

# Immunizations in Pregnancy

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# Objectives

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Review vaccines recommended in pregnancy

Discuss specific vaccines

- RSV
- COVID-19
- Influenza
- Tdap

Explore maternal attitudes regarding vaccination

Address strategies to improve vaccine adherence

# Vaccines Recommended in Pregnancy

VACCINE*	INDICATED DURING EVERY PREGNANCY	MAY BE GIVEN DURING PREGNANCY IN CERTAIN POPULATIONS	CONTRAINDICATED DURING PREGNANCY	CAN BE INITIATED POSTPARTUM OR WHEN BREASTFEEDING OR BOTH
COVID-19 <sup>1,2</sup> (see footnote for recommendations)				
Inactivated influenza	X <sup>†,2,3</sup>			X <sup>§</sup>
Tetanus toxoid, reduced diphtheria toxoid, and acellular pertussis (Tdap)	X <sup>†,4,5</sup>			X <sup>§</sup>
Pneumococcal vaccines		X <sup>  ,6</sup>		X <sup>  ,6</sup>
Meningococcal conjugate (MenACWY) and meningococcal serogroup B		X <sup>¶,7</sup>		X <sup>¶,7</sup>
Hepatitis A		X <sup>#,8</sup>		X <sup>#,8</sup>
Hepatitis B		X <sup>** ,9,10</sup>		X <sup>** ,9,10</sup>
Human papillomavirus (HPV)**				X <sup>††,11,12</sup>
Measles–mumps–rubella			X <sup>‡‡,13,14</sup>	X <sup>‡‡</sup>
			X <sup>‡‡,13,15,16</sup>	X <sup>‡‡</sup>



RSV, new in 2023

# RSV

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Common cause of lower respiratory tract infection in infants

Leading cause of hospitalization for infants

- 68% of infants are infected in the first year of life and 97% by age 2
- 2-3% of young infants are hospitalized for RSV
- Highest hospitalization rates occur within first months of life and decline with age
- 79% of hospitalized children under 2 years of age had no underlying medical conditions

# RSV and Health Equity

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Higher rates of RSV-associated deaths among non-Hispanic Black children compared to non-Hispanic White children

ICU admission rates among non-Hispanic Black infants <6 months old were 1.2-1.6x higher than non-Hispanic White infants

Hospitalization rates 4-10x higher among Alaska Native and American Indian children under 24 months in specific populations studied

# Maternal RSV Vaccination

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Brand name: Abrysvo

Indicated for pregnant individuals at 32-36wks gestation

Prevents LRTD and severe LRTD from RSV in infants from birth to 6 months

Transplacental transfer of maternal antibodies takes about 14 days from maternal vaccination

- Infants born <34wks are recommended to receive Beyfortus

Protection may begin to wane after 3 months

# Data on Maternal RSV Vaccination

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## Efficacy

- Among 3500 pregnant individuals who received the vaccine compared to 3500 pregnant individuals who received the placebo, the vaccine reduced the risk of severe LRTD by 81.8% within 90 days after birth and 69.4% within 180 days after birth
- Subgroup analysis of those who were vaccinated at 32-36 wks, the vaccine reduced the risk of LRTD by 34.7% and reduced the risk of severe disease by 91.1% in 90 days after birth when compared to placebo. Within 180 days after birth, risk of LRTD was reduced by 57.3% and by 76.5% for severe LRTD.

## Limitations

- No data on efficacy after first dose in subsequent pregnancies
- Safety of additional doses given in subsequent pregnancies
- Awaiting additional data to guide whether additional doses are indicated in subsequent pregnancies

# Maternal RSV Vaccination and Risk of Preterm Birth?

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Numerical imbalance in preterm birth was identified, where preterm birth occurred at 5.7% in vaccinated pregnant people versus 4.7% in those who received placebo

- Only seen in trial participants residing in low- to middle-income countries

Available data insufficient to establish or exclude a causal relationship between vaccination and preterm birth

Advise not vaccinating before 32wks to mitigate the theoretical risk



# Infant Vaccination

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Brand name: Beyfortus

Long-acting monoclonal antibody for the prevention of RSV associated LRTD

Recommended for:

- All infants <8 months during first RSV season
- Infants 8-19 months with high-risk conditions during second RSV season
- Mothers of most infants born outside of RSV season (April- September)

Protection lasts around 5 months

# RSV Vaccination Recommendations

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“Healthcare providers of pregnant people should provide information on both products and consider patient preferences when determining whether to vaccinate the pregnant patient or to not vaccinate and rely on administration of Beyfortus to the infant after birth”

# Maternal or Infant Vaccination

## MATERNAL RSV VACCINE

### Benefits

- Protection immediately after birth
- May be more resistant to virus mutation
- Avoid infant injection

### Risks

- Less protection if fewer antibodies are produced or transferred from mother to baby
- Potential risk of preterm birth

## INFANT RSV VACCINE

### Benefits

- Studies of antibody levels suggest protection may wane more slowly
- Provides antibodies directly versus being dependent on receiving maternal antibodies

### Risks

- Limited availability during 2023-2024 RSV season

# COVID-19

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Pregnant people infected with COVID-19 have an increased risk of ICU admission, need for mechanical ventilation, ECMO, and death compared to non-pregnant people

Associated with increased risk of pregnancy complications like preterm birth, stillbirth, and growth restriction

POC are more likely to have severe illness and die compared to their non-Hispanic White counterparts due to social and structural factors

- Recent data suggest that while disparities in access have narrowed, Black and Latinx populations remain vaccinated at lower rates than others due to differential access

# COVID-19 Vaccination

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Recommended for pregnant individuals who have not been previously vaccinated

Vaccination can occur in any trimester, as soon as possible to maximize maternal and fetal health

Pregnant and lactating people should receive a single dose of the 2023-2024 updated COVID-19 vaccine two months after their last dose

# Barriers to Maternal COVID-19 Vaccination

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Pregnant patients are more cautious about receiving vaccines and have more vaccine related questions



Clinical practices are instituting new efforts for regular or ongoing clinical and staff education about vaccination



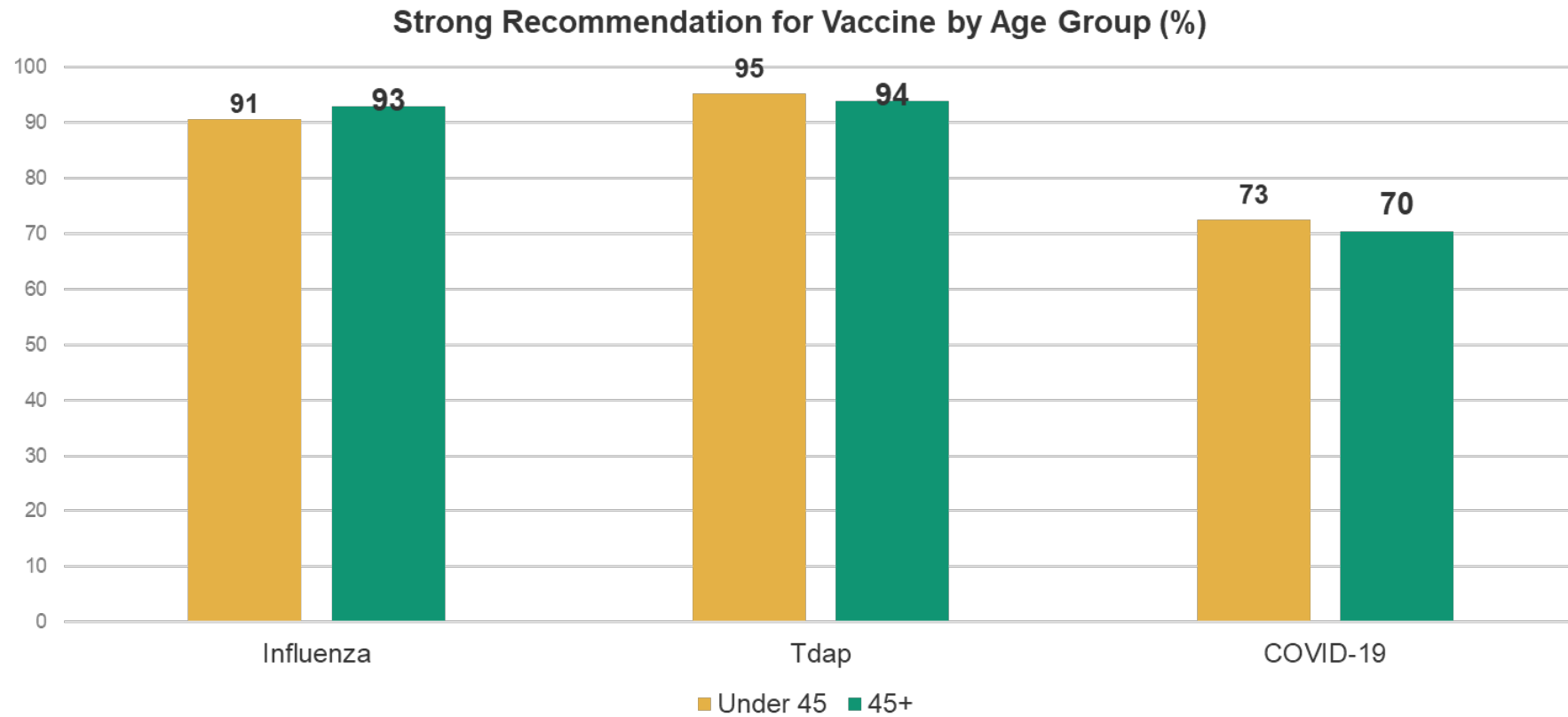
Patients are reporting lack of trust in CDC, government institutions, and health systems/providers around immunizations



Patients are reporting concerns about politicization and polarization of vaccinations and maternal health, in general

# Clinicians Role in COVID-19 Vaccination Rates

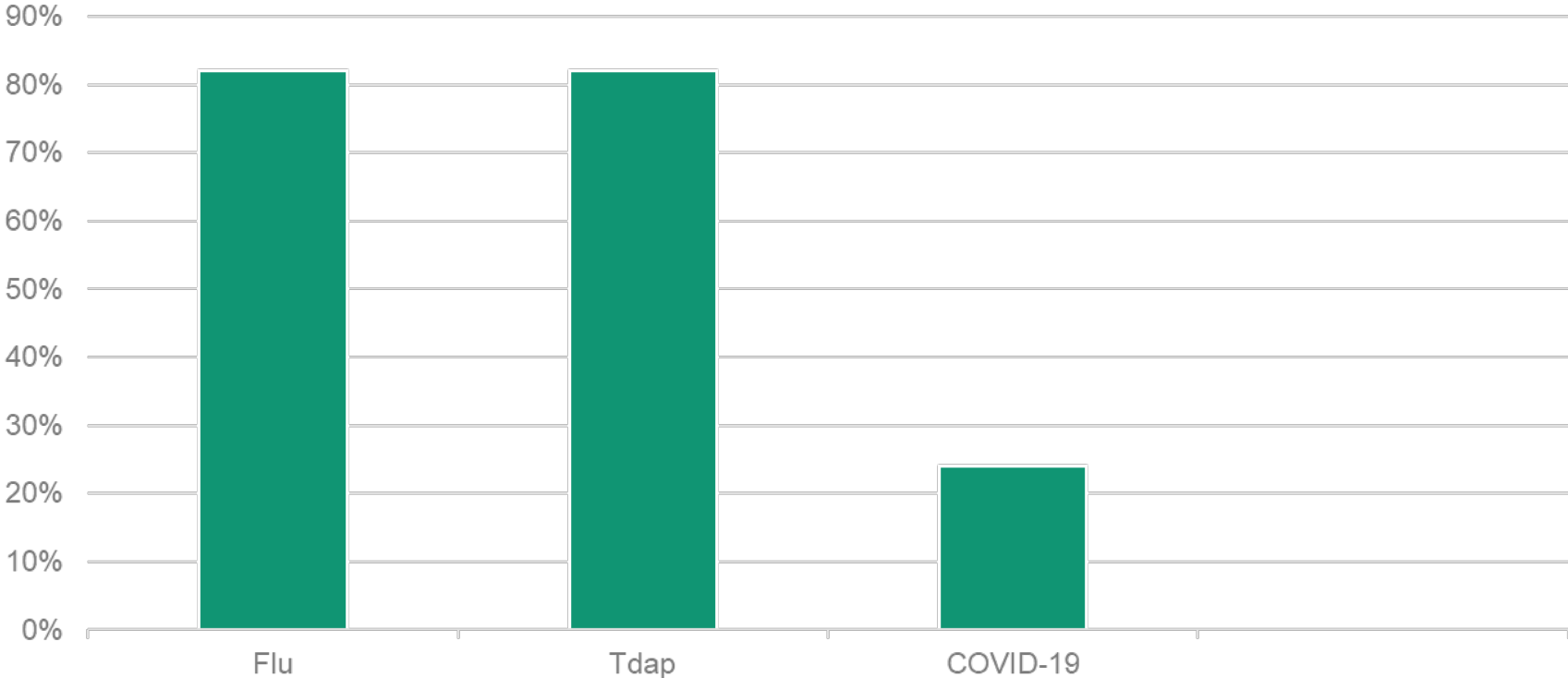
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# Clinicians Role in COVID-19 Vaccination Rates

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Vaccines Administered in ACOG Member Offices





# Counseling on COVID-19 Vaccination

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The vaccine does not cause COVID-19 in pregnant people or their babies

Post-market monitoring studies in pregnancy are ongoing

- To-date no studies have shown increased risk of pregnancy complications like miscarriage, preterm delivery, stillbirth, or birth defects

Vaccination in pregnancy is effective by reducing risk of severe illness or other health effects from COVID-19

- May help prevent stillbirth and preterm delivery

Vaccination in pregnancy builds antibodies that can help protect the baby

- Vaccination can help prevent hospitalization due to COVID-19 in babies younger than 6 months
- Majority of hospitalizations occurred in babies who were born to unvaccinated pregnant individuals

# Influenza

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Influenza in pregnancy can cause severe, life-threatening illness

- Vaccination reduces the risk of hospitalization by 40%

Vaccination during pregnancy transfers antibodies to the fetus, providing protection until babies can be vaccinated at 6 months of age

# Influenza Vaccination

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Pregnant people should receive an inactivated influenza vaccine in every pregnancy

# Pertussis

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Pertussis (whooping cough) can be a deadly infection for infants and children

Most cases occur prior to 2 months of age

- This age group accounts for 69% of pertussis deaths

Infants are eligible for vaccination at 2 months of age

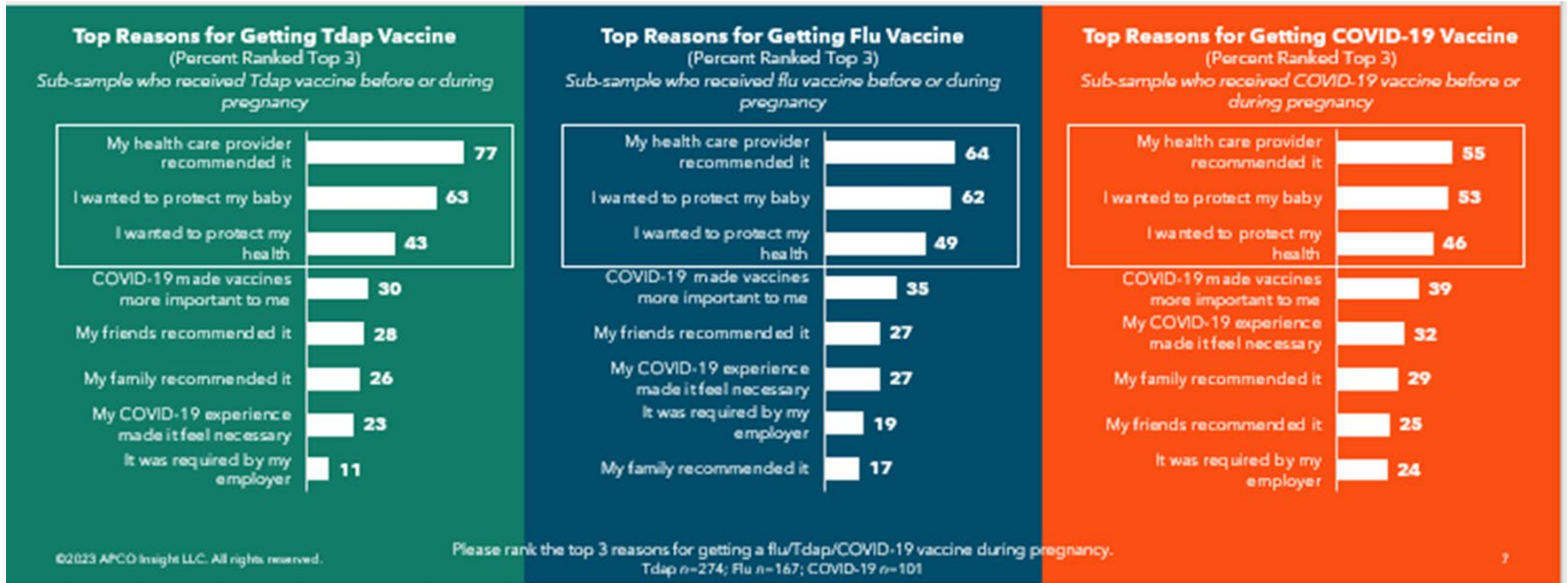
- Best protected if mothers receive tdap vaccination during pregnancy

# Tdap Vaccination

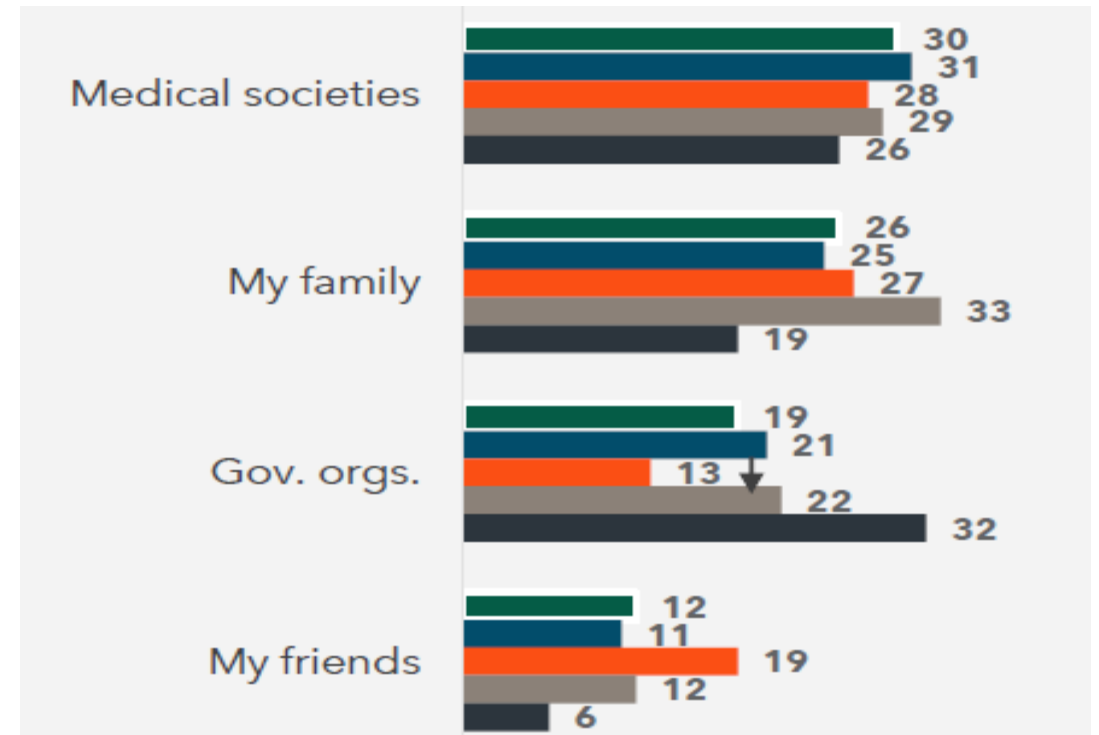
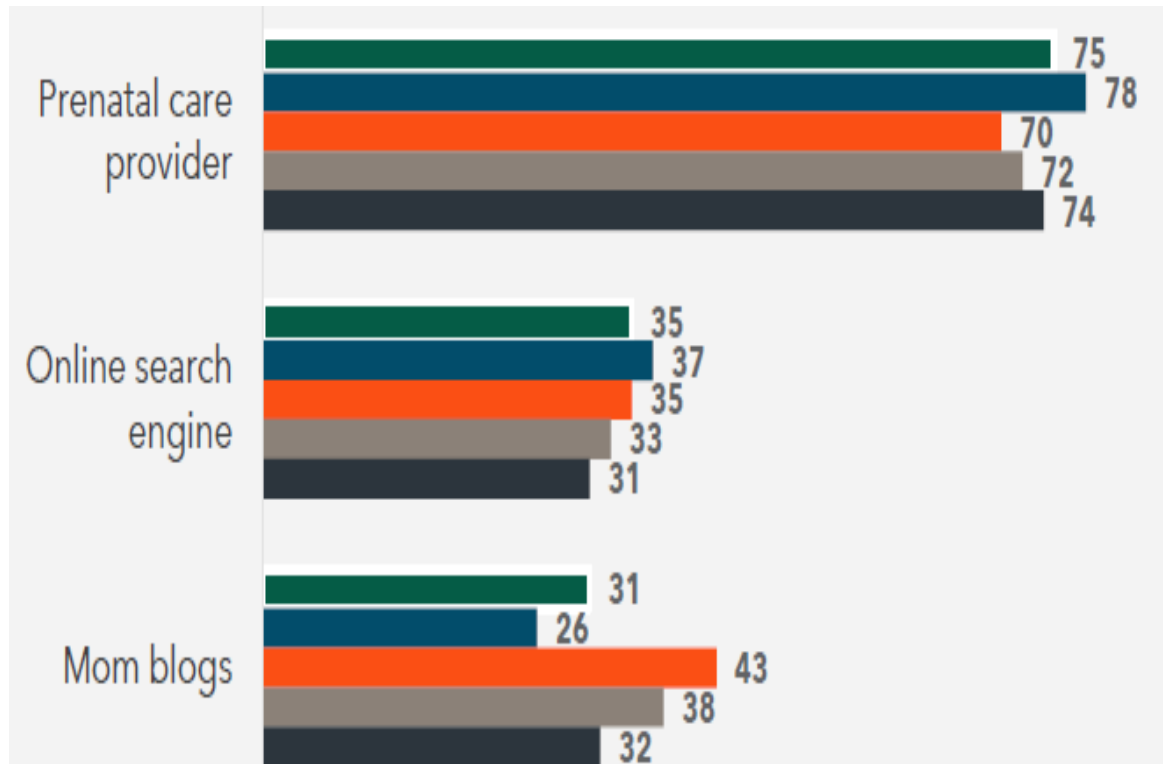
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Recommended for pregnant individuals from 27-36 weeks in each pregnancy

# Factors Influencing Maternal Decisions

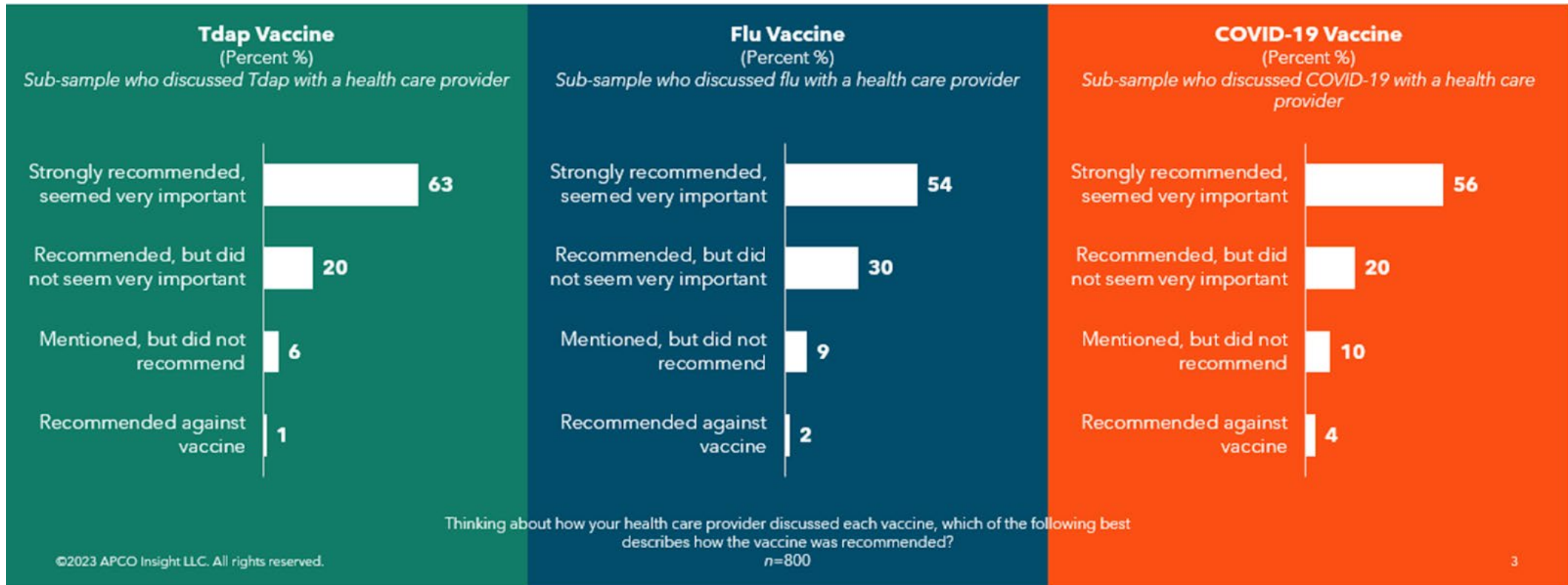


# Preferred Sources of Vaccine Information



■ Total n=900 ■ White n=581 ■ Hispanic/Latino n=200 ■ Black n=120 ■ Other n=65

# Maternal Perceptions of Providers' Recommendations





# Concerns Vary for Individual Vaccines

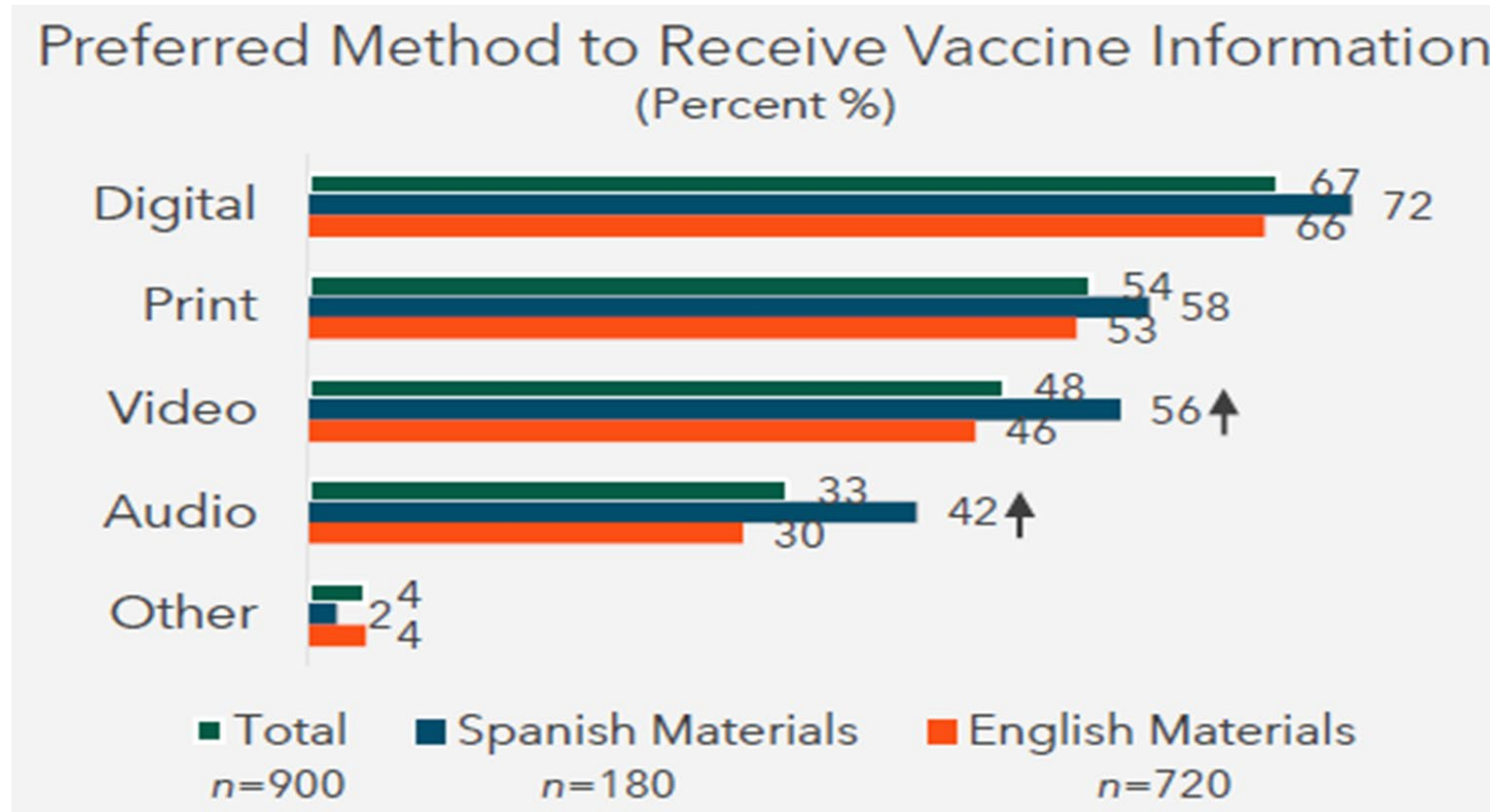
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Tdap has less concerns, despite limited knowledge

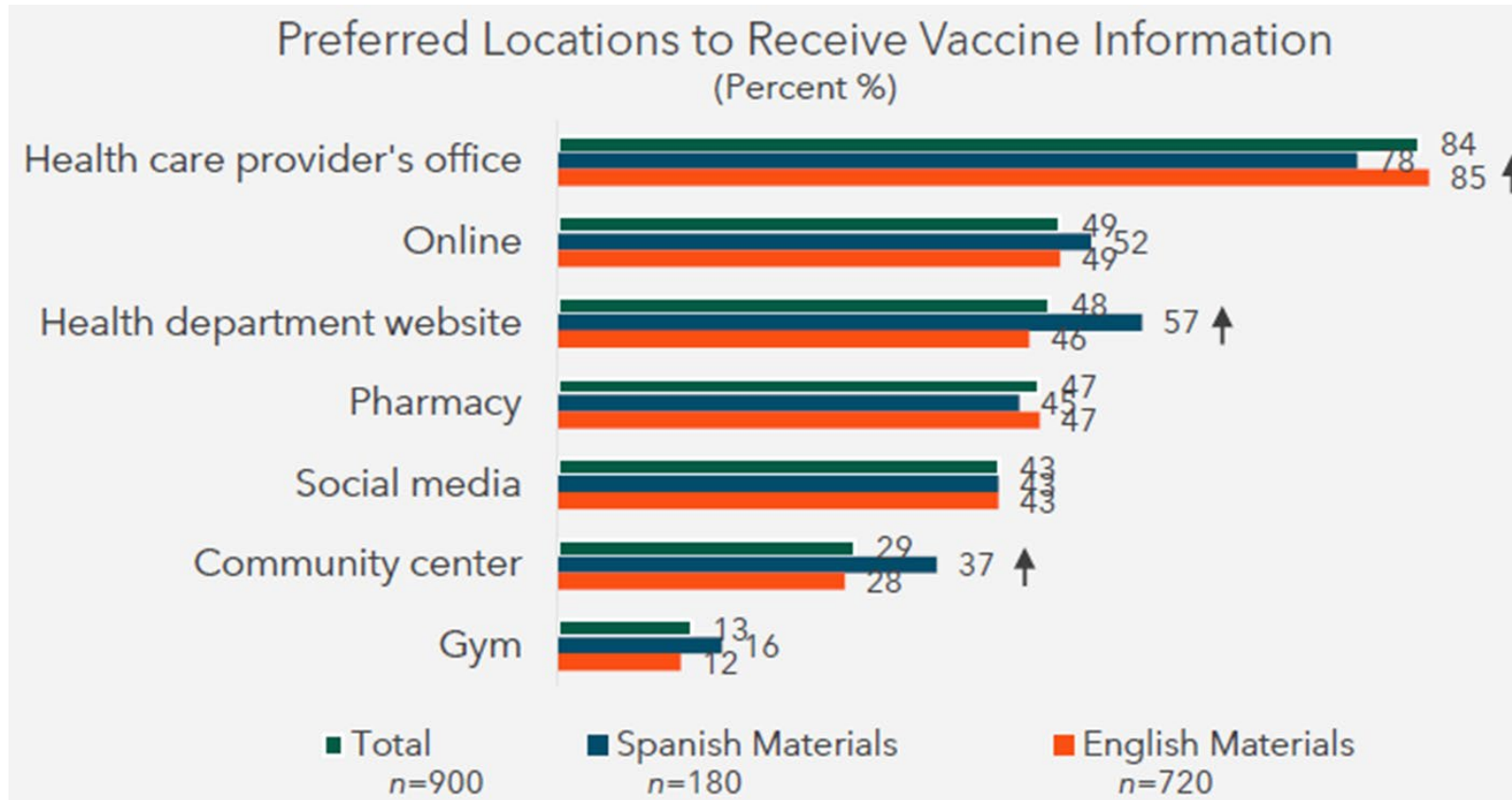
Influenza vaccine concerns stem from personal experience and perceptions about ineffectiveness and increased risk of flu-like illness

COVID-19 vaccination hesitancy more likely to stem from misinformation about serious side effects (fetal effects, infertility, etc.) and distrust around approval process

# Preferred Methods



# Preferred Locations



# To Summarize Patient Preferences

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Provider recommendation is top reason for getting vaccinated

Dialogue with providers and loved ones drive vaccine conversations

The videos and infographics were well received and informative

Digital is a strong medium with print to complement

# Maternal Vaccination Impacts Childhood Vaccination Decisions

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Maternal attitudes are the strongest predictor of whether infants will be vaccinated

Mothers with neutral and negative attitudes had 43 times the odds of no vaccinations for infants

Mothers of unvaccinated infants were more likely to be white, highly educated, exclusively breastfeeding, residing in the Northeast and Western US

First childhood vaccination experience can negatively influence previously positive attitudes

- Increasing vaccine knowledge overtime resulted in positive attitudes

# Strategies to Improve Vaccine Adherence

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Develop standardized processes for assessing, recommending, administering, and documenting vaccination status

- Assess the vaccination status of patients at all clinical encounters
- Utilize public health records
- Identify vaccines patients need, **then clearly recommend needed vaccines**
- Offer needed vaccines or refer to another provider
- Document vaccinations given
- Document decisions about declining and continue to address ongoing questions and offer vaccination at subsequent visits

# Strategies to Improve Vaccine Adherence

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Create a culture of immunization by educating and involving all staff involved

- Delegate responsibilities to a team of staff

Measure vaccination rates of providers' patient panels

If allowed, institute standing orders for indicated immunizations

Explain the difference between RSV, influenza, and COVID19, and the need for different vaccines