COVID-19
HEALTH CARE PROVIDER UPDATE:

COVID-19 AND VACCINATION DURING PREGNANCY
NEW YORK CITY COVID-19 UPDATES

OCTOBER 15, 2021

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Our understanding of COVID-19 is evolving rapidly.
This presentation is based on our knowledge as of October10, 2021, 5 PM.

OUTLINE

- GENERAL UPDATES
- VACCINE UPDATES
- COVID-19 AND VACCINATION DURING PREGNANCY
- QUESTIONS AND ANSWERS

General Updates

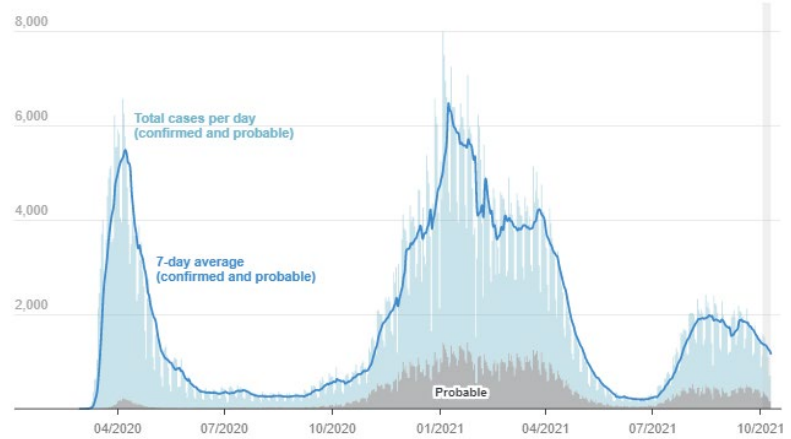
Madhury (Didi) Ray, MD, MPH
Critical Care Planning Lead
COVID-19 Response
NYC Department of Health and Mental Hygiene

COVID-19, NYC, 3/1/2020-10/14/2021

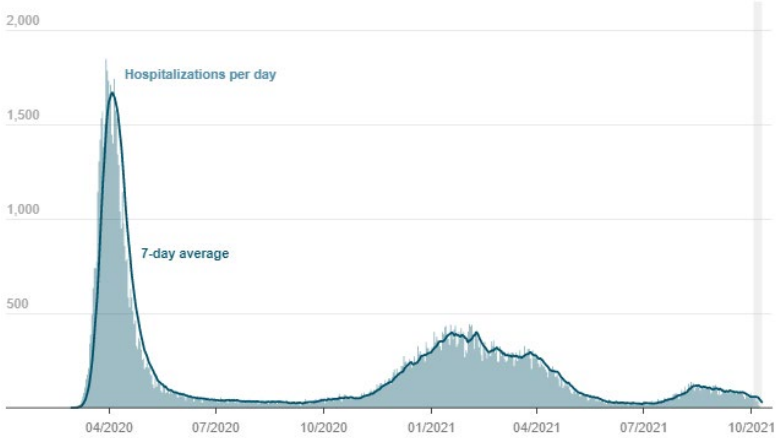
Figures:
Daily COVID-19 cases, hospitalizations, and deaths

NYC Health Department, COVID-19 data
https://www1.nyc.gov/site/doh/covid/covid-19-data-totals.page

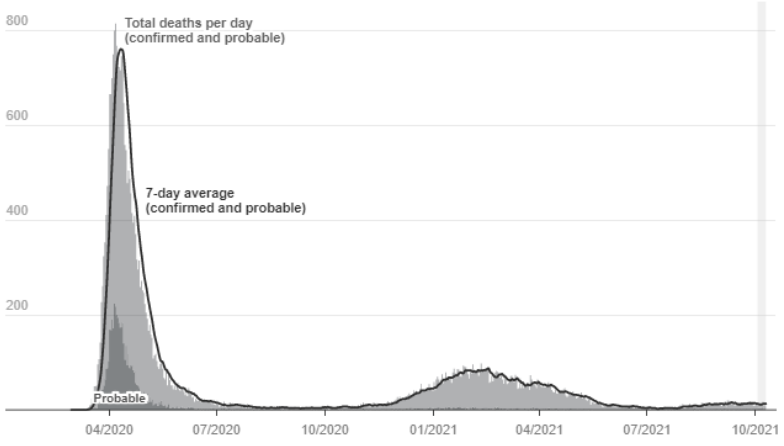
CASES



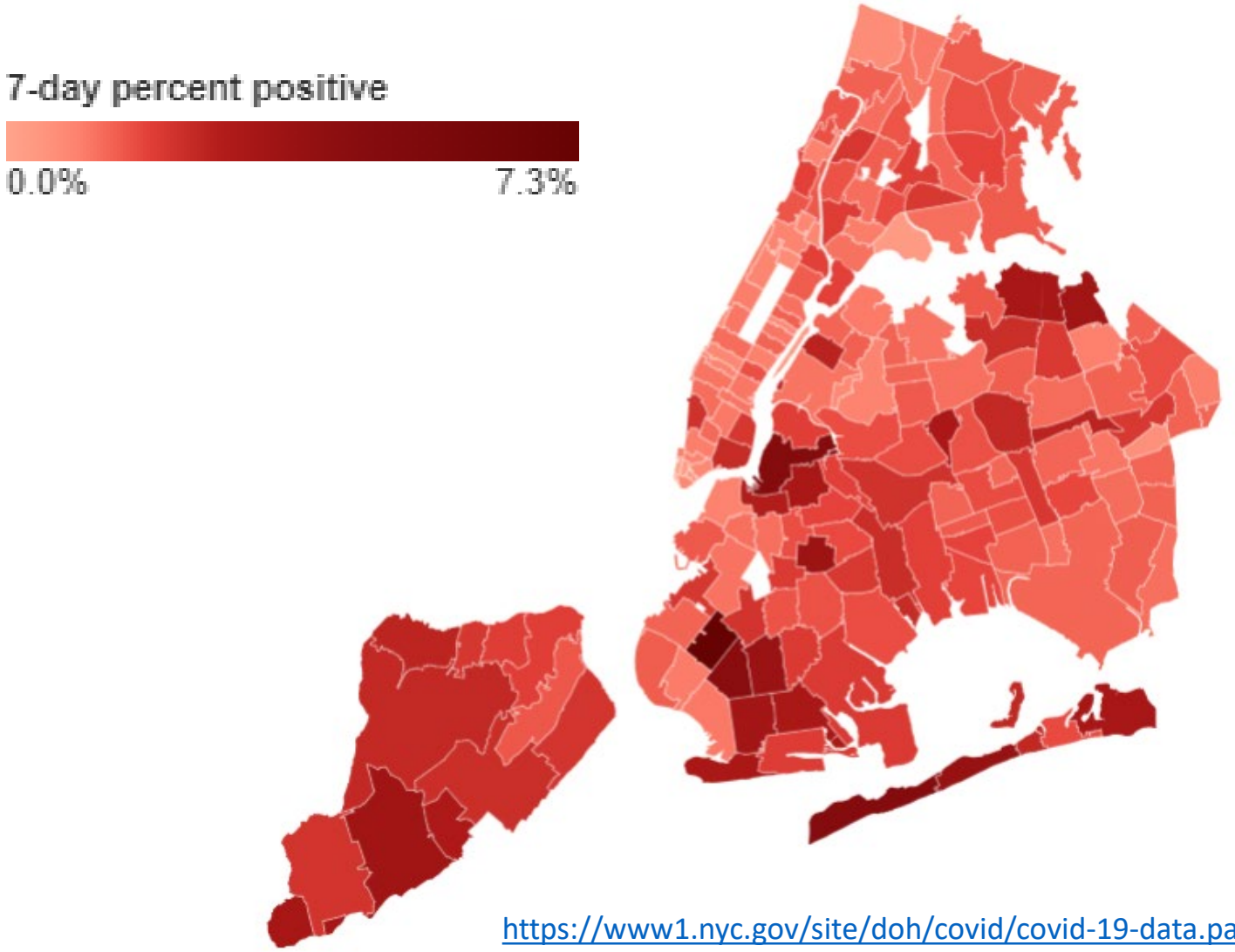
HOSPITALZATIONS



DEATHS

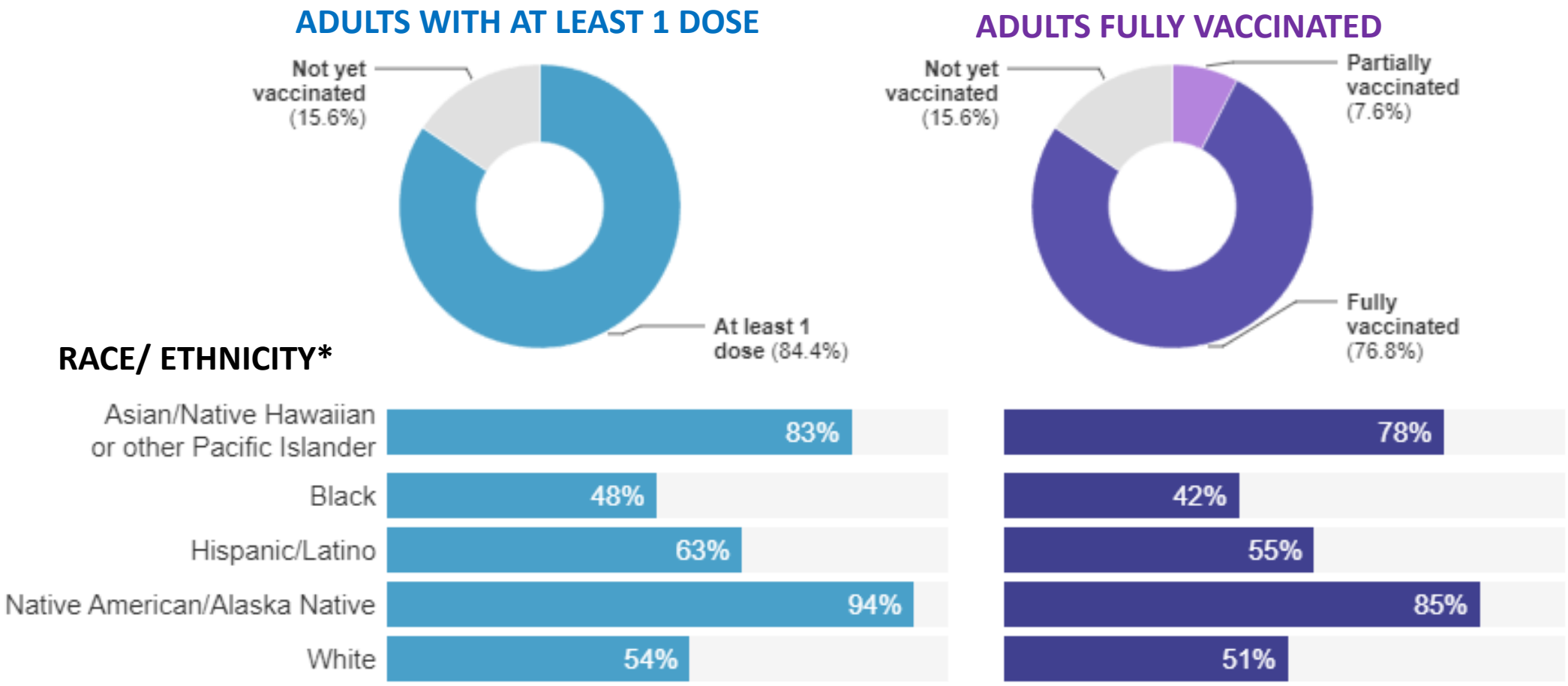


Recent Average Daily COVID-19 Percent Positive by NYC Zip Code



https://www1.nyc.gov/site/doh/covid/covid-19-data.page

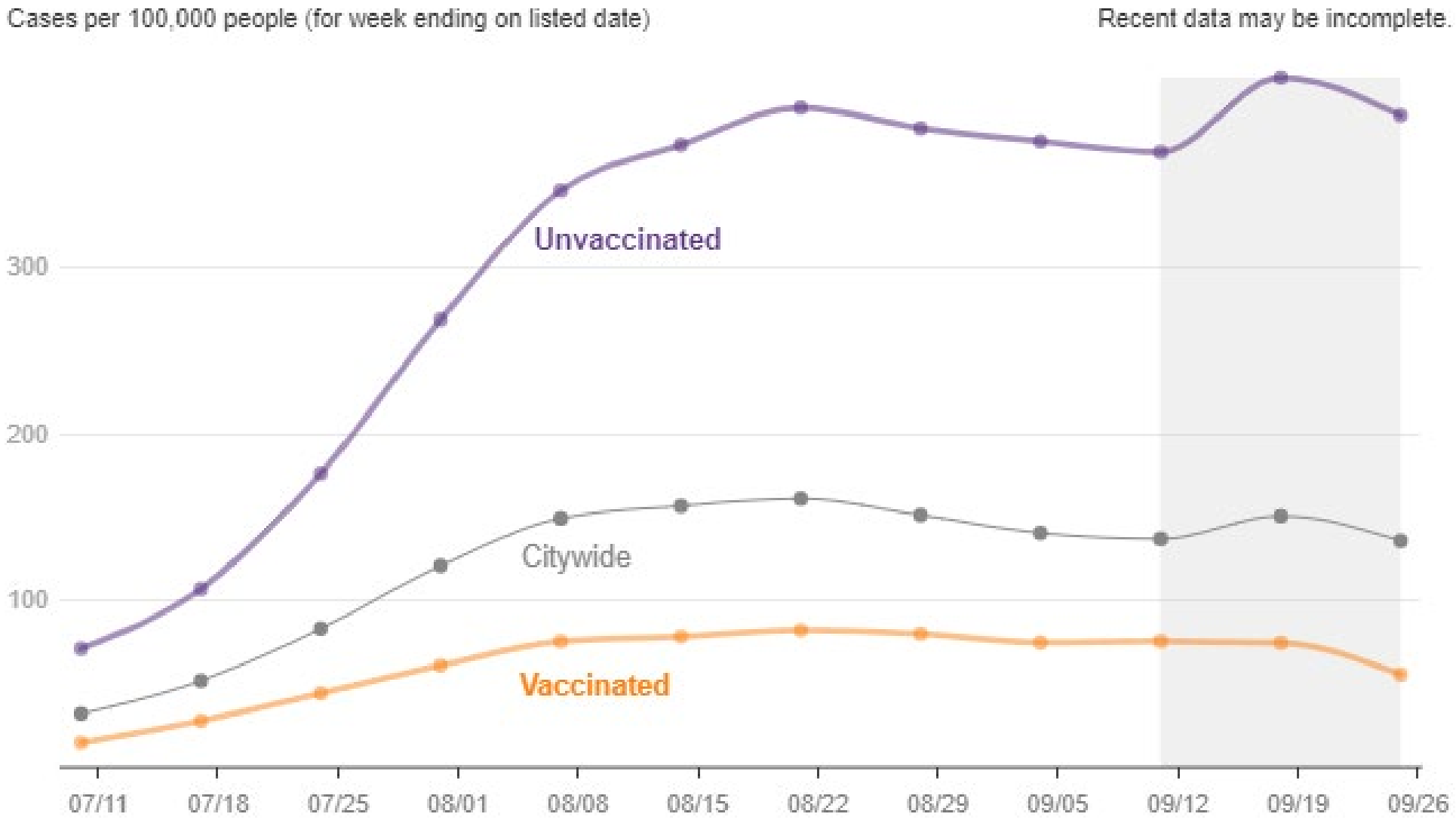
Percent of New Yorkers Vaccinated by Race/Ethnicity



https://www1.nyc.gov/site/doh/covid/covid-19-data-vaccines.page; updated 10/14/2021

* Race/ethnicity data includes all eligible New Yorkers

Weekly Case Rates by Vaccination Status, NYC



https://www1.nyc.gov/site/doh/covid/covid-19-data.page#daily on 10/14/21

Pfizer Booster Dose For Some Adults

- CDC recommends* a single Pfizer booster dose ≥ 6 months after completion of the primary Pfizer vaccine series for certain populations
- **Should** receive a booster:
  - People ages ≥ 65 years
  - Residents ages ≥ 18 years in long-term care facilities
  - People ages 50 - 64 years who have a medical condition that increases their risk for severe COVID-19 illness
- **May** receive a booster, based on individual benefits and risks:
  - People ages 18 - 49 years who have a medical condition that increases their risk for severe COVID-19 illness
  - People ages 18 - 64 years who are at increased risk for COVID-19 exposure and transmission because of occupational or institutional setting

*September 24, 2021: https://www.cdc.gov/media/releases/2021/p0924-booster-recommendations-.html

Benefits of Vaccination For People With History of COVID-19

- Among people with a history of COVID-19, vaccination:
  - Is associated with a decreased risk of reinfection
    - Observational study of people with prior SARS-CoV-2 infection found that unvaccinated people were more than twice as likely as fully vaccinated people to get reinfected[1]
  - Can boost immune response for potentially more durable, longer-lasting protection
  - May offer better protection against COVID-19 variants
- People who have recovered from COVID-19 may be vaccinated as soon as they meet criteria to discontinue isolation

1. Cavanaugh AM, et al. Reduced Risk of Reinfection with SARS-CoV-2 After COVID-19 Vaccination — Kentucky, May–June 2021. MMWR Morb Mortal Wkly Rep 2021;70:1081-1083. DOI: http://dx.doi.org/10.15585/mmwr.mm7032e1

Serologic Testing is Not Recommended For Vaccination Decisions

Serologic testing should **not** be used to determine if a person should receive COVID-19 vaccination

- Available antibody tests vary widely in performance, and none are approved to assess whether a person is protected against COVID-19
- Antibody levels may not correlate with immunity or clinical protection
- Neutralization tests used as surrogates of protection in scientific studies are not available for commercial use
- If someone misinterprets a positive antibody test, they may take fewer precautions, increasing their risk of being infected with and transmitting COVID-19

https://www1.nyc.gov/assets/doh/downloads/pdf/covid/providers/letter-to-providers-covid-19-vaccination-after-sars-cov-2-infection.pdf

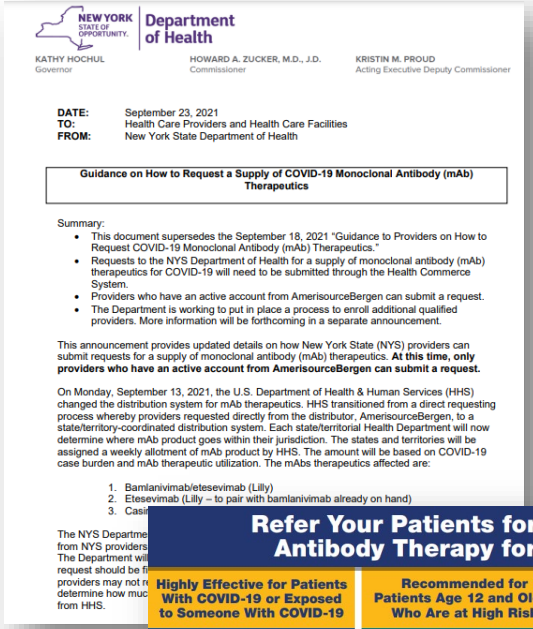
Anticipated Developments in COVID-19 Vaccines

- FDA Vaccine Advisory group
  - Yesterday (October 14), recommended giving booster doses of Moderna's vaccine to same groups as for the Pfizer booster
    - The Moderna booster is 50-µg (half the dose used for the primary vaccine series)
  - Today will discuss and vote on whether to recommend giving booster doses of Johnson & Johnson vaccine, and will discuss mix-and-matching of different vaccines
  - ACIP scheduled to meet October 21, 2021
- Pfizer submitted data to support vaccination in 5 to 11-year-olds
  - FDA Advisory Committee meeting scheduled for October 26, 2021
  - ACIP scheduled to meet November 2-3, 2021
- Moderna has applied for full FDA approval for persons ≥ 18 years
  - Approval may occur by the end of 2021

New Monoclonal Antibody Therapy Resources

PROVIDERS

https://www1.nyc.gov/site/doh/covid/covid-19-providers.page



NEW YORK STATE OF OPPORTUNITY. Department of Health

KATHY HOCHUL, Governor | HOWARD A. ZUCKER, M.D., J.D., Commissioner | KRISTIN M. PROUD, Acting Executive Deputy Commissioner

DATE: September 23, 2021
TO: Health Care Providers and Health Care Facilities
FROM: New York State Department of Health

Guidance on How to Request a Supply of COVID-19 Monoclonal Antibody (mAb) Therapeutics

Summary:

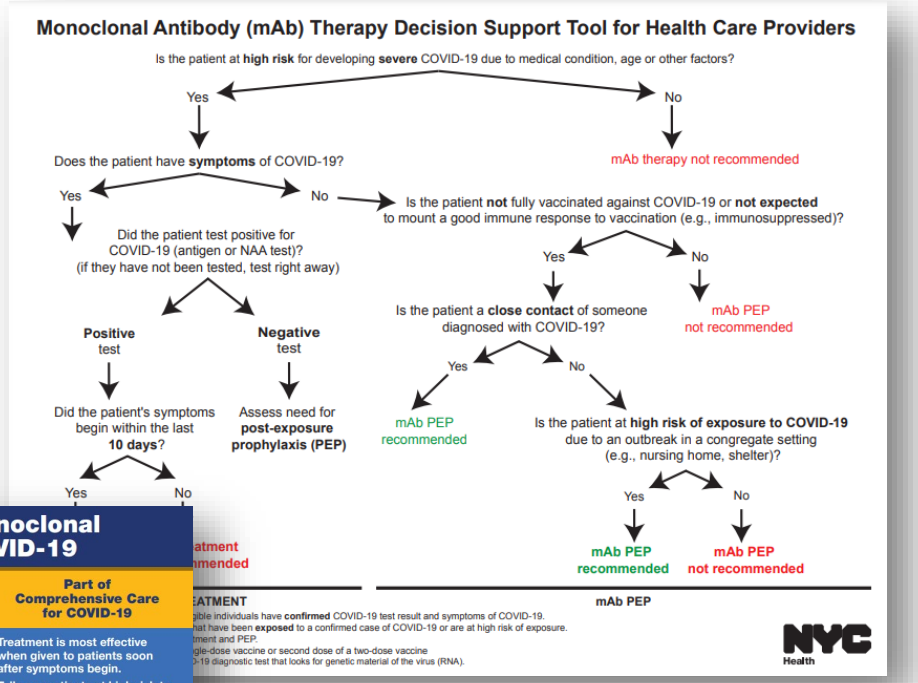
- This document supersedes the September 18, 2021 "Guidance to Providers on How to Request COVID-19 Monoclonal Antibody (mAb) Therapeutics."
- Requests to the NYS Department of Health for a supply of monoclonal antibody (mAb) therapeutics for COVID-19 will need to be submitted through the Health Commerce System.
- Providers who have an active account from AmerisourceBergen can submit a request.
- The Department is working to put in place a process to enroll additional qualified providers. More information will be forthcoming in a separate announcement.

This announcement provides updated details on how New York State (NYS) providers can submit requests for a supply of monoclonal antibody (mAb) therapeutics. **At this time, only providers who have an active account from AmerisourceBergen can submit a request.**

On Monday, September 13, 2021, the U.S. Department of Health & Human Services (HHS) changed the distribution system for mAb therapeutics. HHS transitioned from a direct requesting process whereby providers requested directly from the distributor, AmerisourceBergen, to a state/territory-coordinated distribution system. Each state/territorial Health Department will now determine where mAb product goes within their jurisdiction. The states and territories will be assigned a weekly allotment of mAb product by HHS. The amount will be based on COVID-19 case burden and mAb therapeutic utilization. The mAbs therapeutics affected are:

1. Bamlanivimab/etesevimab (Lilly)
2. Etesevimab (Lilly – to pair with bamlanivimab already on hand)
3. Casi

The NYS Departme
from NYS providers
The Department wil
request should be f
providers may not r
determine how muc
from HHS.



Monoclonal Antibody (mAb) Therapy Decision Support Tool for Health Care Providers

Is the patient at **high risk** for developing **severe** COVID-19 due to medical condition, age or other factors?

Yes → Does the patient have **symptoms** of COVID-19?

Yes → Did the patient test positive for COVID-19 (antigen or NAA test)? (if they have not been tested, test right away)

Positive test → Did the patient's symptoms begin within the last **10 days**?

Yes → atment mmended

No → Assess need for **post-exposure prophylaxis (PEP)**

Negative test → Assess need for **post-exposure prophylaxis (PEP)**

No → Is the patient **not** fully vaccinated against COVID-19 or **not expected** to mount a good immune response to vaccination (e.g., immunosuppressed)?

Yes → Is the patient a **close contact** of someone diagnosed with COVID-19?

Yes → mAb PEP recommended

No → Is the patient at **high risk of exposure to COVID-19** due to an outbreak in a congregate setting (e.g., nursing home, shelter)?

Yes → mAb PEP recommended

No → mAb PEP not recommended

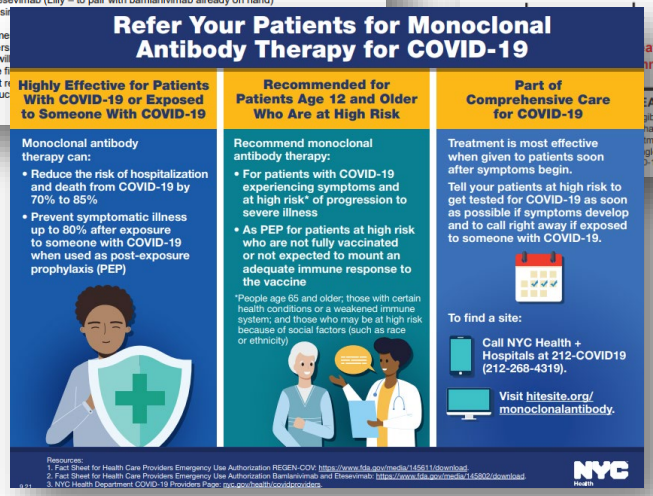
No → mAb PEP not recommended

ATMENT

ible individuals have **confirmed** COVID-19 test result and symptoms of COVID-19.
hat have been **exposed** to a confirmed case of COVID-19 or are at high risk of exposure.
tment and PEP.
gle-dose vaccine or second dose of a two-dose vaccine
-19 diagnostic test that looks for genetic material of the virus (RNA).

mAb PEP

NYC Health



Refer Your Patients for Monoclonal Antibody Therapy for COVID-19

Highly Effective for Patients With COVID-19 or Exposed to Someone With COVID-19

Monoclonal antibody therapy can:

- Reduce the risk of hospitalization and death from COVID-19 by 70% to 85%
- Prevent symptomatic illness up to 80% after exposure to someone with COVID-19 when used as post-exposure prophylaxis (PEP)

Recommended for Patients Age 12 and Older Who Are at High Risk

Recommend monoclonal antibody therapy:

- For patients with COVID-19 experiencing symptoms and at high risk* of progression to severe illness
- As PEP for patients at high risk who are not fully vaccinated or not expected to mount an adequate immune response to the vaccine

*People age 65 and older; those with certain health conditions or a weakened immune system; and those who may be at high risk because of social factors (such as race or ethnicity)

Part of Comprehensive Care for COVID-19

Treatment is most effective when given to patients soon after symptoms begin.

Tell your patients at high risk to get tested for COVID-19 as soon as possible if symptoms develop and to call right away if exposed to someone with COVID-19.

To find a site:

Call NYC Health + Hospitals at 212-COVID19 (212-268-4319).

Visit hitesite.org/monoclonalantibody.

Resources:
1. Fact Sheet for Health Care Providers Emergency Use Authorization REGEN-COV: https://www.fda.gov/media/145611/download
2. Fact Sheet for Health Care Providers Emergency Use Authorization Bamlanivimab and Etesevimab: https://www.fda.gov/media/145802/download
3. NYC Health Department COVID-19 Providers Page: nyc.gov/health/covidproviders

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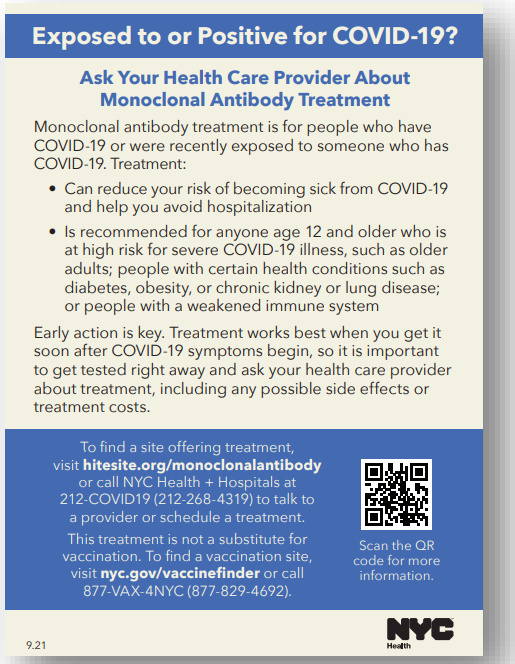
NYC Health

PUBLIC

https://www1.nyc.gov/site/doh/covid/covid-19-symptoms-chronic-health-risks.page



Exposed to or Positive for COVID-19?

Ask Your Health Care Provider About Monoclonal Antibody Treatment

Monoclonal antibody treatment is for people who have COVID-19 or were recently exposed to someone who has COVID-19. Treatment:

- Can reduce your risk of becoming sick from COVID-19 and help you avoid hospitalization
- Is recommended for anyone age 12 and older who is at high risk for severe COVID-19 illness, such as older adults; people with certain health conditions such as diabetes, obesity, or chronic kidney or lung disease; or people with a weakened immune system

Early action is key. Treatment works best when you get it soon after COVID-19 symptoms begin, so it is important to get tested right away and ask your health care provider about treatment, including any possible side effects or treatment costs.

To find a site offering treatment, visit **hitesite.org/monoclonalantibody** or call NYC Health + Hospitals at 212-COVID19 (212-268-4319) to talk to a provider or schedule a treatment.

This treatment is not a substitute for vaccination. To find a vaccination site, visit **nyc.gov/vaccinefinder** or call 877-VAX-4NYC (877-829-4692).

Scan the QR code for more information.

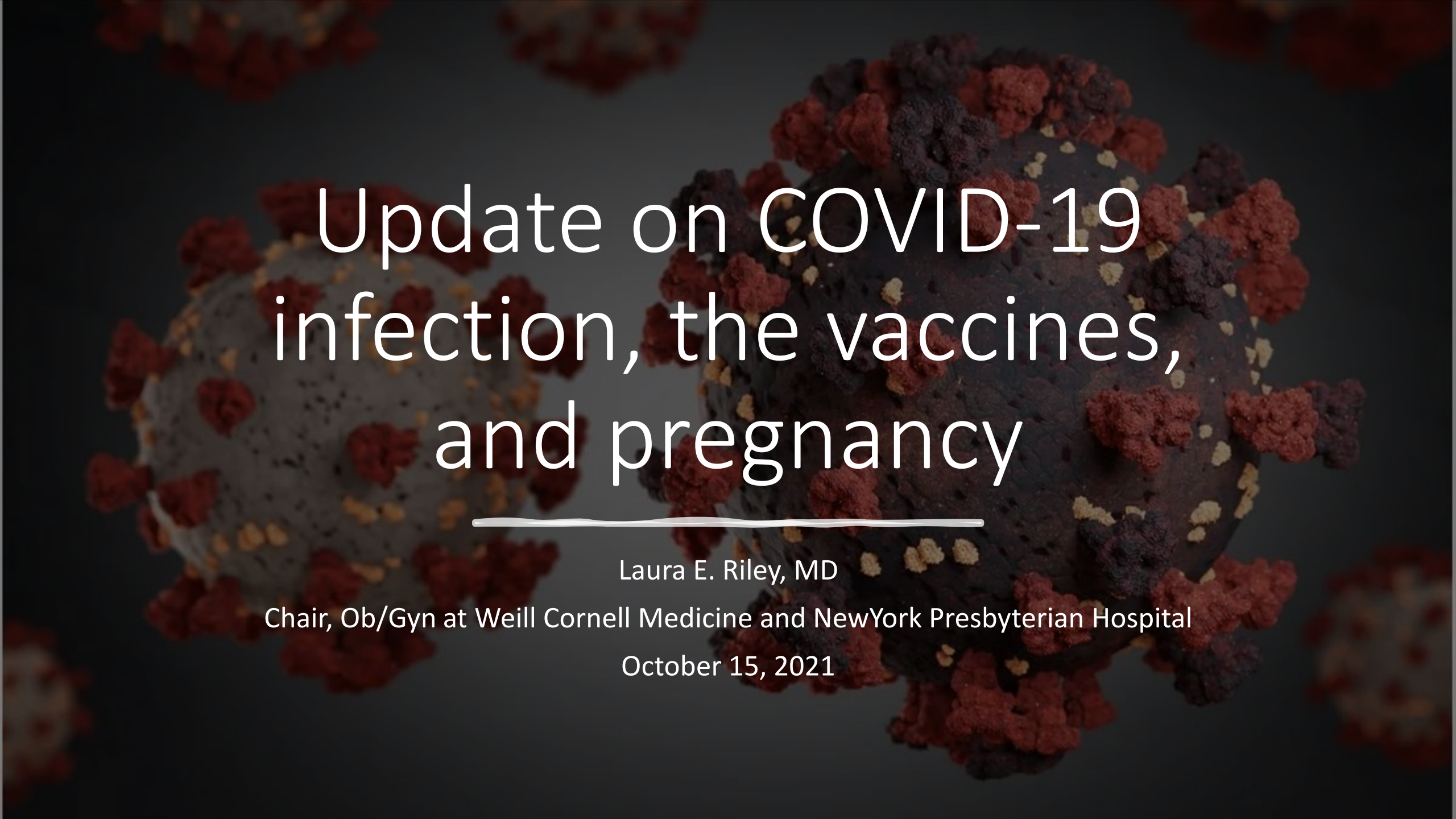
9.21

NYC Health

To find a treatment site or schedule an appointment

- Visit hitesite.org/monoclonalantibody OR
- Call NYC Health + Hospitals at 212-COVID19 (212-268-4319)

NYC Health



Update on COVID-19 infection, the vaccines, and pregnancy

Laura E. Riley, MD

Chair, Ob/Gyn at Weill Cornell Medicine and NewYork Presbyterian Hospital

October 15, 2021

Disclosures

- Writer for Up to Date
- Writer for Turner Publishing(You and Your Baby: pregnancy)
- Editorial board: New England Journal of Medicine and Contemporary Ob/gyn
- Medical Advisory Board: MAVEN, Parents Magazine

(CDC workgroup on COVID vaccines and VAst, ACOG Immunization Task Force and writer of ACOG practice advisory on COVID)

ACOG/SMFM/CDC recommendations:

- ACOG recommends that all eligible persons greater than age 12 years, **including pregnant and lactating individuals**, receive a COVID-19 vaccine or vaccine series.

- Document discussion of the vaccine. During subsequent office visits, address ongoing questions and concerns and offer vaccination again.

- Women's health care practitioners should lead by example by being vaccinated and encouraging eligible patients to be vaccinated as well.

- COVID-19 vaccines may be administered simultaneously with other vaccines such as influenza and Tdap.

ACOG/SMFM Recommendations:

- Moderately to severely immunocompromised people should receive a third dose of the Pfizer-BioNTech and Moderna mRNA COVID-19 vaccines at least 28 days after the completion of the initial mRNA COVID-19 vaccine series.

- Individuals aged 18 through 64 years at high risk of severe COVID-19 are eligible for a COVID booster. Therefore, ACOG recommends that pregnant people, including pregnant health care workers, receive a booster dose of the Pfizer-BioNTech COVID-19 vaccine at least 6 months following the completion of their initial Pfizer-BioNTech COVID-19 vaccine series.

- People aged 18–64 years who are at increased risk for COVID-19 exposure and transmission because of occupational or institutional setting may receive a booster including HCW.

Characteristics of pregnant women admitted to hospital with confirmed SARS-CoV-2 infection in UK : (n=427 women)

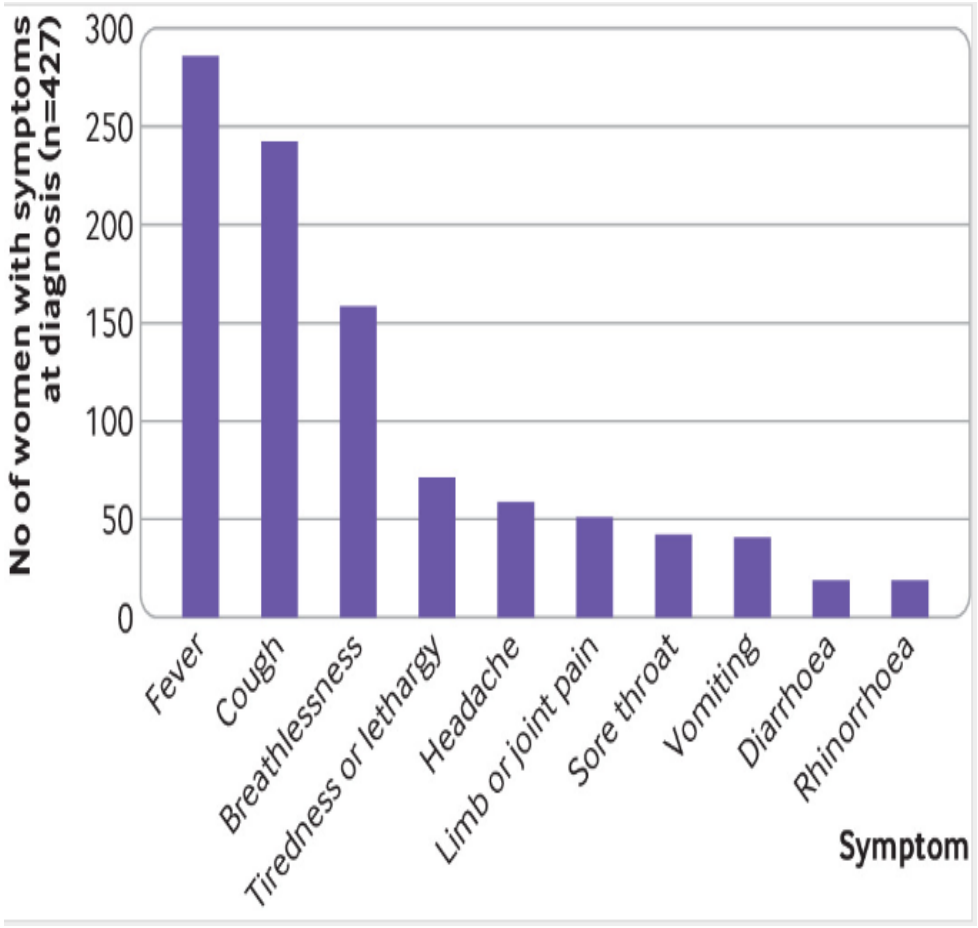


Table 2 Estimated incidence of admission with SARS-CoV-2 infection in pregnancy among different population subgroups

Characteristic	Estimated No of maternities	No of pregnant women admitted with SARS-CoV-2	Incidence per 1000 maternities	Rate ratio (95% CI)
Age*, years:				
<20	2532	4	1.6	0.4 (0.1 to 1.1)
20-34	63 768	248	3.9	1 (reference)
≥35	19 992	175	8.8	2.3 (1.8 to 2.7)
Body mass index†:				
Normal (<25)	36 377	126	3.5	1 (reference)
Overweight (25 to <30)	20 836	141	6.8	2.0 (1.5 to 2.5)
Obese (≥30)	16 154	140	8.7	2.5 (2.0 to 3.2)
Ethnic group (England only)‡:				
White	49 282	173	3.5	1 (reference)
Asian	7400	103	13.9	4.0 (3.1 to 5.1)
Black	3135	89	28.4	8.1 (6.2 to 10.5)
Chinese/other	2960	28	9.5	2.7 (1.7 to 4.0)
Mixed	1304	9	6.9	2.0 (0.9 to 3.8)

Knight et al. BMJ 2020;369:m2107

Rates of Maternal and Perinatal Mortality and Vertical Transmission in Pregnancies complicated by SARS-CoV-2 Infection: a systematic review

- 13/99 articles includes 538 pregnancies w/confirmed SARS-CoV-2
- 435 (80.9 %) delivered
- Maternal ICU admission: 8/263 (3%)
- Maternal critical disease: 3/209 (1.4%)
- No maternal deaths
- C/S rate: 332/392 (84.7%)
- Preterm birth rate: 57/284 (20%)
- Vertical transmission: 0/310 (0%)

Huntley et al. Obstet Gynecol 2020; 136: 303-12

Characteristics of women of reproductive age with SARS CoV-2 (US Jan 22-Jul 7)

- 300,000+ SARS-CoV-2-positive reproductive age women
- 8,207 pregnant (9.0%)
- CVD, DM & chronic lung disease: more frequent among pregnant women

- Increased risk of hospitalization: aRR 5.4 (5.1-5.6)
- Increased risk of ICU admission: aRR 1.5 (1.2-1.8)
- Increased risk of mechanical ventilation: aRR 1.7 (1.2-2.4)
- No differences in death: aRR 0.9 (0.5-1.5)

Ellington CDC MMWR 2020;69(25): June 26,2020

Additional observations:

- Khoury et al: 5 NYC hospitals, 241 COVID+ pregnant women
  - 102 (42.3%) asymptomatic
  - 64 (26.5%) mild, 63 (26.1%) severe, 12 (5.0%) critical
  - COVID severity associated with higher BMI and increased CD rates

- Emeruwa et al: COVID transmission associated with neighborhood markers of household crowding and low SES

- Goldfarb et al: 65 Hispanic and 127 non-Hispanic women with sx of COVID 19 (71% tested) 72% Hispanic women vs 27% non-Hispanic women were positive p<.001.

Khoury et al Obstet Gynecol 2020; Emeruwa et al JAMA 2020;Goldfarb et al Obstet Gynecol 2020

Clinical manifestations, risk factors & maternal and perinatal outcomes: living systematic review and meta-analysis (Dec 2019-June 2020)

- 77 Studies including 13,118 pregnant women and 83,486 nonpregnant women

- Risk factors for COVID: advanced maternal age, higher BMI, chronic hypertension, preexisting diabetes
- Maternal co-morbidities: risk factors for ICU admission and invasive ventilation
- Maternal outcomes: all cause mortality (.006), ICU admission(.03), Invasive ventilation (.01)
- Fetal/neonatal outcomes: preterm birth, stillbirth, cesarean delivery, NICU admission

Allotey et al. BMJ 2020 370: m3320

Additional pregnancy observations

In an adjusted analysis of 1,219 pregnant women:

- Severe-critical COVID-19 vs mild disease
- Cesarean delivery: 59.6% vs 34%, aRR 1.57 (1.30-1.90)
- Hypertensive disorders: 40.4% vs18.9%, aRR 1.61 (1.18-2.20)

Khoury et al Obstet Gynecol 2020;
Metz et al Obstet Gynecol 2021

Birth and Infant Outcomes after COVID Infection in pregnancy

- Among 3912 infants with known gestational age born to women with documented SARS-CoV-2 infection
- 12.9% were preterm (<37 weeks)
- Among 610 (21.3%) infants with test results: 2.6% had positive SARS-CoV-2

MMWR/ November 6, 2020 / 69(44);1635–1640

Data on COVID-19 during Pregnancy: Birth and Infant Outcomes

Data Reported to CDC as of September 3, 2021

Pregnant Women | Data by Month | Birth Outcomes | Live Births

29,025

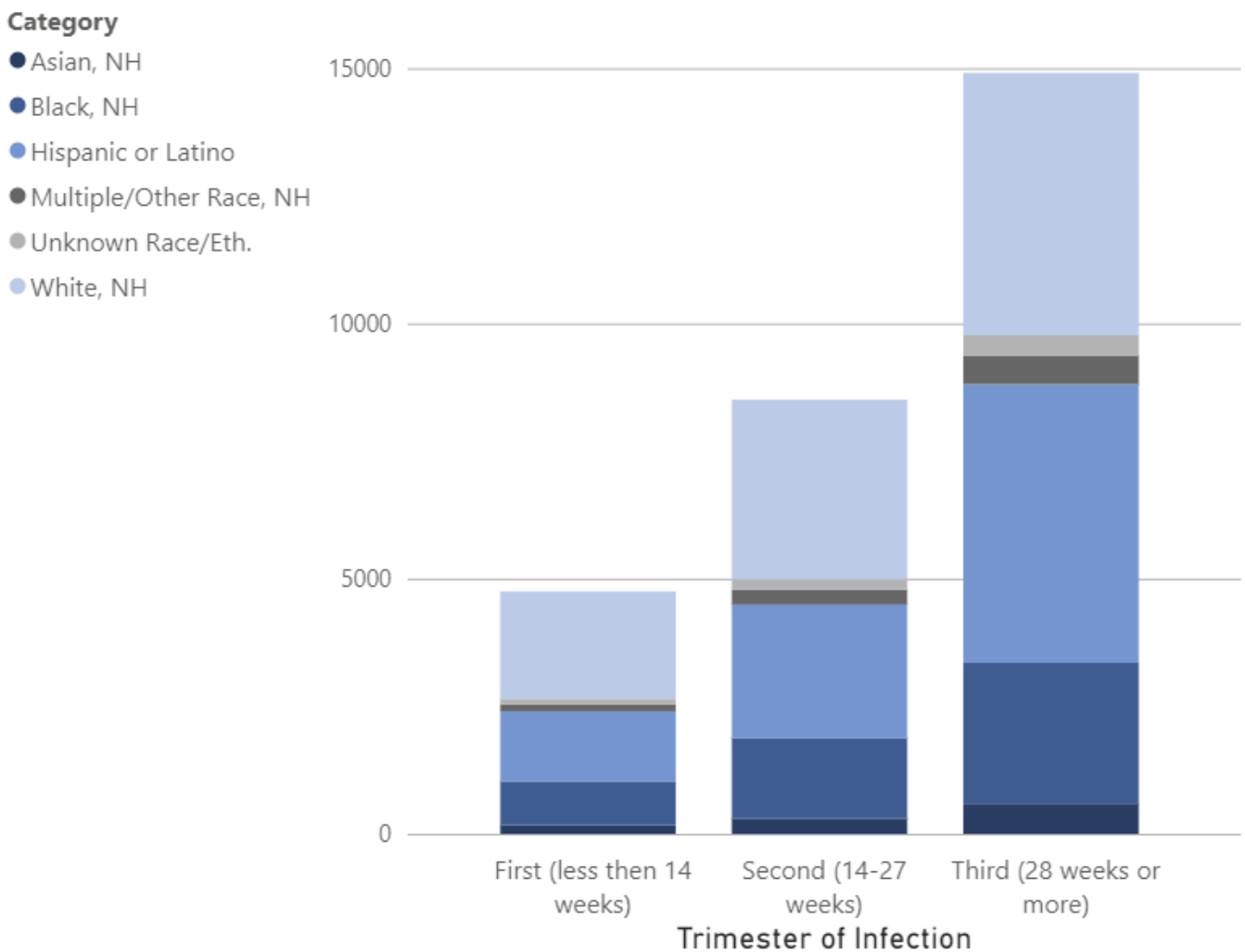
Women with COVID-19 who Completed Pregnancy

View by Selected Category

- (●) Race/Ethnicity
- ( ) Maternal Age

Number of Pregnant Women with COVID-19 by Trimester of Infection

Information on timing of infection was available for 28,165 (97.0%) women.



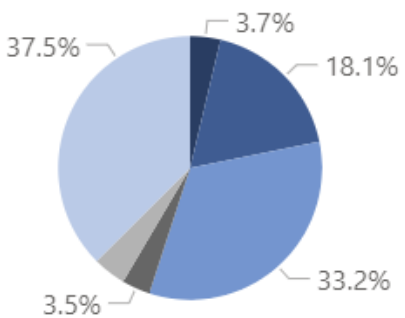
Trimester of Infection	Number of Women
First (less then 14 weeks)	4750
Second (14-27 weeks)	8507
Third (28 weeks or more)	14908
Total	**28165**

Race/Ethnicity	Number of Women
Asian, NH	1068
Black, NH	5194
Hispanic or Latino	9445
Multiple/Other Race, NH	987
Unknown Race/Eth.	709
White, NH	10762
Total	**28165**

NH = Non-Hispanic

Maternal Age in Years	Number of Women
<20	1442
20-29	14003
30-39	11604
40-55	910
Unknown Age	206
Total	**28165**

Total Women with Known Timing of Infection



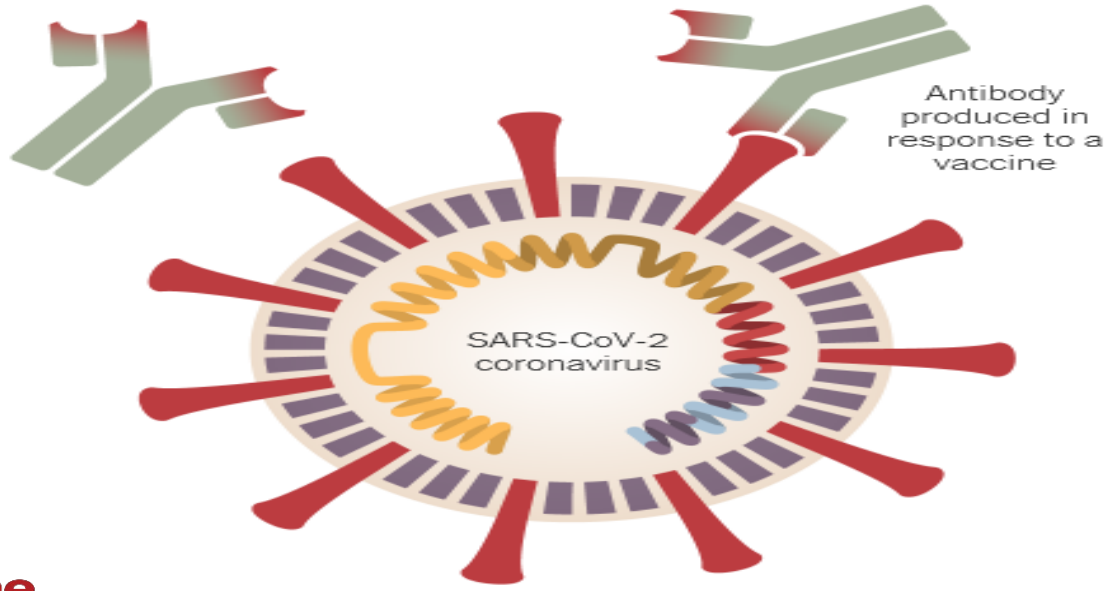
Coronavirus Vaccine Tracker

By Jonathan Corum, Denise Grady, Sui-Lee Wee and Carl Zimmer Updated July 11, 2020

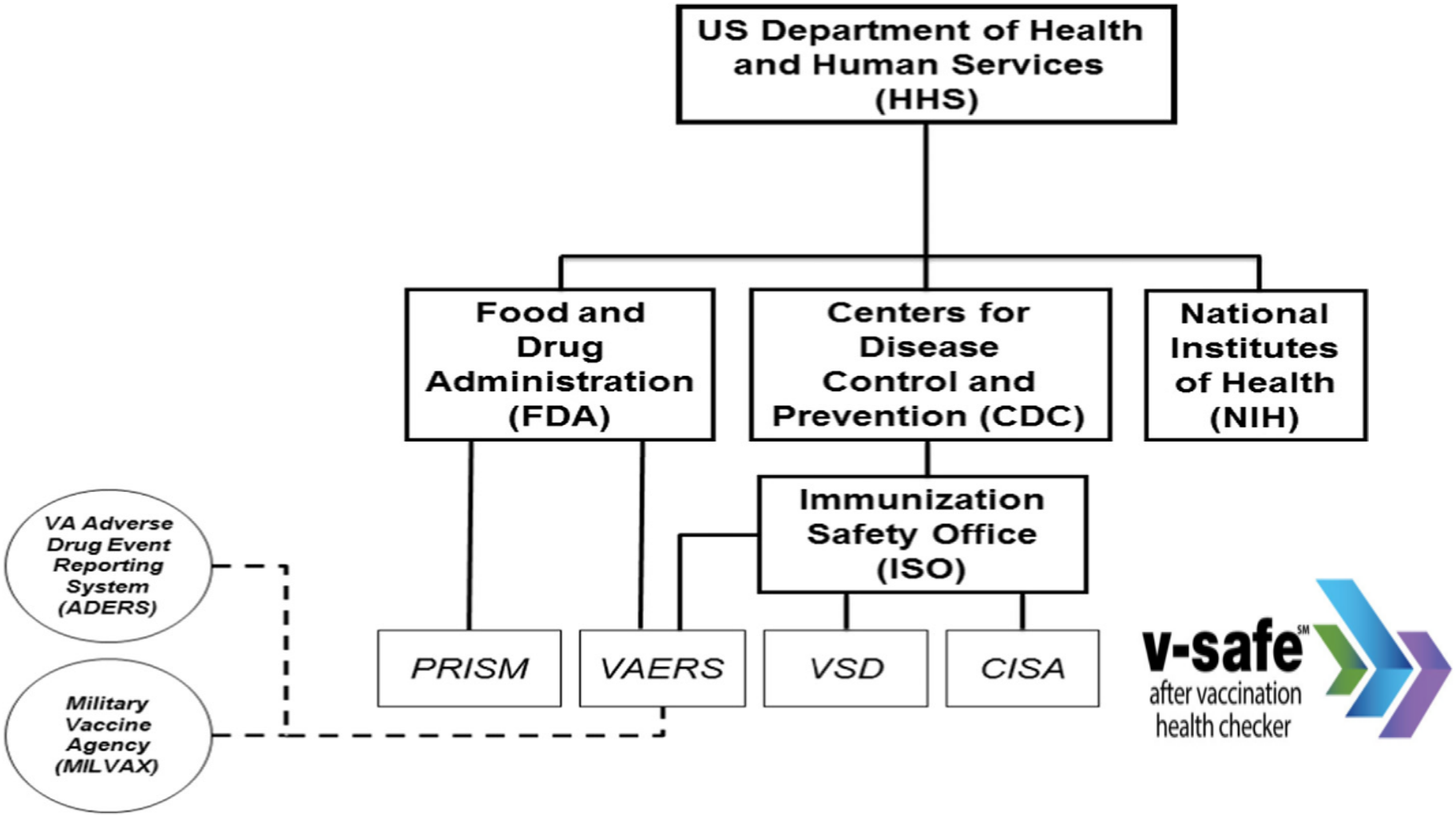
WORLD COUNTRIES | U.S.A. STATES TESTING

PRECLINICAL	PHASE I	PHASE II	PHASE III	APPROVAL
135+	14	11	4	1
Vaccines not yet in human trials	Vaccines testing safety and dosage	Vaccines in expanded safety trials	Vaccines in large-scale efficacy tests	Vaccine approved for limited use

Researchers around the world are developing more than 155 vaccines against the coronavirus, and **22 vaccines** are in human trials. Vaccines typically require years of research and testing before reaching the clinic, but scientists are racing to produce a safe and effective vaccine by next year.



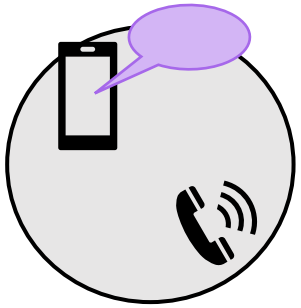
Vaccine Monitoring System



Nesin et al. Seminars in Perinatology 2015

Active safety monitoring for COVID-19 vaccines

- **V-safe** is a new CDC smart-phone based monitoring program for COVID-19 vaccine safety
  - uses text messaging and web surveys to check-in with vaccine recipients after vaccination
  - participants can report side effects and health impact events after COVID-19 vaccination
  - includes active telephone follow-up by CDC for reports of significant health impact
  - captures information on pregnancy status and enables follow-up on pregnant women



V-safe and Registry Monitoring People Who Report Pregnancy

v-safe After Vaccination Health Checker
Pregnant people reported, United States,
as of October 4, 2021

163,777

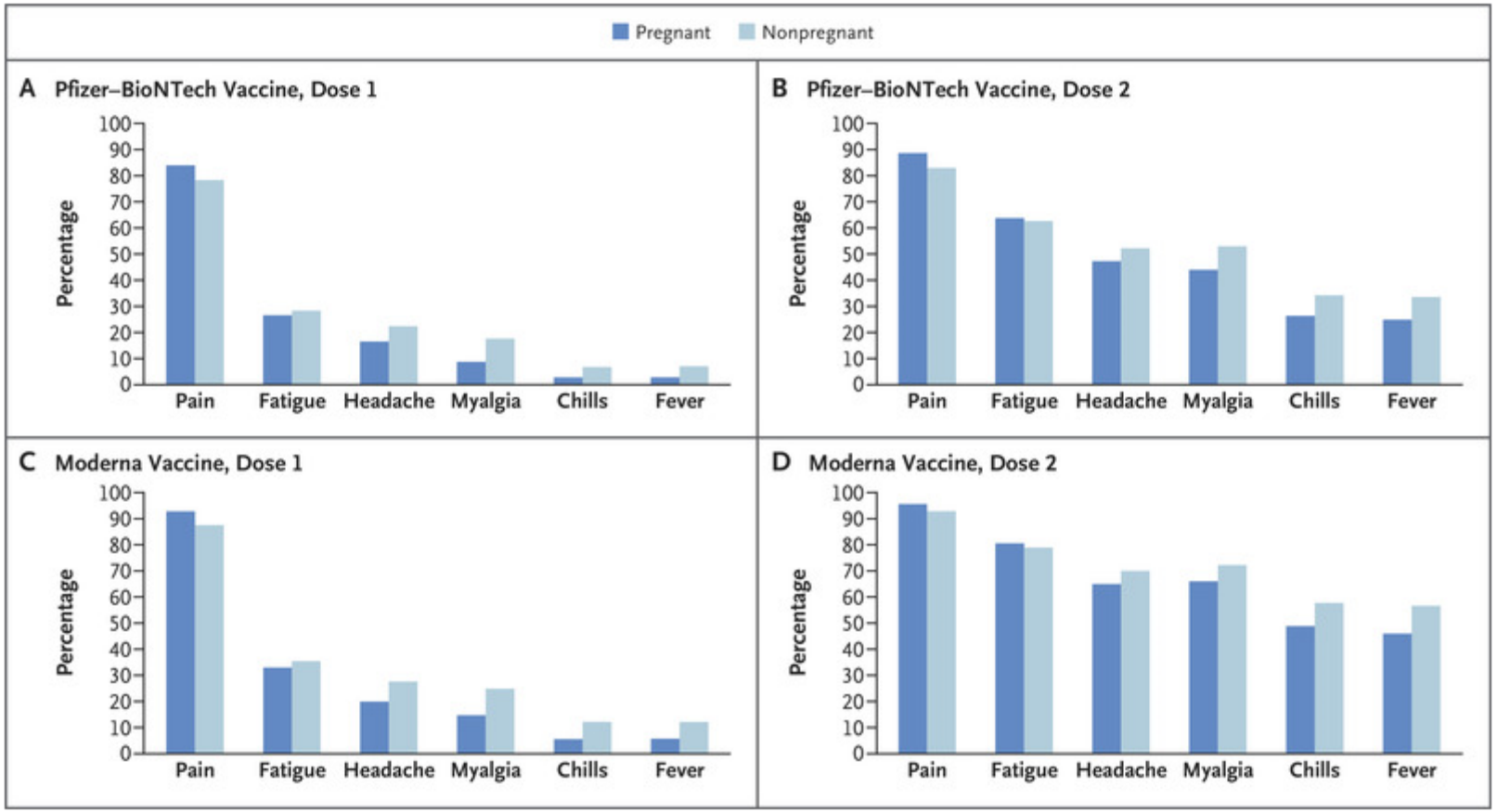
v-safe COVID-19 Vaccine Pregnancy Registry
Pregnant people enrolled, United States,
as of October 4, 2021

5,104

*As of October 4, 2021, more than 163 thousand **v-safe** participants have indicated they were pregnant at the time they received COVID-19 vaccination. CDC is currently enrolling eligible participants and analyzing data to better understand how COVID-19 vaccination affects pregnant people. As CDC learns more about the effects of vaccination during pregnancy, data will be presented at the Advisory Committee on Immunization Practices (ACIP) meetings, which are open to the public, and in published reports.*

Preliminary findings of mRNA COVID vaccine safety

Figure 1. Most Frequent Local and Systemic Reactions Reported in the V-safe Surveillance System on the Day after mRNA Covid-19 Vaccination.



Shimabukuro TT, et al. N Engl J Med. 2021 Apr 21

Preliminary findings of mRNA COVID vaccine safety

Neonatal outcome among live-born infants		
Preterm birth: <37 wk[21,22]	8–15	60/636 (9.4)¶
Small size for gestational age[23,24]‖	3.5	23/724 (3.2)
Congenital anomalies[25]**	3	16/724 (2.2)
Neonatal death[26]††	<1	0/724

* The populations from which these rates are derived are not matched to the current study population for age, race and ethnic group, or other demographic and clinical factors.

† Data on pregnancy loss are based on 827 participants in the v-safe pregnancy registry who received an mRNA Covid-19 vaccine (BNT162b2 [Pfizer–BioNTech] or mRNA-1273 [Moderna]) from December 14, 2020, to February 28, 2021, and who reported a completed pregnancy. A total of 700 participants (84.6%) received their first eligible dose in the third trimester. Data on neonatal outcomes are based on 724 live-born infants, including 12 sets of multiples.

‡ A total of 96 of 104 spontaneous abortions (92.3%) occurred before 13 weeks of gestation. No denominator was available to calculate a risk estimate for spontaneous abortions, because at the time of this report, follow-up through 20 weeks was not yet available for 905 of the 1224 participants vaccinated within 30 days before the first day of the last menstrual period or in the first trimester. Furthermore, any risk estimate would need to account for gestational week–specific risk of spontaneous abortion.

§ The denominator includes live-born infants and stillbirths.

¶ The denominator includes only participants vaccinated before 37 weeks of gestation.

‖ Small size for gestational age indicates a birthweight below the 10th percentile for gestational age and infant sex according to INTERGROWTH-21st growth standards (http://intergrowth21.ndog.ox.ac.uk). These standards draw from an international sample including both low-income and high-income countries but exclude children with coexisting conditions and malnutrition. They can be used as a standard for healthy children growing under optimal conditions.

** Values include only major congenital anomalies in accordance with the Metropolitan Atlanta Congenital Defects Program 6-Digit Code Defect List (www.cdc.gov/ncbddd/birthdefects/macdp.html); all pregnancies with major congenital anomalies were exposed to Covid-19 vaccines only in the third trimester of pregnancy (i.e., well after the period of organogenesis).

†† Neonatal death indicates death within the first 28 days after delivery.

Shimabukuro TT, et al. N Engl J Med. 2021 Apr 21

mRNA vaccines not associated with SAb

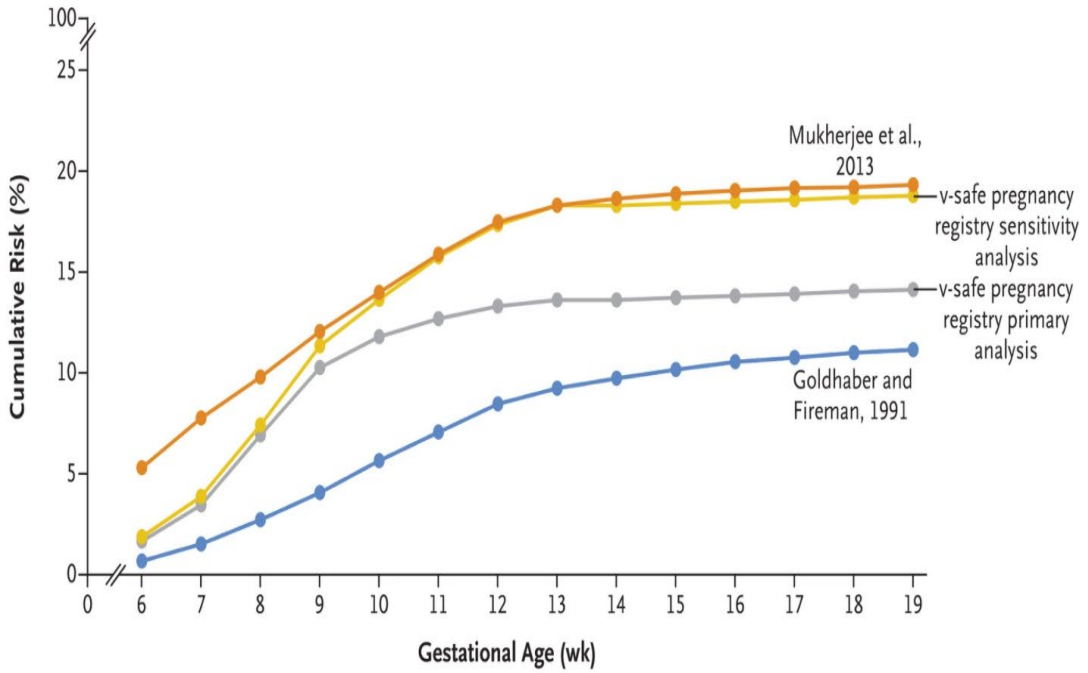
Research letter based on VSD

Table 2. Adjusted Odds Ratios for Receipt of COVID-19 Vaccine Within 28 Days Prior to a Spontaneous Abortion, December 15, 2020, Through June 28, 2021, Across 8 Vaccine Safety Datalink Sites and Among 264 104 Pregnancy-Periods[a]

	Adjusted odds ratio (95% CI)[b]
Full population	1.02 (0.96-1.08)
By gestational age, wk	
6-8	0.94 (0.86-1.03)
9-13	1.07 (0.99-1.17)
14-19	1.08 (0.89-1.29)
By vaccine type[c]	
mRNA-1273 (Moderna)	1.03 (0.94-1.11)
BNT162b2 (Pfizer-BioNTech)	1.03 (0.95-1.11)

Kharbanda et al. JAMA doi:10.1001/jama.2021.15494

Research letter based on V-safe



Zauche et al. NEJM doi/full/10.1056/NEJMc2113891

Maternal COVID vaccine antibodies and neonatal cord blood

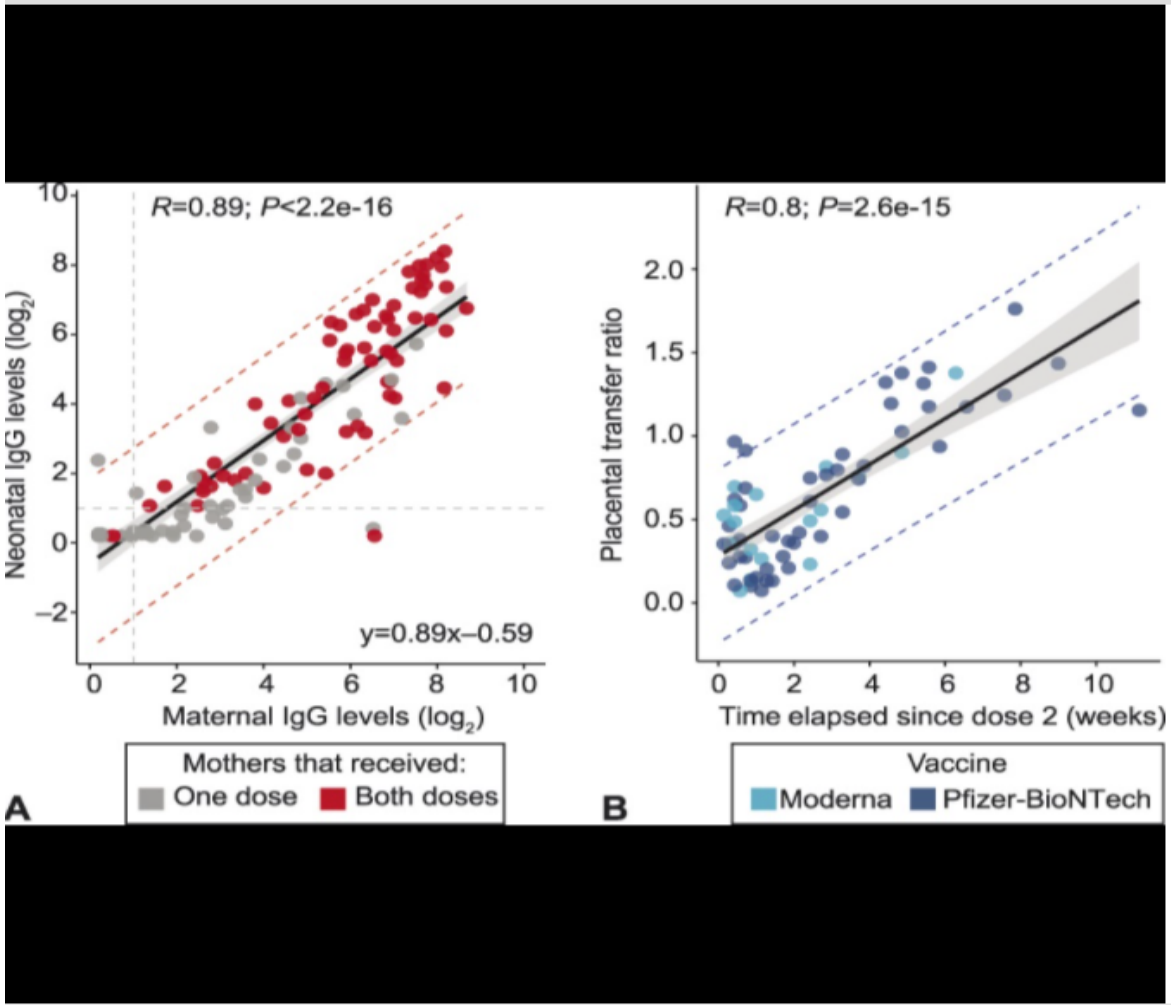


Fig. 2.

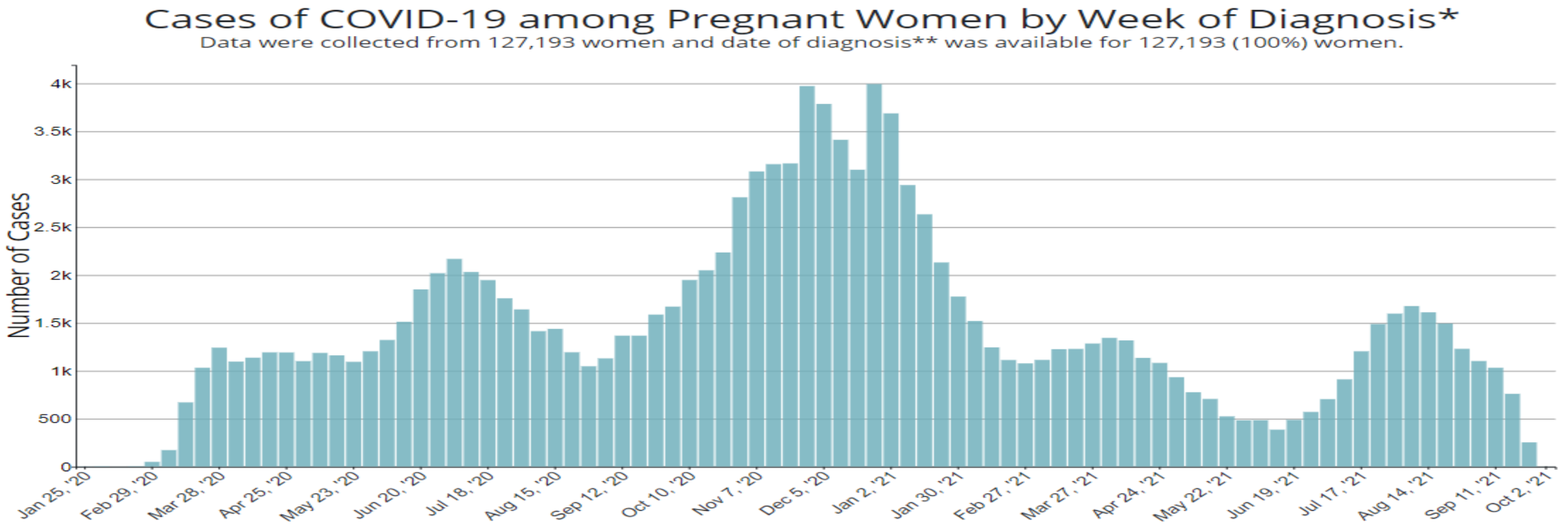
Neonatal antibody response to maternal coronavirus disease 2019 (COVID-19) mRNA vaccination. **A**. Cord blood immunoglobulin (Ig)G levels vs maternal IgG levels. *Grey dots* represent neonates born to mothers who received only one dose of the vaccine. All positive serology cutoffs were 1 (*dashed grey line*). The relationship between maternal and neonatal IgG levels was studied using Pearson correlation analysis and linear regression on log_2-scaled serologic values. CIs are represented by *shaded region* (95% CI 0.80–0.97). Lower and upper prediction intervals are indicated with *dotted red lines*.**B**. Placental transfer ratio (neonatal IgG/maternal IgG) vs weeks elapsed since maternal vaccination dose 2 for 65 dyads containing mothers who received both vaccine doses. Time point 0 is day of vaccine dose 2. The relationship between IgG placental transfer ratio (neonatal/maternal) and time was studied using Pearson correlation analysis and linear regression on placental transfer ratio and time elapsed since

Prabhu et al. Obstetrics & Gynecology: April 28, 2021

Pregnancy enhanced surveillance

Pregnant women[1] with COVID-19, United States, January 22, 2020 - October 4, 2021

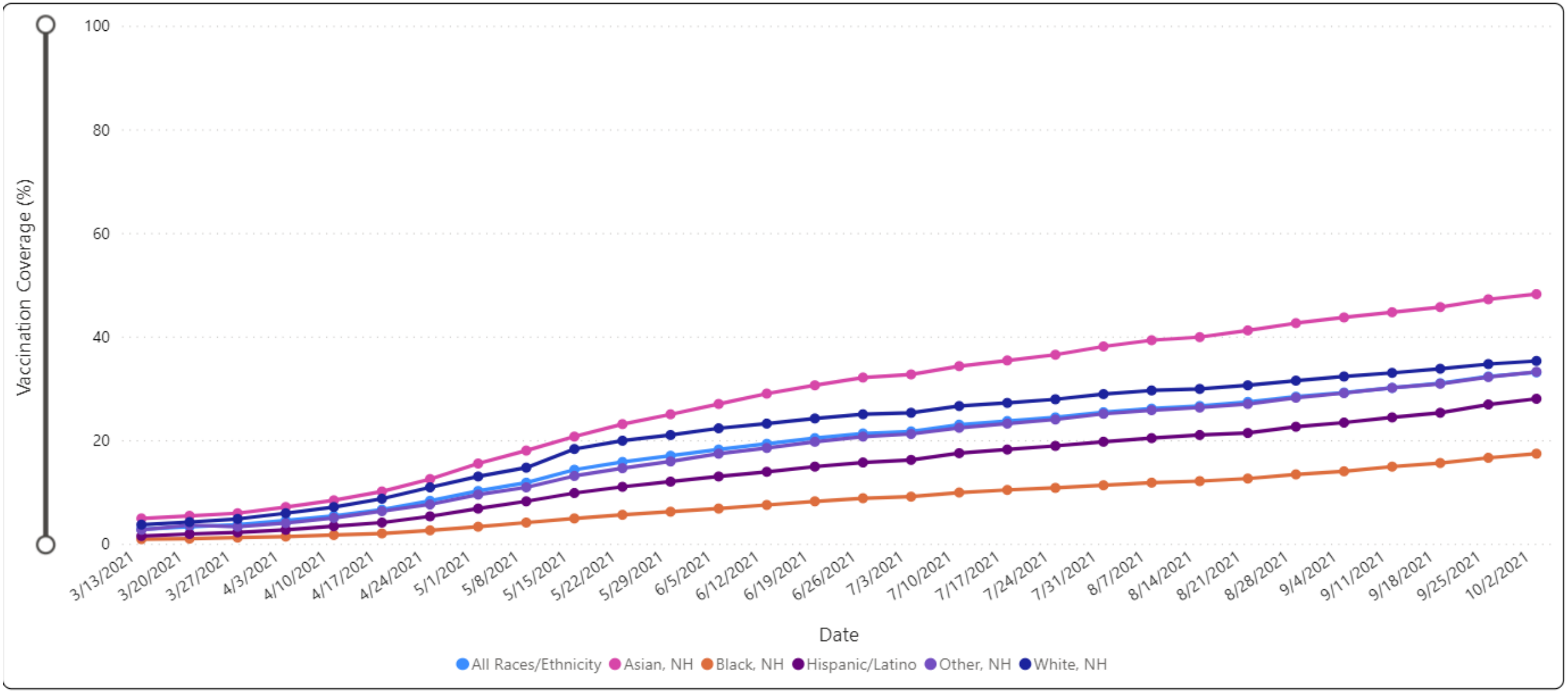
TOTAL CASES[1]	TOTAL DEATHS
127,193	171



https://covid.cdc.gov/covid-data-tracker/#datatracker-home

Figure 2: Percent of Pregnant People Aged 18–49 Years Fully Vaccinated with COVID-19 Vaccine Prior to or during Pregnancy Overall, by Race/Ethnicity, and Date Reported to CDC – Vaccine Safety Datalink*, United States December 14, 2020 – October 2, 2021

Figure 1 | Figure 2 | Figure 3



NH = Non-Hispanic; "Other, NH" race includes American Indian or Alaska Native, Native Hawaiian or Pacific Islander, and Multiple or Other races; "vaccination coverage" represents the total number of pregnant people (denominator as of October 2, 2021 = 195,089) who were fully vaccinated, including both doses of the Pfizer-BioNTech or Moderna vaccines or a single dose of the Johnson & Johnson's Janssen vaccine.

COVID Vaccines and Infertility

Does mRNA SARS-CoV-2 vaccine influence patients' performance during IVF-ET cycle?

36 couples resumed IVF 7-85d post vaccine

No in between cycle differences in ovarian stimulation and embryological variables before & after vaccine

mRNA vaccine did not affect pts' performance or ovarian reserve in subsequent IVF cycle

Orvieto et al. Reproductive Biology and Endocrinology (2021)

SARS-CoV-2 spike protein seropositivity from vaccination or infection does not cause sterility

- 171 frozen embryo transfers performed and compared between SARS-CoV-2 vaccine positive, infection positive and seronegative women
- No difference in serum hCG documented implantation rates or sustained implantation rates between 3 groups

Morris, Randy, Fertil Steril Rep (2021)

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Ellington S, et al. Characteristics of Women of Reproductive Age with Laboratory-Confirmed SARS-CoV-2 Infection by Pregnancy Status - United States, January 22-June 7, 2020. MMWR Morb Mortal Wkly Rep. 2020 Jun 26;69(25):769-775. doi: 10.15585/mmwr.mm6925a1.MMWR Morb Mortal Wkly Rep. 2020. PMID: 32584795

Huntley et. Rates of Maternal and Perinatal Mortality and Vertical Transmission in Pregnancies complicated by SARS-CoV-2 Infection: a systemic review. Obstet Gynecol 2020;136:303-12

Orvieto Raoul, et al. Does mRNA SARS-CoV-2 vaccine influence patients' performance during IVF-ET cycle? Reproductive Biology and Endocrinology (2021) 19:69

Galang, R. R., et al. Risk Factors for Illness Severity Among Pregnant Women With Confirmed Severe Acute Respiratory Syndrome Coronavirus 2 Infection—Surveillance for Emerging Threats to Mothers and Babies Network, 22 State, Local, and Territorial Health Departments, 29 March 2020–5 March 2021Clinical Infectious Diseases 2021; 73(S1)S-17-S23

Morris, R. S., SARS-CoV-2 spike protein seropositivity from vaccination or infection does not cause sterility. Fertil Steril Rep 2021 2666-3341

Summary

- COVID infection in pregnancy is associated with severe morbidity and mortality.
- COVID cases in pregnancy occur even in “healthy” people.
- Current data show that most hospitalized pregnant people are unvaccinated and only about 30% of pregnant women are vaccinated.
- COVID vaccines are safe during all trimesters of pregnancy including preconception.
- COVID vaccines are not associated with infertility.
- Studies of covid vaccines and menstrual irregularities are underway but preliminary observations suggest that the changes are transient.

Additional COVID-19 Resources

COVID-19 Vaccines

- NYC Health Department - COVID-19 Vaccine:
  - Providers:
    - Vaccine information: nyc.gov/health/covidvaccineprovider
    - Provider hotline to schedule vaccine appointments: **877-VAX-4NYC (877-8229-4692)**; press 2 at second prompt
  - Public: nyc.gov/covidvaccine
- Citywide Immunization Registry Reporting Assistance
  - https://www1.nyc.gov/site/doh/providers/reporting-and-services/cir-how-to-report.page#electronic
- Vaccine Provider Assistance: nycimmunize@health.nyc.gov

General COVID-19 Resources

- Provider page: https://www1.nyc.gov/site/doh/covid/covid-19-providers.page
- Data page: https://www1.nyc.gov/site/doh/covid/covid-19-data.page
- Dear Colleague COVID-19 newsletters (sign up for *City Health Information* subscription at: nyc.gov/health/register)
- NYC Health Alert Network (sign up at https://www1.nyc.gov/site/doh/providers/resources/health-alert-network.page)
- Provider Access Line: **866-692-3641**

NYC Health

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