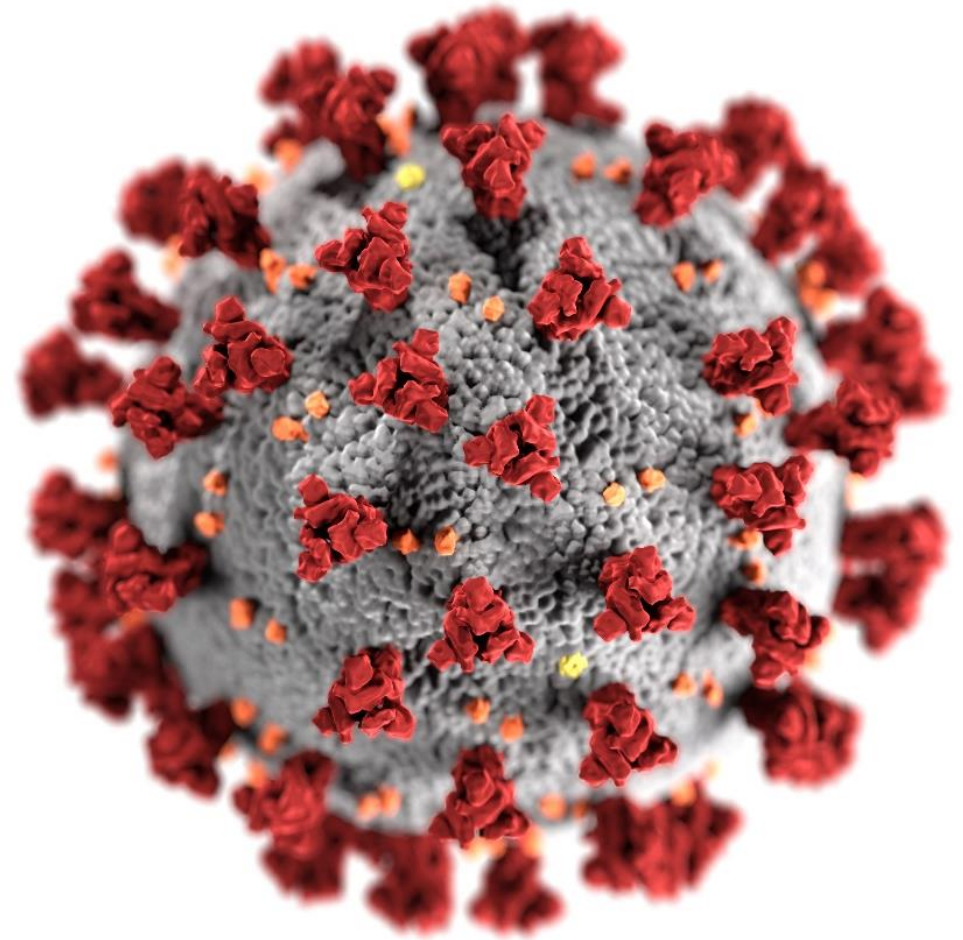


Framework for future doses of COVID-19 vaccine doses and next steps

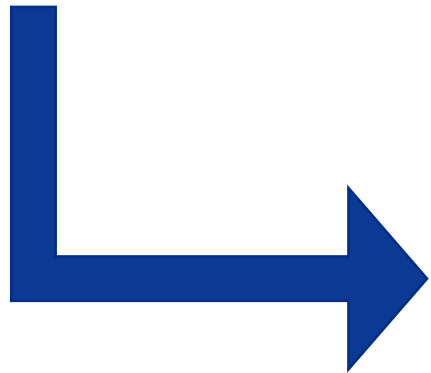
Sara Oliver MD, MSPH
ACIP Meeting
April 20, 2022



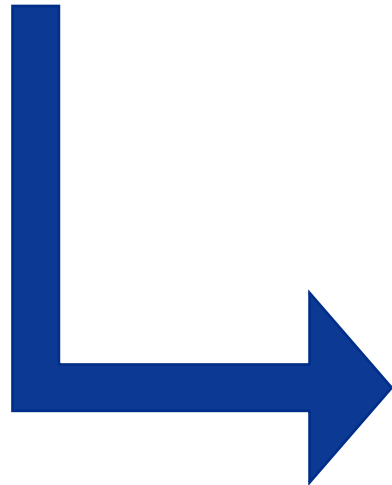
cdc.gov/coronavirus

Future doses of COVID-19 vaccines

What are the **key considerations** for decision making?



What **data** are available for decision making?



Does ACIP **recommend** future doses of COVID-19 vaccines in any populations?

Future doses of COVID-19 vaccines:

Data needed to inform recommendations



Public
Health
Problem

What is the recent COVID-19 epidemiology?

What are the recent COVID-19 **case counts**?

What are the recent COVID-19 **hospitalization rates**?

What is the recent vaccine effectiveness (VE) of
COVID-19 vaccines?

How is VE **waning** over time?

How does VE vary by **severity** of disease?

How is VE impacted by the circulating **variant**?

Future doses of COVID-19 vaccines: Data needed to inform recommendations



Public
Health
Problem

Does the need vary by **population**?

Older adults

Immunocompromised individuals

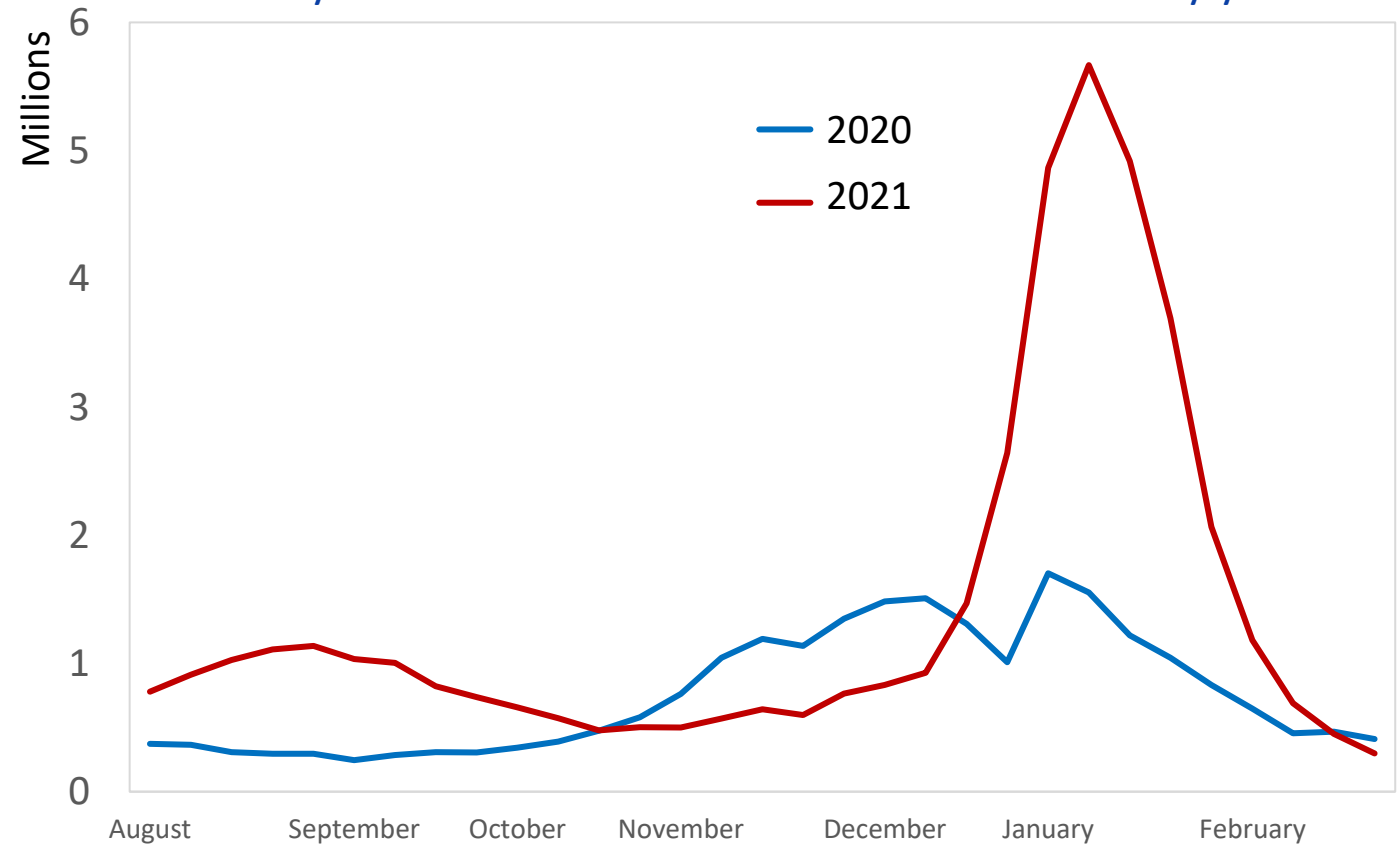
Other vulnerable populations

Future doses of COVID-19 vaccines

Public Health Problem

- COVID-19 epidemiology unpredictable to date, without defined seasonality
- Winter surges noted in the two prior years
 - 2020 surge began in October/November
 - 2021 surge began in December/January
- Likely difficult to predict timing of future surges

Daily Trends in Number of U.S. COVID-19 Cases by year



Future doses of COVID-19 vaccines: Data needed to inform recommendations

Are booster doses of COVID-19 vaccines **safe** and **immunogenic**?

Do COVID-19 vaccines provide a **boost** in neutralizing antibody response?

How do neutralizing antibodies correlate with **clinical protection** from COVID-19?



Benefits
and
Harms

Future doses of COVID-19 vaccines: Data needed to inform recommendations

Will booster doses of COVID-19 vaccines reduce COVID-19 **incidence**, **hospitalization** and/or **mortality**?

Do boosters **improve VE** against the circulating variant?



Benefits
and
Harms

Future doses of COVID-19 vaccines



- Important to define **goal** of future doses of COVID-19 vaccines: prevention of infection/transmission or prevention of severe disease
 - Prevention of infection/transmission **time-limited**: would require timing of vaccine roll-out just prior to any increase in COVID-19 cases
 - Prevention of severe disease more **durable**: would allow more flexibility in timing of future vaccine roll-out
 - Preserving capacity of **healthcare infrastructure** in winter likely important
- Data may support different recommendations for general population and vulnerable populations

Future doses of COVID-19 vaccines

- Vaccines that prompt a **diverse immune response** likely provide better protection against current (and possibly future) SARS-CoV-2 variants
- Considerations for diverse immune response from COVID-19 vaccines:
 - **Time** between recommended doses of COVID-19 vaccines
 - Possibly expanding vaccines to include additional SARS-CoV-2 **variants**
 - Possibly expanding to include different COVID-19 vaccine **platforms** (e.g. protein subunit vaccines)

Future doses of COVID-19 vaccines: Data needed to inform recommendations



Feasibility

What are the **implementation considerations** for future doses of COVID-19 vaccines?

Future doses of COVID-19 vaccines

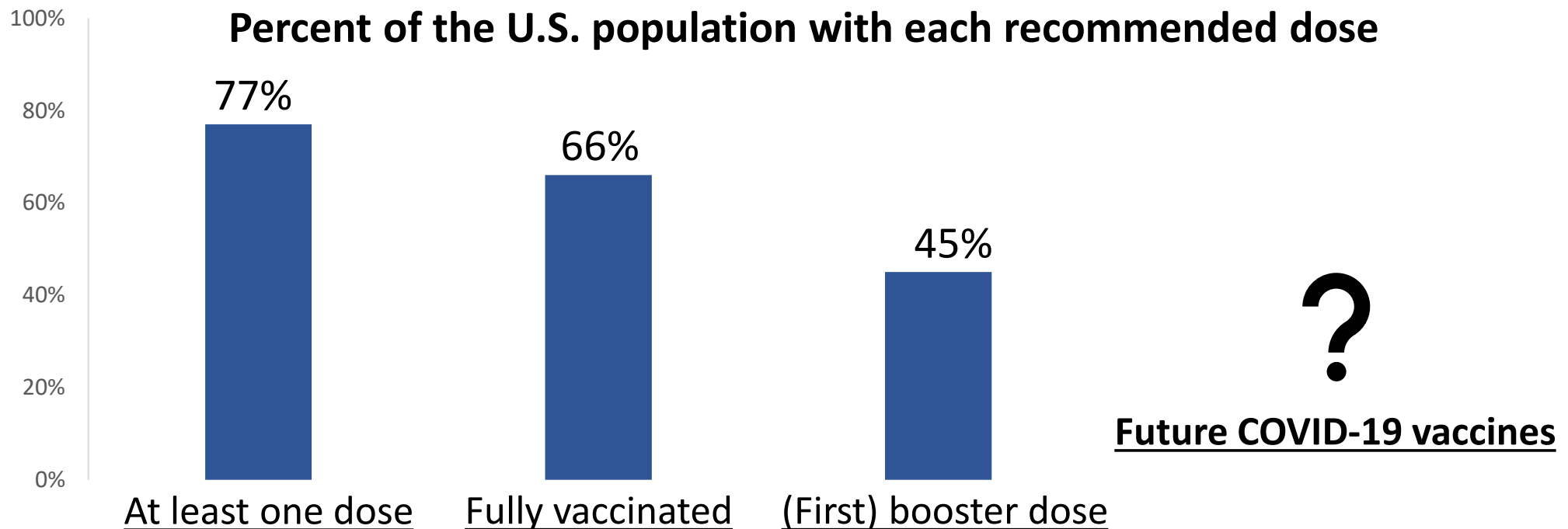


- Important to have COVID-19 vaccine policy that is **simple**
 - Policies that differ by type of vaccine (current and previous doses) are difficult
 - For many vaccines, recommendations are not dependent on type of vaccine received previously
 - Vaccines based on timing (e.g. annual booster) may be easier to communicate than number (e.g. second booster, fourth dose, etc)

Future doses of COVID-19 vaccines



- For every COVID-19 vaccine dose recommended, **uptake declines**
- Important to ensure acceptability and uptake are higher when the public health need for protection from a COVID-19 vaccine is more critical



Summary and Work Group Considerations



Future doses of COVID-19 vaccines: Summary



Initial dose(s) of vaccine:
Prime

Time between the doses can allow for a 'boosting' effect with the immune system

Subsequent doses of vaccine:
'Boost' Effect

B-cells

Antibodies

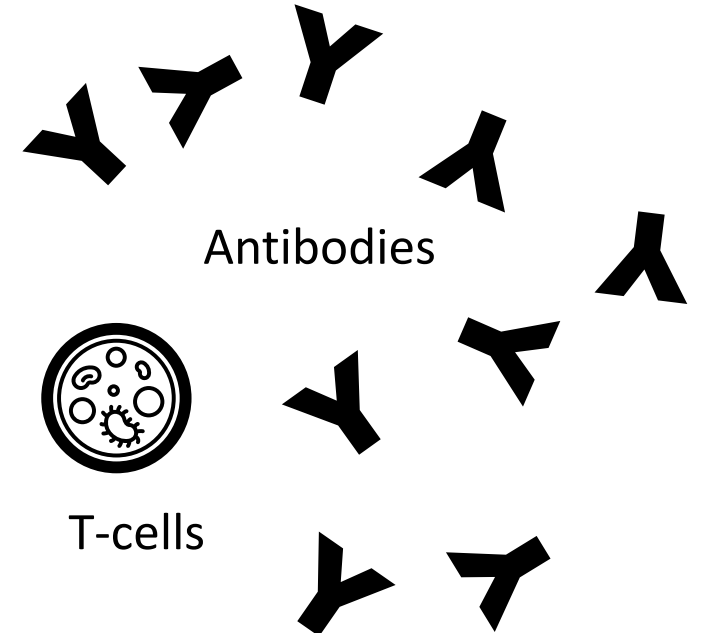
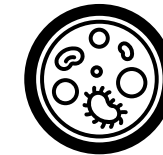
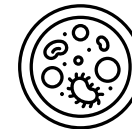
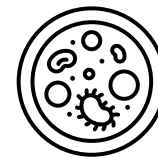
T-cells



B-cells

Antibodies

T-cells



Future doses of COVID-19 vaccines:

Summary

- Policy around future doses require continued evaluation of COVID-19 epidemiology and vaccine effectiveness, including the impact of both **time** and **variants**, and the ability of doses to **improve** protection
- Evolution of COVID-19 vaccines will be important as SARS-CoV-2 virus evolves
 - May include evolution of strains included in the vaccines as well as vaccine platform
- Vaccine policy that is **simple** and **easy to communicate** and implement will be important to optimize uptake
 - Balance simplicity with need to provide optimal protection to vulnerable populations

Future doses of COVID-19 vaccines:

Summary

- Consider the impact of each COVID-19 vaccine recommendation:
 - Time and resources of pharmacies, providers and public health staff
 - Effect on vaccine confidence and uptake
 - Incremental balance of benefits and risks
 - Monitor for any negative impact of repeated boosting on antibody titers

Future doses of COVID-19 vaccines:

Next Steps

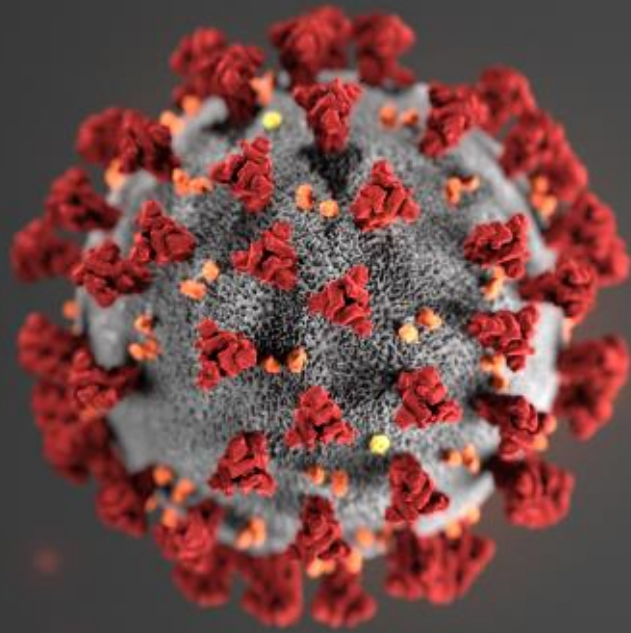
- FDA and CDC will continue to partner for future discussions
- ACIP will continue to review additional data:
 - COVID-19 epidemiology, genomic surveillance and vaccine effectiveness
 - Manufacturer data on safety, immunogenicity and possible efficacy of variant-specific vaccines
- Further discussions around feasibility, implementation, and balance of benefit and risks by age group and population to inform the timing and populations for future doses of COVID-19 vaccines

Questions for ACIP

1. What does ACIP think should be the primary **goal** for future doses of COVID-19 vaccines?
2. What other **data** would be important for ACIP to review?
3. What are other **considerations** for future doses of COVID-19 vaccines?

Acknowledgements

- Megan Wallace
- Monica Godfrey
- Danielle Moulia
- Susan Goldstein
- Mary Chamberland
- Lauren Roper
- Jack Gersten
- Jefferson Jones
- Eddie Shanley
- Stephen Hadler
- Tara Anderson
- Alfonso Hernandez-Romieu
- Adriana Lopez
- Sarah Meyer
- Elisha Hall
- Tamara Pilishvili
- Ruth Link-Gelles
- Vaccine Task Force
- Epi Task Force
- Respiratory Viruses Branch



For more information, contact CDC
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TTY: 1-888-232-6348 www.cdc.gov

The findings and conclusions in this report are those of the authors and do not necessarily represent the official position of the Centers for Disease Control and Prevention.

