

## Highly vaccinated countries thought they were over the worst.

### Denmark says the pandemic's toughest month is just beginning.

At the State Serum Institute, a government science campus, Denmark tracks the coronavirus in granular detail By [Chico Harlan](#) December 18, 2021 [Story source: Washington Post](#)

COPENHAGEN — In a country that tracks the spread of [coronavirus](#) variants as closely as any in the world, the signals have never been more concerning. Omicron positives are doubling nearly every two days. The country is setting one daily case record after another. The lab analyzing positive tests recently added an overnight shift just to keep up.

And scientists say the surge is just beginning.

As omicron drives a new phase of the pandemic, many are looking to Denmark — and particularly the government institute devoted to testing, surveillance and modeling — for warnings about what to expect.

The emerging answer — **even in this highly vaccinated, wealthy northern European country — is dire.** For all the defenses built over the last year, **the virus is about to sprint out of control**, and scientists here expect a similar pattern in much of the world.

“The next month will be the hardest period of the pandemic,” said Tyra Grove Krause, the chief epidemiologist at Denmark’s State Serum Institute, a campus of brick buildings along a canal.

Ever since the omicron variant emerged in November, the best hope has been that it might cause less severe sickness than the delta version it is competing with, which in turn might make this wave more manageable

and help the transition of covid-19 into an endemic disease. But Denmark’s projections show the wave so fully inundating the country that even a lessened strain will deliver an unprecedented blow.

Tyra Grove Krause, chief epidemiologist at the State Serum Institute, says the next month “will be the hardest period of the pandemic.” (Chico Harlan/The Washington Post)

Scientists caution that the knowledge of omicron remains imprecise. Denmark’s virus modelers have many scenarios. But even in a middle-of-the-road scenario, Danish hospitals will soon face a daily flow of patients several times beyond what they’ve previously seen.

“This will overwhelm hospitals,” Grove Krause said. “I don’t have any doubt about it.”

In her office building, where she works with a six-person modeling team, she tried to explain why omicron amounts to such a setback in the fight against the pandemic. She likened the virus to a flood, and she described how vaccines, under earlier variants, had acted like two barrier walls safeguarding the health system. One barrier resulted from the vaccines’ ability to reduce the probability of infection, keeping spread low. The other barrier stemmed from the diminished likelihood of severe sickness and death. Both barriers had some holes, but together, they ensured that the floodwaters never got too high.

But now, she said, the first barrier has been largely removed. **Denmark’s data shows people with two doses to be just as**

vulnerable to omicron infection as the unvaccinated. Those who've received boosters have better protection — a sign of hope — but meanwhile, about 3 in 4 Danes have yet to receive a third dose, making the majority of the country vulnerable.

That dynamic, coupled with a variant far more transmissible than the one from last winter, means any Danish person is now dramatically more likely to come in contact with the virus — including the old and the frail, as Denmark's demographics skew older, like much of the West. The water will now flow through the holes in the second wall.

WHO: Omicron is spreading faster than any other variant. Here's the latest on what we know.

At least four dozen countries and 39 U.S. states have reported cases of the omicron variant. National video reporter Hannah Jewell explains what we know. (Casey Silvestri/The Washington Post)

On her double-monitor computer, Grove Krause pulled up the institute's latest projections, which scientists were still tweaking before releasing them to the public on Saturday. The range of possibilities is wide, but the very best scenario — which is unlikely, she said — shows daily hospitalizations matching the peak of last year. In most of the other scenarios, the numbers soar into the stratosphere.

Denmark's hospitals have never had more than 1,000 covid 19 patients at any given time, last winter's peak. But by early January, in a moderate scenario, hospitals could be seeing 500 new covid patients arriving every day. If omicron's transmissibility winds up on the higher end, and it proves just as severe as the delta

variant, with a strong ability to evade vaccines, daily admissions could reach 800.

And then there is the matter of infections. Before this wave, Denmark had never seen more than 5,000 cases in a day. On Friday, it logged more than 11,000 new cases. Within a week, in a moderate scenario, case numbers could hit 27,000. And into January? The institute's estimates climb higher still, off the Y-axis.

With the surge coming into view, Denmark this month cut the opening hours for bars and restaurants, urged people to work from home, and closed schools seven days earlier than planned for Christmas break. Grove Krause cautioned that the projections didn't take into account the government's further moves announced Friday, which include the closure of cinemas and theaters. But even a full lockdown, she said, "won't stop this from getting out of control."

With coronavirus cases soaring, Denmark has bumped up closing time for restaurants and bars. But groups still congregate, indoors and outdoors, in many of Copenhagen's canal-lined neighborhoods. (Chico Harlan/The Washington Post)

Denmark's projections are taken seriously around the world, because they are informed by an all-encompassing coronavirus surveillance system designed specifically for moments like this — when the nature of the virus is quickly shifting.

The system starts with testing: Denmark swabs more people than almost any other country — at a per capita pace seven times that of the United States. The tests, which are free for both citizens and travelers, then arrive at the State Serum Institute, as well as at a sister facility on the other side of the country. Lab technicians identify the positives within 24 hours. And by the

following day, they know which variant is responsible for every case.

A portion of the positives are then fully genetically sequenced, delivering an extra layer of insight — allowing researchers not only to see mutations, but also to potentially understand who infected whom.

“We’re seeing things pretty much in real time,” said Arie Cohen, head of development at the lab that processes test results and conducts the initial variant analysis.

What that data has shown, so far, is that the hospitalization rate is slightly lower for omicron than it is for delta — though because hospitalizations lag behind infections, and because omicron infections hit only recently, scientists say the results will be more meaningful in a couple of weeks.

Scientists have also identified how omicron was seeded throughout the country, first from travelers inbound from Africa, and then through several superspreader events. A just-published paper from the institute and other researchers described a Christmas party attended by about 150 people. Most were vaccinated. And yet 71 tested positive for omicron.

Initial omicron cases in Denmark have been concentrated disproportionately among people in their 20s — an age group that normally has mild symptoms, and whose infections might be missed by countries that test less. Some scientists at the institute think Denmark’s wave is a week or two ahead of other Western countries. But others say many countries could already be experiencing the same pattern, with the young — who are most likely to travel and socialize — jump-starting community spread.

“There’s a chance that Denmark is capturing the spread that other countries are missing,” said Marc Stegger, whose team analyzes genomic data.

New swabs arrive at this lab 21 times a day, from morning until 2 a.m. Within 48 hours of every test, Denmark knows whether a positive is attributable to omicron. (Chico Harlan/The Washington Post)

Scientists here say granular research only makes sense if the knowledge provides a way to safeguard the country — and it has in the past. A year ago, [when the alpha variant was taking hold](#), Denmark quickly tightened its lockdown, significantly [blunting the wave](#).

The government hasn’t implemented a comprehensive lockdown this time. But it has tried to be responsive to the emerging science. Still, the spread has continued apace. For early omicron cases, Denmark tried to quarantine not just close contacts, but contacts of contacts; the strategy was abandoned after nine days because it became untenable.

[Those new covid measures Biden announced? Europe’s been doing that and more for a while.](#)

At the State Serum Institute, many scientists talk wearily about the pre-omicron days as if reflecting on another era, back when the pandemic was manageable and understandable. In the past several weeks alone, the testing lab has hired 100 new people. It bought 20 new PCR machines. It started dipping into its reserve stockpile of plastic lab parts and competing with other countries for supplies. The institute’s Christmas party, planned for last week, was canceled.

Scientists say they feel trepidation — and also a bit of awe — about what they are

seeing: an incredibly fit virus, winning a turf war against delta. As of Monday — the most recent day with complete, publicly released data — omicron accounted for [26.8 percent of cases](#). A week earlier, omicron's share had been 4.9 percent.

“It's moving so fast,” Cohen said, as more swabs arrived at the lab below his second-floor office. He said his chief concern was to keep things running. He called himself a “lab guy,” and said thinking about the bigger picture was for the epidemiologists. But he ventured: “I can't help but have a fatalistic opinion: that we're all going to get this.”

For the moment, the full consequences of the omicron variant are still on the horizon — weeks away, on a computer screen, or part of government warnings. In Britain, the only country that can match Denmark's variant surveillance, Prime Minister Boris Johnson has talked about a “[tidal wave](#)” of incoming cases. The variant is already dominant in London, and Europe's center for disease control says it is likely to become dominant on the continent as a whole in January or February. The United States, too, is bracing for a big wave and swamped hospitals as early as next month.

#### [Boris Johnson reports U.K.'s first known death of patient with omicron variant](#)

But the models project only a few weeks into the future, and what lies beyond — after the omicron wave crests and dissipates — is left to the scientific imagination.

Public health officials on what we know — and don't — about the omicron variant

Public health officials took to the airwaves on Dec. 5 to outline the dangers posed by the omicron coronavirus variant as cases were reported across the U.S. (Zach Purser Brown/The Washington Post)

At the State Serum Institute, the man with the imagination is Anders Fomsgaard, one of Denmark's best-known virologists. He's a saxophone enthusiast with curly hair. His colleagues call him an idea man. And he works in a squat yellow building where researchers are growing omicron cultures.

He greeted a visitor at the entrance, under neon lights shaped like geometrical fragments, which he explained represent HIV.

“Another epidemic,” he said. “Still going on, by the way.”

Anders Fomsgaard, one of Denmark's most well-known virologists, says the world is “five steps behind” the coronavirus. (Chico Harlan/The Washington Post)

Perhaps, he said, omicron's origins are connected to HIV, as the virus could have come from an immunocompromised person whose body couldn't kill off the virus, which was able to grow and change. Even in Danish hospitals, he said, there are people who have had the coronavirus for seven or eight months. In Denmark, the changes are being monitored; in most places, they are not.

“This could be one of the ways you create this resistant virus,” he said.

His goal, he said, is to help humanity finally get ahead of the coronavirus. And to that end, he's leading all sorts of experiments. Among them is research on a vaccine that targets T cells. Such a vaccine wouldn't protect against infection, but its goal would be to stop sickness. The advantage would be that it targets parts of the coronavirus that don't seem to mutate.

“We are all the time responding,” he said. “We're behind. We are five steps behind.”

He thinks the next month will be brutal, but after that? It's hard to say. Infected people, and there will be many, could come away with a deepened protection — pushing the coronavirus into something less menacing. But he also said the virus is impossible to eradicate fully. Maybe it could jump into rodents. Then maybe back into humans, reformed. He described the coronavirus as a

“master mutator,” and clearly, with vaccination, humans are driving the virus into a corner, where it can either weaken or change.

“It could come out on the other end even weaker,” Fomsgaard said. “But that is risky business. It might hit another jackpot mutation.”