Tough travel bans only 'modestly' slow coronavirus spread: study

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An in-depth analysis of strict travel bans, both within and outside of China, finds that they may have done little to impede the spread of coronavirus.

In fact, even the draconian 90% travel restrictions placed on residents living in the epidemic's epicenter, Wuhan, "delayed the overall epidemic progression by only 3 to 5 days in mainland China," according to researchers who published their findings March 6 in the journal *Science*.

As to bans on flights from Wuhan to other countries, including the United States, the new research suggests that such efforts probably only temporarily slowed the international spread of COVID-19.

That's because many undetected cases were already circulating globally, the researchers believe, and once these cases "seeded" a new country, local outbreaks unconnected to China got quickly underway.

The bottom line is that "moving forward, we expect that travel restrictions to COVID-19-affected areas will have [only] modest effects" in curbing the number of new cases, said a team led by Matteo Chinazzi, of Northeastern University in Boston.

So, what *will* work to help slow the virus?

The answer: "transmission-reduction interventions," according to Chinazzi's group.

Those interventions include common-sense steps U.S. health officials have been advocating for weeks, including frequent hand washing, "social distancing" (no handshaking, avoiding crowds), staying home when sick, coughing into your elbow and cleaning frequently touched surfaces.

In the new study, researchers devised a complex model of the situation in China and globally. In part, this involved using "real-world data where the world is divided into sub-populations centered around major transportation hubs [usually airports]."

Overall, the model involved more than 3,200 "sub-populations" across more than 200 countries, the team said. They also gathered data from the International Air Transport Association (IATA) and ground travel data from governments in more than 30 nations on five continents.

Although the exact beginning of the coronavirus outbreak is still unclear, Chinazzi and colleagues based their findings on the notion that about 40 cases first emerged in Wuhan between mid-November and Dec. 1, 2019.

Beginning on Jan. 23, 2020, the scope of the epidemic raised alarm bells, and the Chinese government placed strict restrictions on movement for citizens living in and near Wuhan. For weeks, millions of people were forced to stay home, away from public transit, workplaces and schools.

But the new model shows that even the 90% travel restrictions used in Wuhan curbed the spread of the new coronavirus in China by just a few days.

Why? Because by Jan. 23, "the epidemic was [already] seeded in several locations across mainland China," the researchers said.

This covert "seeding" occurs because experts assume that about 60% of cases of coronavirus infection actually go undetected, partially because many of those infected will show no or only mild symptoms.

Indeed, even in China, the study authors estimate that just 1 in every 4 cases are detected and confirmed.

So what about the effects of banning international air travel to and from Wuhan?

In this case, the initial effect was very beneficial: According to Chinazzi's group, such efforts were able to slow the "importation" of

COVID-19 from mainland China to other countries by about 77% by mid-February.

Those benefits were short-lived, however.

In mid-February, countries such as Iran, Italy and South Korea were already reporting major domestic outbreaks. Though the travel bans slowed the international spread of coronavirus by two to three weeks, Chinazzi's team believes that "the number of cases observed outside mainland China will resume its growth after two to three weeks from cases that originated elsewhere.

"Even in the presence of the strong travel restrictions … a large number of individuals exposed to the [new coronavirus] have been traveling internationally without being detected," the study authors said.

Dr. Robert Glatter is an emergency physician at Lenox Hill Hospital in New York City. Reading over the new report, he agreed that "while travel bans may have delayed the spread of COVID-19 in the initial stages, the more important and relevant measures to reduce spread of the virus arise from rapid identification, isolation and contact tracing of contacts of persons who test positive for COVID-19."

Individual efforts, used routinely by millions of Americans, will be crucial, he added.

"This means meticulous hand hygiene, social distancing, covering your coughs and sneezes, and staying home if you are sick," Glatter said.

As of Friday, the World Health Organization reported that more than 100,000 people worldwide have been diagnosed with COVID-19, and nearly 3,400 have died. In the United States, over 220 cases have been reported (all have been quarantined), including 14 deaths.

More information: Matteo Chinazzi et al. The effect of travel restrictions on the spread of the 2019 novel coronavirus (COVID-19) outbreak, *Science* (2020). DOI: 10.1126/science.aba9757