

Increasing COVID-19 Vaccine Uptake in Pregnant People

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Financial Disclosures

- None

Learning Objectives

- Review the outcomes of COVID-19 infection in pregnant people
- Discuss the safety profile of COVID-19 vaccines for pregnant and lactating people, as well as people wanting to become pregnant
- Describe the problem of lower COVID-19 vaccine uptake among pregnant people
- Offer opportunities to improve COVID-19 vaccine uptake in pregnant people

Inclusive Language

- The U.S. OB/GYN community recognizes that people/persons other than women become pregnant, carry pregnancies, and deliver babies
- This can include transgender, gender non-binary, and gender non-conforming people, among others
- In an effort to be more inclusive, you will hear me use pregnant people, persons, and women interchangeably throughout this presentation

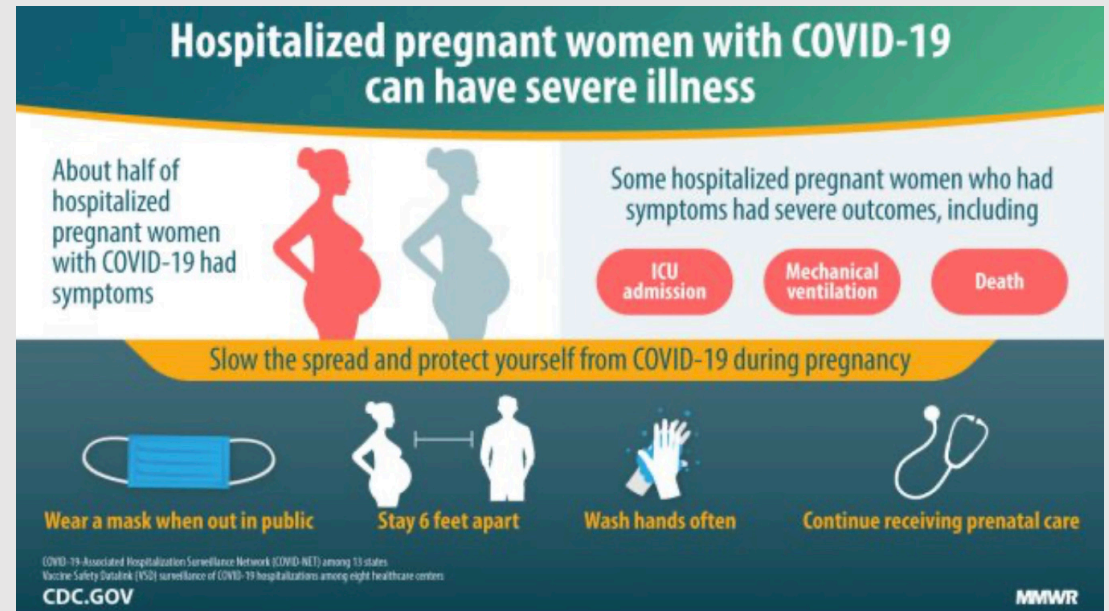
A Patient Story



Risk of Disease From COVID-19 Infection During Pregnancy

COVID-19 Infection During Pregnancy

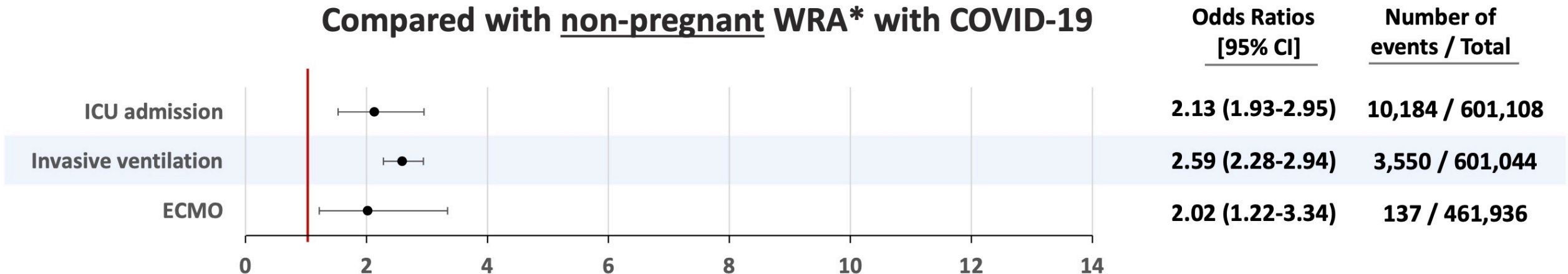
Pregnancy is an independent risk factor for **severe** COVID-19 disease



COVID-19 Infection During Pregnancy

- Compared to non-pregnant women of reproductive age:
 - 2-3-fold increased risk for **ICU admission**
 - ~2.5-fold increased risk for needing **ventilator support**
 - 2-fold increased risk for needing **Extracorporeal Membrane Oxygenation (ECMO)**
 - 1.7-fold increased risk for **death**

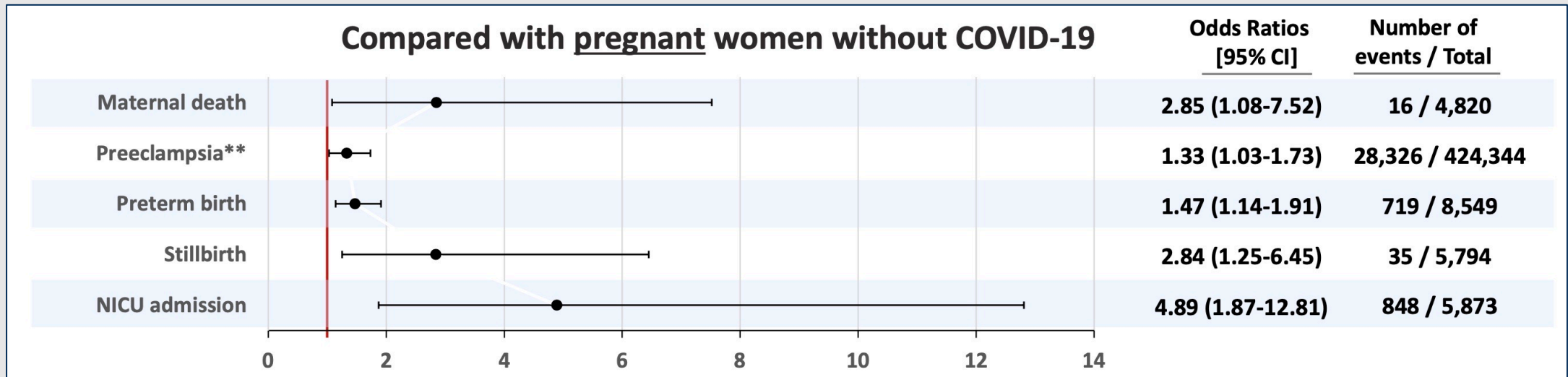
Compared with non-pregnant WRA* with COVID-19



Allotey et al. BMJ 2020;370:m3320 and Zambrano et al. MMWR 2020, 69(44);1641–1647

COVID-19 Infection During Pregnancy

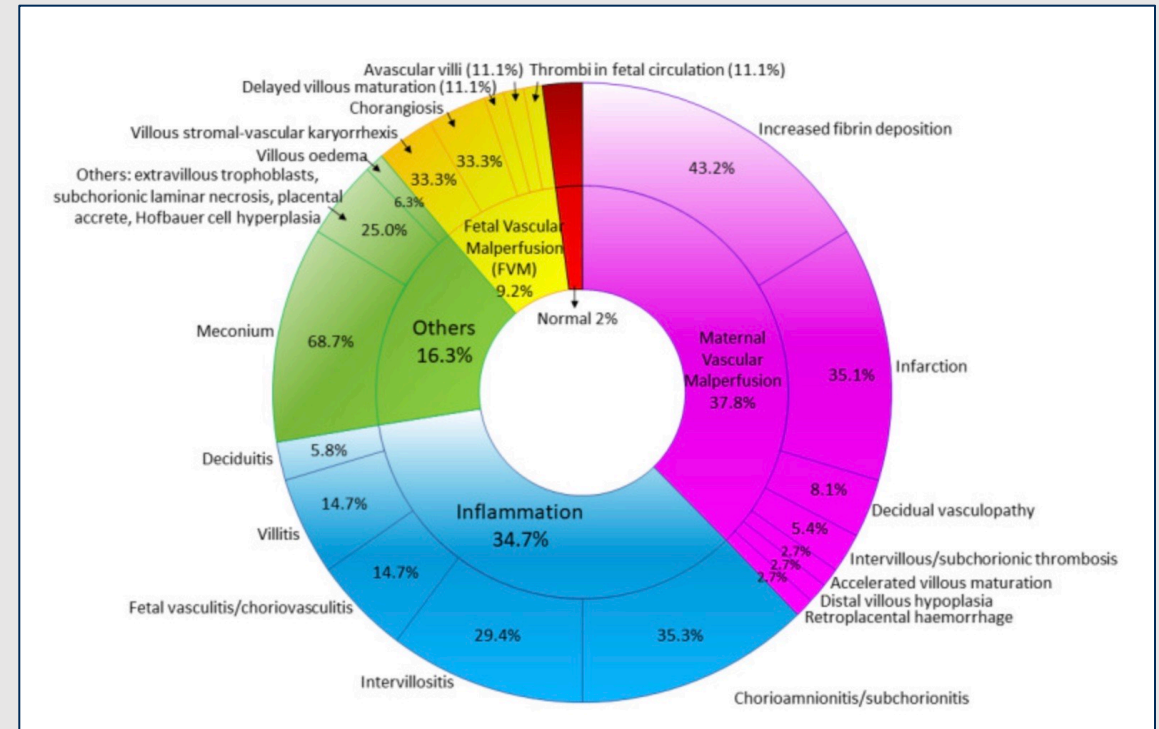
- Compared to pregnant women without COVID-19:
 - 2.85-fold increased odds of **maternal death**
 - 1.33-fold increased odds of **pre-eclampsia**
 - 1.47-fold increased odds of **preterm birth**
 - 2.84-fold increased odds of **stillbirth**
 - 4.89-fold increased odds of **NICU admission**



Allotey et al. BMJ 2020;370:m3320 and Wei et al. CMAJ 2021;193(16):E540-E548

COVID-19 Infection During Pregnancy

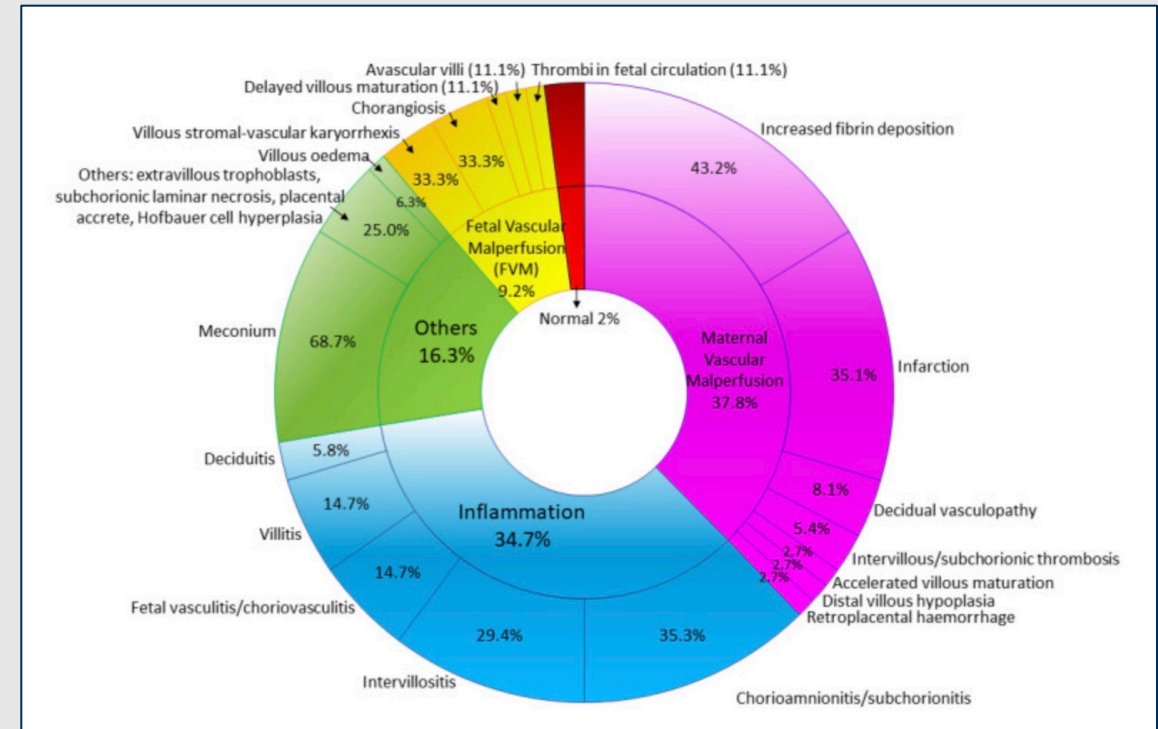
- It is **extremely rare** that COVID-19 crosses the placenta and causes congenital infection in the fetus
- **No** COVID-19 related birth defects that have been identified



Wong et al. Diagnostics (Basel) 2021 Jan; 11(1): 94.

COVID-19 Infection During Pregnancy

- However, consistent pathologic changes are seen in the **placenta**
- These may be the cause of the increased risks of stillbirth, preterm birth, and pre-eclampsia seen with COVID-19 infection during pregnancy



Wong et al. Diagnostics (Basel) 2021 Jan; 11(1): 94

COVID-19 Vaccines and Pregnancy

COVID-19 Vaccines and Pregnancy



The American College of Obstetricians and Gynecologists recommends that pregnant individuals be vaccinated against COVID-19. Vaccination helps protect you and may help protect your newborn against COVID-19 infection.



COVID-19 Vaccine Trials

- Despite strong lobbying by the American College of Obstetricians and Gynecologists and the Society for Maternal Fetal Medicine (among other women's health and advocacy organizations) for pregnant people to be included in the original vaccine studies, pregnancy was an **exclusion criteria** from being able to participate in these critical trials
- “Discuss the risks and benefits with your provider” ->
- “Recommend”



The banner features three vertical panels: a green panel with a bandage icon, a blue panel with a hand holding a smartphone displaying the v-safe app, and a purple panel with a thumbs-up icon. To the right, the text 'v-safeSM after vaccination health checker' is displayed next to a large blue and green arrow. Below this, a dark teal section contains a photo of a family holding a smartphone, the word 'NEW!' in large white letters, and the text: 'People who have already been vaccinated can enter an additional dose. Parents or guardians can enroll their vaccinated children.' A small timestamp '3:23:08 AM' is visible in the bottom right corner of this section.

NEW! | People who have already been vaccinated can enter an additional dose. Parents or guardians can enroll their vaccinated children.

Get vaccinated. Get your smartphone. Get started with v-safe.
Use your smartphone to tell CDC about any side effects after getting the COVID-19 vaccine. You'll also get reminders if you need an additional dose.

V-safe and Registry Monitoring People Who Report Pregnancy

v-safe After Vaccination Health Checker
Pregnant people reported, United States,
as of December 20, 2021

180,289

v-safe COVID-19 Vaccine Pregnancy Registry
Pregnant people enrolled, United States,
as of December 20, 2021

8,749

COVID-19 Vaccines DO NOT Contain Live Virus

- Pfizer/Moderna Vaccines
 - Contain mRNA genetic material that encode SARS-CoV-2 spike S-protein
 - Elicits neutralizing antibodies to the S-protein
 - mRNA rapidly degraded (10-20 days) by normal cellular processes
- Janssen Biotech (Johnson & Johnson) Vaccine
 - Uses a modified adenovirus (common cold) vector that cannot replicate
 - Delivers the DNA code for the SARS-CoV-2 spike S-protein to host cells
 - Spike protein in host cells triggers antibody and cell-mediated responses
 - DNA code is not integrated into the host cell genetic material

COVID-19 Vaccines - Update

- December 16, 2021
 - Due to the increased risk of the rare complication of Thrombosis and Thrombocytopenia Syndrome (TTS), the CDC released a clinical preference for the mRNA vaccines over the adenovirus vector vaccine
 - Individuals not wanting the mRNA vaccines still should be able to receive the Janssen Biotech (J&J) vaccine

CDC Endorses ACIP's Updated COVID-19 Vaccine Recommendations

Media Statement

Advisory Committee on Immunization Practices

For Immediate Release: Thursday, December 16, 2021

Contact: [Media Relations](#)

(404) 639-3286

COVID-19 Vaccine Recommendations

	Age	Dose schedule	Technology	Third Dose
Pfizer- BioNTech/ Comirnaty (approved)	≥ 12 years	2 doses/ 21 days	mRNA	<u>For moderately to severely immunocompromised individuals</u>
	$\geq 5-11$ years	2 doses/ 21 days (reduced dose)		
Moderna	≥ 18 years	2 doses/ 28 days	mRNA	<u>For moderately to severely immunocompromised individuals</u>
Janssen Biotech (J&J)*	≥ 18 years	1 dose	Adenovector	N/A

COVID-19 Vaccine Booster Recommendations

COVID-19 VACCINE BOOSTERS DURING PREGNANCY

All pregnant and recently pregnant people
(up to 6 weeks postpartum) who received a
COVID-19 vaccine before or during pregnancy

Should receive a booster
5 ~~6~~ months
after second shot of
Pfizer or Moderna

Should receive a booster
2 months
after shot of
J&J/Janssen

Can receive any vaccine for a booster:

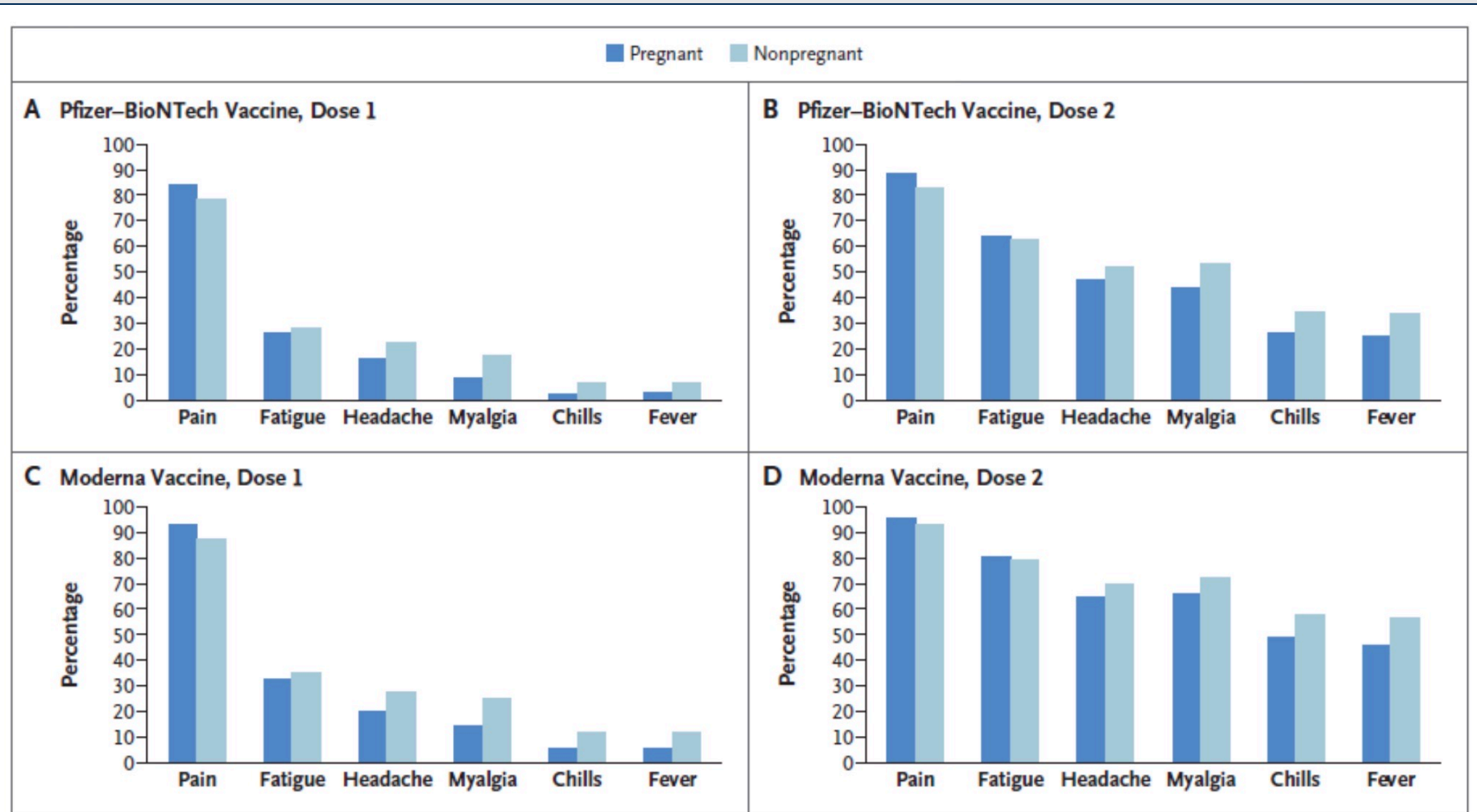
Pfizer: Full dose

Moderna: Half dose

J&J: Full dose



COVID-19 Vaccine Side Effects in Pregnancy



Preliminary Findings of mRNA Covid-19 Vaccine Safety in Pregnant Persons, April 2021. <https://www.nejm.org/doi/10.1056/NEJMoa2104983>

COVID-19 Vaccine Side Effects in Pregnancy

- **No difference** in common COVID-19 mRNA vaccine side effects between pregnant and non-pregnant people
 - Pain
 - Fatigue
 - Headache
 - Myalgias
 - Chills
 - Fevers
- For the first or second shot – no difference

COVID-19 Vaccine Side Effects in Pregnancy

Table 4. Pregnancy Loss and Neonatal Outcomes in Published Studies and V-safe Pregnancy Registry Participants.

Participant-Reported Outcome	Published Incidence*	V-safe Pregnancy Registry†
	%	no./total no. (%)
Pregnancy loss among participants with a completed pregnancy		
Spontaneous abortion: <20 wk ^{15-17‡}	Not applicable	104
Stillbirth: ≥ 20 wk ¹⁸⁻²⁰	<1	1/725 (0.1)§
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

Preliminary Findings of mRNA Covid-19 Vaccine Safety in Pregnant Persons, April 2021.

COVID-19 Vaccine Side Effects in Pregnancy

- **No difference** in poor pregnancy outcomes between COVID-19 vaccinated pregnant people and the general population
 - Miscarriage
 - Stillbirth
 - Preterm birth
 - Small size for gestational age
 - Birth defects
 - Neonatal death

OBSTETRICS

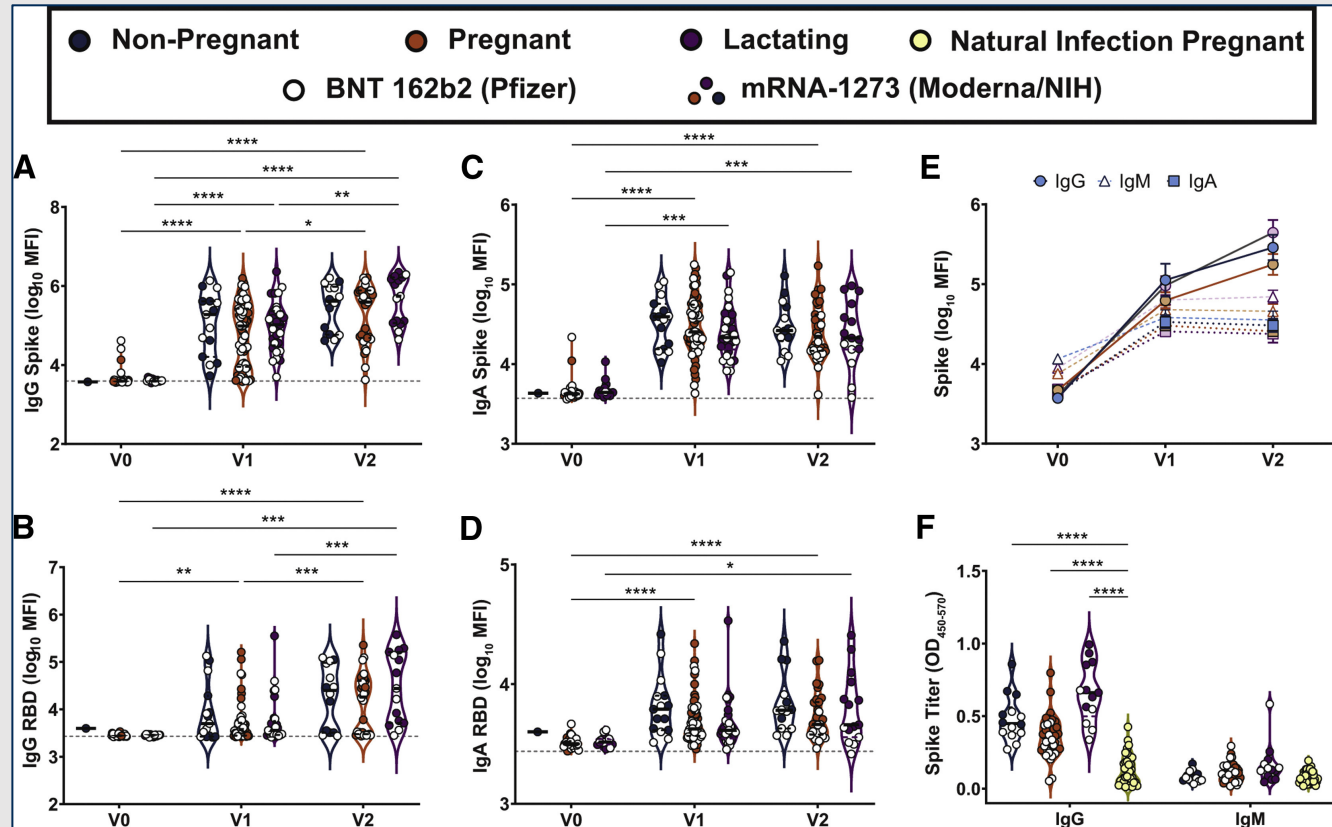
Coronavirus disease 2019 vaccine response in pregnant and lactating women: a cohort study



Kathryn J. Gray, MD, PhD; Evan A. Bordt, PhD; Caroline Atyeo, BS; Elizabeth Deriso, PhD;
Babatunde Akinwunmi, MD, MPH, MMSc; Nicola Young, BA; Aranxta Medina Baez, BS; Lydia L. Shook, MD; Dana Cvrk, CNM;
Kaitlyn James, PhD, MPH; Rose De Guzman, PhD; Sara Brigida, BA; Khady Diouf, MD; Ilona Goldfarb, MD, MPH;
Lisa M. Bebell, MD; Lael M. Yonker, MD; Alessio Fasano, MD; S. Alireza Rabi, MD; Michal A. Elovitz, MD; Galit Alter, PhD;
Andrea G. Edlow, MD, MSc

- Enrolled 84 pregnant, 31 lactating, and 16 nonpregnant women
- Compared antibody response between natural COVID-19 infection to the COVID-19 mRNA vaccines
- Evaluated for antibodies in:
 - Patient blood
 - Breastmilk
 - Umbilical cord blood -> passage of antibodies to the baby

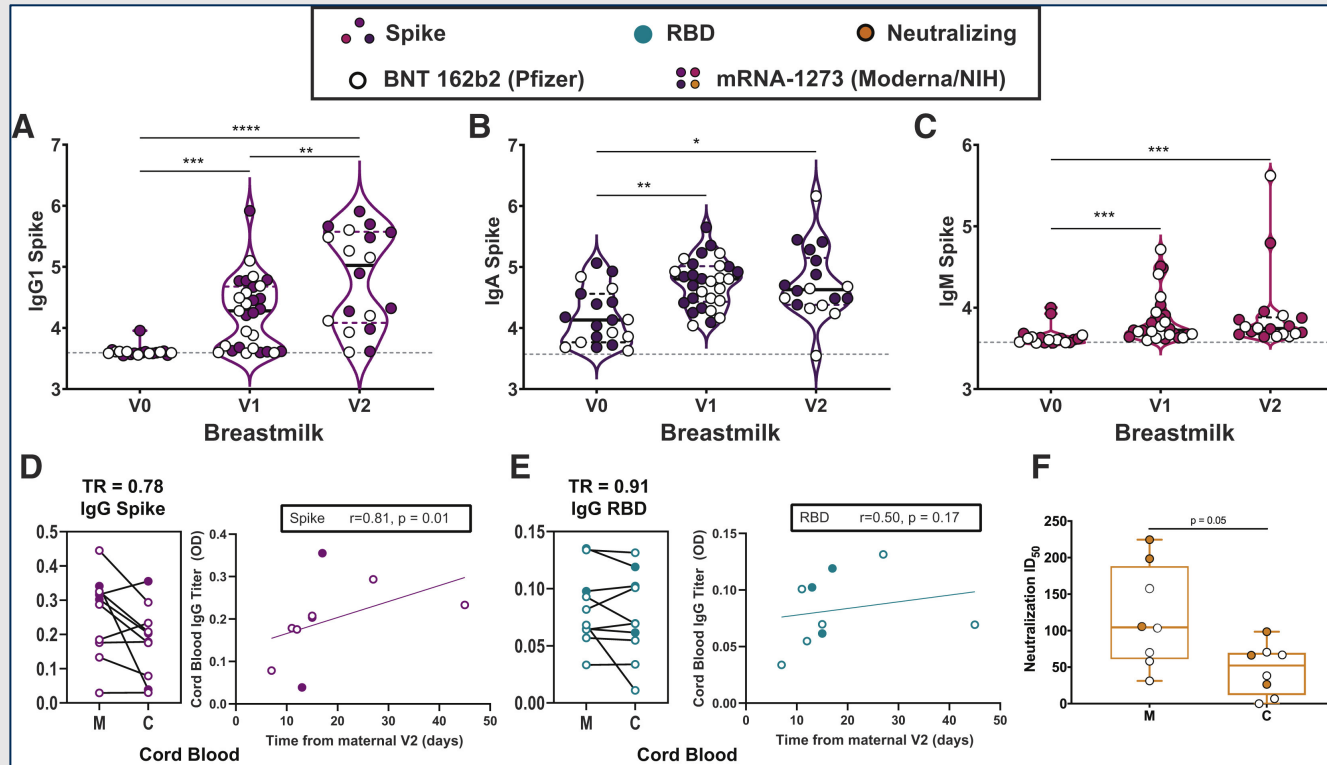
Patient Serum Antibodies to COVID-19



Gray et al AJOG 2021;225(3):303.e1-303.e17

- Present after both natural infection and vaccine
- Pregnant and lactating women had similar response to non-pregnant women
- Antibody response MUCH higher in vaccine vs. natural infection

Umbilical Cord Blood / Breastmilk



- Neutralizing antibodies against the SARS-CoV-2 spike S protein were found in both the umbilical cord blood and breastmilk
- Suggests passive immunity to the fetus/neonate with maternal vaccination

Gray et al AJOG 2021;225(3):303.e1-303.e17

COVID-19 Vaccines and Pregnancy

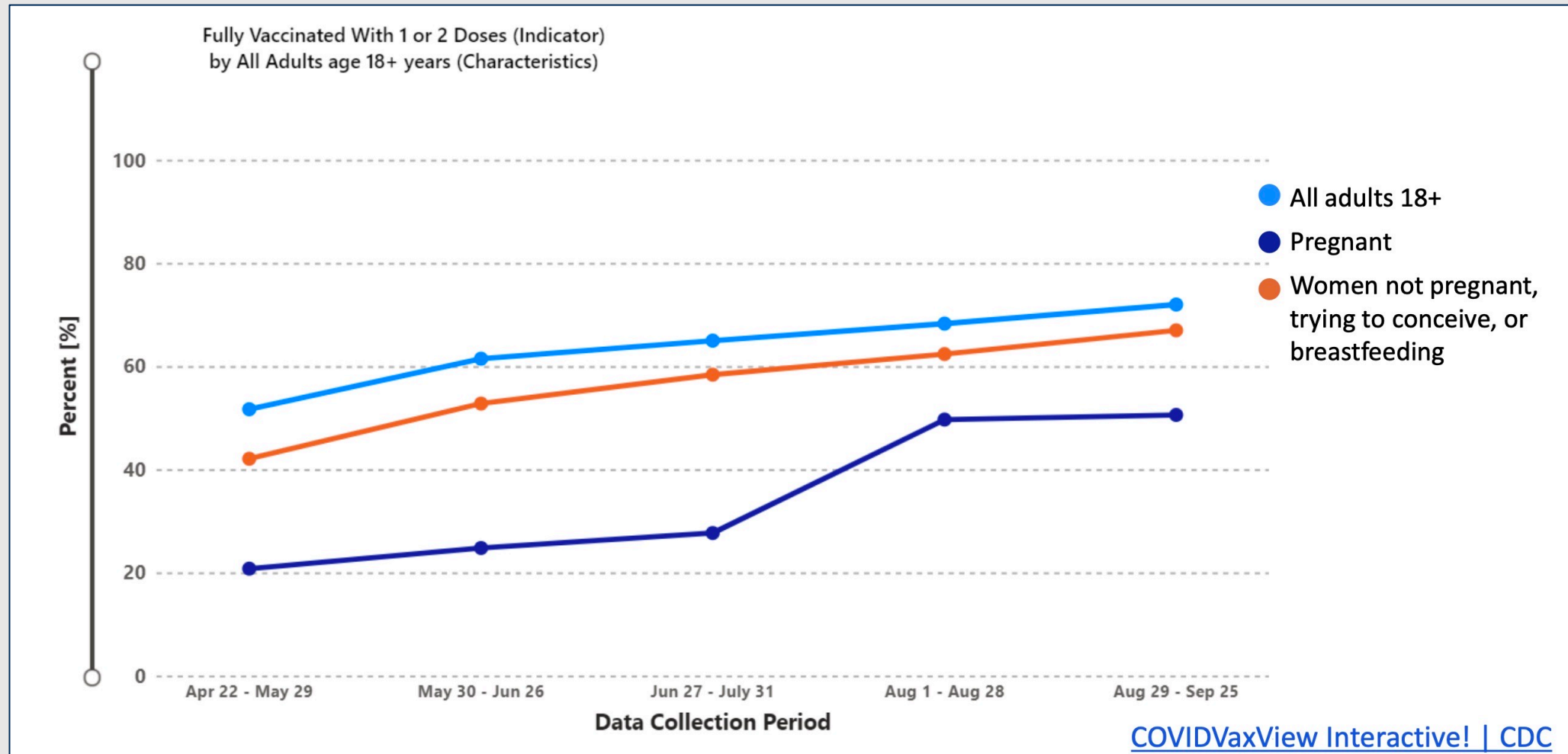
- We now have good and reliable data to suggest that COVID-19 vaccination is safe and effective in pregnancy and lactation
- Data also suggests that vaccination in pregnancy provides some degree of immunity to the fetus/neonate through the placenta and breastmilk



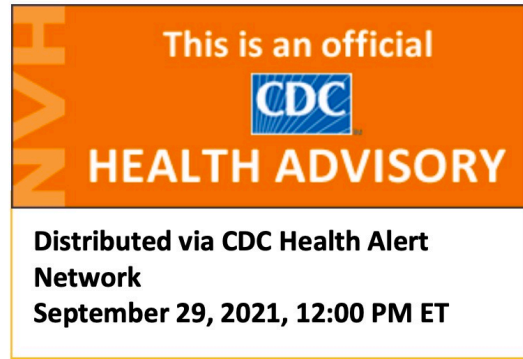
COVID-19 VACCINATION IS SAFE
and protects you, your family, and your community.

COVID-19 Vaccines During Pregnancy – How Are We Doing?

Big Boost After Strong CDC Recommendation for COVID Vaccine During Pregnancy



CDC Health Alert Notice

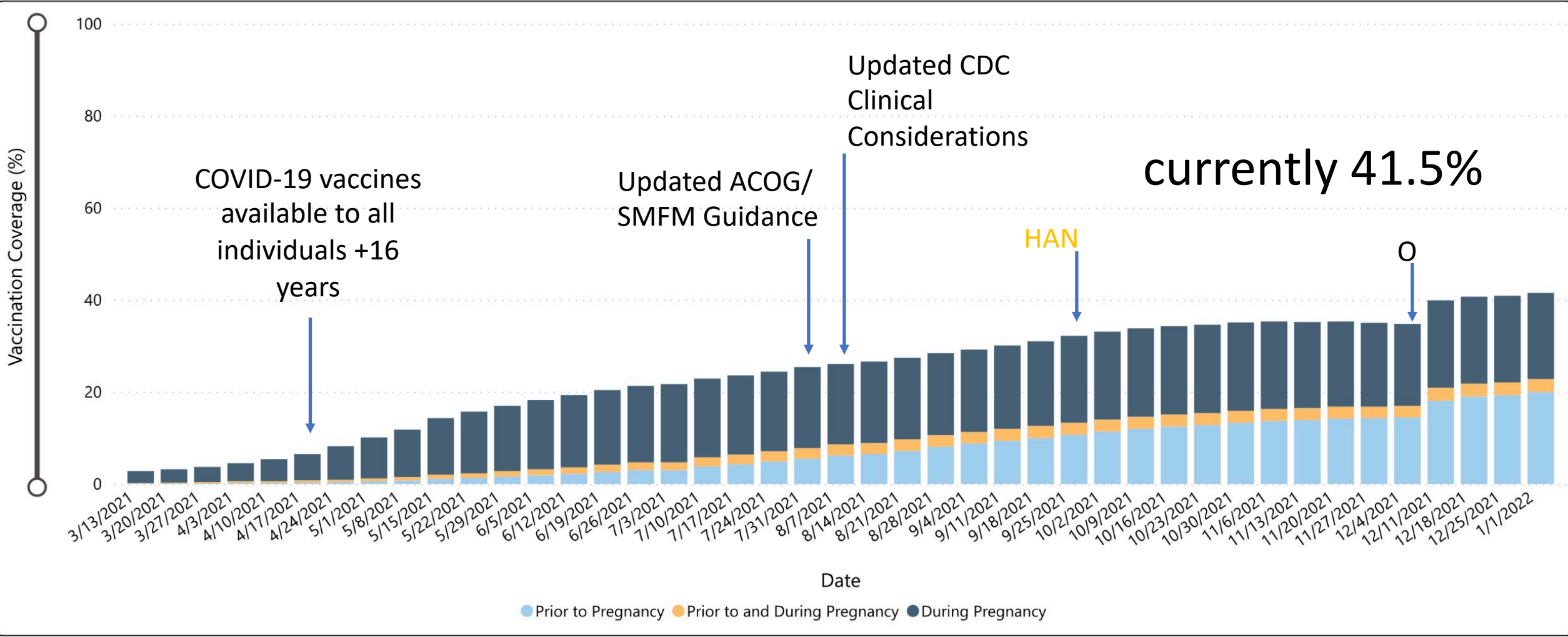


- As of 9/18/21 only 31% of pregnant people were fully vaccinated against COVID-19

COVID-19 Vaccination for Pregnant People to Prevent Serious Illness, Deaths, and Adverse Pregnancy Outcomes from COVID-19

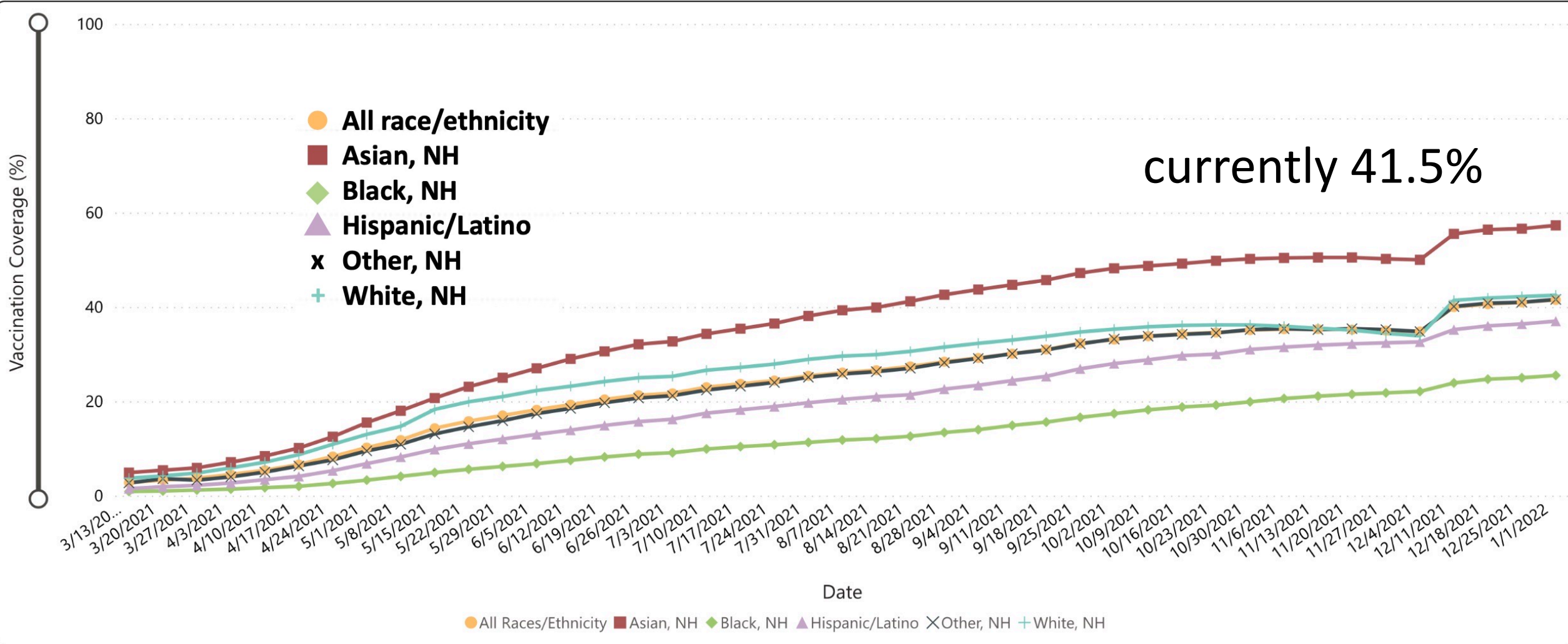
The Centers for Disease Control and Prevention (CDC) recommends urgent action to increase Coronavirus Disease 2019 (COVID-19) vaccination among people who are pregnant, recently pregnant (including those who are lactating), who are trying to become pregnant now, or who might become pregnant in the future. CDC **strongly recommends** COVID-19 vaccination either before or during pregnancy because the benefits of vaccination outweigh known or potential risks.

**Figure 1: Percent of Pregnant People Aged 18–49 Years Fully Vaccinated with COVID-19 vaccine Prior to and during Pregnancy, by Timing of Vaccination and Date Reported to CDC – Vaccine Safety Datalink*, United States
December 14, 2020 – January 1, 2022^**



<https://covid.cdc.gov/covid-data-tracker/#vaccinations-pregnant-women>

**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 – January 1, 2022^**



<https://covid.cdc.gov/covid-data-tracker/#vaccinations-pregnant-women>

COVID-19 Vaccines and Pregnancy

- With the reliable safety and efficacy data regarding COVID-19 vaccines in pregnancy, along with the data supporting increased risk of severe illness and poor pregnancy outcomes with COVID-19 infection during pregnancy, the **low** fully vaccinated rate of **41.5%** of pregnant people is **unacceptable**



Next Steps

Tools and Recommendations



Tips for Health Care Providers

- Lead with listening
- Use patient-centered techniques
- Respond with empathy
- Address misinformation about COVID-19 vaccination by sharing key facts
- Help individuals find their motivation for getting vaccinated
- Wrap up the conversation by encouraging your patients to take at least one action
- Re-engage in conversations during follow up visits



www.cdc.gov/vaccines/covid-19/hcp/engaging-patients.html

Tips for Patients and Health Systems

- Patients
 - Disseminate information and updates
 - Assess reasons for vaccine hesitancy
 - Share personal stories
 - Recruit vaccine champions of diverse backgrounds
- Providers and Health Systems
 - Encourage clinicians to become a vaccine providers in different clinic settings*
 - Provide resources to assist with vaccine discussions
 - Work with hospitals to encourage vaccine availability in triage and postpartum

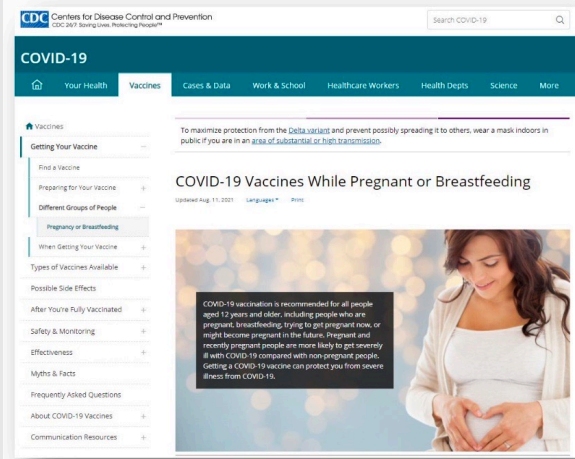


CDC Tools and Resources

CDC Resources

CDC's COVID-19 vaccine tools and resources.

- COVID-19 Vaccination:
<https://www.cdc.gov/vaccines/covid-19/index.html>
- For Healthcare Professionals:
<https://www.cdc.gov/vaccines/covid-19/hcp/index.html>



ACOG Resources



"When my patients ask me about the COVID-19 vaccines, I proudly tell them I got the shots and that I was breastfeeding at the time. In fact, I am still pumping and breastfeeding my baby. Getting the vaccine was the right choice for me."

— **Veronica Maria Pimentel, MD, FACOG**, obstetrician-gynecologist and maternal-fetal medicine specialist (Connecticut)

COVID-19 Vaccines: Tools for Your Practice and Your Patients

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COVID-19

ACOG Tool Kit on Routine Visits and Screenings During the Pandemic

COVID-19 Vaccines: Tools for Your Practice and Your Patients

A Note to Send to Your Patients

How to Become a COVID-19 Vaccinator

Vaccine Boosters During Pregnancy

Conversation Prompts



More than 80% of people say that they would turn to their doctor or to another health care professional who cares for them to actually make a decision about whether or not they should get a vaccine."

— Vice Admiral Vivek H. Murthy, MD, MPH, U.S. Surgeon General, 2021 ACOG Annual Clinical and Scientific Meeting

Obstetrician-gynecologists have the unique responsibility of counseling their patients, including people who are pregnant and lactating, through their COVID-19 vaccination decisions. This guide can help you:

Tips for this Committee

- Women and Children's Health Committee of the State of Connecticut Medical Assistance Program Oversight Council
 - Lobby to collect pregnancy-specific COVID-19 vaccination rates in Connecticut
 - Partner with birthing hospitals and pre-/post-natal care providers to discuss ways to breakdown barriers to pregnant people receiving COVID-19 vaccines (you are all invited to meet with the Connecticut Perinatal Quality Collaborative!)
 - Sponsor focus group discussions with pregnant and lactating people to hear concerns and questions about COVID-19 vaccine safety and efficacy in pregnancy



Thank you for your time

Christopher M. Morosky, MD, MS, FACOG

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- SMFM: Provider Considerations for Engaging in COVID-19 Vaccine Counseling With Pregnant and Lactating Patients available at: https://s3.amazonaws.com/cdn.smfm.org/media/3282/Provider_Considerations_for_Engaging_in_COVID_Vaccination_Considerations_12-20-21_%28final%29.pdf
- CDC Endorses ACIP's Updated COVID-19 Vaccine Recommendations <https://www.cdc.gov/media/releases/2021/s1216-covid-19-vaccines.html>

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- CDC Talking with Patients about COVID-19 Vaccination <https://www.cdc.gov/vaccines/covid-19/hcp/engaging-patients.html>
- CDC COVID-19 Vaccination Clinical & Professional Resources <https://www.cdc.gov/vaccines/covid-19/index.html>
- CDC Vaccine Recipient Education <https://www.cdc.gov/vaccines/covid-19/hcp/index.html>
- ACOG COVID-19 Landing Page <https://www.acog.org/covid-19>