COVID-19 Update
March 28,2021

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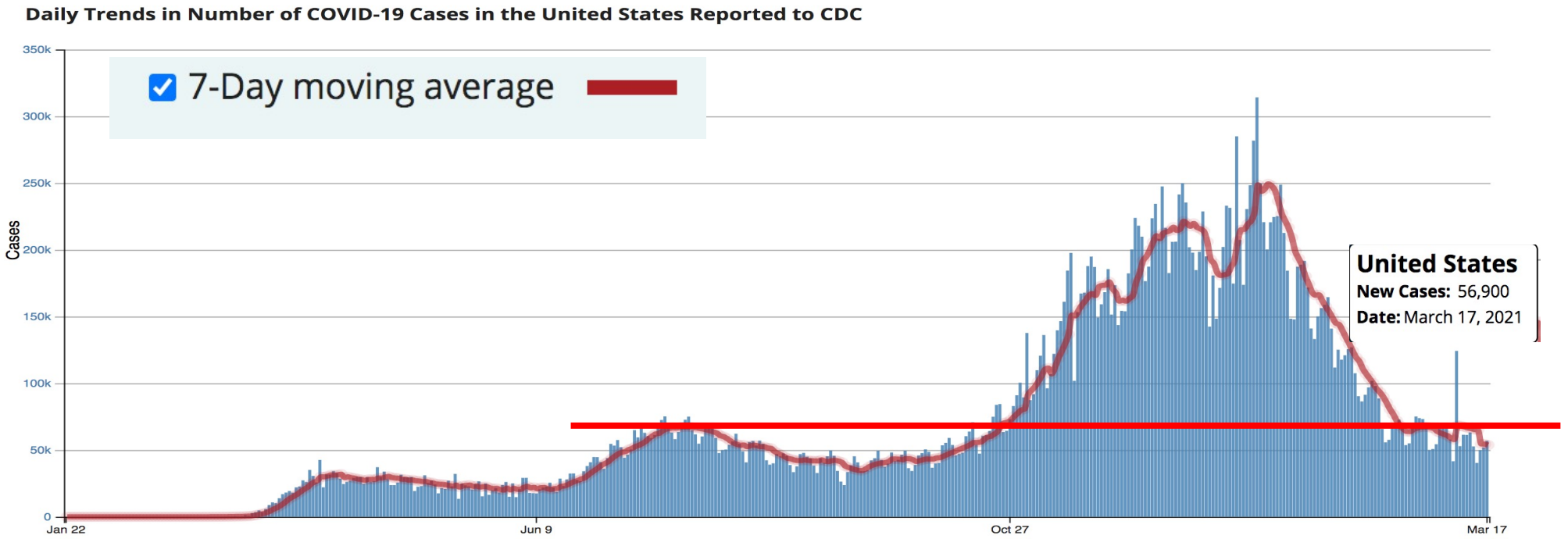
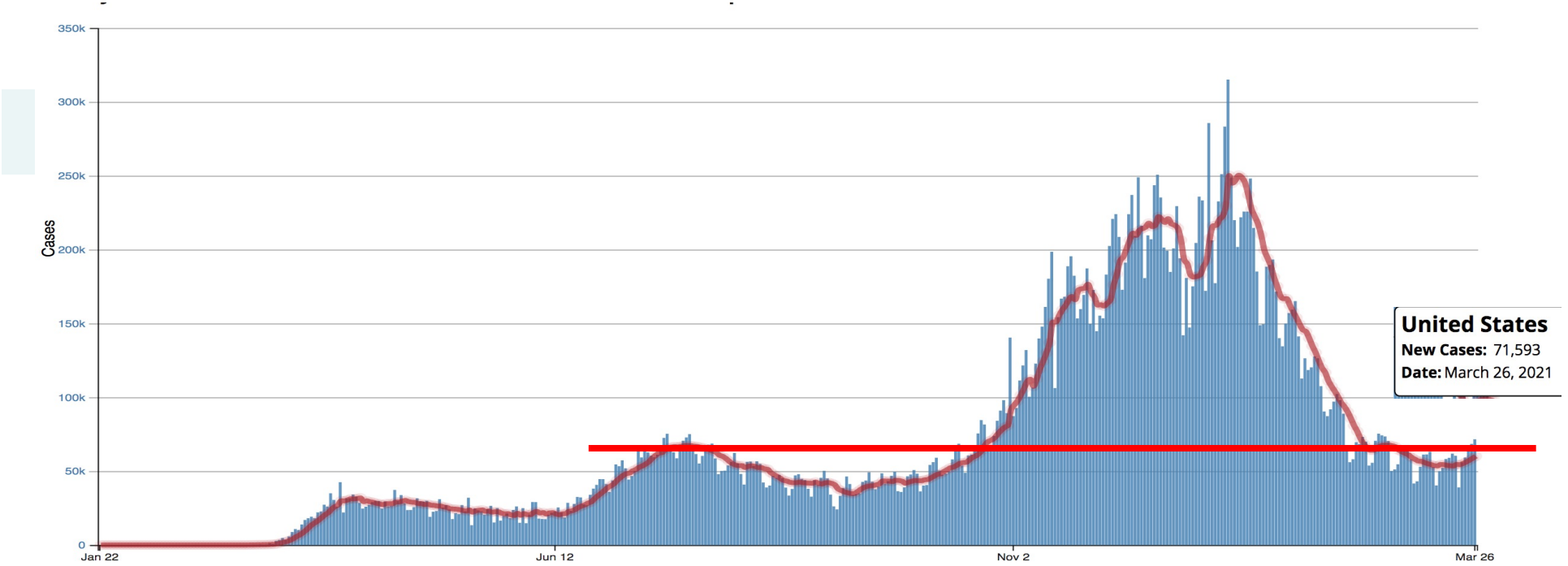
Daily Trends in Number of COVID-19 Cases in the United States Reported to CDC



Since the highest 7-day average of 249,378 on January 11, 2021, the 7-day moving average decreased 78.1%. On March 10, there was a 11.2% decrease in the 7-day average number of daily cases reported compared with the prior week. Even with these declines, the 56,586 cases reported on March 10, 2021, is higher than the 42,597 cases reported during the first peak in the pandemic on April 6, 2020.

Daily Trends in Number of COVID-19 Cases in the United States Reported to CDC



COVID-19 Vaccinations in the United States

Total Vaccine Doses

Delivered	180,644,125
Administered	140,180,735

Learn more about the distribution of vaccines.

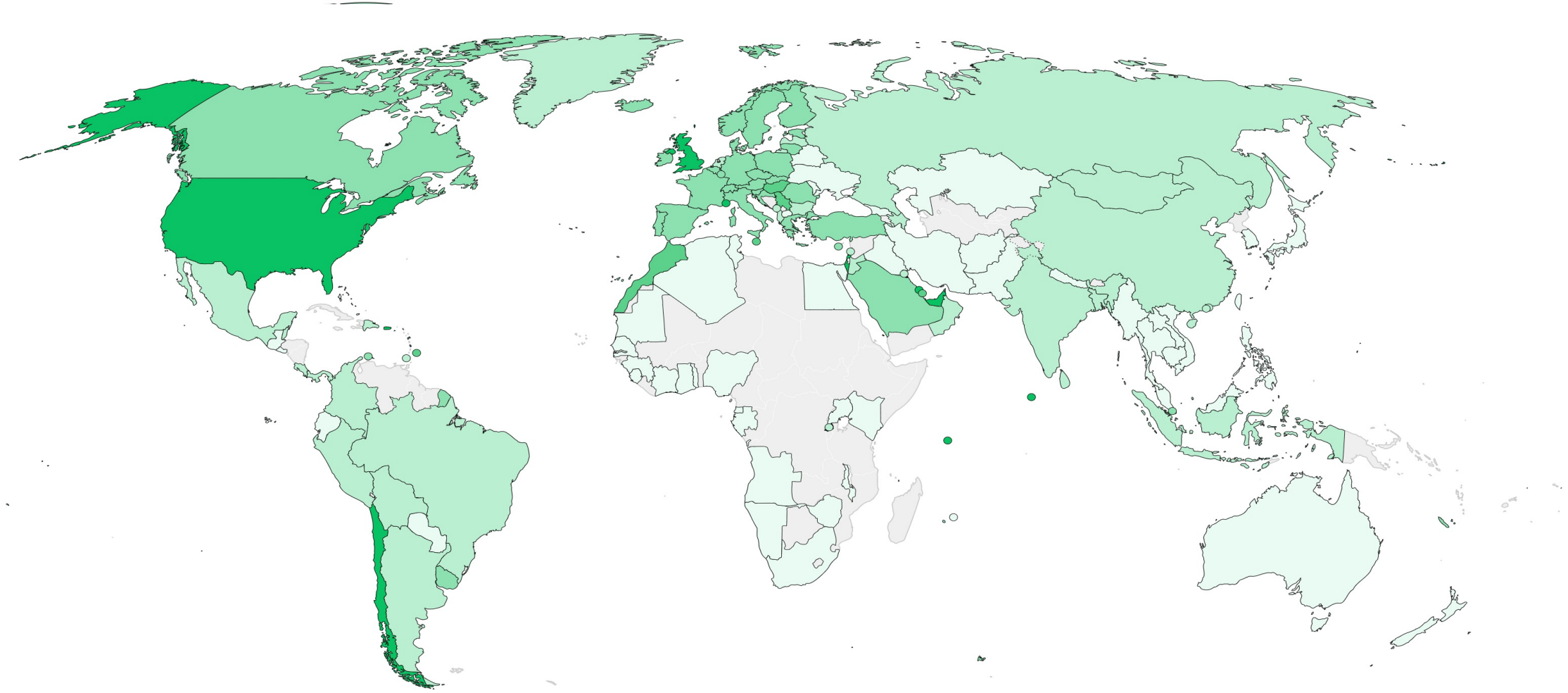
People Vaccinated	At Least One Dose	Fully Vaccinated
Total	91,707,729	50,141,769
% of Total Population	27.6%	15.1%
Population ≥ 18 Years of Age	91,417,268	50,065,329
% of Population ≥ 18 Years of Age	35.4%	19.4%
Population ≥ 65 Years of Age	39,273,886	25,810,034
% of Population ≥ 65 Years of Age	71.8%	47.2%

About these data

CDC | Data as of: Mar 27 2021 6:00am ET | Posted: Mar 27 2021 12:26PM ET

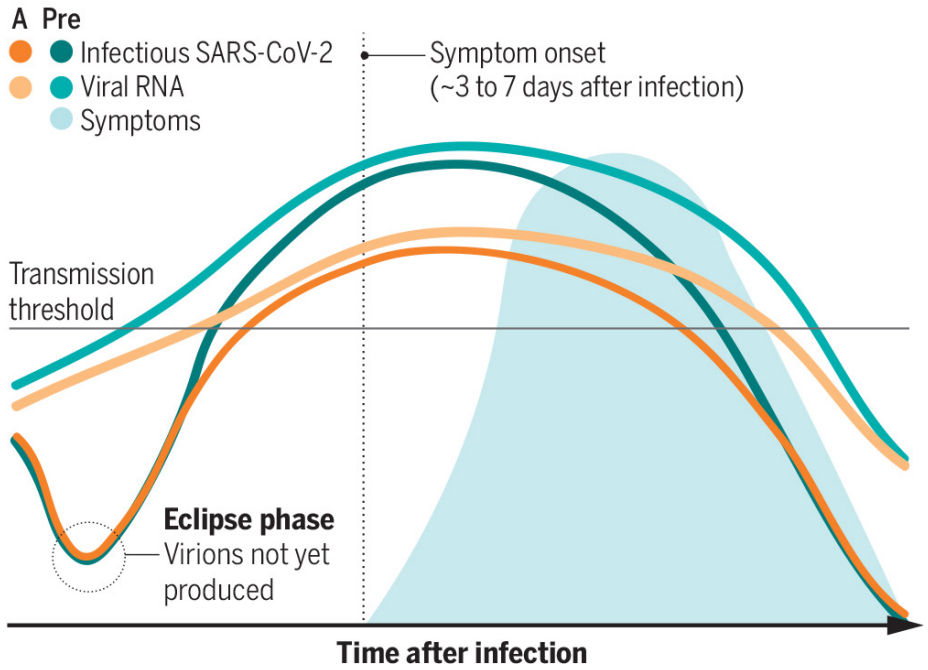
World Map of Vaccinations

More than 528 million doses have been administered—enough to vaccinate 3.4% of the global population



Viral replication and symptom onset

The titer of infectious severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) and the amount of viral RNA are generally lower in asymptomatic (A) than presymptomatic (Pre) COVID-19. There is likely to be a threshold at which a person becomes contagious, but this is not known. In presymptomatic patients, symptoms usually begin when viral load peaks, so there is a period of infectiousness when a person has no symptoms.



Angela L. Rasmussen, and Saskia V. Popescu Science 2021;371:1206-1207

Science AAAS

New York Variant: B1.526.

- Contains resistance mutation E484K which attenuates neutralization by antibodies
- Appeared in late November 2020 in New York
- Accounted for 25% of cases in New York in February 2021
- 12.3% rise in incidence noted in diverse neighborhoods in NYC 2/2021
- Affected mostly older patients who had higher hospitalization rates

doi: https://doi.org/10.1101/2021.02.23.21252259

SARS-COV-2 Variants

VARIANT OF INTEREST

VARIANT OF CONCERN

VARIANT OF HIGH CONSEQUENCE

Variant of Interest

A variant with specific genetic markers that have been associated with

- **Changes to receptor binding**
- **Reduced neutralization by antibodies generated against previous infection or vaccination**
- **Reduced efficacy of treatments**
- **Potential diagnostic impact**
- **Predicted increase in transmissibility or disease severity**

Possible attributes of a variant of interest:

- Specific genetic markers that are predicted to affect transmission, diagnostics, therapeutics, or immune escape: (Example E484K mutation)
- Evidence that is the cause of an increased proportion of cases or unique outbreak clusters
- **Limited prevalence or expansion in the US or in other countries**

Variants of Interest

Name (Pango lineage)	Substitution	Name (Nextstrain[a])	First Detected	BEI Reference Isolate[b]	Predicted Attributes
B.1.526	**Spike:** (L5F*), T95I, D253G, (S477N*), (E484K*), D614G, (A701V*) **ORF1a:** L3201P, T265I, Δ3675/3677 **ORF1b:** P314L, Q1011H **ORF3a:** P42L, Q57H **ORF8:** T11I **5'UTR:** R81C	20C	New York/November 2020		• Potential reduction in neutralization by monoclonal antibody treatments • Potential reduction in neutralization by convalescent and post-vaccination sera
B.1.525	**Spike**: A67V, Δ69/70, Δ144, E484K, D614G, Q677H, F888L **ORF1b**: P314F **ORF1a**: T2007I **M**: I82T **N:** A12G, T205I **5'UTR**: R81C	20C	New York/December 2020		• Potential reduction in neutralization by monoclonal antibody treatments • Potential reduction in neutralization by convalescent and post-vaccination sera
P.2	**Spike**: E484K, D614G, V1176F **ORF1a**: L3468V, L3930F **ORF1b**: P314L **N:** A119S, R203K, G204R, M234I **5'UTR**: R81C	20J	Brazil/April 2020		• Potential reduction in neutralization by monoclonal antibody treatments • Potential reduction in neutralization by convalescent and post-vaccination sera

Variants of Concern

A variant of concern is defined as one that is associated with :

- **Increase in transmissibility**
- **More severe disease**
- **Reduction in neutralization by antibodies generated from previous infection or vaccination**
- **Reduced effectiveness of treatments or vaccine or evidence of test failure.**

In addition to the possible attributes of a variant of interest

- **Evidence of impact on diagnostics, treatments, and vaccines**
  - Widespread interference with diagnostic test targets
  - Evidence of substantially increased resistance to one or more class of therapies
  - Evidence of significant decreased neutralization by antibodies generated during previous infection or vaccination
  - Evidence of reduced vaccine-induced protection from severe disease
- **Evidence of increased transmissibility**
- **Evidence of increased disease severity**

CDC has classified two new strains, SARS-CoV-2 B.1.427 and B.1.429, detected in California, as variants of concern.

- B.1.429 and B.1.427 are roughly 20% more transmissible than wild-type SARS-CoV-2 and may not be as responsive to certain treatments.
- B.1.429 represents 8.1% of circulating SARS-CoV-2 in the U.S., while B.1.427 is at 3.3%.

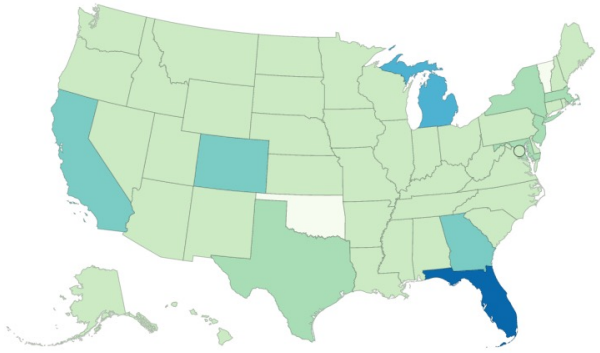
Variants of Concern

Name (Pango lineage)	Spike Protein Substitutions	Name (Nextstrain[a])	First Detected	BEI Reference Isolate[b]	Known Attributes
B.1.1.7	Δ69/70 Δ144Y (E484K*) (S494P*) N501Y A570D D614G P681H	20I/501Y.V1	United Kingdom	NR-54000	• ~50% increased transmission [5] • Likely increased severity based on hospitalizations and case fatality rates [6] • Minimal impact on neutralization by EUA monoclonal antibody therapeutics [7, 14] • Minimal impact on neutralization by convalescent and post-vaccination sera [8,9,10,11,12,13,19]
P.1	K417N/T E484K N501Y D614G	20J/501Y.V3	Japan/ Brazil	NR-54982	• Moderate impact on neutralization by EUA monoclonal antibody therapeutics [7,14] • Reduced neutralization by convalescent and post-vaccination sera [15]
B.1.351	K417N E484K N501Y D614G	20H/501.V2	South Africa	NR-54009	• ~50% increased transmission[16] • Moderate impact on neutralization by EUA monoclonal antibody therapeutics [7,14] • Moderate reduction on neutralization by convalescent and post-vaccination sera [8,12,18,19,20]
B.1.427	L452R D614G	20C/S:452R	US-California		• ~20% increased transmissibility [21] • Significant impact on neutralization by some, but not all, EUA therapeutics • Moderate reduction in neutralization using convalescent and post-vaccination sera [21]
B.1.429	S13I W152C L452R D614G	20C/S:452R	US-California		• ~20% increased transmissibility [21] • Significant impact on neutralization by some, but not all, EUA therapeutics • Moderate reduction in neutralization using convalescent and post-vaccination sera [21]

SARS-CoV-2 Variants

Variant	Reported Cases in US	Number of Jurisdictions Reporting
B.1.1.7	3701	50
B.1.351	108	23
P.1	17	10

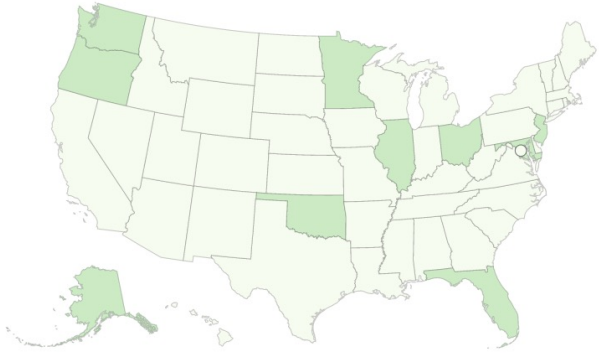
Emerging Variant Cases in the United States*†



Number of Cases
0 to 0
1 to 100
101 to 200
201 to 300
501 to 600
601 to 700
Filters
Variant B.1.1.7

Territories AS GU MH FM MP PW PR VI

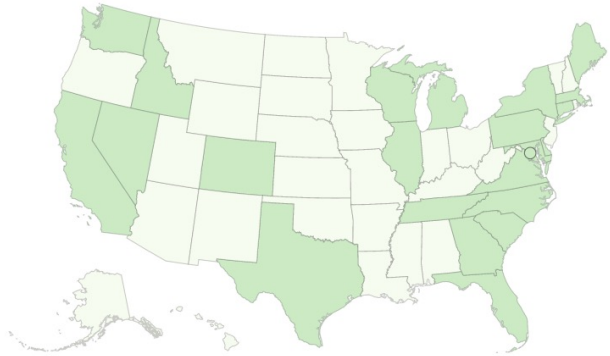
Emerging Variant Cases in the United States*†



Number of Cases
0 to 0
1 to 100
101 to 200
201 to 300
501 to 600
601 to 700
Filters
Variant P.1

Territories AS GU MH FM MP PW PR VI

Emerging Variant Cases in the United States*†



Number of Cases
0 to 0
1 to 100
101 to 200
201 to 300
501 to 600
601 to 700
Filters
Variant B.1.351

Territories AS GU MH FM MP PW PR VI

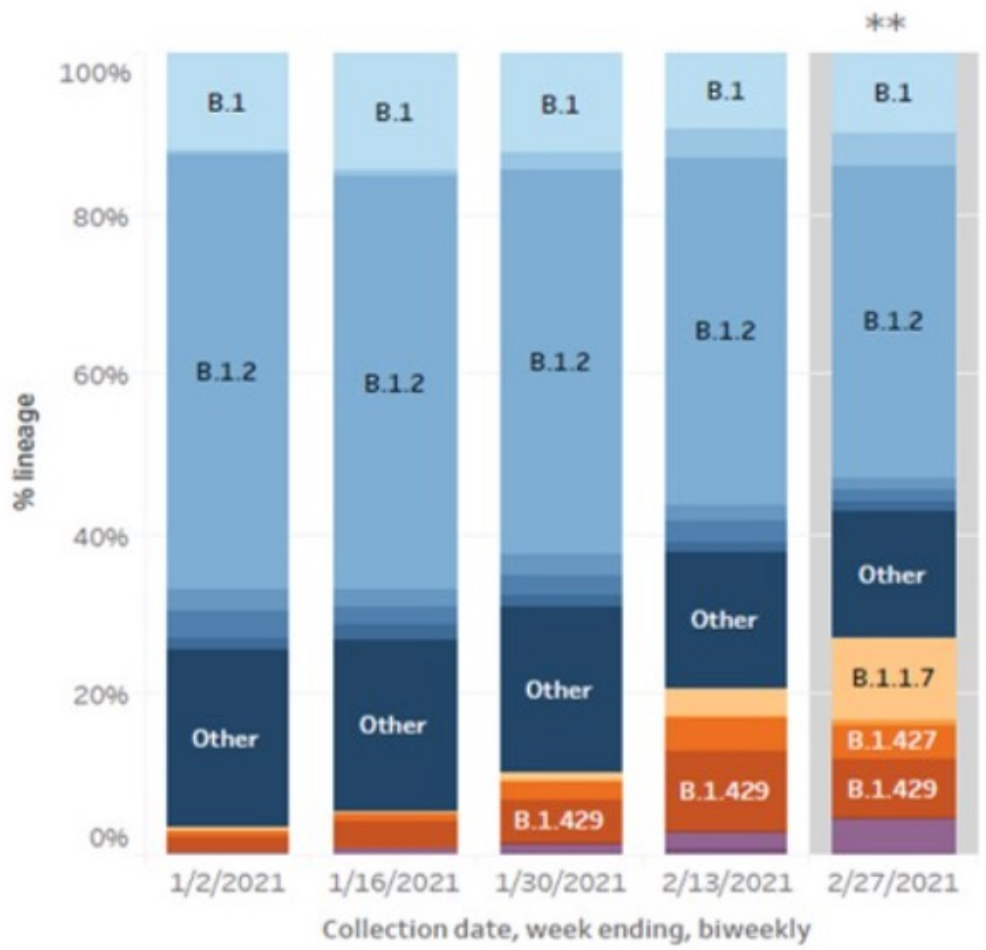
Variants of High Consequence

. Those are defined as a variant associated with

- Demonstrated failure of diagnostic tests,
- Significant reduction in vaccine protection
- Significantly reduced susceptibility to authorized treatments
- More severe clinical disease and more hospitalizations.

So far, none of the emerging variants have met the CDC's criteria for variants of high consequence

SARS-CoV-2 Variants Circulating in the United States



	Lineage	% Total	Type
Top Lineages	B.1.2	46.2%	
	B.1	9.8%	
	B.1.429	8.1%	VOC
	B.1.427	3.3%	VOC
	B.1.1.222	3.0%	
	B.1.243	2.7%	
	B.1.1.7	2.6%	VOC
	B.1.234	2.2%	
	B.1.526	1.8%	VOI
	B.1.311	1.4%	
VOI/VOC not in Top Lineages	P.2	0.6%	VOI
	B.1.351	0.2%	VOC
	B.1.525	0.1%	VOI
	P.1	0.1%	VOC
	A.23.1	0.0%	VOI
Other *	Other	18.2%	

Percentages represent the proportion of viruses belonging to the indicated lineage, based on four weeks of data ending Feb 13.
*Other lineages represent >200 additional lineages which are each circulating at ≤2% of viruses.
**Most recent data (shaded in gray) are subject to change as samples from that period are still being processed.

What Can We Do To Prevent Emergence of Variants?

Viral replication leads to mutations

Decreasing viral replication is the key

Viral replication can be decreased by preventing infections with SARS-CoV-2

- Vaccination
- Mask use
- Social distance
- Avoid crowds and poorly ventilated spaces
- Wash your hands often
- Cover coughs and sneezes
- Clean AND disinfect
- Be alert for symptoms.

Acute Allergic Reactions to mRNA COVID-19 Vaccines METHODS

- **Prospective study** performed at Mass General Brigham (MGB)
- **Employees**
  - Who received their first dose of an mRNA COVID-19 vaccine 12/16/2020-2/12/2021
  - For 3 days after vaccination, completed symptom surveys through email/ text message/ phone, and smartphone application
  - Acute allergic reaction symptoms solicited included itching, rash, hives, swelling, and/or respiratory
- **To identify anaphylaxis, allergists/immunologists reviewed** the EHR of employees
  - Reporting 2 or more allergy symptoms
  - Described as having an allergic reaction in MGB safety reports
  - Logged by the on-call MGB allergy/immunology team supporting employee vaccination
  - Referred to MGB allergy/immunology.
- **Brighton Criteria and the NIAID/FAAN criteria used to score episodes.**
  - Confirmed anaphylaxis required meeting at least 1 of these 2 sets of criteria.

NIAID/FAAN: National Institute of Allergy and Infectious Diseases/Food Allergy and Anaphylaxis Network

JAMA Published online March 8, 2021

Anaphylaxis Cases After mRNA COVID-19 Vaccination (n = 16)

	No. (%)		
	Both mRNA vaccines (n = 16)	Pfizer-BioNTech (n = 7)	Moderna (n = 9)
Age, mean (SD), y	41 (13)	41 (14)	41 (13)
Female	15 (94)	6 (86)	9 (100)
Prior allergic reactions	10 (63)	3 (43)[a]	7 (78)[b]
Prior anaphylaxis	5 (31)	1 (14)	4 (44)
Symptoms			
Pruritus, urticaria, and/or angioedema	14 (88)	6 (86)	8 (89)
Sensation of throat closure, cough, wheeze, and/or dyspnea	14 (88)	6 (86)	8 (89)
Hypotension and/or tachycardia	7 (44)	3 (43)	4 (44)
Nausea, vomiting, and/or diarrhea	8 (50)	3 (43)	5 (56)
Minutes to onset, mean (SD) [range]	17 (28) [1-120]	14 (7) [10-30]	19 (38) [1-120]
Symptom timing			
≤15 min	14 (88)	6 (86)	8 (89)
≤30 min	15 (94)	7 (100)	8 (89)
Received epinephrine	9 (56)	6 (86)	3 (33)
Treatment setting[c]			
Emergency department	9 (56)	4 (57)	5 (56)
Hospitalization	1 (6)	1 (14)	0
Intensive care unit	1 (6)	1 (14)	0
Brighton level[d]			
1	1 (6)	0	1 (11)
2	13 (81)	7 (100)	6 (67)
3	2 (13)	0	2 (22)
NIAID/FAAN criteria[e]	9 (56)	4 (57)	5 (56)
Severity[f]			
Grade I	7 (44)	3 (43)	4 (44)
Grade II	9 (56)	4 (57)	5 (56)
Grade III	0	0	0
Grade IV	0	0	0
Elevated tryptase[g]	1 (6)	0	1 (11)

JAMA Published online March 8, 2021

Acute Allergic Reactions to mRNA COVID-19 Vaccines

98% did not have any symptoms of an allergic reaction

Severe reactions (anaphylaxis) occurred at a rate of 2.47 per 10 000 vaccinations.

- All individuals with anaphylaxis cases recovered without shock or endotracheal intubation.
- The incidence rate of confirmed anaphylaxis is larger than that reported by the CDC

Risk of anaphylaxis to an mRNA COVID-19 vaccine is extremely low, comparable to other common health care exposures.

Most of the vaccine recipients with anaphylaxis had allergy histories (31% having prior anaphylaxis)

Given that approximately 5% of adults have severe food allergy histories and 1% of adults have severe drug allergy histories, it is likely that this cohort included ~ 4000 individuals with severe food or medication allergy who were safely vaccinated.

Impact of the COVID-19 Vaccine on Asymptomatic Infection Among Patients Undergoing Pre-Procedural COVID-19 Molecular Screening

Background:

- The impact of vaccines on asymptomatic SARS-CoV-2 infection is largely unknown

Methods:

- **Retrospective cohort study** of consecutive, asymptomatic adult patients (n = 39,156) within a large United States healthcare system who underwent 48,333 pre-procedural SARS-CoV-2 molecular screening tests between December 17, 2020 and February 8, 2021.
- **The primary exposure** of interest was vaccination with at least one dose of an mRNA COVID-19 vaccine.
- **The primary outcome** was relative risk of a positive SARS-CoV-2 molecular test among those asymptomatic persons who had received at least one dose of vaccine, as compared to persons who had not received vaccine during the same time period.
- Relative risk was adjusted for age, sex, race/ethnicity, patient residence relative to the hospital (local vs. non-local), healthcare system regions

Clinical Infectious Diseases, 2021;ciab229, https://doi.org/10.1093/cid/ciab229

Impact of the COVID-19 Vaccine on Asymptomatic Infection Among Patients Undergoing Pre-Procedural COVID-19 Molecular Screening

Results

- Positive molecular tests in asymptomatic individuals were reported in
  - **42 (1.4%)** of 3,006 tests performed on vaccinated patients
  - **1,436 (3.2%)** of 45,327 tests performed on unvaccinated patients
    - (RR=0.44 95% CI: 0.33-0.60; p<.0001)
- Compared to unvaccinated patients, the risk of asymptomatic SARS-CoV-2 infection was lower among those >10 days after 1st dose (RR=0.21; 95% CI: 0.12-0.37)

Conclusions:

- COVID-19 vaccination with an mRNA-based vaccine showed a significant association with a reduced risk of asymptomatic SARS-CoV-2 infection

Clinical Infectious Diseases, 2021;ciab229, https://doi.org/10.1093/cid/ciab229

Fully Vaccinated People Can:

Visit

- Visit with other fully vaccinated people indoors without wearing masks or physical distancing

Visit

- Visit with unvaccinated people from a single household who are at low risk for severe COVID-19 disease indoors without wearing masks or physical distancing

Refrain

- Refrain from quarantine and testing following a known exposure if asymptomatic

For now, fully vaccinated people should continue to:

Take precautions in public like wearing a well-fitted mask and physical distancing

Wear masks, practice physical distancing, and adhere to other prevention measures when visiting with unvaccinated people

- Who are at increased risk for Severe COVID-19 disease or who have an unvaccinated household member at increased risk for severe COVID-19 disease

Wear masks, physical distance, and other prevention measures when visiting with unvaccinated people from *"multiple households"*

Avoid medium- and large-sized in-person gatherings

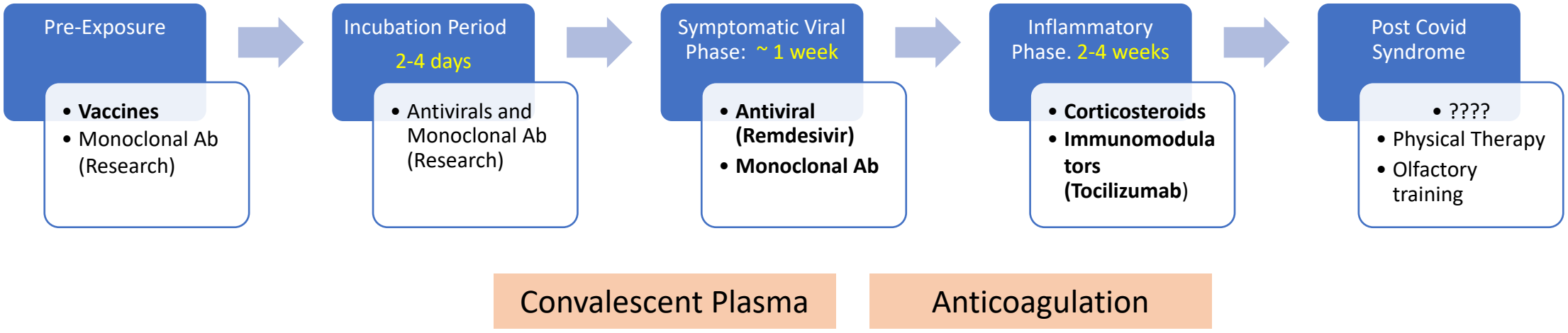
Get tested if experiencing COVID-19 Symptoms

Follow guidance issued by individual employers

Follow CDC and health department travel requirements and recommendations

How to Explain it to Your Patients

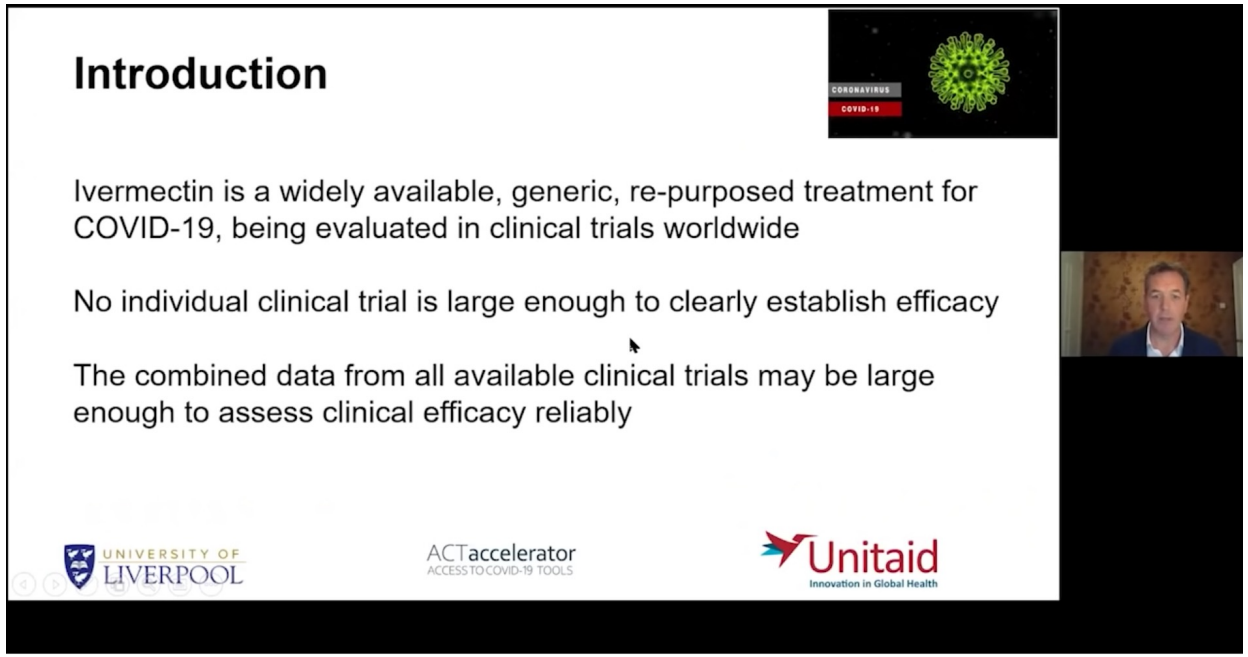
COVID-19 Treatment



What do We know about Ivermectin?

- It is licensed for use against strongyloidiasis and Onchocerciasis (river blindness)
- Also used off-label use for scabies and head lice
- Used in veterinary medicine for pet owners as a common de-worming agent.

What do We know about Ivermectin and COVID-19?



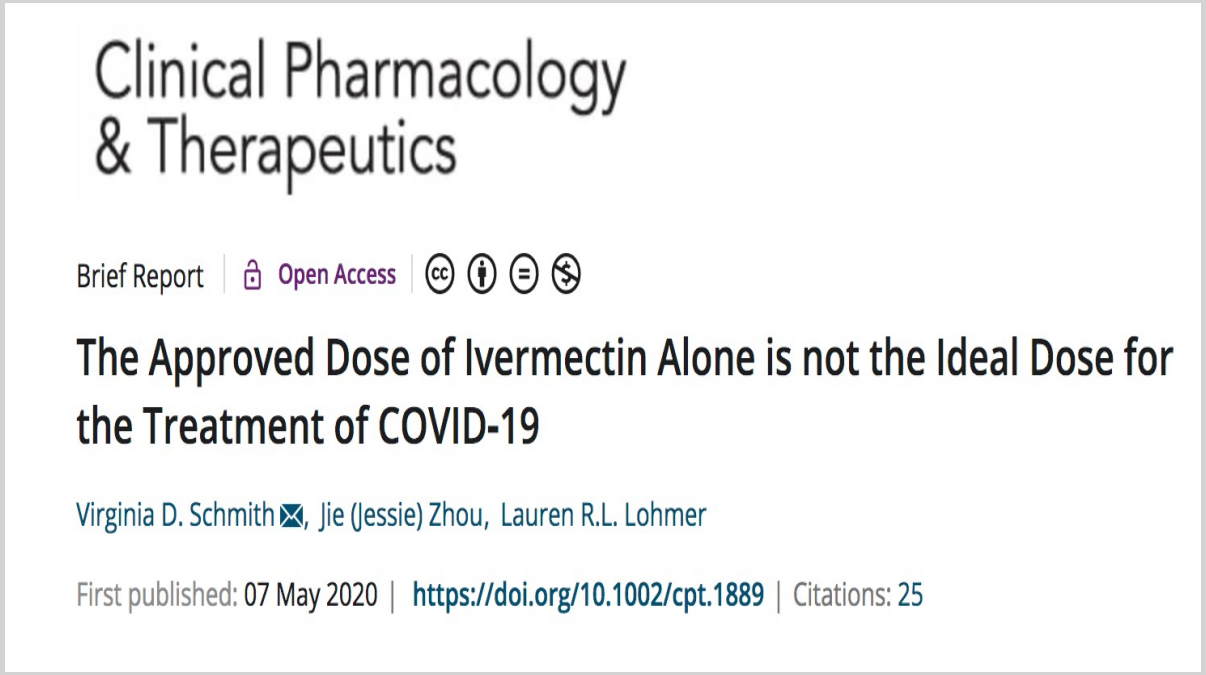
Ivermectin meta-analysis by Dr. Andrew Hill

https://www.youtube.com/watch?v=yOAh7GtvcOs&feature=youtu.be

- **Metanalysis**
  - The risk-ratio for mortality with ivermectin was 0.17 (95% confidence interval 0.08, 0.35), an 83% reduction in risk of dying .
  - Outcomes for other endpoints (time to viral clearance, time to clinical recovery, duration of hospitalization) also favored treatment over controls.
- **Limitations**
  - incompleteness of the data
  - Some of the studies were open label,
  - Difference in dosing regimens and endpoints.
  - Publication bias may play a role
  - None of these trials have yet been published in peer-reviewed journals.

What do We know about Ivermectin and COVID-19?

- Pharmacokinetic (PK) data on ivermectin's antiviral activity.
  - PK studies don't always correlate with clinical activity, and ivermectin may have anti-inflammatory activity



Clinical Pharmacology & Therapeutics

Brief Report | Open Access

The Approved Dose of Ivermectin Alone is not the Ideal Dose for the Treatment of COVID-19

Virginia D. Schmith, Jie (Jessie) Zhou, Lauren R.L. Lohmer

First published: 07 May 2020 | https://doi.org/10.1002/cpt.1889 | Citations: 25

"Ivermectin is unlikely to reach the IC_{50} of 2 µM in the lungs after single oral administration of the approved dose (predicted lung concentration: 0.0873 µM) or at doses 10× higher that the approved dose administered orally (predicted lung concentration: 0.820 µM"

NIH COVID-19 Treatment Guidelines:

- Ivermectin Recommendation
  - There are insufficient data for the COVID-19 Treatment Guidelines Panel (the Panel) to recommend either for or against the use of ivermectin for the treatment of COVID-19. Results from adequately powered, well-designed, and well-conducted clinical trials are needed to provide more specific, evidence-based guidance on the role of ivermectin in the treatment of COVID-19.

Ivermectin: Clinical Trials.gov

- Number of studies: 63
- Completed: 21
- Completed with results: 8

Ivermectin: Clinical Trials.gov

Country		Number of Patients Enrolled	Outcome
Bangladesh	Ivermectin + Doxycycline vs Placebo in Mild - Moderate COVID-19	400	All Cause Mortality: 1.67% in Treatment group vs 0% in Placebo
Turkey	Ivermectin +hydroxychloroquine +Azithromycin + Faviravir vs Ivermectin in Severe COVID 19	60	No difference in outcomes
Egypt	PEP Study Ivermectin vs Placebo	340	58 % Infections in Placebo group vs 7.4% in Treatment group
Argentina	PEP Nasal spray Ivermectin vs Placebo	229	
Spain	Duration of Nasal Carriage	24	
Argentina	Ivermectin + Dexamethasone + Aspirin + Lovenox in Mild to Severe Covid 19	169	
Iraq	Hydroxychloroquine + Azithromycin + Ivermectin Vs Ivermectin	26	No differences in outcomes

Molnupiravir for COVID-19

NATAP/CROI: COVID Oral Antiviral Molnupiravir Phase 2a Findings. March 2021

Molnupiravir (EIDD-2801/MK-4482) is an investigational, orally-bioavailable form of a potent ribonucleoside analog that inhibits the replication of multiple RNA viruses including SARS-CoV-2

Molnupiravir has been shown to be active in several models of SARS-CoV-2, including for prophylaxis, treatment, and prevention of transmission, as well as SARS-CoV-1 and MERS

EIDD-2801 was invented at Drug Innovations at Emory (DRIVE), LLC, a not-for-profit biotechnology company wholly owned by Emory University

Tocilizumab added to IDSA guidelines

Among hospitalized adults with progressive severe or critical COVID-19 who have elevated markers (**CRP >75**) of systemic inflammation, the IDSA guideline panel suggests tocilizumab in addition to standard of care (i.e., steroids) rather than standard of care alone.

(***Conditional recommendation, Low certainty of evidence***)

https://www.idsociety.org/practice-guideline/covid-19-guideline-treatment-and-management/

Tocilizumab for added to IDSA guidelines

REMAP-CAP trial (NEJM February 25, 2021)

- Tocilizumab (352 pts) or , sarilumab (48 pts), placebo (402 pts)
- **OR > 1 = improved survival, more organ support free days or both**
  - Median adjusted cumulative OR was 1.64 for Tocilizumab and 1.76 for sarilumab
  - Hazard ratio for survival for both was 1.61

COVACTA trial (NEJM January 7, 2021)

- 438 pts with severe Covid-19 received Tocilizumab and 144 pts received placebo
- No improvement in mortality or clinical status noted at 28 days

Effect of a Single High Dose of Vitamin D_3 on Hospital Length of Stay in Patients With Moderate to Severe COVID-19A Randomized Clinical Trial

JAMA 2021 Mar 16;325(11):1053-1060.

Objective

- To investigate the effect of a single high dose of vitamin D_3 on hospital length of stay in patients with COVID-19.

Design, Setting, and Participants

- This was a multicenter, double-blind, randomized, placebo-controlled trial conducted in 2 sites in Sao Paulo, Brazil.
- The study included 240 hospitalized patients with COVID-19 who were moderately to severely ill at the time of enrollment .

Interventions

- Patients were randomly assigned to receive a single oral dose of 200 000 IU of vitamin D_3 (n = 120) or placebo (n = 120).

Main Outcomes and Measures

- The primary outcome was length of stay.
- Secondary outcomes were:
  - Mortality during hospitalization
  - Number of patients admitted to the intensive care unit
  - Number of patients who required mechanical ventilation
  - Serum levels of 25-hydroxyvitamin D, total calcium, creatinine, and C-reactive protein.

Effect of a Single High Dose of Vitamin D_3 on Hospital Length of Stay in Patients With Moderate to Severe COVID-19 A Randomized Clinical Trial:

JAMA 2021 Mar 16;325(11):1053-1060.

Results

- Of 240 randomized patients, 237 were included in the primary analysis
  - Age, 56.2 [14.4] years and 43.9% were women
  - Baseline 25-hydroxyvitamin D level, 20.9 ng/mL).
  - Median length of stay was not significantly different between the vitamin D_3 (7.0 [4.0-10.0] days) and placebo groups (7.0 [5.0-13.0] days $P = .59$;
  - The difference between the vitamin D_3 group and the placebo group was not significant for in-hospital mortality (7.6% vs 5.1%) $P = .43$.
  - No differences found on admission to the intensive care unit or need for mechanical ventilation
  - Mean serum levels of 25-hydroxyvitamin D significantly increased after a single dose of vitamin D_3 vs placebo (44.4 ng/mL vs 19.8 ng/mL; difference, 24.1 ng/mL [95% CI, 19.5-28.7]; $P < .001$).
  - There were no adverse events, but an episode of vomiting was associated with the intervention.

Conclusions and Relevance

- Among hospitalized patients with COVID-19, a single high dose of vitamin D_3, compared with placebo, did not significantly reduce hospital length of stay. The findings do not support the use of a high dose of vitamin D_3 for treatment of moderate to severe COVID-19.

Association of Children's Mode of School Instruction with Child and Parent Experiences and Well-Being During the COVID-19 Pandemic — COVID Experiences Survey, United States, October 8–November 13, 2020

Families who did at least part of their schooling virtually reported worse mental- and physical-health-related outcomes

Nearly 1300 parents of children aged 5 to 12 years were surveyed in October and November 2020.

Children attended only virtual school compared to in-person only reported:

- Decreased physical activity, 63% vs. 30%
- Less in-person time with friends, 86% vs. 70%
- Worsened mental or emotional health 25% vs. 16%.

Children who received both virtual & in-person instruction had worse outcomes than those receiving only in-person schooling.

Virtual school parents were more likely than in-person school parents to report

- Their own emotional distress (54% vs. 38%)
- Trouble sleeping (22% vs. 13%).

Virtual instruction was more common among Black, Hispanic, and non-Hispanic other/multiracial families than white families.

MMWR / March 19, 2021 / 70(11);369–376

Association of Children's Mode of School Instruction with Child and Parent Experiences and Well-Being During the COVID-19 Pandemic — COVID Experiences Survey, United States, October 8–November 13, 2020 *Weekly* / March 19, 2021 / 70(11);369–376

CONCLUSIONS

"These findings highlight the importance of in-person learning for children's physical and mental well-being and for parents' emotional well-being. Community-wide actions to reduce COVID-19 incidence and support mitigation strategies in schools are critically important to support students' return to in-person learning."

Racial/Ethnic COVID-19 Disparities

Risk for COVID-19 Infection, Hospitalization, and Death By Race/Ethnicity

Rate ratios compared to White, Non-Hispanic persons	American Indian or Alaska Native, Non-Hispanic persons	Asian, Non-Hispanic persons	Black or African American, Non-Hispanic persons	Hispanic or Latino persons
Cases[1]	1.7x	0.7x	1.1x	1.3x
Hospitalization[2]	3.7x	1.0x	2.9x	3.1x
Death[3]	2.4x	1.0x	1.9x	2.3x

Race and ethnicity are risk markers for other underlying conditions that affect health, including socioeconomic status, access to health care, and exposure to the virus related to occupation, e.g., among frontline, essential, and critical infrastructure workers.

CDC.gov

Incentivizing Vaccination Uptake The “Green Pass” Proposal in Israel

- The aim of the pass is to encourage citizens, including those at lower risk of severe COVID-19 disease, to receive vaccination in a national attempt to achieve 95% immunization rate, presumably a sufficient percentage to reach herd immunity

Wilf-Miron R, Myers V, Saban M. Incentivizing Vaccination Uptake: The “Green Pass” Proposal in Israel. *JAMA.* Published online March 15, 2021. doi:10.1001/jama.2021.4300

Incentivizing Vaccination Uptake The “Green Pass” Proposal in Israel

Only for individuals with immunity, based on:

- Having recovered from COVID-19 or being fully vaccinated (1 week after the second dose).

Access limited to 6 months for

- Social
- Cultural
- Sports events
- Gyms
- Hotels
- Restaurants

The green pass would also give exemption from quarantine either for a close contact to a COVID-19 patient or returning travelers from abroad.

Wilf-Miron R, Myers V, Saban M. Incentivizing Vaccination Uptake: The “Green Pass” Proposal in Israel. *JAMA.* Published online March 15, 2021. doi:10.1001/jama.2021.4300

Incentivizing Vaccination Uptake The “Green Pass” Proposal in Israel

The green pass allows entry to certain places for individuals who have been vaccinated while penalizing those who have not.

Proof of vaccination is done through

- Downloading the pass from the Israeli Ministry of Health app or website, or
- Use a printed document with a QR code.

Pass forgery is regarded as a criminal act punishable by fine or incarceration.

Media campaigns have been promoting the green pass, transmitting messages of mutual social responsibility associated with getting vaccinated and using celebrities to influence social norms surrounding vaccination.

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Incentivizing Vaccination Uptake The “Green Pass” Proposal in Israel

This proposal has been met with both enthusiasm and some opposition, given the ethical and legal issues it raises, potentially creating a basis for discrimination based on vaccination status.

Wilf-Miron R, Myers V, Saban M. Incentivizing Vaccination Uptake: The “Green Pass” Proposal in Israel. *JAMA.* Published online March 15, 2021. doi:10.1001/jama.2021.4300

Comments to the ”Green Pass”

”We would argue that these would be yet another measure that widens the gap between “haves” and “have nots” at regional, national, and global levels”.

Potential Problems

- Which vaccines will make persons passport-eligible?
- For how long would such passports be valid?
- What will happen to passports when variants that reduce vaccine efficacy become dominant in a community?
- What about those with immunity due to natural?
- If measured antibodies are the basis for a passport, at what antibody level does a person not qualify?
- And how can one equitably treat those with true contraindications such as anaphylaxis to similar vaccines?
- An inequitable society cannot equitably provide passports.
- The less privileged are less likely to have immediate access to vaccine, to be able to travel to get vaccinated, to be able to go to the show or the gym that the passport allows.

“When viewed in a societal context, a vaccine passport allows the privileged to resume their privileges. The appeal of the concept of a vaccine passport is obvious. The realities make passports problematic. We cannot support them”.

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