Cambridge
Public Health
Department

Agenda
Cambridge COVID-19 Expert Advisory Panel
2 pm, Wednesday, March 10, 2021

Join with Google Meet

[redacted]

Join by phone

[redacted]

Welcome and Attendance

1) Clinical, case and wastewater data update

2) Bill's update: Variants, vaccinations and weather.
Scenarios: Osterholm & Walensky

3) Claude/Nancy vaccine clinic update, CPS testing update

4) What we can do about indoor dining:

- Messaging to indoor diners and restaurant mgrs./staff
- IAQ workshop w EH&E (recorded series)
- C3 members & ISD inspectors (poster, written guidance, hifi masks)
- Possible Restaurant EO: hifi masks for staff, IAQ standards, posting requirement?
- Observed behavior confirms non-compliance

5) Looking ahead: March 22 to Phase 4, Step 1 (UNLESS…)
How soon will we know how bad it might get? Soon enough to halt further reopening?

Attachments:

1) Cambridge New Case Data (3/8/21)
2) Cambridge Wastewater chart (2/24/21)
3) MA Daily New Cases and Deaths (3/8/21)
4) *Support your local restaurants (draft)*
5) *Safer Indoor Dining for Cambridge Restaurants*
6) *The vaccine race against the coronavirus variants_VOX.com*
7) *Pfizer_Moderna vaccines give T-cell immunity against new variants*_Daily Mail

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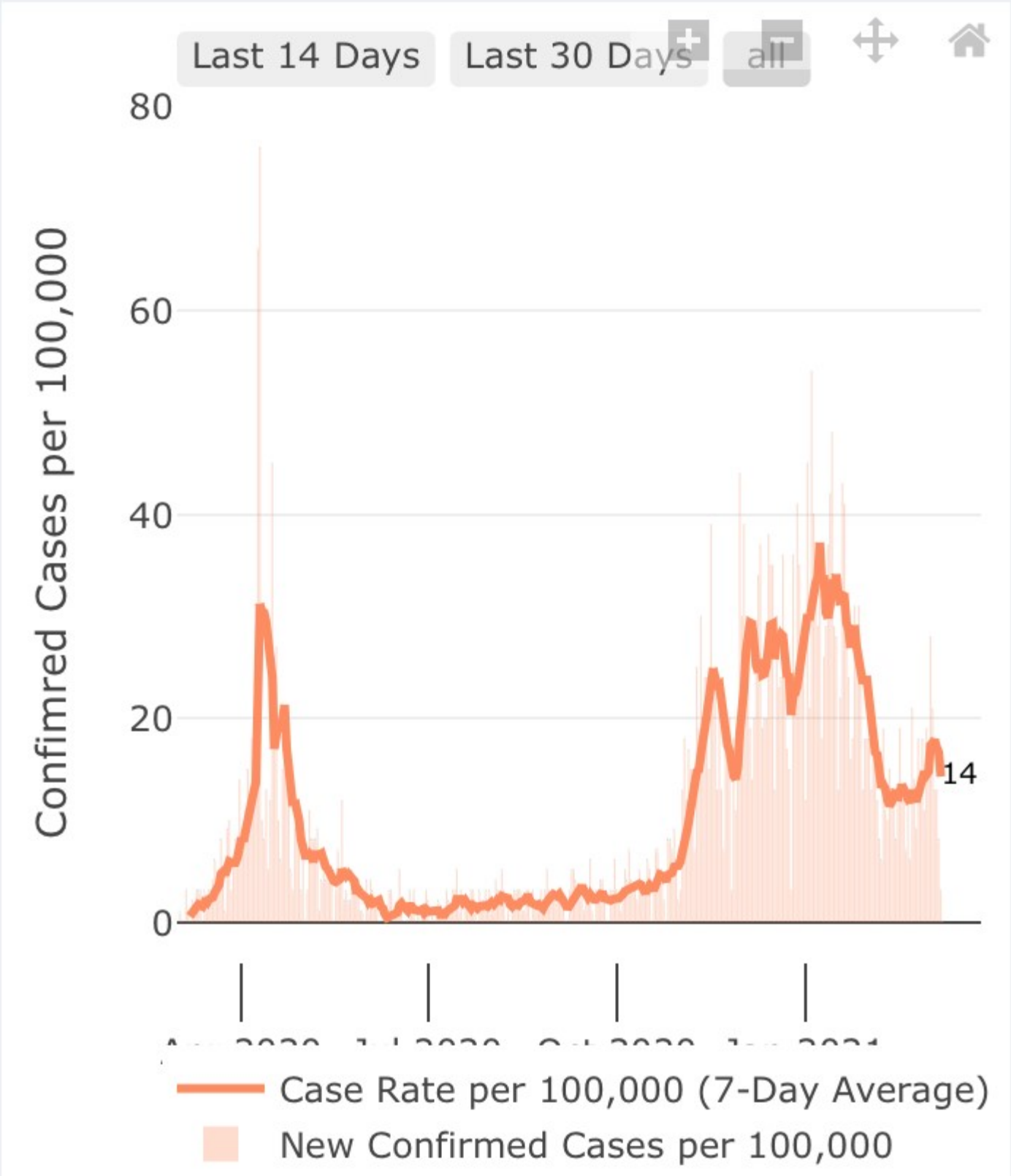
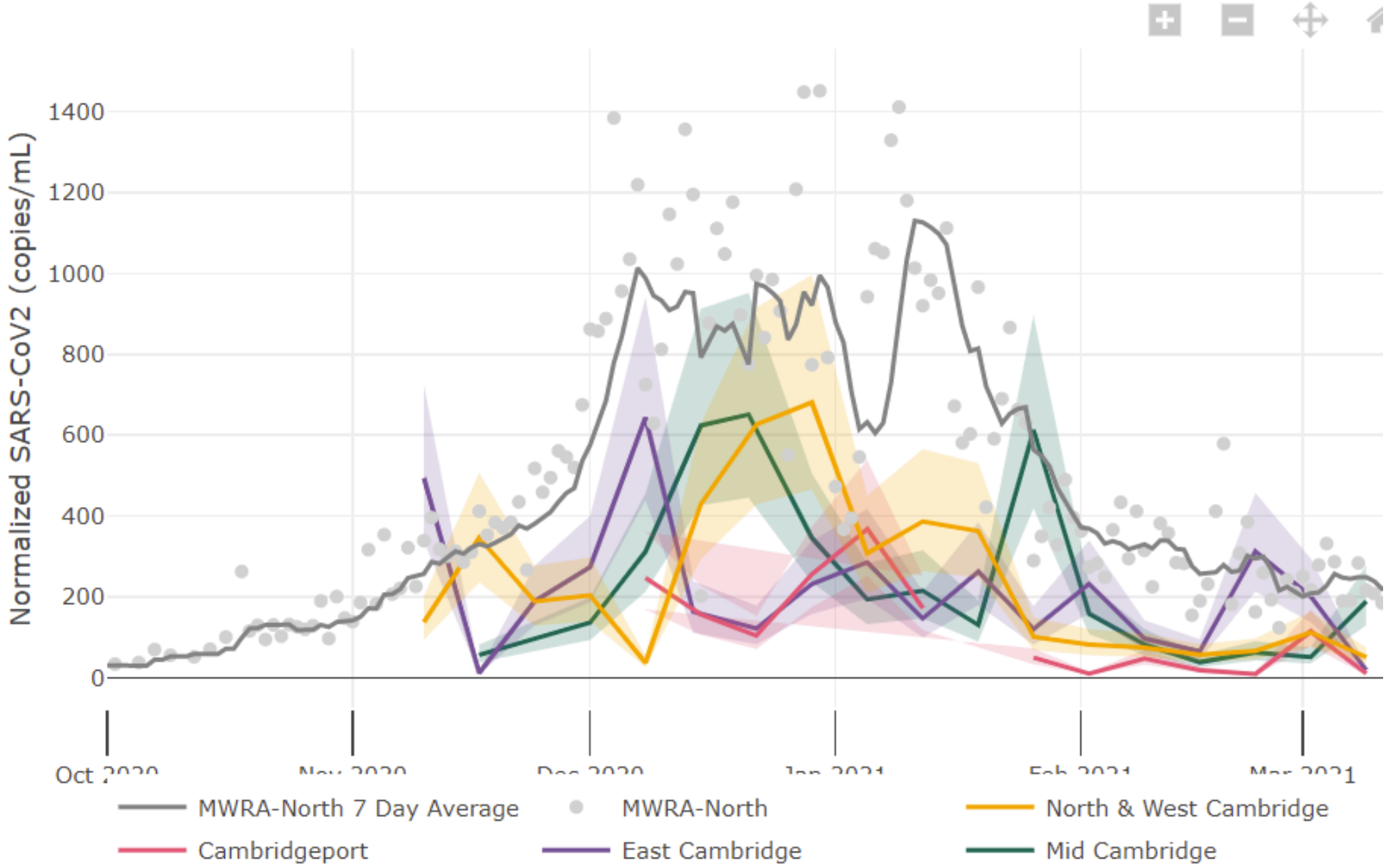
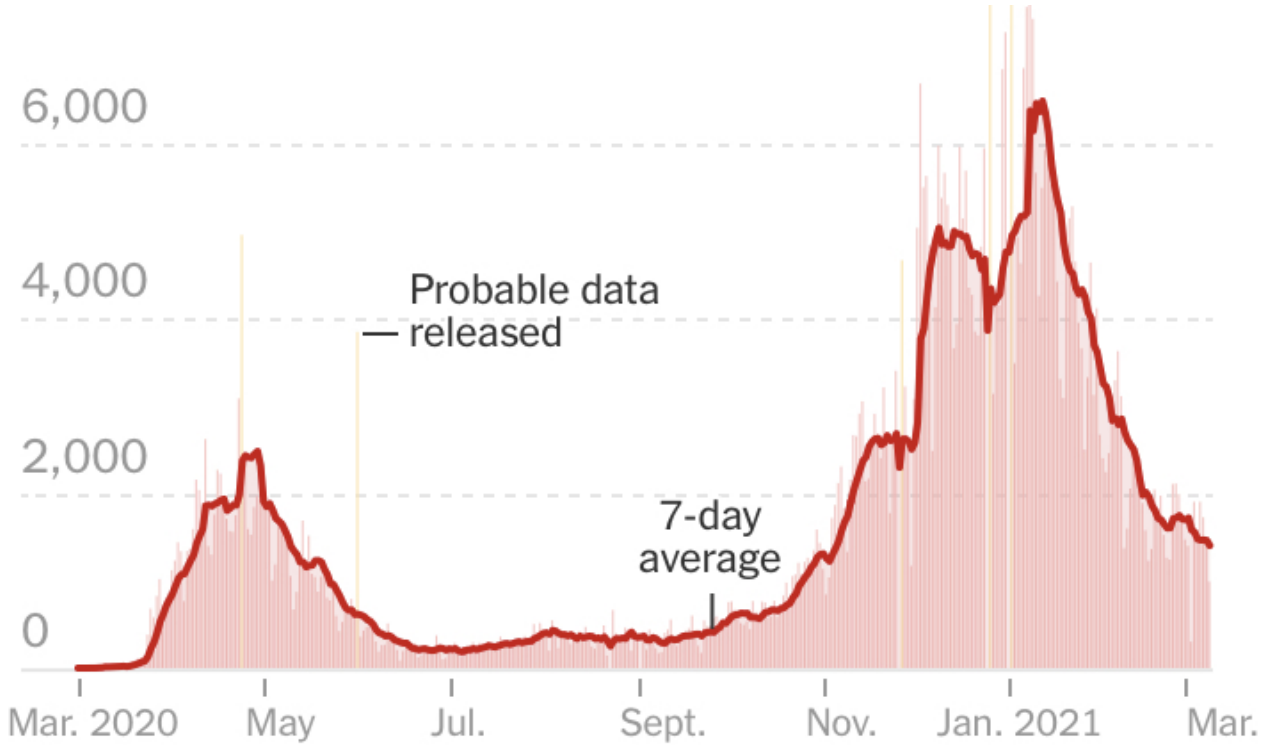
CHA Cambridge Health Alliance

New Confirmed Cases

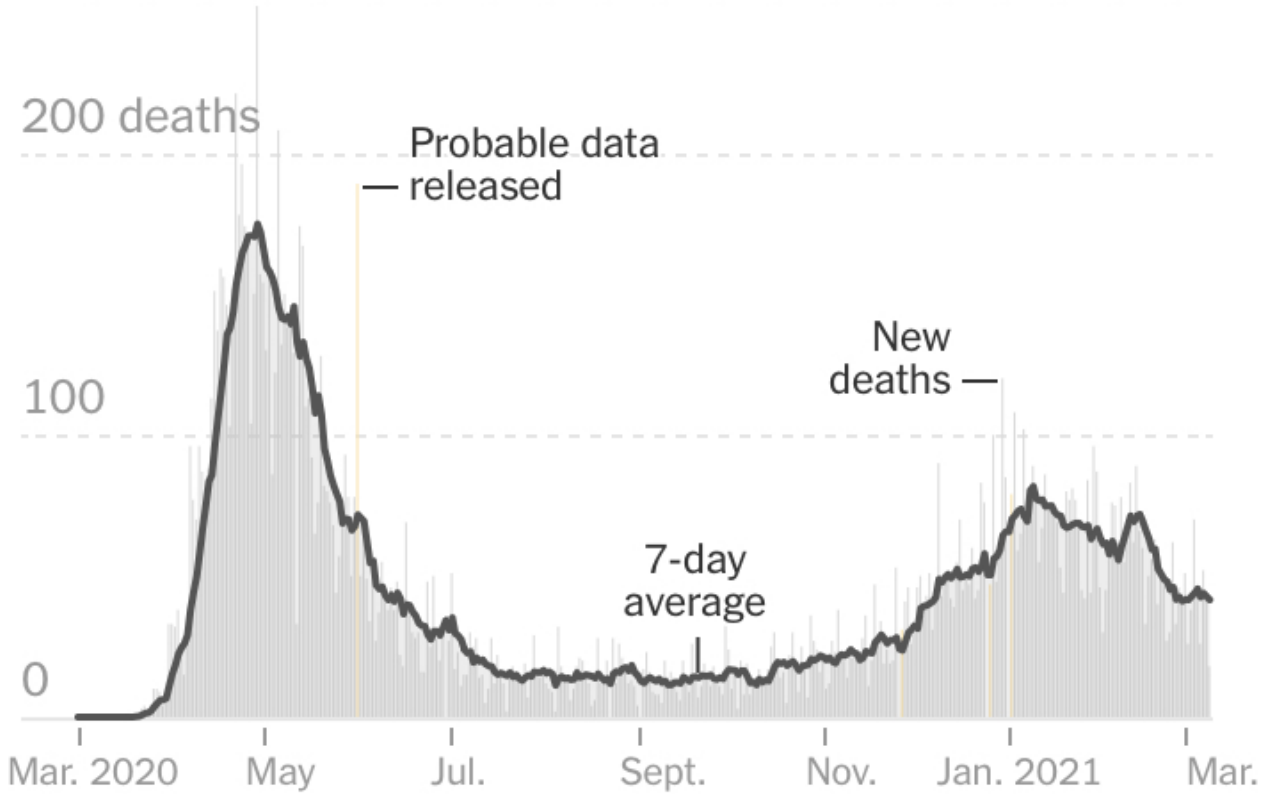
Case Rate <> Case Count*




Normalized SARS-CoV2 (copies/mL)
1400
1200
1000
800
600
400
200
0
Oct 2020
Nov 2020
Dec 2020
Jan 2021
Feb 2021
Mar 2021
MWRA-North 7 Day Average
MWRA-North
North & West Cambridge
Cambridgeport
East Cambridge
Mid Cambridge



Daily reported deaths



Support your Local Restaurants

CONSIDER TAKE-OUT. Cambridge restaurants have an amazing array of take-out option. Pick-up is the quickest and safest option.

EAT OUTDOORS when the weather is good.

PROTECT YOUR SERVER

- Wear your mask while ordering
- Wear your mask while waiting for your food
- Wear your mask after you've finished eating

DINE WITH PEOPLE IN YOUR HOUSEHOLD (or EAT OUTDOORS IF YOU MIX HOUSEHOLDS)

KEEP YOUR MEAL SHORT & QUIET -- SAVE CHATTER FOR THE AFTER-DINNER STROLL or OUTDOOR DRINKS

Thanks for helping us to support our restaurants by protecting other diners and waitstaff

Some thoughts: You would include images, colors, fonts, right?

Guidance for COVID-safe indoor dining

1) Watch recorded video hosted by the City of Cambridge and Environmental Health & Engineering (EH&E) offering IAQ technical guidance for restaurants [get link from Pardis]

2) Friendly enforcement of mask use at the table:
    - Notify diners of the expectations and requirements for mask use at your establishment while they are being seated. Emphasize safety for server and other patrons.
    - Non-verbal reminders to use masks (e.g. pantomime face coverage) when customers are seated but not eating or drinking.
    - If customers are not covering both mouth and nose they should be reminded to use mask as intended.

3) Louder and more boisterous groups
    - Remind that lower speech volumes will keep all diners and staff safer
    - Alcohol may encourage more animated or louder conversation (keep an eye on parties order more alcohol)
    - Best to emphasize that quieter conversation is preferred while being seated to avoid defense response at a later time.

4) Background music, if used at all, should be kept at a minimum volume. As background noise increases the volume of conversations also tend to escalate.

5) Six-foot Separation between dining parties should be measured between closest diners in different parties, not between the tables themselves.

6) Public Health strongly recommends the use of higher filtration masks (e.g. KN-95 and KF-94) for restaurant waitstaff. These are readily available (costing $2.50-$3.00 or less with bulk orders). Double-masking is another approach to protecting staff, but should only be used with lighter non-medical procedure masks (inner) and cloth or non-medical procedure (outer). Higher filter masks are much preferred.

7) Keep a supply of masks for customers who do not have good masks or any masks. Offer better (higher filtration) masks to customers willing to take them.

8) Emphasize serious compliance with stay-at-home policy among staff who are symptomatic. If they are encouraged to be honest about their health status it can help improve compliance.

9) Any staff that are found to be COVID positive should be reported to the Cambridge Public Health Department. This is an additional reporting requirement beyond normal reporting requirement, which go through the town of residence of the employee. https://www.cambridgema.gov/-/media/Files/citymanagersoffice/COVID19/updatedguidelinesforreportingcovid19tolbohjan2021.pdf

10) Reopening after a staff person has been reported to be COVID positive (and was present at work) should be managed through the Cambridge Inspectional Services Department (617-349-6100)

The vaccine race against the coronavirus variants, explained

Covid-19 vaccines are here. So are new mutations. Here's what you should know.

By Umair Irfan and Julia Belluz Mar 2, 2021, 2:30pm EST

The Covid-19 vaccine developed by Johnson & Johnson began distribution this week, just as new variants of the virus are gaining ground. *Timothy D. Easley/Getty Images*

The world is now locked in an arms race with **Covid-19**, as multiple effective vaccines are being deployed (**at staggeringly different rates**) around the world. At the same time, new variants of the SARS-CoV-2 virus have been rapidly spreading.

The Covid-19 vaccines that are being distributed in the US, as well as the newly authorized Johnson & Johnson vaccine, have been shown to **almost eliminate deaths and hospitalizations** from the disease, even for people infected with the

new mutations. For a disease that has infected more than 114 million people around the world in just over a year, this is tremendously good news.

But it's no time to kick back.

There's evidence that the virus is evolving in ways that can reduce the effectiveness of Covid-19 vaccines — particularly when they're up against the variant discovered in South Africa. Both Johnson & Johnson and Novavax's vaccine efficacy rate dropped in the South Africa arm of their clinical trials (from **72 in the US to 64 percent** in South Africa and from **89 in the UK to 49 percent**, respectively).

The vaccines still worked against their new foe in the majority of trial participants. The human immune response, after all, is **robust and multi-layered**. It can adapt to different versions of the virus that come along, which is why vaccine-induced immunity is unlikely to "fall off a cliff and go from 95 percent to zero," as University of Utah evolutionary virologist Stephen Goldstein told Vox.

However, the situation is still dicey. "Eventually, when the majority of the susceptible population is vaccinated with effective vaccines, the variant better suited for survival in the new host will be one that has the ability to evade the vaccine-induced immunity," researchers warned in a March 1 letter published in ***Nature***. Such a variant could "decrease, and even abolish, the beneficial effects of a broad immunization program."

And the more people the virus infects, the more mutations it acquires — mutations that may eventually evade the protection provided by prior infections or from vaccinations. The **slow pace** of the global vaccine rollout, particularly in low- and middle-income countries, then means that even if people in rich countries like the US are fully vaccinated, variants may still emerge in less vaccinated regions, increasing the risk of new outbreaks everywhere.

That's why, while global health groups work to get **more vaccines to more people** around the world, vaccine developers are quickly trying to find new strategies to cope with the variants. They've already brought new vaccines to the market in record time. Now they are investigating everything from booster shots to entirely reformulated vaccines.

Vox's German Lopez is here to guide you through the Biden administration's unprecedented burst of policymaking. **Sign up to receive our newsletter each Friday**.

What we know about the coronavirus variants and Covid-19 vaccines

All viruses mutate as they move through populations, and until recently, the mutations in SARS-CoV-2 weren't cause for much concern. (A mutation is a change in the genetic makeup of a virus, while a variant is a virus that has a suite of mutations that alter how it behaves.) That changed in mid-December, when a **more contagious variant** known as B.1.1.7 was discovered in Britain, just as the first Covid-19 vaccines were coming online.

That was only the beginning of a new chapter in the pandemic. Since then, several new variants and mutations of concern — what the WHO calls changes to the virus that are worrisome — have surfaced in **dozens of countries around the world**, becoming the dominant strain in some.

The Centers for Disease Control and Prevention predicted that B.1.1.7 could **overtake** other versions of the virus in the US this month. And evidence is mounting that B.1.1.7 is not only more transmissible but potentially also **deadlier than prior versions of the virus**.

Another variant, B.1.351, first identified in South Africa, has proven more **difficult to immunize against**. And still another immune-evading variant discovered in Brazil, known as P1, has already spread to at **least 25 other countries**, including the US. Scientists reported that in several instances, the **P1 variant was behind reinfections** in people who already survived an earlier course of the illness. And two new variants may have emerged in the United States, in **New York** and in **California**. These new variants of concern stand to undermine precious progress against the pandemic because they're either more contagious, potentially more dangerous, or threaten the vaccines we have. And perhaps even more ominously, they're a reminder that far more — and perhaps even more threatening — variants will emerge in the future.

Adding to the threat is that many parts of the world, including the US, are not doing enough **genetic sequencing of SARS-CoV-2**. That makes it harder to identify and prepare for new variants when they emerge, increasing the chances of them spreading undetected.

The good news is that, for the most part, vaccines still seem to provide good protection against the SARS-CoV-2 variants discovered so far. So does prior infection.

But there have been some worrying signs that current Covid-19 vaccines are less effective against some new variants — again, B.1.351, first identified in South Africa.

How can seemingly minor mutations change the virus's susceptibility to a vaccine? When a vaccine is administered, the human immune system responds by producing targeted antibodies, proteins that can stick to a specific pathogen. Antibodies that prevent that pathogen from causing an infection are said to be neutralizing.

Studies show that the vaccines developed by Pfizer/BioNTech and by AstraZeneca/Oxford lead to a lower concentration of neutralizing antibodies to B.1.351 than to the older versions of the virus, explained **Benhur Lee**, a professor of microbiology at the Icahn School of Medicine at Mount Sinai. However, these vaccines generate such a high level of neutralizing antibodies to begin with that the reduced protection is still effective.

Antibodies are also just one component of the immune response. A recent preprint found that **immune protection provided by T cells** generated in response to a Covid-19 vaccine was just as potent against the new variants.

"This is probably the reason why you see other vaccines still being efficacious in South Africa," Lee said in an email. So a drop in efficacy doesn't mean the vaccines are rendered useless, but it does mean they'll be less protective in environments where variants like B.1.351 are spreading.

In South Africa, the AstraZeneca/Oxford vaccine, which has not been approved in the US, has been **pulled from the country's vaccination campaign**. Officials found that it was less effective against the new variant, but the findings came from a small trial of roughly 2,000 people. "Since they had the option of Pfizer and J&J coming down the line, South Africa chose to go ahead with those other vaccines," Lee said.

The vaccines may also provide less resistance to milder forms of Covid-19 spawned by the new variants. Even if they don't land someone in the hospital, such infections can still reduce quality of life, especially for people with other preexisting health conditions. And we've already seen that even seemingly mild

cases of the disease can have lasting effects: **persistent fatigue, brain fog, and so on**.

Another public health concern with regard to vaccines is how well they block transmission of the virus. This is a crucial factor in controlling the pandemic in the population, particularly when vaccination rates are still so far away from reaching **herd immunity**.

For now, there is less information about how well vaccines block transmission than there is when it comes to stopping the disease in people. Identifying infections, particularly asymptomatic cases, requires aggressive testing for the virus within a study, an expensive and time-consuming task. But the research that is emerging so far is encouraging.

A recent preprint **study from the UK** reported that the full course of Pfizer/BioNTech vaccine reduced the chances of developing a transmissible infection by 86 percent. Another preprint study, looking at Covid-19 **vaccines in Israel**, saw an 89.4 percent drop in transmissible infections.

Will the variants also erode protection against transmission?

It's possible, but there's little research to date. The variants already seem to cause more cases of disease with symptoms — **early evidence about B.1.1.7** suggests this is the case — so it's likely that infected people may generate and shed more virus, helping it spread. If SARS-CoV-2 variants lead to more infections breaking through the protection barrier of vaccines, those infections in turn could spur further transmission.

But as with the vaccine protection for individuals, a barrier to transmission, even if it's lower, would still slow the spread of the virus within a community.

"Even a less efficacious vaccine will be an important tool to tamp down a highly transmissible strain," Lee said.

How Covid-19 vaccine manufacturers are preparing for the variants

One advantage that we have in this race against the variants is that the new vaccines being rolled out around the world so far are also very nimble.

The **Pfizer/BioNTech vaccine** and the **Moderna vaccine** both use a molecule called **mRNA as their platform**. This molecule delivers instructions to the body

to make a spike protein found on the SARS-CoV-2 virus, educating the immune system to fend it off if it encounters the actual virus in the future.

Meanwhile, the vaccine developed by the **University of Oxford and AstraZeneca** that recently received approval in the UK (but not yet in the US) uses a reprogrammed version of another virus, an adenovirus, to shuttle DNA that codes for the SARS-CoV-2 spike protein to use as target practice. The one-dose **Johnson & Johnson vaccine** that recently received an emergency use authorization from the FDA also uses an adenovirus vector.

In both of these fairly new vaccine platforms, developers only need to modify the code of DNA or mRNA to tweak the vaccine to reorient it to new variants, something they can do **quickly** if necessary.

But while it may be possible to alter the vaccine to adapt to new mutations, it's not ideal: It requires expensive changes in the vaccine production process and eats up valuable time.

"It takes time to manufacture hundreds of millions of doses," Lee said.

Another approach is to build off of existing vaccine formulations but add on another shot. For example, companies like Pfizer are considering adding a third, booster dose to their two-dose Covid-19 vaccine regimen to solidify the response to the new variants. "We believe that the third dose will raise the antibody response 10- to 20-fold," Pfizer CEO Albert Bourla told **NBC News** on February 25.

In an email, a Pfizer spokesperson explained that the company hasn't seen a loss of protection against the new variants in its laboratory studies, but is proactively gaming out several responses, like a booster dose, through further clinical trials. "We need to focus both on vaccinating the world with an initial regimen and be driven by the science of our clinical studies for the boost," according to the spokesperson. "We are focused on enrolling the full study and should have the findings soon."

Moderna, meanwhile, announced on February 24 that it has sent a version of its vaccine **optimized to handle the South Africa** variant to the National Institutes of Health for further study. The company is also investigating a booster dose.

Johnson & Johnson's phase 3 clinical trial commenced after those from other manufacturers, so they were able to capture the efficacy of their vaccine against

some of the new variants. “The [Johnson & Johnson] Covid-19 vaccine candidate also provided protection against multiple Covid-19 variants,” according to a spokesperson for the company. Johnson & Johnson is also studying a two-dose version of its vaccine.

For its part, the **FDA announced it is streamlining the approval process** for vaccines to target the new SARS-CoV-2 variants, making the procedure similar to approvals for annual influenza vaccines.

“If Covid-19 becomes an endemic, potentially seasonal virus, we can establish a regulatory pathway that will allow us to move expeditiously to update and validate an updated vaccine, similar to what is done with the flu every year,” said a Pfizer spokesperson.

However, researchers say one shouldn’t hold out for a reformulated vaccine and should take the first shot they’re offered. Whether a vaccine manufacturer opts for a booster, a reformulation, or decides to stick with the existing protocol, timing is critical, and people need to be vaccinated as fast as possible to contain the pandemic.

What do variants and vaccines mean for how the pandemic ends?

There are at least several possibilities for how the pandemic will fade away. Covid-19 could become a largely intermittent threat, with sporadic outbreaks. It could also become seasonal, with surges in the fall and winter. These possibilities make the evolution of the pandemic in 2021 even less predictable than 2020.

“The question mark is going to be next fall, next winter. Is there going to be a new variant that becomes dominant again? Are we going to see efficacy from the vaccines start to wane by that time?” said **Anish Mehta**, medical director for clinical quality and virtual health at **Eden Health**, and an assistant clinical professor of medicine at the Icahn School of Medicine at Mount Sinai. “That’s what’s really going to be the big test for us.”

One thing we do know is that the suite of public health strategies used so far — social distancing, hand-washing, mask-wearing — remain useful. “A lot of the things that we’ve been doing throughout this pandemic will continue to work when it comes to these variants,” said **Gigi Gronvall**, a senior scholar at the Johns Hopkins Center for Health Security, during a press call.

If vaccination rates continue rising while new infections decline, the United States may be able to stay ahead of the virus. Life could return to something approaching normal for most Americans by this summer, according to Mehta.

But it's turning out that many parts of the world, especially developing countries, aren't able to keep up. There are places that still aren't able to **get vaccines at all** — and probably won't for a couple of years. As SARS-CoV-2 continues to spread, the likelihood of even more mutations arising will increase. And as has already been demonstrated, new variants don't stay behind borders for long.

That's part of why it's so important to work toward **equity in Covid-19 vaccine distribution** around the world. As long as the virus can spread anywhere, it's a threat everywhere.

More proof current Covid variants won't scupper vaccines: Crucial T cell immunity is NOT hampered by new strains in people given Pfizer or Moderna jabs, study finds

- **Study found 'negligible impact' of mutations on natural or vaccine immunity**
- **White blood cells can target large areas so only extreme mutations stop them**
- **Antibody immunity weaker against mutant variants but only one of body's tools**
- **Study said T cells 'unaffected' by Kent, Brazil, South Africa or California strains**

By SAM BLANCHARD DEPUTY HEALTH EDITOR FOR MAILONLINE
PUBLISHED: 12:16 EST, 3 March 2021 | **UPDATED:** 12:40 EST, 3 March 2021

Immunity produced by white blood cells is 'not substantially affected' by mutated **coronavirus** variants, scientists have found.
Experts were concerned the current jabs might not work as well against the South African and Brazilian variants because they changed its shape.

Studies found disease-fighting proteins called antibodies were less effective in the face of the new strains, raising fears they would partially evade vaccine-triggered immunity and cause reinfections.

But they are only one type of immunity. New experiments have found white blood cells called T cells appear to work just as well against Covid variants as they do the original virus.

And they work just as well when produced by either the Pfizer or Moderna vaccine, which were both tested in the study.

Scientists at the University of California, San Diego said: 'The data presented here suggests that T cell responses are largely unaffected by the variants.'

They said the T cells, which tag onto the coronavirus and help to destroy it, might not completely stop infection but should prevent people getting seriously ill. This would mean that anyone who has already had Covid or a vaccine would get less sick the next time they were infected with the virus.

Experts said the effectiveness of T cells, a type of white blood cell that can be produced by a vaccine, appears to be 'unaffected' by the Kent, South Africa, Brazil or California variants of the coronavirus (Pictured: NHS staff prepare to administer a vaccine in Derbyshire)

The researchers tested what happened when they mixed the coronavirus with the blood of people who had been vaccinated with the Pfizer or Moderna vaccine.

Specifically they measured two types of T cell in the blood, called CD4 and CD8.

CD4 are 'helper' cells which identify a viral infection and spark the rest of the immune system into action, and CD8 are 'cytotoxic' and they can destroy infected cells in the body.

These work alongside antibodies, which target the virus itself and wreck it directly.

They found that the T cells worked just as well when they were exposed to the old Wuhan variant of the virus, the Kent variant, the Brazilian variant or the South African one.

STUDY FINDS BRAZIL VARIANT MAY REINFECT 2/3 PEOPLE WITH IMMUNITY

A study led by Imperial College London and published online today has found that the Brazil variant of coronavirus may cause reinfection among 61 per cent of people who have already had Covid caused by a different strain.

Research on the P1 variant among people living in the Brazilian city of Manaus found potentially high levels of reinfection, and that the variant was more transmissible than the original pandemic strain.

British experts have cautioned that the study cannot be used to predict what may happen in the UK.

According to the new study, blood testing suggests more than 67 per cent of people in Manaus may have had Covid by October 2020.

There was surprise then when the city suffered another huge wave of coronavirus at the start of this year, so experts sought to find out why.

They found that the proportion of Covid cases that were the P1 variant grew from zero to 87 per cent in about eight weeks.

P1 was found to be 1.4 to 2.2 times more transmissible than other variants in Manaus, and was found to evade 25 per cent to 61 per cent of protective immunity from previous infection.

Dr Nuno Faria, reader in viral evolution at Imperial, told a briefing: 'If 100 people were infected in Manaus last year, somewhere between 25 and 61 of them are susceptible to reinfection with P1.'

The study could not say how severe illness was in people who were reinfected. It found a slightly higher death rate connected to P1 cases in Manaus but said this coincided with 'substantial healthcare failure' and hospitals running out of oxygen, so it couldn't be pinned on the new variant.

Coronavirus genetics expert at COG-UK, Professor Sharon Peacock, said the study could not be used to speculate on the effectiveness of vaccines or how things 'will pan out in other countries including the UK'.

Previous studies found antibodies worked less well against the mutated strains, worrying scientists, but this gives reassurance that vaccines will still work in other ways.

Dr Alex Sette, the La Jolla researcher who led the study, and colleagues wrote that the vast majority of T cells 'are not affected by the mutations found in the variants analyzed'.

They added: 'We focused on T cell responses elicited by either natural infection or vaccination with the Pfizer/BioNTech and Moderna COVID-19 mRNA vaccines.

'We found negligible effects on both CD4+ or CD8+ T cell responses to all four variants investigated, to include the B.1.1.7, B.1.351, P.1 and CAL.20C variants found in the UK, South Africa, Brazil and California, respectively.'

They explained that the reason T cells did not seem to get weaker against the variants, when antibodies did, is that they are less specific.

While antibodies must target very specific parts of the virus, and often the same parts in everyone, T cells are much more general and can stick to various bits.

This wider approach means the virus must mutate far more significantly for the T cells not to recognise any of it – something that has not yet happened.

And people make slightly different T cells, meaning that a virus that could dodge them in one person might not be able to in someone else.

Dr Sette told The Times: 'If you have a good T cell response you may not be able to prevent infection, but you should be able to soften the blow...

'That is important. The opposite scenario would have been really concerning, if the new variants had been able to evade both the antibody response and the T-cell response.'

The study comes after Professor Andrew Pollard, the lead investigator of trials of Oxford University's Covid jab, said he was optimistic that vaccines would tackle variant forms of Covid.

The university and its pharmaceutical partner, AstraZeneca, are already working on a booster jab to be ready by the autumn.

Professor Pollard said a single booster could be enough to tackle both the South African and Brazilian variants because they are so similar.

He said on BBC Radio 4 yesterday: 'It is difficult because we're very focused on what we're seeing today and of course the nature of this virus is that it will continue to throw out new mutations in time.

'And so, to some extent, we've got to start moving away from an obsession with each variant as it appears [and] try to rely on the excellent sequencing that is being run

nationally to pick up variants so that new designs of vaccines can be made as and when they are needed.

'Certainly at the moment there are some similarities between the P.1 Brazil variant and the B.1351 South African variant.

'So the work at the moment is partly to understand whether a vaccine for one of them might actually protect against both.

'There’s a lot more that we don’t know yet about this, but all the developers are working on new vaccines to make sure we are ready if we need to be.'

Dr Sette's study was published online on **bioRxiv** without review from independent scientists, not in a journal.

Read more:

- **www.biorxiv.org/...**