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Department
of Pediatrics
Established 1930

COVID-19 for Pediatric Populations

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Disclosures

- No financial disclosures
- What gets said here today may change based on new data and recommendations
 - Knowledge moves rapidly



Agenda

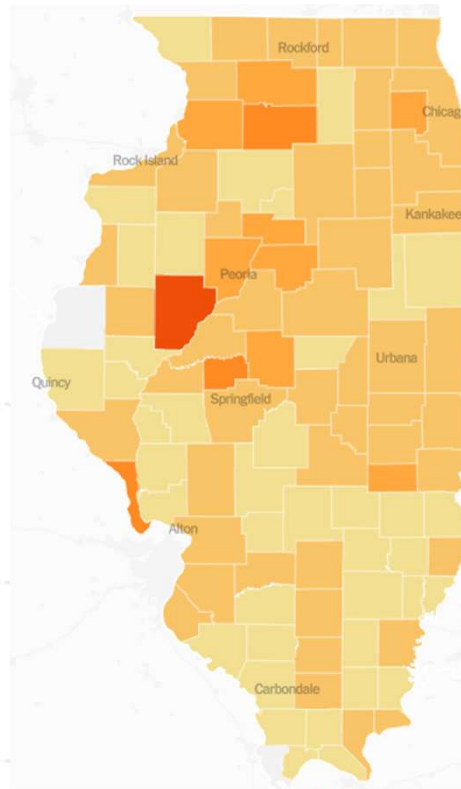
- Demographics
- COVID vaccine
 - COVID vaccine and pregnancy/lactating women
 - Vaccine hesitancy update
 - Effectiveness in HCW
- COVID and surgery timing

Epidemiology

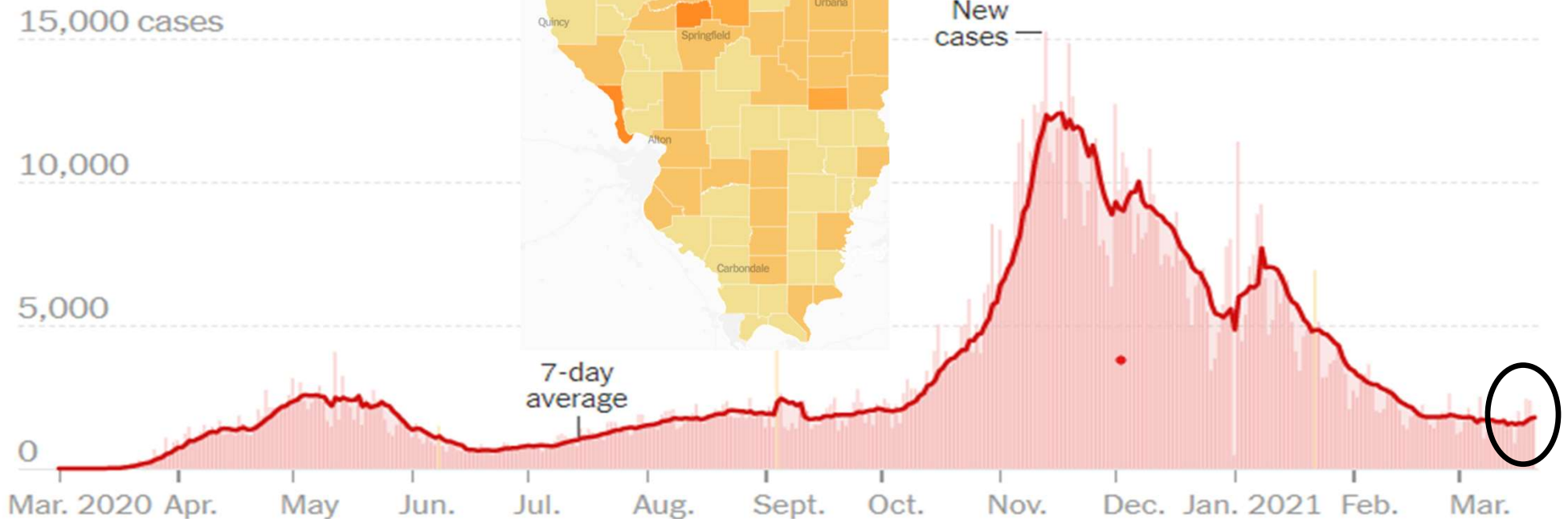
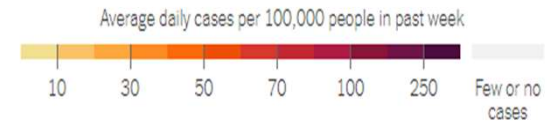


Illinois Cases

7 day Positivity rate 2.5%
(3/21/2021)



County Hot Spots

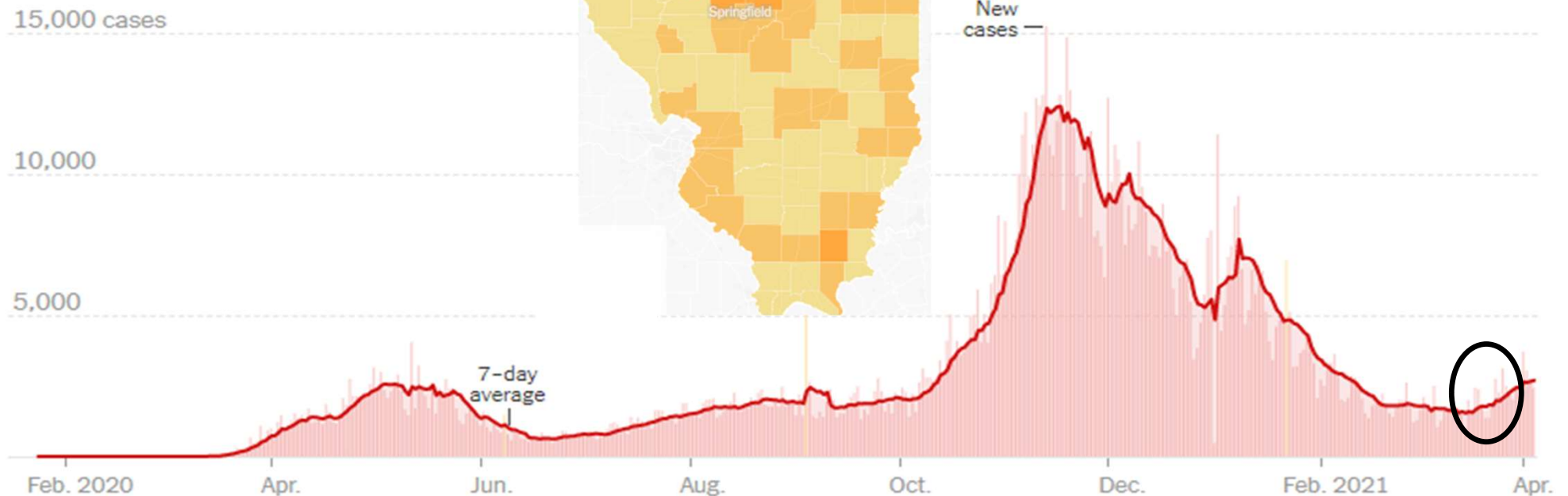


<https://www.nytimes.com/interactive/2020/us/illinois-coronavirus-cases.html>

<https://covidactnow.org/us/illinois-il?s=1330330>

Illinois Cases

7 day Positivity rate 4.2%
(4/05/2021)



<https://www.nytimes.com/interactive/2020/us/illinois-coronavirus-cases.html>

<https://covidactnow.org/us/illinois-il?s=1330330>



to Live By

Please you, be careful
Continue to mitigate
And to vaccinate

Original Investigation | Infectious Diseases

Risk Factors Associated With SARS-CoV-2 Seropositivity Among US Health Care Personnel

Jesse T. Jacob, MD; Julia M. Baker, PhD; Scott K. Fridkin, MD; Benjamin A. Lopman, PhD; James P. Steinberg, MD; Robert H. Christenson, PhD; Brent King, MD; Surbhi Leekha, MBBS; Lyndsay M. O'Hara, PhD; Peter Rock, MD, MBA; Gregory M. Schrank, MD; Mary K. Hayden, MD; Bala Hota, MD, MPH; Michael Y. Lin, MD, MPH; Brian D. Stein, MD, MS; Patrizio Caturegli, MD; Aaron M. Milstone, MD, MHS; Clare Rock, MD, MS; Annie Voskertchian, MPH; Sujan C. Reddy, MD; Anthony D. Harris, MD

- Cross-sectional study of HCP at 4 large health care systems (Emory Healthcare, Johns Hopkins Medicine and University of Maryland Medical System, and Rush University System)
- 24,749 HCP were assessed for risk factors for acquiring COVID using questionnaire on community and workplace exposures at the time of serology

	OR (95% CI) Adjusted (n = 23 548)
Contact with person with COVID-19 in community	
No	1 [Reference]
Yes	3.5 (2.9-4.1)
Unknown or not reported	1.3 (1.0-1.5)
Cumulative community incidence of COVID-19 (log 10)	1.8 (1.3-2.6)

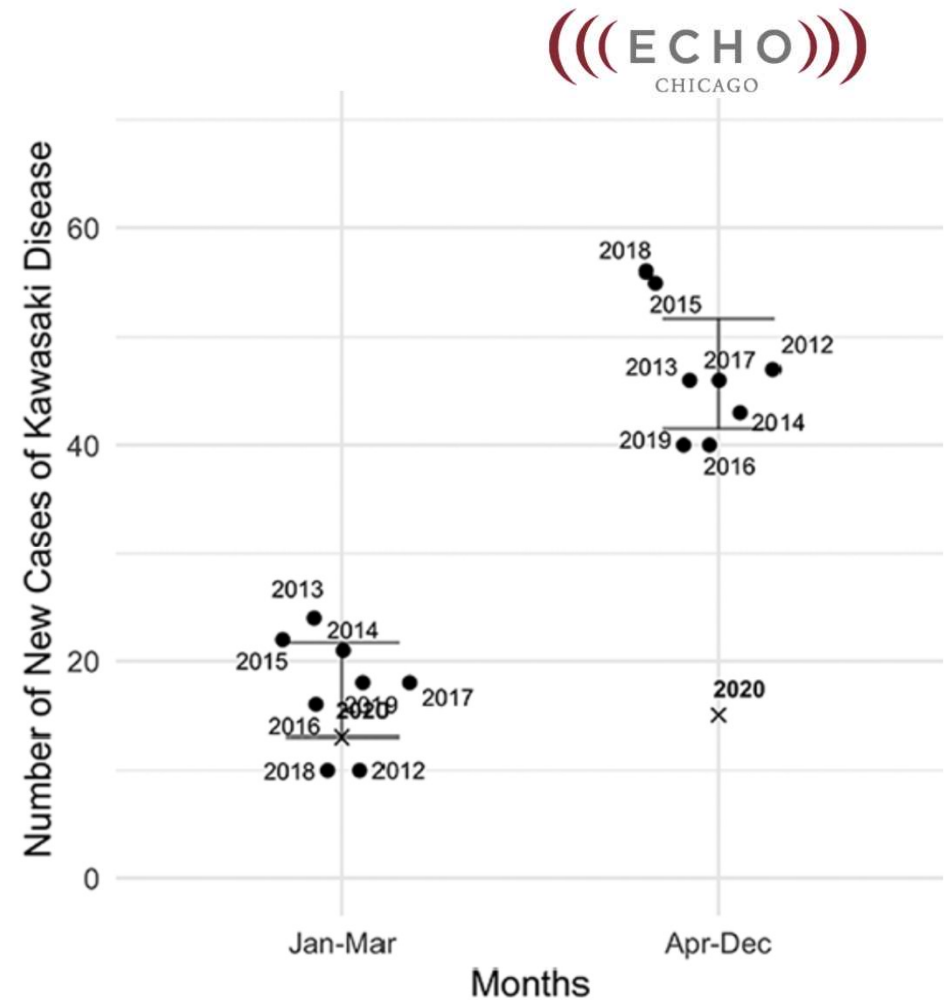
Risk of Getting COVID and Workplace Factors

OR (95% CI)
Adjusted (n = 23 548)

Workplace factors	
Job role	
Nonclinical	1 [Reference]
Nurse practitioner or physician's assistant	0.9 (0.6-1.2)
Environmental services	1.5 (0.8-3.1)
Nurse	1.1 (0.9-1.3)
Other direct care personnel ^c	1.1 (0.9-1.4)
Other health care professional ^d	0.7 (0.4-1.3)
Patient care technician, nursing assistant, nurse technician	1.2 (0.9-1.6)
Pharmacy	0.8 (0.4-1.6)
Physician	0.9 (0.7-1.1)
Physical, occupational, or speech therapist	1.3 (0.7-2.1)
Radiology technician	1.0 (0.6-1.6)
Respiratory therapist	0.9 (0.5-1.6)
Unknown	0.9 (0.4-1.8)
Workplace environment	
Inpatient for patients with and without COVID-19	1 [Reference]
Emergency department	1.0 (0.8-1.3)
Other	0.9 (0.7-1.0)
Unknown	0.9 (0.7-1.2)

The Impact of Social Distancing for COVID-19 Upon Diagnosis of Kawasaki Disease

Stanford Shulman,¹ Bessey Geevarghese,¹ Kwang-Youn Kim,² and Anne Rowley^{1,✉}





COVID-19 vaccine response in pregnant and lactating women: a cohort study

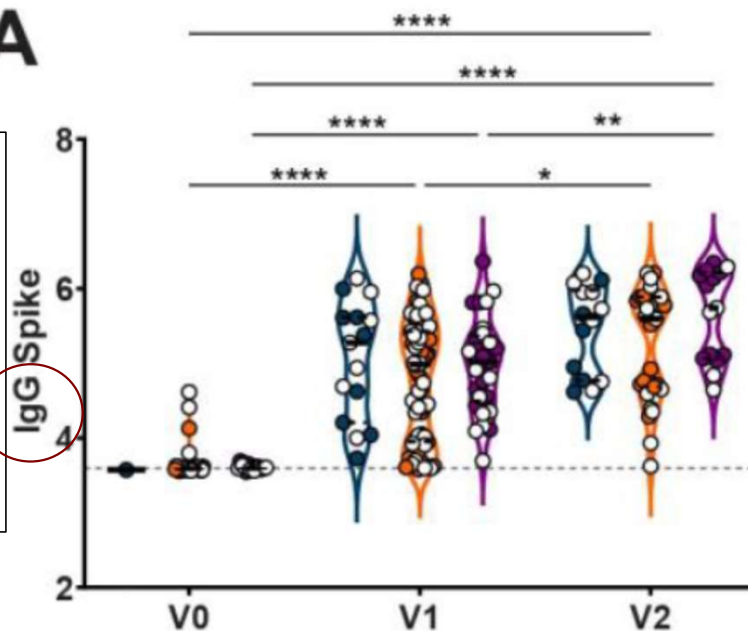


- 131 reproductive-age vaccine recipients (84 pregnant, 31 lactating, and 16 non-pregnant) were enrolled in a prospective cohort study
 - Primarily White, non-Hispanic women in their mid-30s (around 75%)
 - Mean gestational age at first vaccine dose was 23.2 weeks
 - 13% in 1st trimester, 46% in 2nd trimester, 34 in the 3rd trimester
- Titers of SARS-CoV-2 spike and RBD IgG, IgA and IgM were quantified in maternal sera (N=131), umbilical cord sera (N=10), and breastmilk (N=31) at baseline, 2nd vaccine dose, 2-6 weeks post 2nd vaccine, and delivery
- Titers were compared to pregnant women 4-12 weeks from native SARS-CoV-2 infection

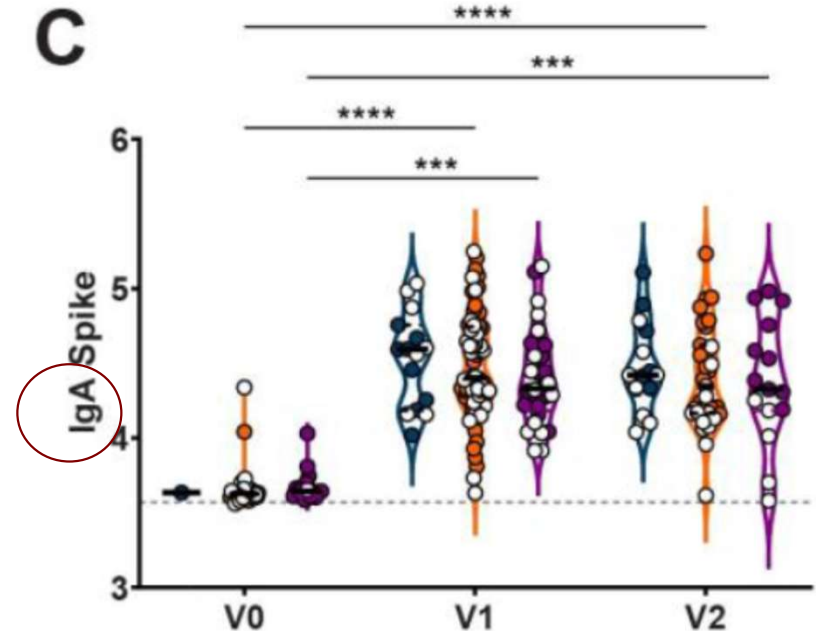
SAR-CoV-2 Antibody Response to Vaccination

● Non-Pregnant ● Pregnant ● Lactating
○ BNT 162b2 (Pfizer) ● mRNA-1273 (Moderna/NIH)

A

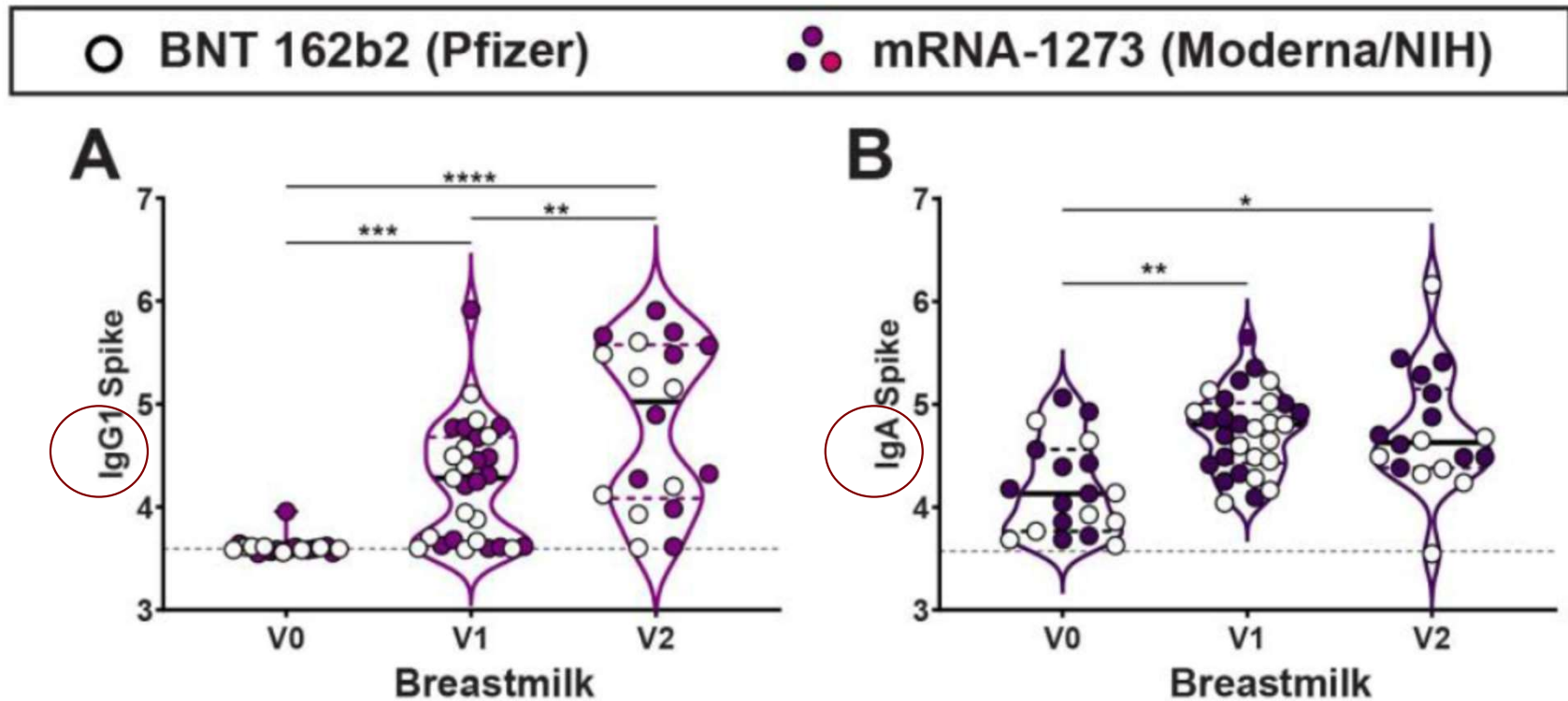


C



- Similar, but of lower magnitude responses for RBD Ab
- Vaccine Ab levels higher than natural infection (not shown)

SAR-CoV-2 Antibody Response to Vaccination: Breast Milk



Emerging data point to a critical role for breastmilk IgG in neonatal immunity against several other vaccinatable viral pathogens including HIV, RSV, and influenza suggesting IgG response may be more important

Side Effects

Characteristic	Non-pregnant (n=16), N (%)	Pregnant (n=84), N (%)	Lactating (n=31), N (%)
Side effects at 2nd vaccine dose ^c			
- Injection site soreness	12 (75%)	44 (57%)	17 (61%)
- Injection site reaction/rash	0 (0%)	1 (1%)	0 (0%)
- Headache	6 (38%)	25 (32%)	11 (39%)
- Muscle aches	7 (44%)	37 (48%)	16 (57%)
- Fatigue	9 (56%)	41 (53%)	14 (50%)
- Fever/chills	8 (50%)	25 (32%)	12 (43%)
- Allergic reaction	0 (0%)	1 (1%)	0 (0%)
- Other ^d	2 (12%)	7 (9%)	7 (25%)

A cumulative symptom/reactogenicity score was generated by assigning one point to each side effect

- The cumulative symptom score after the 1st dose in all three groups was low
- For the 2nd dose, there was no significant difference between groups
 - Median (IQR) 2 (1-3) pregnant, 3 (2-4) lactating, and 2.5 (1-4.5) non-pregnant (p = 0.40)
- Fevers/chills difference by group not statistically significant (p=0.25)
 - Authors point out that fever in pregnancy might be associated with congenital malformations and adverse neurodevelopmental outcomes when it occurs in the first trimester, although conflicting data on this
 - Manage with acetaminophen

Outcomes of pregnancy

- Delivery information for the 13 pregnant participants who delivered during the study period and 10 had cord blood available
 - All were vaccinated in the third trimester
 - Of the umbilical cord blood samples, 9/10 mothers had received both vaccine doses, median of 14 days (11-16) from vaccine 2
- No congenital problems
- All cord blood had measureable COVID antibody

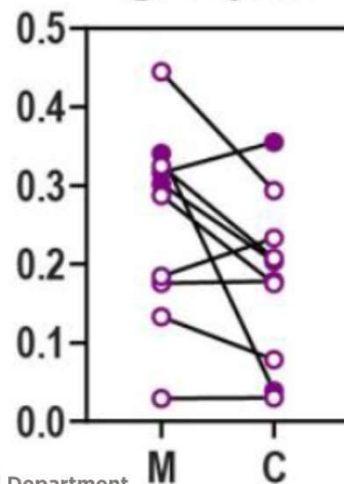
SAR-CoV-2 Antibody Response to Vaccination: Comparison of Maternal to Cord Blood

○ BNT 162b2 (Pfizer)

● mRNA-1273 (Moderna/NIH)

D

TR = 0.67
IgG Spike



Predicting Immune Response

- Composite reactogenicity score after boost dose of vaccine was significantly positively correlated with both maternal serum and breastmilk antibody titers
 - Details not provided

<https://www.medrxiv.org/content/10.1101/2021.03.07.21253094v1>

Conclusions

- Vaccine-induced immune responses were equivalent in pregnant and lactating vs non-pregnant women
- All titers were higher than those induced by SARS-CoV-2 infection during pregnancy
- Vaccine-generated antibodies were present in all umbilical cord blood and breastmilk samples
- SARS-CoV-2 specific IgG, but not IgA, increased in maternal blood and breastmilk with vaccine boost

Title:

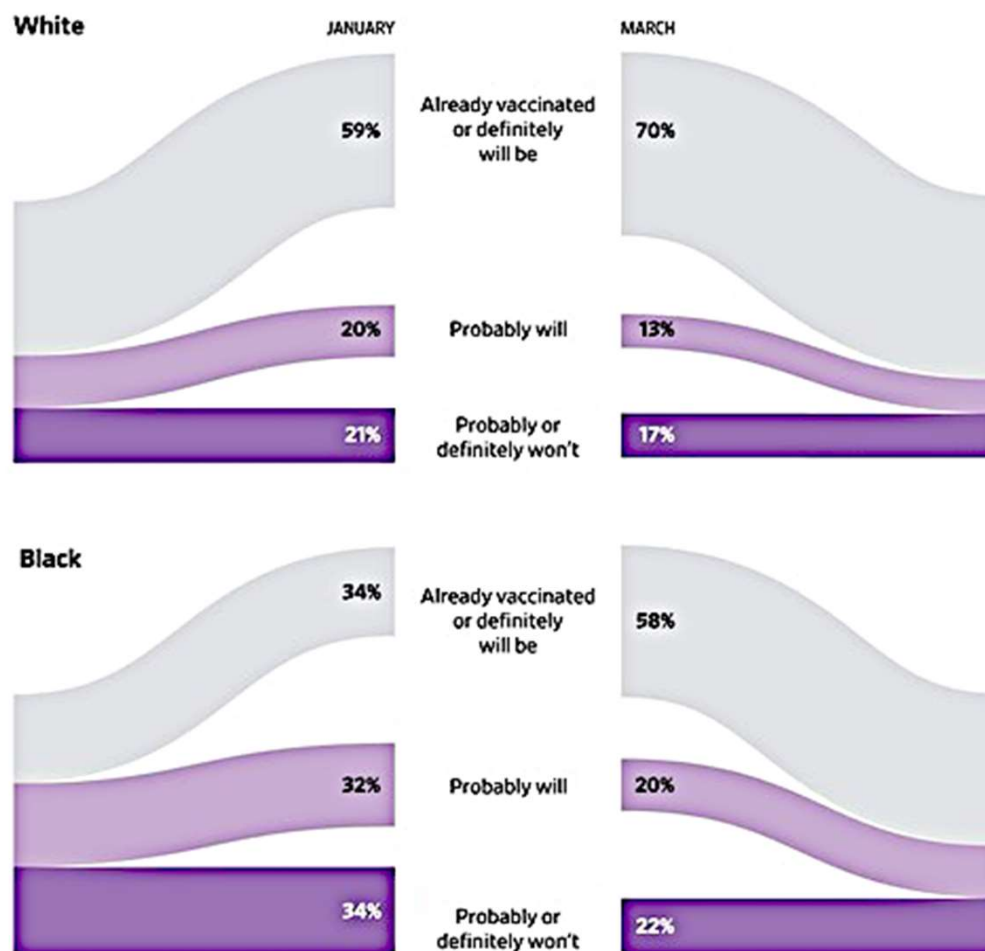
Efficient maternofetal transplacental transfer of anti- SARS-CoV-2 spike antibodies after antenatal SARS-CoV-2 BNT162b2 mRNA vaccination

Authors:

Amihai Rottenstreich, MD¹, Gila Zarbiv, RN, CNM¹, Esther Oiknine-Djian, PhD², Roy Zigron, MD¹, Dana G. Wolf, MD², Shay Porat, MD¹

- Immunizations were in the 3rd trimester - 20 mother/newborn dyads
- Anti-spike & anti-RBD-specific IgG levels in maternal sera and in cord blood
- Titers in cord blood increased with time lapsed since the first vaccine dose
- The median placental transfer ratios of anti-spike and anti-RBD specific IgG were 0.44 and 0.34 respectively
 - Relatively low compared to other vaccines – reason unknown (also lower than in other paper)

Vaccine Hesitancy on the Wane



<https://www.wsj.com/articles/as-covid-19-vaccinations-ramp-up-hesitancy-wanes-11617096603>

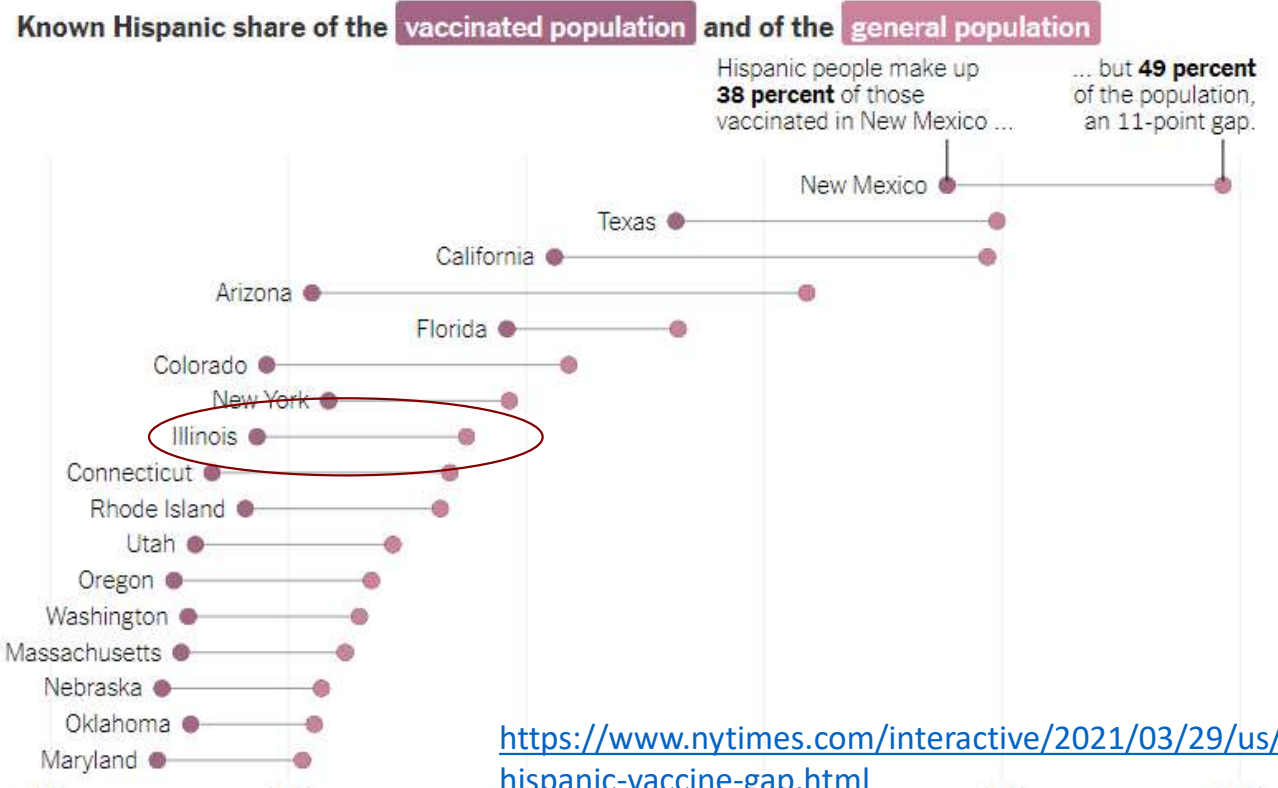
Hispanic Vaccine Gap

• Why?

- Technology gap
- English only websites
- Distrust of government
 - Fear of ICE
- Fear of vaccine
- Essential workers
 - Can't take time off
 - Fear of losing job
- No insurance, assuming must cost money
- Ignorance of process

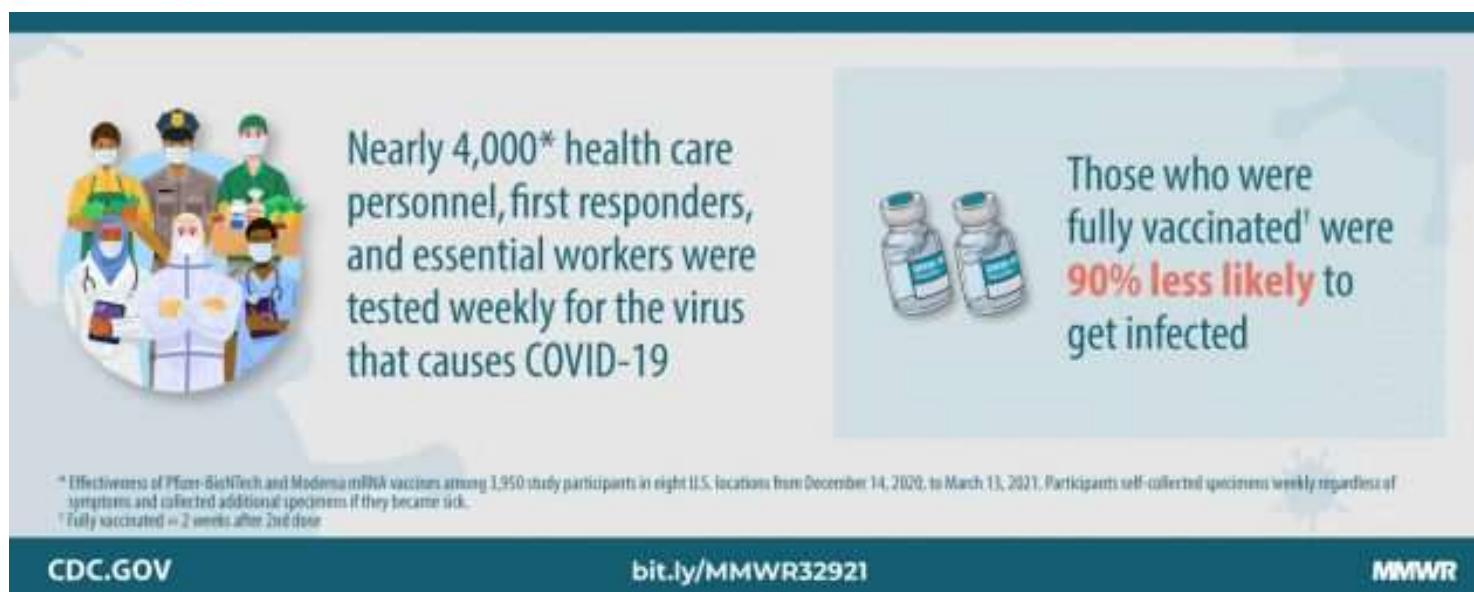
• Solutions

- Education about process
- Help with registering
- Solve the digital divide
- Trusted messangers



Interim Estimates of Vaccine Effectiveness of BNT162b2 and mRNA-1273 COVID-19 Vaccines in Preventing SARS-CoV-2 Infection Among Health Care Personnel, First Responders, and Other Essential and Frontline Workers — Eight U.S. Locations, December 2020–March 2021

Early Release / March 29, 2021 / 70



https://www.cdc.gov/mmwr/volumes/70/wr/mm7013e3.htm?s_cid=mm7013e3_e&ACSTrackingID=USCDC_921-DM53321&ACSTrackingLabel=MMWR%20Early%20Release%20-%20Vol.%2070%2C%20March%2029%2C%202021&deliveryName=USCDC_921-DM53321

Surgery Timing and COVID



Original Article

**Timing of surgery following SARS-CoV-2 infection:
an international prospective cohort study**

COVIDSurg Collaborative* and GlobalSurg Collaborative*

- Peri-operative SARS-CoV-2 infection increases postoperative mortality
- The aim was to determine the optimal duration of planned delay before surgery in adult patients who had SARS-CoV-2 infection
- International, multicenter, prospective cohort study included patients undergoing elective or emergency surgery during October 2020
 - Surgical patients with pre-operative SARS-CoV-2 infection were compared with those without
 - Primary outcome measure was 30-day postoperative mortality
- Among 140,231 patients (116 countries), 3127 (2.2%) had a pre-operative SARS-CoV-2 diagnosis
- Adjusted 30-day mortality without SARS-CoV-2 infection was 1.5% (95%CI 1.4–1.5)
- In patients with a pre-operative SARS-CoV-2 diagnosis, mortality was increased if having surgery within:
 - 0–2 weeks - 4.1 (3.3–4.8), 3–4 weeks - 3.9 (2.6–5.1) and 5–6 weeks - 3.6 (2.0–5.2), but ≥ 7 weeks after SARSCoV-2 diagnosis there was similar mortality risk to baseline - 1.5 (0.9–2.1))
- Where possible, surgery should be delayed for at least 7 weeks following SAR CoV-2 infection

