

2021 Carolyn P. Horchow Women's
Health Symposium

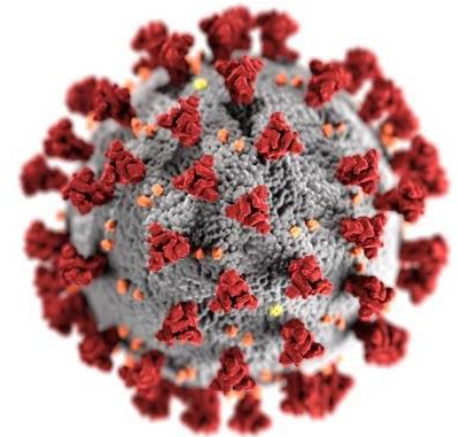
UTSouthwestern
Medical Center

Pandemic Posts: Dispatches from the COVID-19 Frontlines

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Outline

- **COVID-19 Pandemic: Where are we now?**
- **UT Southwestern COVID-19 Response**
 - **Tracking COVID-19:** Modeling, Epidemiology and Genomic Sequencing
 - **Treating COVID-19:** Pharmacologic Treatments and Clinical Trials
 - **Defeating COVID-19:** COVID-19 Vaccines



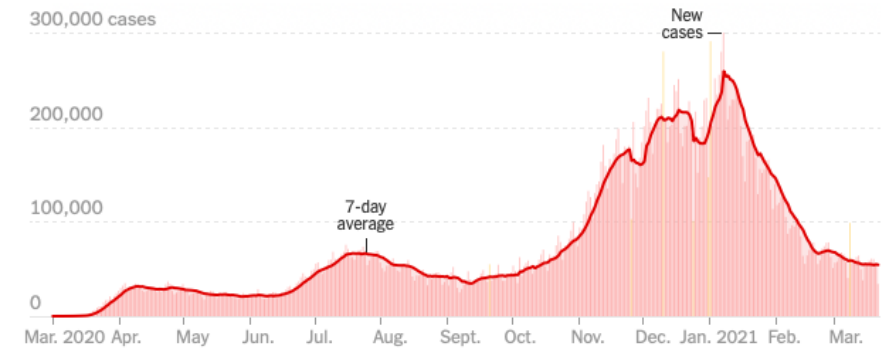
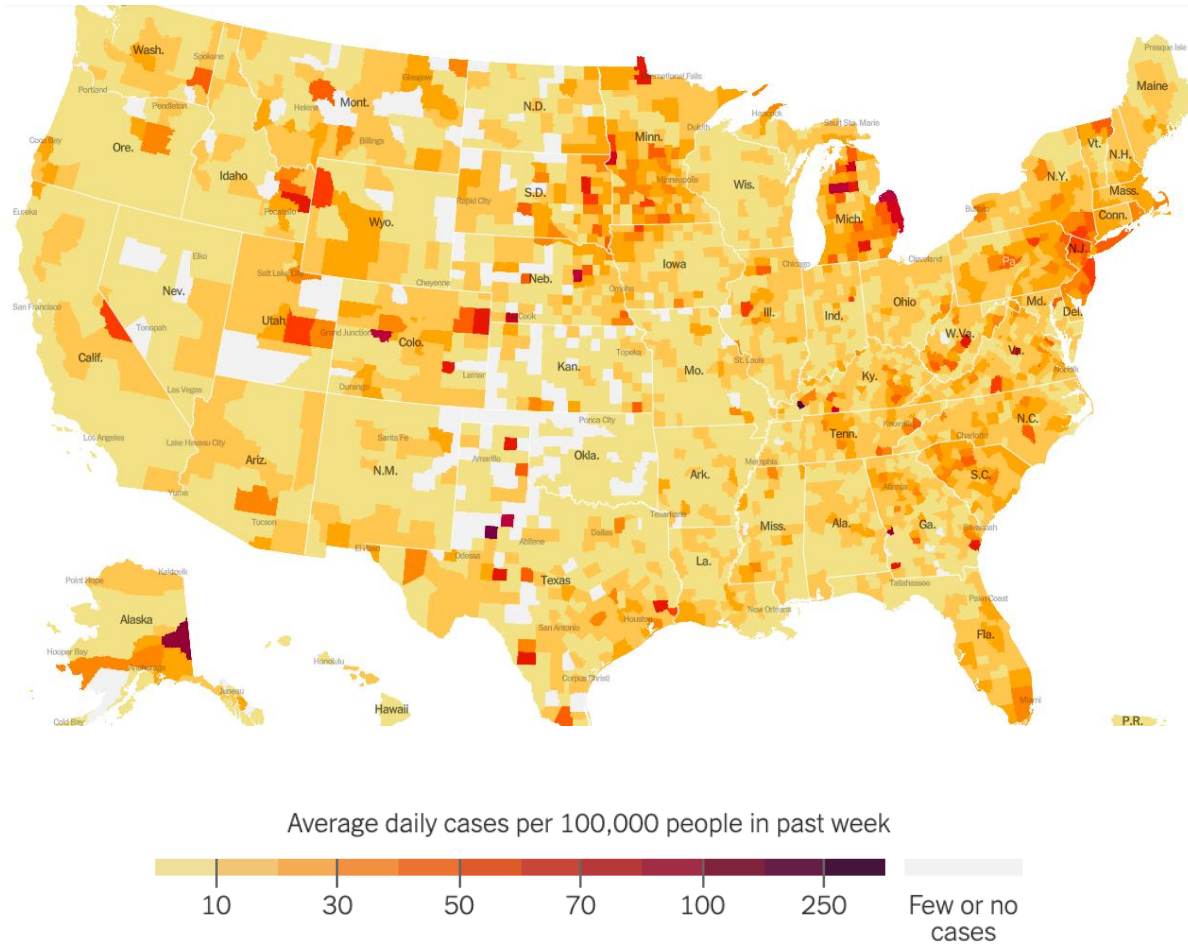
A Day in the Clements Hospital ER: January 2020

**ER Call: A traveler
with a febrile illness
from China**



**Test for SARS-CoV-2
ultimately negative,
took about 1 week to
return**

COVID-19 Trends in the United States

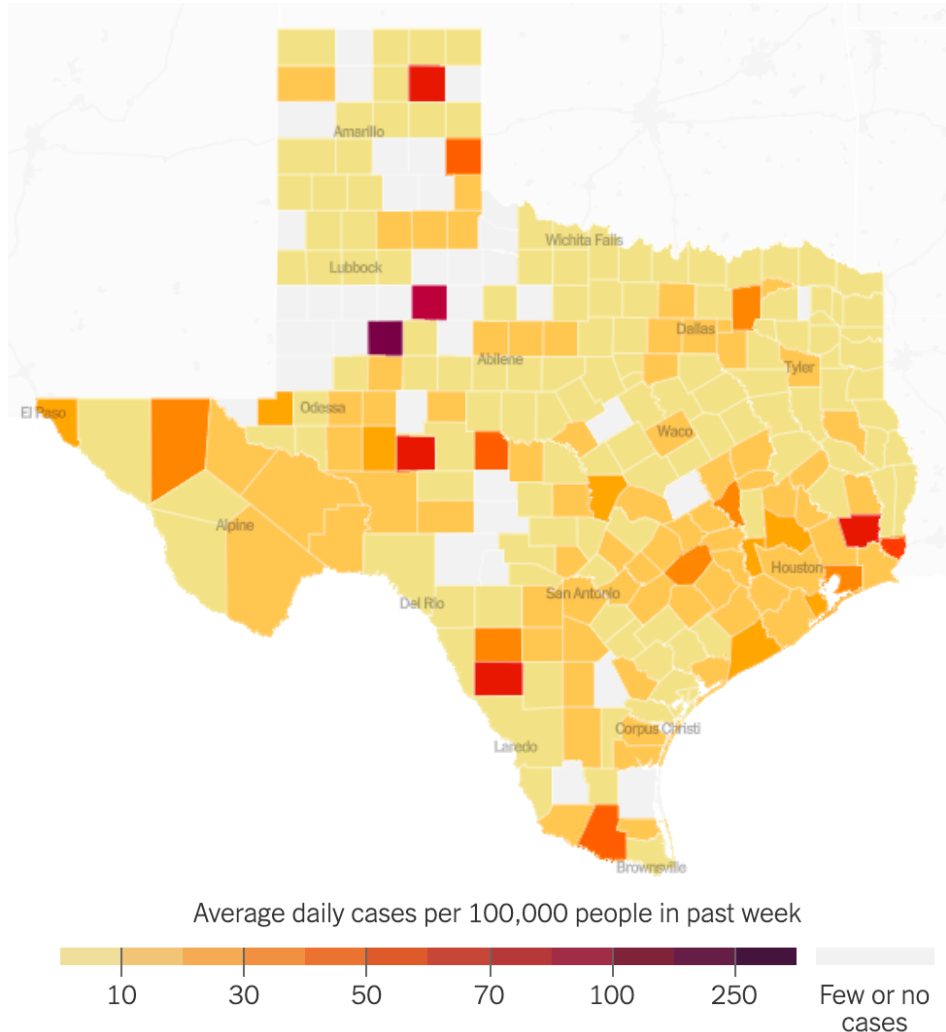


	TOTAL REPORTED	ON MARCH 21	14-DAY CHANGE
Cases	29.8 million+	34,217	-7% ↘
Deaths	541,937	444	-38% ↘
Hospitalized		39,333	-17% ↘

Day with reporting anomaly. Hospitalization data from the U.S. Department of Health and Human Services; 14-day change trends use 7-day averages.

Source: New York Times; Data as of March 22, 2021

COVID-19 Trends in Texas

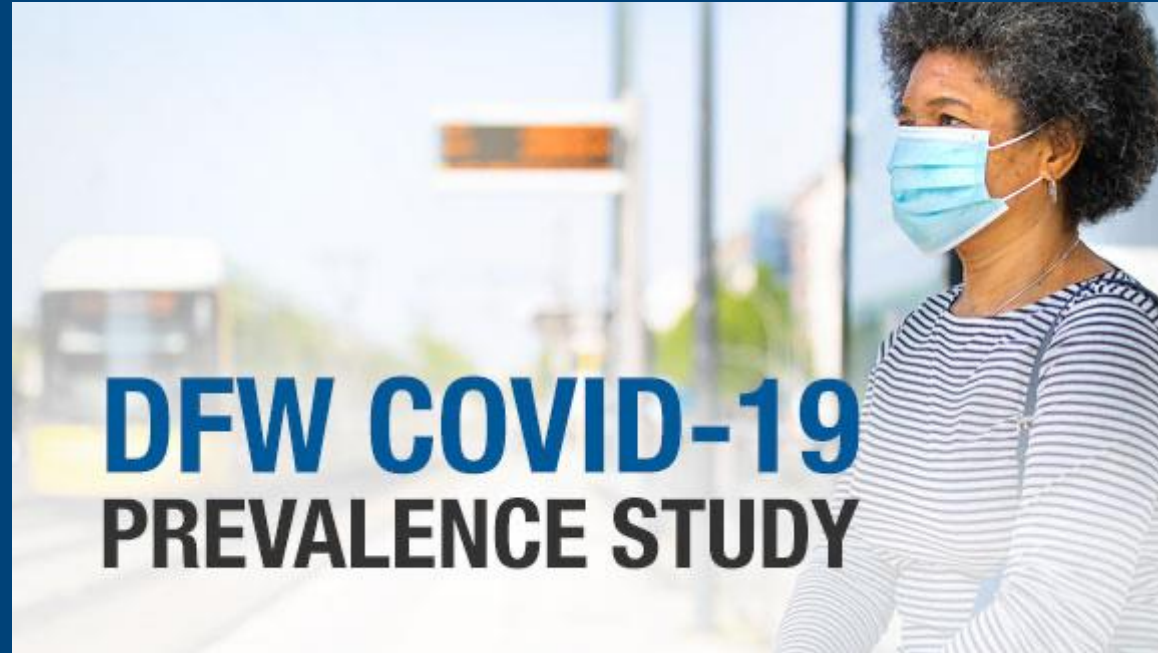


Source: New York Times; Data as of March 22, 2021



	TOTAL REPORTED	ON MARCH 21	14-DAY CHANGE
Cases	2.7 million+	2,331	-36% ↘
Deaths	47,611	45	-39% ↘
Hospitalized		4,055	-30% ↘

Day with reporting anomaly. Hospitalization data from the U.S. Department of Health and Human Services; 14-day change trends use 7-day averages.



Tracking COVID-19

COVID-19 Pandemic Modeling

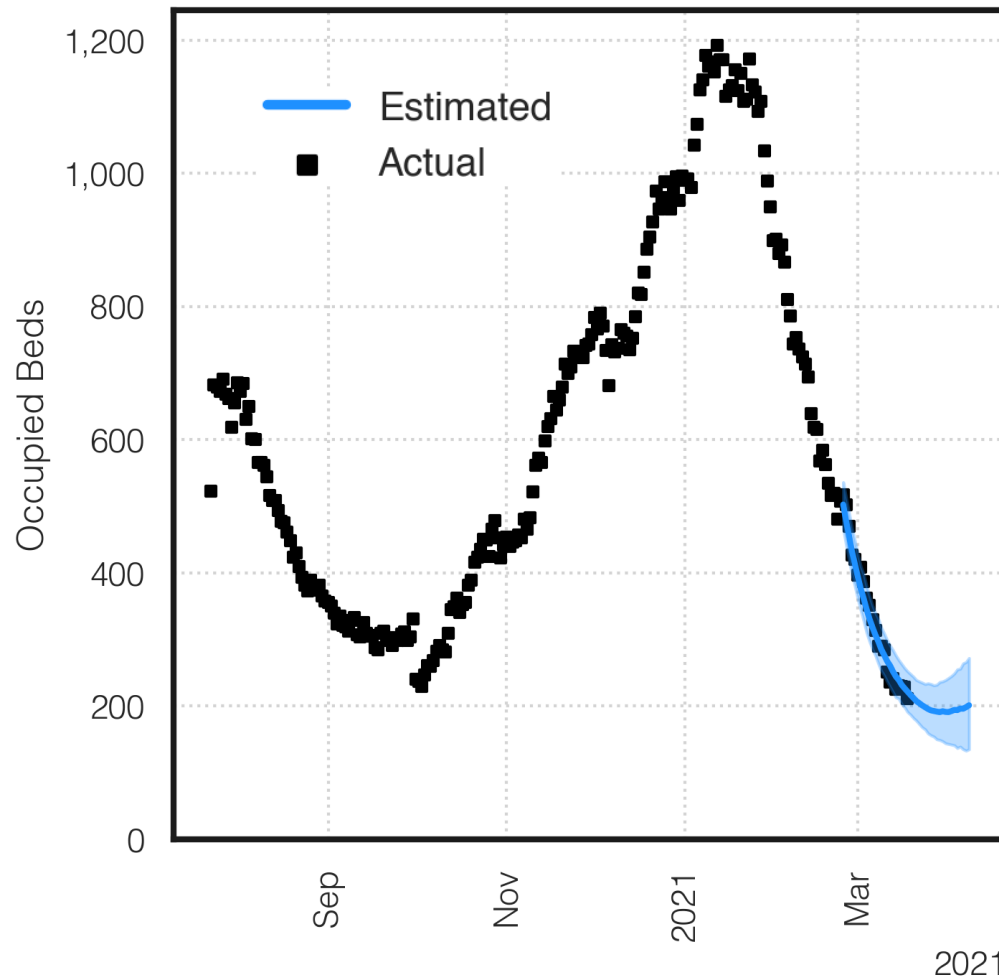
Seroprevalence Study

Genomic Sequencing of Variants

COVID-19 Hospitalizations in Dallas County: Past, Present, and Future Forecasting

Updated 3/22/21 with data from 3/19/21

Hospitalized COVID-19+ Patients: Past and Predicted

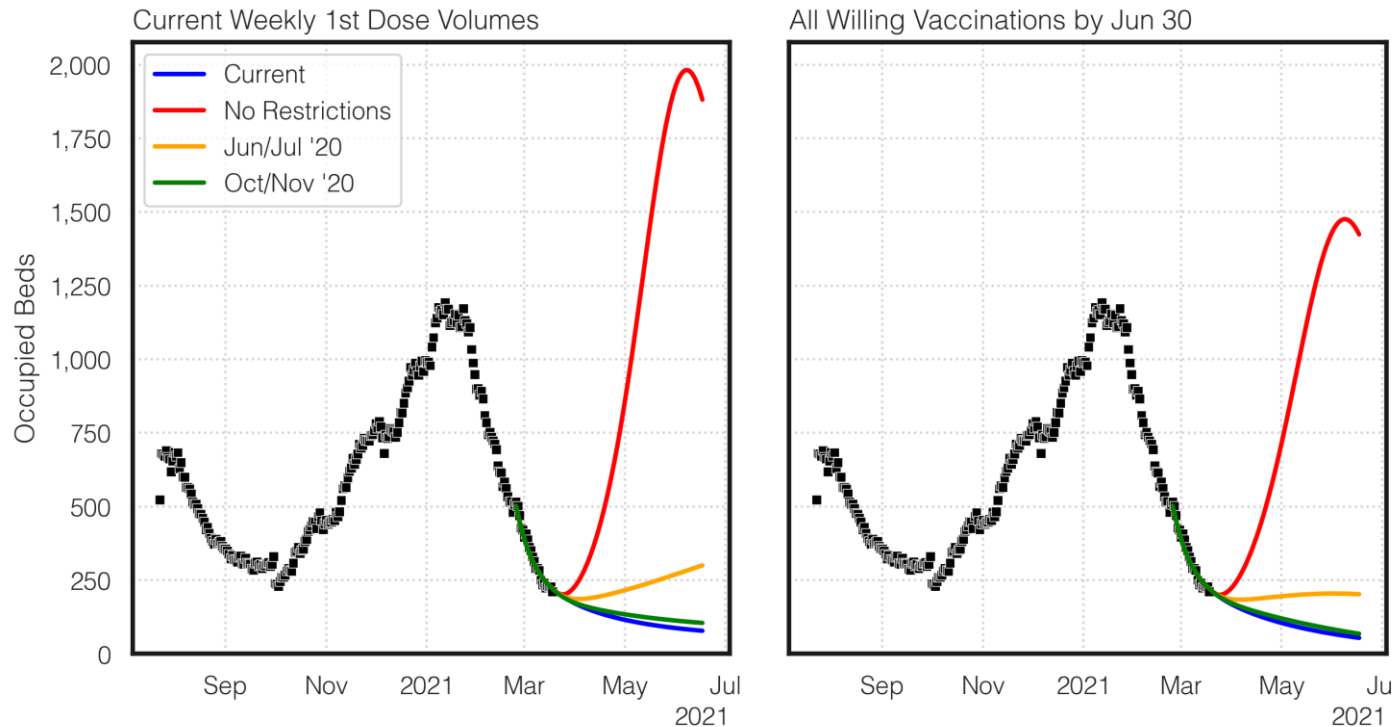


- COVID-19 hospitalizations (black squares) have decreased by 44% over the past two weeks.
- The **blue line** shows the estimated number of hospitalizations for the last three weeks, as well as our 21-day forecast starting from 3/19.
- Dallas County **total COVID-19 hospitalizations** are predicted to reach 140-270 concurrent hospitalized cases by April 8.
- **Roughly 480 new COVID-19 infections per day** are expected by April 8.

Dallas County's Trajectory Still Depends on Our Behavior/ Vaccination Success

Updated 3/22/21 with data from 3/19/21

- Without any modification in behavior, our COVID-19 hospitalizations could still surpass previous records even in an ideal vaccination scenario
- Reverting to the behaviors of June/July 2020 before mask mandates went into effect, without a notable increase in vaccination volume will lead to increases in hospitalization
- Eliminating need for masks requires a successful vaccination campaign and adherence to social distancing recommendations until prevalence is reduced



"All Willing Vaccinations" assumes that 73% of adult residents of Dallas County receive at least one dose by Jun 30

Red is if all behavior returns to unmitigated, pre-pandemic patterns (no masking/social distancing/business restrictions)

Orange is if we return to behavior patterns of Jun/Jul '20 (limited masking/social distancing/business restrictions)

Green is if we return to behavior patterns of Oct/Nov '20 (mask mandate/business restrictions; limited social distancing)

Blue is if we continue behaviors of Feb. '21 (strong compliance with mask mandate/social distancing; business restrictions)

DFW COVID-19 Seroprevalence Study

- Collaboration between UTSW and Texas Health Resources to measure COVID-19 prevalence in DFW overall and key sociodemographic groups

Study stopped early due to higher prevalence and vaccine rollout

	Sample Size	Prevalence Rates	Vaccine Implementation
Goal / Assumption	44,000	PCR+ = 1% Ab+ = 4%	12-18 months
Actual	21,377	PCR+ = 3% Ab+ = 7%	9 months


Study used adaptive design to evolve with COVID-19 science

Community Sampling



Shift from population to volunteer based

Vaccine Behavior & Hesitancy



Add vaccine-related questions to survey

Variant Analysis

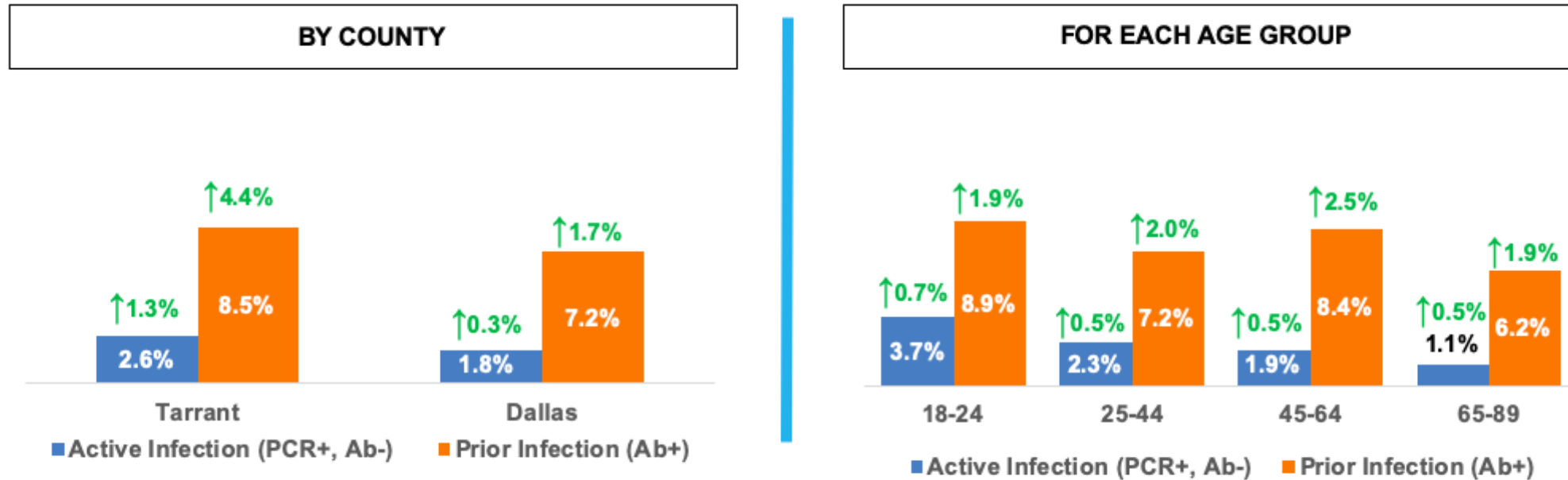


Test for emerging variants in samples

Slide adapted from Dr. Jasmin Tiro; <https://utswmed.org/covidstudy>

DFW COVID-19 Seroprevalence Community Sample (17,277 Individuals; March 2021)

Prevalence of Active Infection: Dallas 1.8%, Tarrant 2.6%
Prevalence of Prior Infection: Dallas 7.2%, Tarrant 8.5%



*The change in infection prevalence between December 2020 and March 2021 is shown in green and red above each bar.

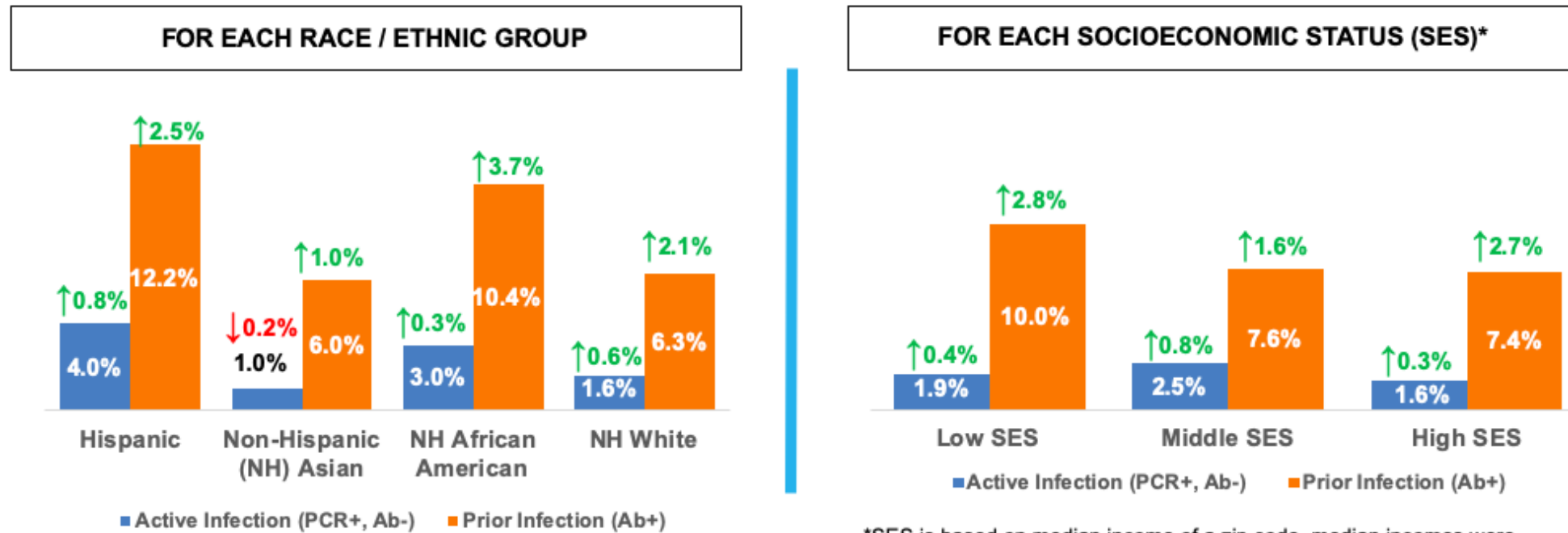
utswmed.org/covidstudy

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Slide adapted from Dr. Jasmin Tiro; <https://utswmed.org/covidstudy>

DFW COVID-19 Seroprevalence Community Sample (17,277 Individuals; March 2021)

Documented racial and socioeconomic disparities in COVID-19 prevalence in DFW



*SES is based on median income of a zip code, median incomes were <\$40,000 for **low SES**, \$40,000-70,000 for **middle SES**, and >\$70,000 for **high SES**.

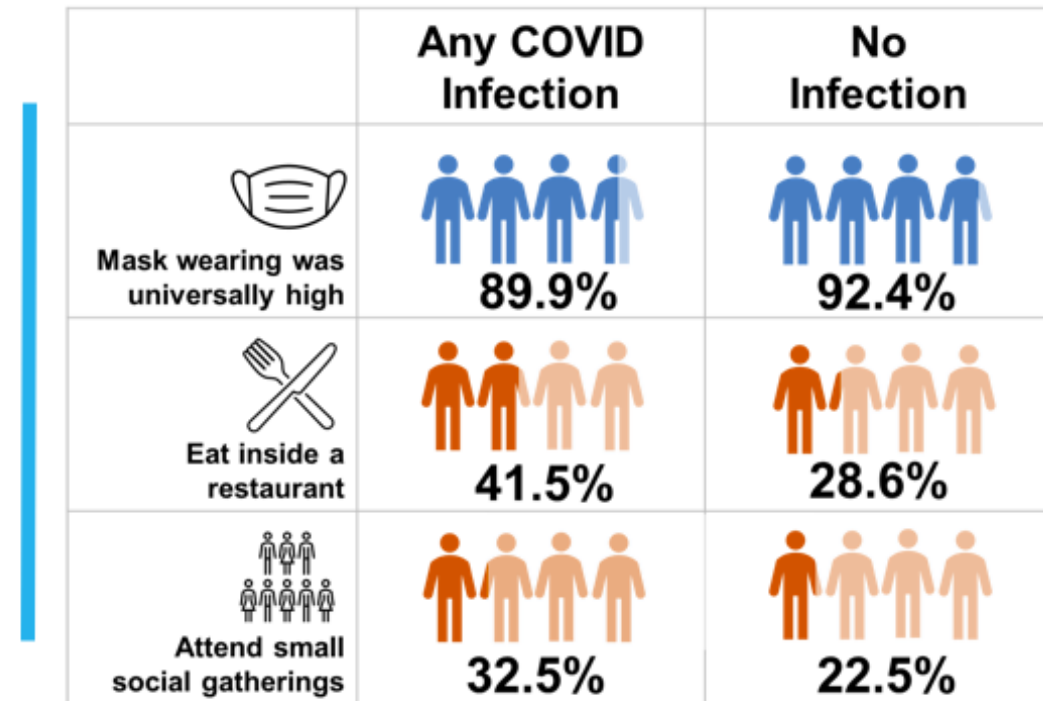
utswmed.org/covidstudy

*The change in infection prevalence between December 2020 and March 2021 is shown in **green** and **red** above each bar.

Slide adapted from Dr. Jasmin Tiro; <https://utswmed.org/covidstudy>

DFW COVID-19 Seroprevalence Community Sample (17,277 Individuals; March 2021)

Identified key behavioral risk factors for COVID-19 prevalence in DFW



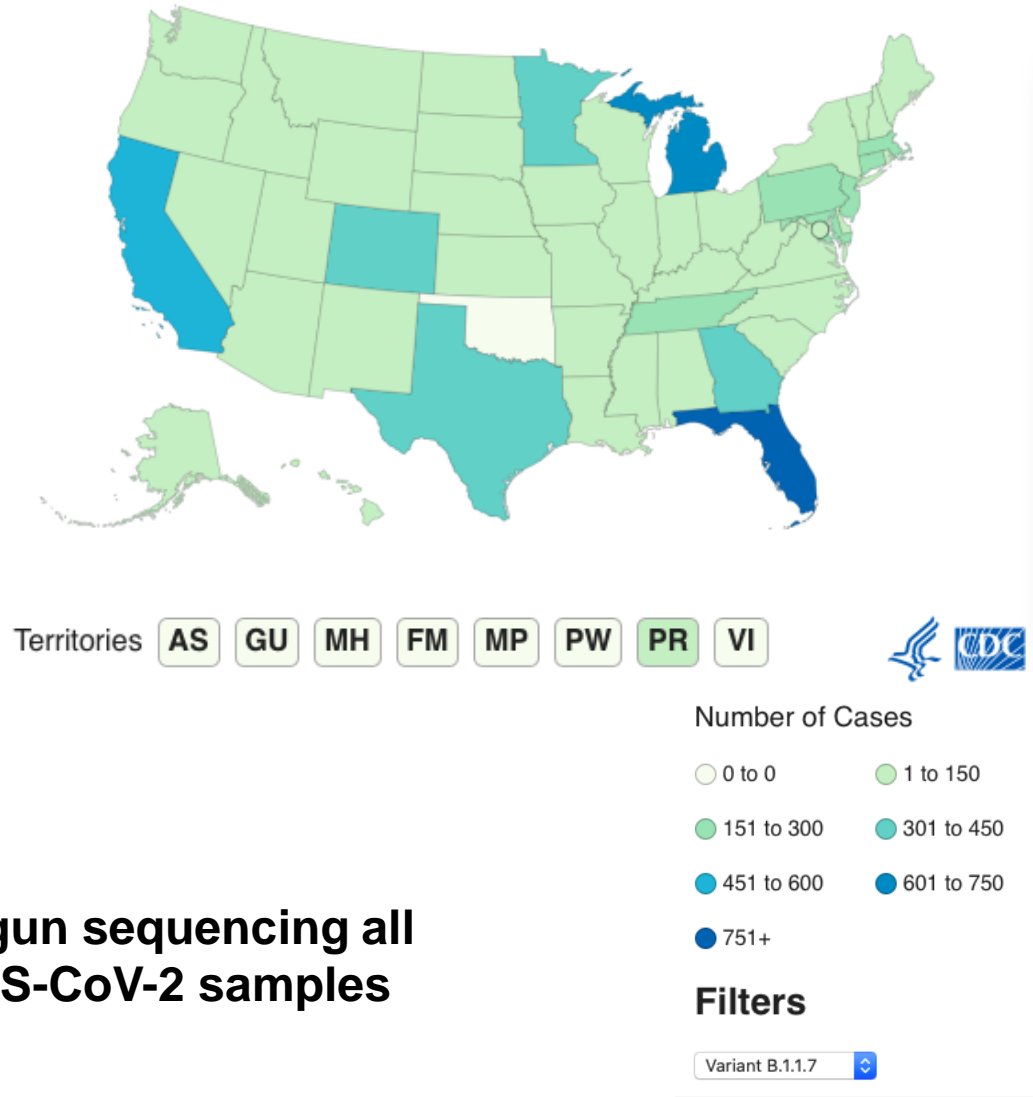
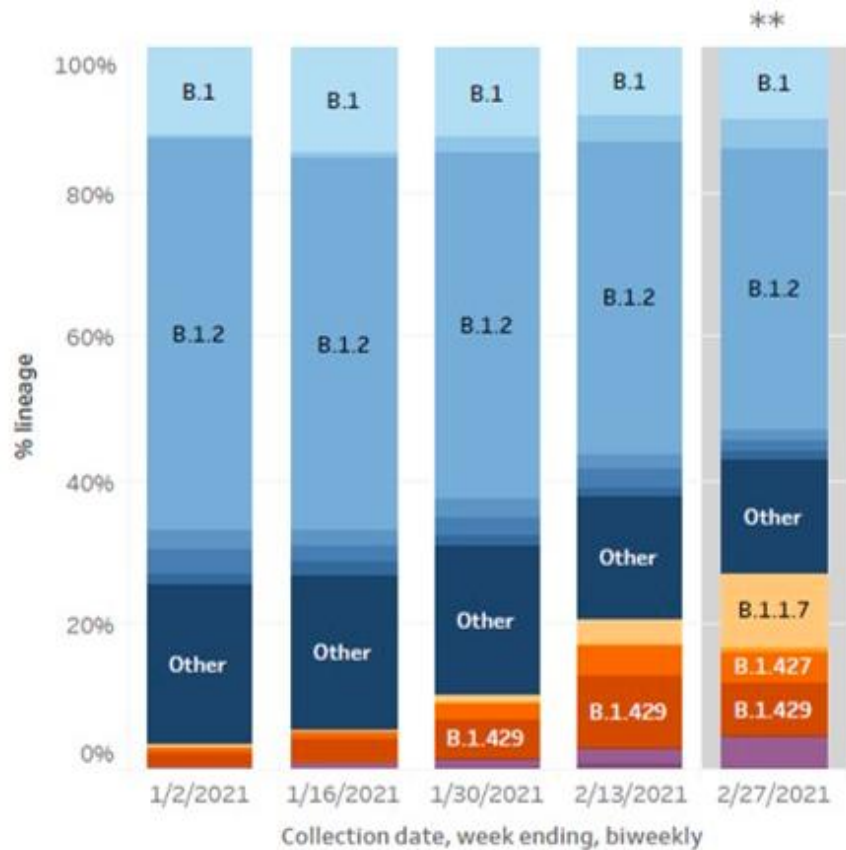
Slide adapted from Dr. Jasmin Tiro; <https://utswmed.org/covidstudy>

SARS-CoV-2 Variants of Concern (VOC)

Key SARS-CoV-2 variants of concern	B.1.1.7	B.1.351	P.1	B.1.427/ B1.429
Location/Date first identified	United Kingdom, Sep 2020	South Africa, Oct 2020	Brazil and Japan, Jan 2021	California, July 2020
Identified in US to date	Yes	Yes	Yes	Yes
Impact on vaccine efficacy?	No	Some reduced efficacy	Likely some reduced efficacy	Possible some impact
Impact on monoclonal antibody therapies?	No	Reduced efficacy to some but not all Ab products	Reduced efficacy to some but not all Ab products	Reduced efficacy to some but not all Ab products
Primary Concerns	Increased spread by ~ 50%, more severe disease	Increased spread, some antibody escape	Increased spread, some antibody escape	Increased spread by 20%, some antibody escape

<https://www.cdc.gov/coronavirus/2019-ncov/cases-updates/variant-surveillance/variant-info.html#Concern>

SARS-CoV-2 Variants Circulating in the US



Since early Feb 2021, UTSW has begun sequencing all positive employee and patient SARS-CoV-2 samples

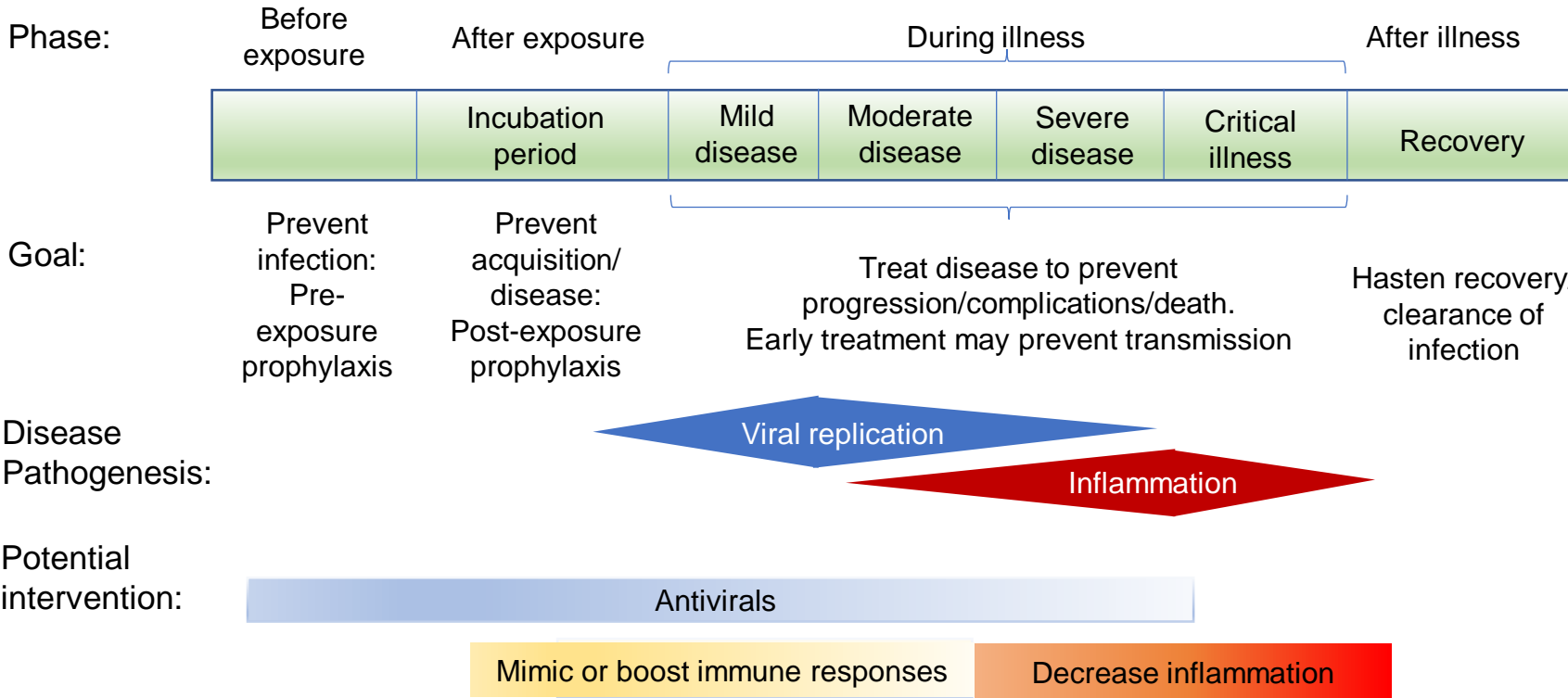
<https://www.cdc.gov/coronavirus/2019-ncov/transmission/variant-cases.html>



Treating COVID-19

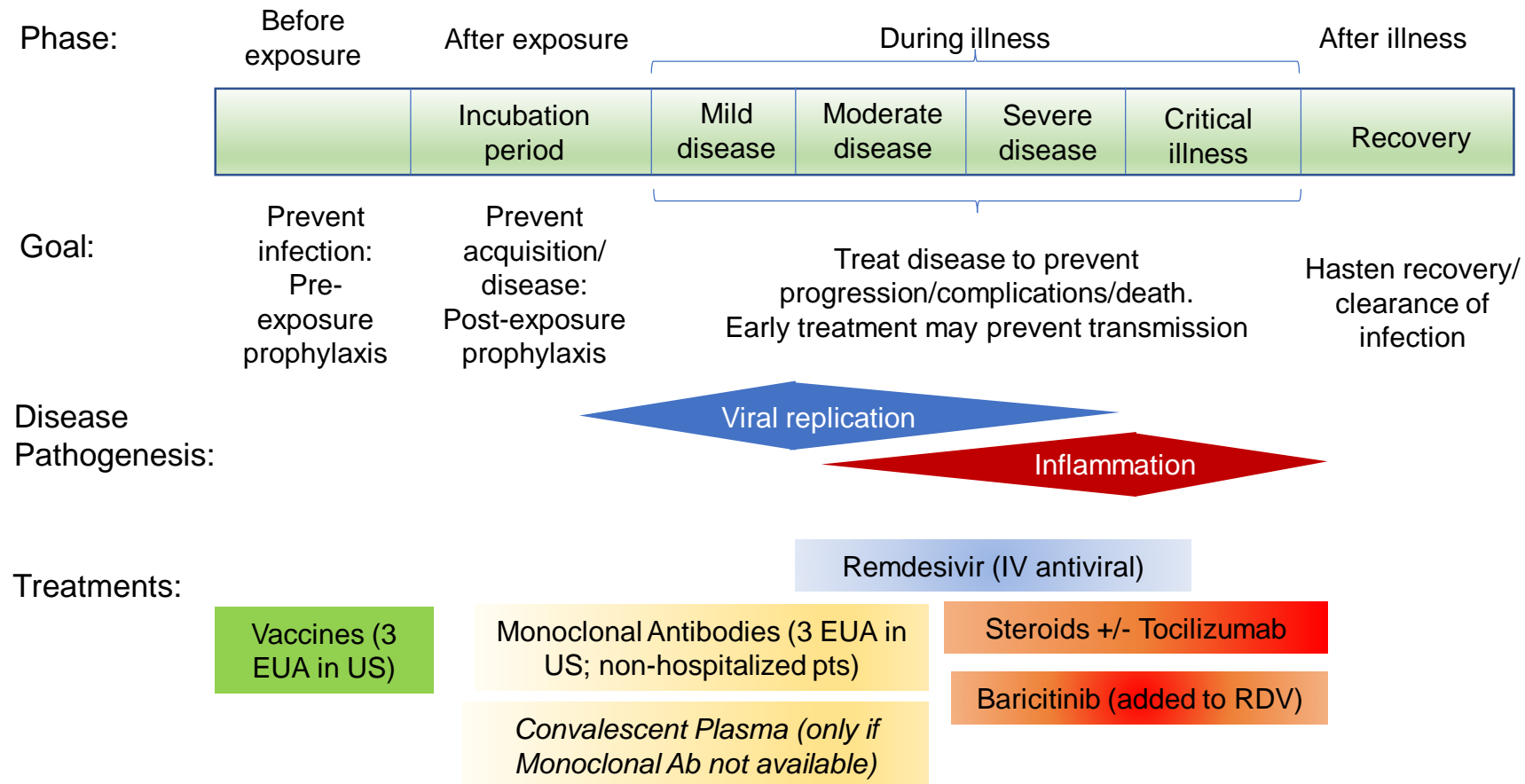
Pharmacologic Treatments and Clinical Trials

Goals of Treatment Across COVID-19 Spectrum



Adapted from slide by Dr. Rajesh Gandhi and Dr. Arthur Kim, MGH

Current Recommended COVID-19 Treatment: March 2021



EUA: Emergency Use Authorization

Adapted from slide by Dr. Rajesh Gandhi and Dr. Arthur Kim, MGH

UTSW COVID-19 Research and Clinical Trials

- More than 625 patients enrolled in COVID-19 clinical trials; site for major clinical trial networks (e.g. ACTT, ACTIV)
- More than 325 patients treated with EUA monoclonal antibodies
- Over 200 active or pending research projects spanning basic sciences, clinical trials, and population studies

COVID-19 Research Projects

SARS-CoV2 Targets (28)	+
Host Response to SARS-CoV2 (34)	+
Epidemiology, Clinical and Laboratory Features, and Outcomes (71)	+
Clinical Trials (20)	+
Social and Behavioral Research (34)	+
Effects of the Pandemic on Other Diseases (34)	+
Effects of COVID-19 on Health Care Workers and Practice (48)	+

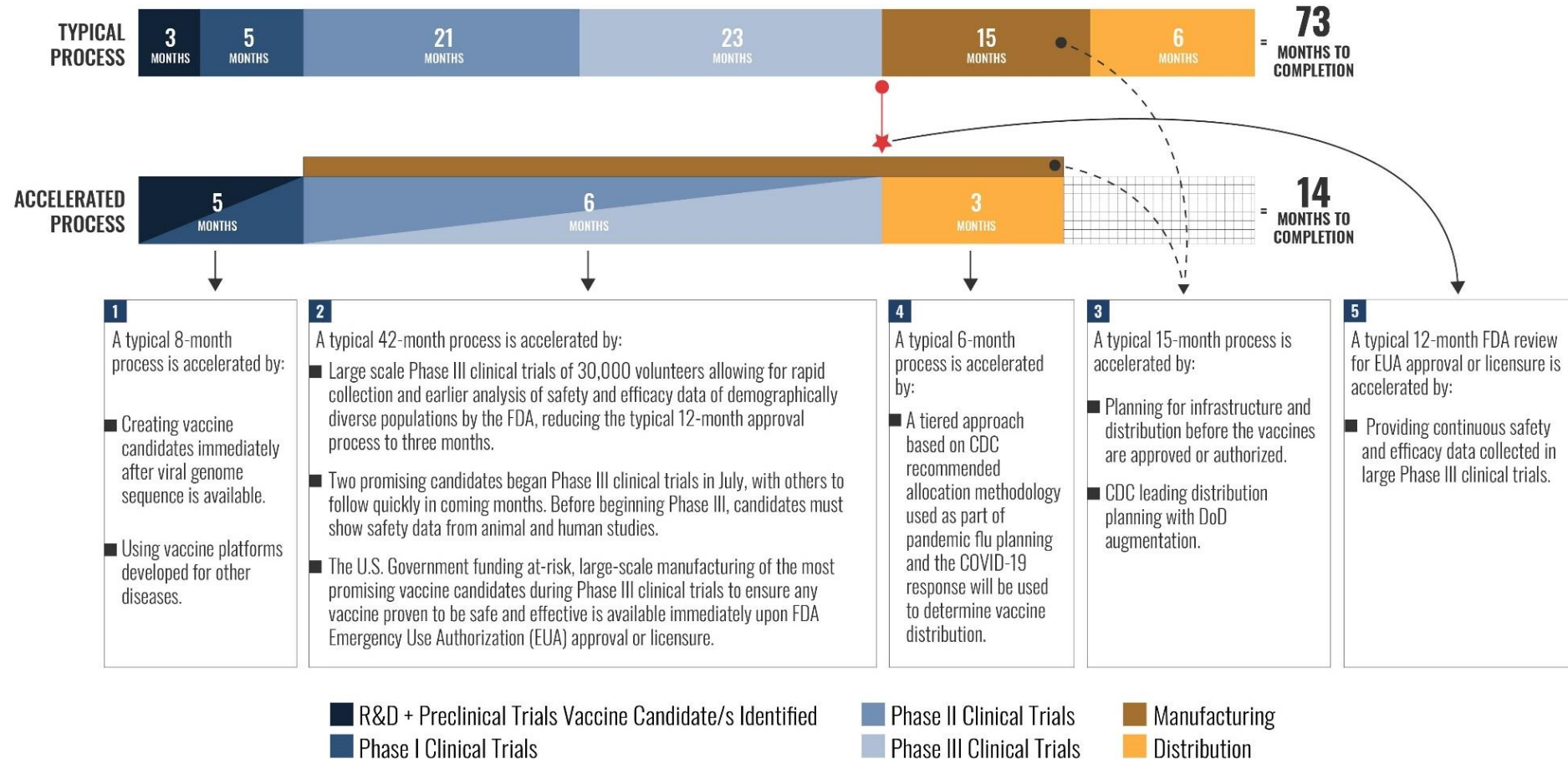
<https://www.utsouthwestern.edu/covid-19/researchers/projects.html>



Defeating COVID-19

Vaccination Efforts at UT Southwestern

How Did We Get Here So Fast: Operation Warp Speed



Financial and government risk increased, not product or safety risk

<https://media.defense.gov/2020/Aug/13/2002476369/-1/-1/0/200813-D-ZZ999-100.JPG>






Summary of COVID-19 Vaccine Trials

Company	Platform	Doses	Number in trial vaccinated	Protection from hospitalized COVID-19	Protection from severe COVID-19	Protection from all symptomatic COVID-19
Pfizer/ BioNTech	mRNA	2	~18,600	100%	100%	95%
Moderna	mRNA	2	~15,000	97% (1 case after 2 nd dose)	97%	94.1%
J&J/ Janssen	Human adeno vector	1	~22,000	100%	85% (none hospitalized)	72% US, 66% Latin America, 57% S. Africa
Oxford/ AstraZeneca	Chimp adeno vector	2	~25,000	100%	100%	69-74% overall US; 70% UK; S. Africa trial halted for mild
Novavax	Protein + Adjuvant	2	~9700	100%	100%	89% UK; 60% S. Africa

Adapted from @MonicaGandhi9 (Twitter 3/22/21)

Reactogenicity: Comparison to Other Vaccines

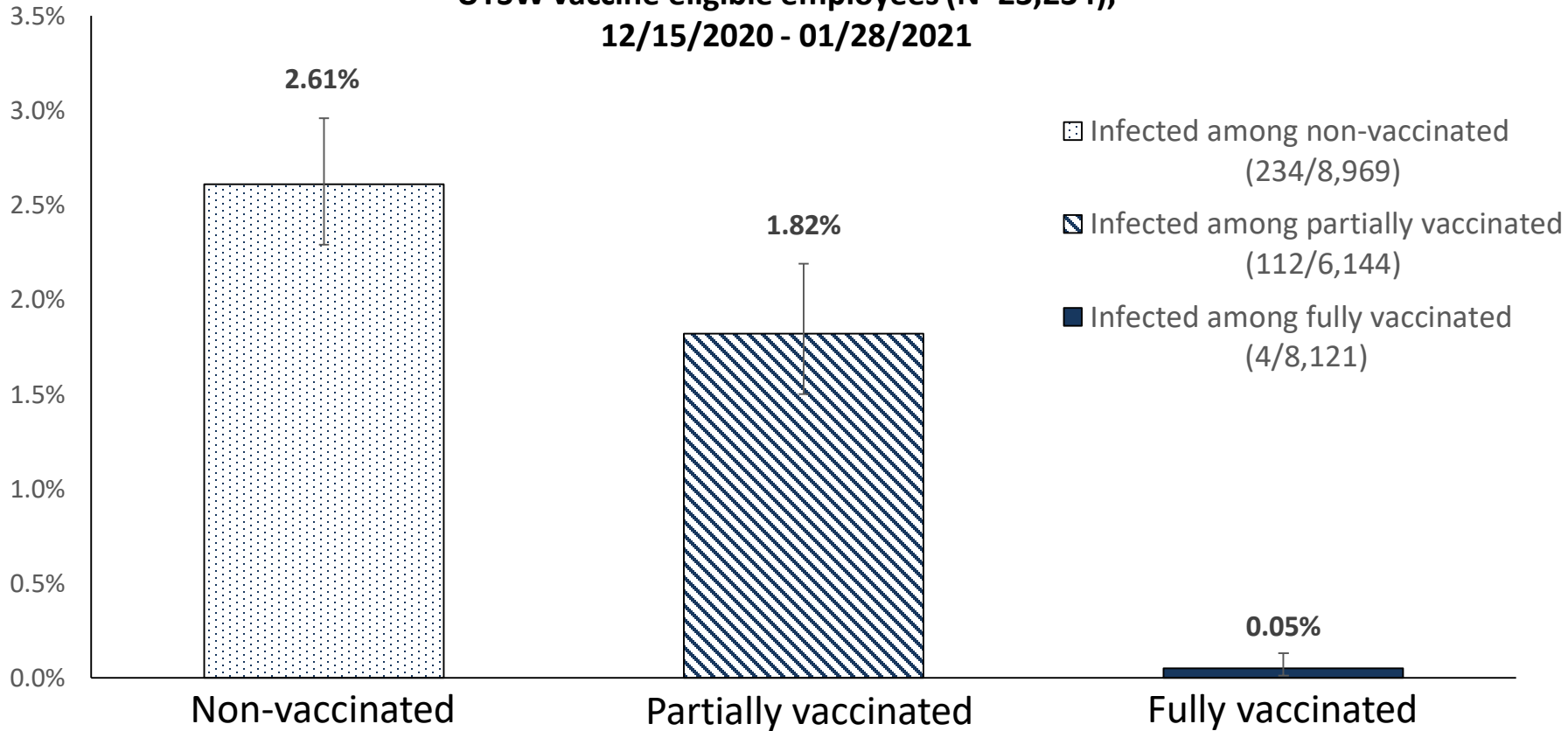
(After dose #2 for the two-dose regimens, age <60 – the highest side effect group found)

	 Shingrix <small>(ZOSTER VACCINE RECOMBINANT, ADJUVANTED)</small>	 COVID-19 mRNA-1273 <small>messenger therapeutics</small>	 COVID-19 BNT162b2	 Ad26.COV2.S	 Flu <small>Influenza Vaccine FLUCELVAX QUADRIVALENT</small>
Local Pain	88.4%	90.1%	77.8%	58.6%	45.4%
Redness	38.7%	9.0%	5.9%	9.0%	13.4%
Swelling	30.5%	12.6%	6.3%	7.0%	11.6%
Myalgia	56.9%	61.3%	37.3%	39.1%	15.4%
Fatigue	57%	67.6%	59.4%	43.8%	17.8%
Headache	50.6%	62.8%	51.7%	44.4%	18.7%
Chills	35.8%	48.3%	35.1%	2%* (unsolicited)	6.2%
Fever	27.8%	17.4%	15.8%	12.8%	0.8%
Overall Grade 3%	5.2%	4.1%	1.5%	0.54%	0.45%
Overall SE %	48%	46%	36%	27% <small>*31% not counting chills</small>	15%
	1	2	3	4	5

Twitter: @JesseOSheaMD Dr. Jesse O'Shea MD, Emory University

Impact of Vaccination on UTSW Employee Community

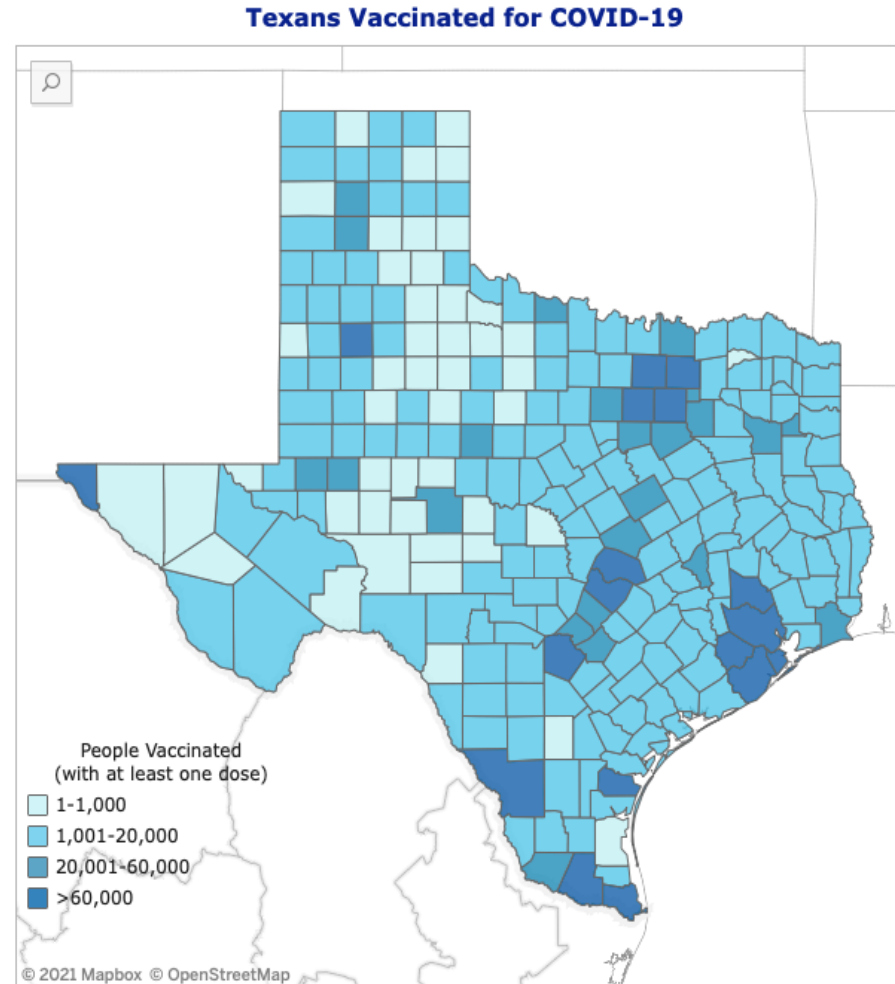
Percent newly testing positive for COVID-19 on or after UTSW COVID-19 employee vaccination distribution began, stratified by vaccination status*, UTSW vaccine eligible employees (N=23,234), 12/15/2020 - 01/28/2021



*Vaccination status is determined at date of positive COVID-19 test showing new infection 12/15/20 or later, and if no infection, vaccination status as of 1/28/21. Non-vaccinated include those with no record of vaccine received at UTSW. Partially vaccinated include those who received one dose, or who received their second dose less than 7 (Pfizer) or 14 (Moderna) days ago. Fully vaccinated include those who received their second dose at least 7 (Pfizer) or 14 (Moderna) days ago

Vaccine Efforts at UTSW and in Texas

- UTSW is one of 6 vaccine hubs for Dallas county
- 4 vaccination sites:
 - West Campus Clinic
 - Market Hall
 - RedBird Mall
 - UT Dallas
- UTSW Vaccination efforts (as of 3/24/21)
 - > 200,000 vaccine doses administered
 - >120,000 individuals vaccinated



Doses Administered

9,319,666

People Vaccinated with at least One Dose

6,345,029

People Fully Vaccinated

3,196,293

Doses Allocated

14,239,685

Doses Shipped

11,230,105

Last Updated:
3/22/2021 3:24:13 PM

UT Southwestern COVID-19 Resources to Address Vaccine Hesitancy

UTSW COVID-19 MedBlogs and Vaccine Website

Recent MedBlogs:

- Life After COVID-19 Vaccines
- COVID-19 Vaccine Hesitancy: How to Overcome the Culture of Mistrust
- COVID-19 Vaccines: Separating Myths From Reality
- COVID-19 Vaccines: The Tough Questions Answered By a Frontline Doctor

<https://utswmed.org/medblog/topic/covid/>
<https://utswmed.org/whattoknow/>

UTSW “What to Know” Videos

Life After COVID-19 Vaccination



Building Confidence in COVID-19 Vaccines



Key Take-Home Messages

- COVID-19: Reminder of potential impact of emerging infectious diseases on public health and society at large
- Important tools to track spread of disease (e.g., modeling, seroprevalence study, genomic sequencing) to inform public health and policy interventions
- Treatments for COVID-19 only modestly effective to date, still need clinical trials for better targeted approaches
- COVID-19 vaccines are effective and safe
 - Strongly protective against severe disease and death
 - Provide some protection even against new variants
 - Currently 3 available in U.S.: Pfizer and Moderna (mRNA), J&J (viral vector)
- Non-pharmacologic interventions (NPIs) like masking and physical distancing still important in public while the vaccine rollout proceeds

