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

Sara Oliver MD, MSPH
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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

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

- 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

https://covid.cdc.gov/covid-data-tracker/#trends_dailycases
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?
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?
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

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

Percent of the U.S. population with each recommended dose:

- 77% At least one dose
- 66% Fully vaccinated
- 45% (First) booster dose

Summary and Work Group Considerations
Future doses of COVID-19 vaccines: Summary

Initial dose(s) of vaccine: **Prime**
- B-cells
- Antibodies
- T-cells

Subsequent doses of vaccine: ‘Boost’ Effect
- B-cells
- Antibodies
- T-cells

**Time** between the doses can allow for a ‘boosting’ effect with the immune system.
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?
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