerging infections, the role of DGMQ and the federal quarantine station network are more important than ever. The COVID-19 pandemic saw a proliferation of technological advancements and introduced a range of mitigation strategies for reducing the transmission of the virus nationally and globally. DGMQ must be provided the funding and regulatory authority it needs to implement these effective interventions and continue to protect the public's health.

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