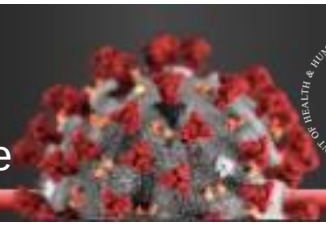
Indian Health Service
National Pharmacy and Therapeutics Committee
COVID-19 Emerging Treatments Update



September 2, 2022

FDA Authorizes Moderna, Pfizer-BioNTech Bivalent COVID-19 Vaccines for Use as a Booster Dose

On August 31, 2022, the U.S. Food and Drug Administration amended the emergency use authorizations (EUAs) of the Moderna COVID-19 Vaccine and the Pfizer-BioNTech COVID-19 Vaccine to authorize bivalent formulations of the vaccines for use as a single booster dose at least two months following primary or booster vaccination. The bivalent vaccines, referred to as "updated boosters," contain two messenger RNA (mRNA) components of SARS-CoV-2 virus, one of the original strain of SARS-CoV-2 and the other one in common between the BA.4 and BA.5 lineages of the omicron variant of SARS-CoV-2.

Eligibility and timing of single booster doses:

- Individuals 18 years of age and older are eligible for a single booster dose of the **Moderna COVID-19 Vaccine, Bivalent** if it has been at least two months since they have completed primary vaccination or have received the most recent booster dose with any authorized or approved monovalent COVID-19 vaccine.
- Individuals 12 years of age and older are eligible for a single booster dose of the **Pfizer-BioNTech COVID-19 Vaccine, Bivalent** if it has been at least 2 months since they have completed primary vaccination or have received the most recent booster dose with any authorized or approved monovalent COVID-19 vaccine.

COVID-19 Bivalent Vaccine Booster Notes:

- The authorized bivalent COVID-19 vaccines, or updated boosters, include an mRNA component of the original strain to provide an immune response that is broadly protective against COVID-19 and an mRNA component in common between the omicron variant BA.4 and BA.5 lineages to provide better protection against COVID-19 caused by the omicron variant.
- The BA.4 and BA.5 lineages of the omicron variant are currently causing most cases of COVID-19 in the U.S. and are predicted to circulate this fall and winter. In June, the agency's Vaccines and Related Biological Products Advisory Committee voted overwhelmingly to include an omicron component in COVID-19 booster vaccines.
- For each bivalent COVID-19 vaccine, the FDA based its decision on the totality of available evidence, including extensive safety and effectiveness data for each of the monovalent mRNA COVID-19 vaccines, safety and immunogenicity data obtained from a clinical study of a bivalent COVID-19 vaccine that contained mRNA from omicron variant BA.1 lineage that is similar to each of the vaccines being authorized, and nonclinical data obtained using a bivalent COVID-19 vaccine that contained mRNA of the original strain and mRNA in common between the BA.4 and BA.5 lineages of the omicron variant.
- Based on the data supporting each of these authorizations, the bivalent COVID-19 vaccines are expected to provide increased protection against the currently circulating omicron variant. Individuals who receive a bivalent COVID-19 vaccine may experience side effects commonly reported by individuals who receive authorized or approved monovalent mRNA COVID-19 vaccines.
- With this FDA authorization, the monovalent mRNA COVID-19 vaccines are not authorized as booster doses for individuals 12 years of age and older. The FDA will work quickly to evaluate future data to support authorization of bivalent COVID-19 boosters for additional age groups.
- With this authorization, the FDA has also revised the EUA of the Moderna COVID-19 Vaccine and the Pfizer-BioNTech COVID-19 Vaccine to remove the use of the monovalent Moderna and Pfizer-BioNTech COVID-19 vaccines for booster administration for individuals ≥18 years of age and ≥12 years of age, respectively. These monovalent vaccines continue to be authorized for use for administration of a primary series for individuals 6 months of age and older as described in the letters of authorization. At this time, the Pfizer-BioNTech COVID-19 Vaccine remains authorized for administration of a single booster dose for individuals 5 through 11 years of age at least five months after completing a primary series of the Pfizer-BioNTech COVID-19 Vaccine.

Data Supporting the Moderna COVID-19 Vaccine, Bivalent Authorization

- To evaluate the effectiveness of a single booster dose of the Moderna COVID-19 Vaccine, Bivalent for individuals ≥18 years of age, the FDA analyzed immune response data among ~600 individuals ≥18 years of age who had previously received a 2-dose primary series and one booster dose of monovalent Moderna COVID-19 Vaccine. These

participants received a second booster dose of either the monovalent Moderna COVID-19 Vaccine or Moderna's investigational bivalent COVID-19 vaccine at least 3 months after the first booster dose. After 28 days, the immune response against BA.1 of the participants who received the bivalent vaccine was better than the immune response of those who had received the monovalent Moderna COVID-19 Vaccine.

- The safety of a single booster dose of the Moderna COVID-19 Vaccine, Bivalent for individuals ≥18 years of age is supported by safety data from a clinical study which evaluated a booster dose of Moderna's investigational bivalent COVID-19 vaccine, safety data from clinical trials which evaluated primary and booster vaccination with the monovalent Moderna COVID-19 Vaccine, and post-marketing data with the monovalent Moderna COVID-19 Vaccine.
- The safety data accrued with the bivalent vaccine and with the monovalent Moderna COVID-19 Vaccine are relevant to the Moderna COVID-19 Vaccine, Bivalent because these vaccines are manufactured using the same process.
- The clinical study that evaluated the safety of a booster dose of the bivalent vaccine included ~800 participants ≥18 years of age who previously received a two dose primary series and one booster dose of the monovalent Moderna COVID-19 Vaccine, and then at least 3 months later, received a second booster dose with either the monovalent Moderna COVID-19 Vaccine or Moderna's investigational bivalent COVID-19 vaccine. Among the study participants who received the bivalent vaccine, the most commonly reported side effects included pain, redness and swelling at the injection site, fatigue, headache, muscle pain, joint pain, chills, swelling of the lymph nodes in the same arm of the injection, nausea/vomiting and fever.

Data Supporting the Pfizer-BioNTech COVID-19 Vaccine, Bivalent Authorization

- To evaluate the effectiveness of a single booster dose of the Pfizer-BioNTech COVID-19 Vaccine, Bivalent for individuals ≥12 years of age, the FDA analyzed immune response data among ~600 adults >55 years of age who had previously received a 2-dose primary series and one booster dose with the monovalent Pfizer-BioNTech COVID-19 Vaccine. These participants received a second booster dose of either the monovalent Pfizer-BioNTech COVID-19 Vaccine or Pfizer-BioNTech's investigational bivalent COVID-19 vaccine (original and omicron BA.1) 4.7 to 13.1 months after the first booster dose. After one month, the immune response against BA.1 of the participants who received the bivalent vaccine was better than the immune response of those who received the monovalent Pfizer-BioNTech COVID-19 Vaccine.
- The safety of a single booster dose of the Pfizer-BioNTech COVID-19 Vaccine, Bivalent for individuals 12 years of age and older is based on safety data from a clinical study which evaluated a booster dose of Pfizer-BioNTech's investigational bivalent COVID-19 vaccine, safety data from clinical trials which evaluated primary and booster vaccination with the monovalent Pfizer-BioNTech COVID-19 Vaccine, and post-marketing safety data with the monovalent Pfizer-BioNTech COVID-19 Vaccine.
- The safety data accrued with the bivalent vaccine and with the monovalent Pfizer-BioNTech COVID-19 Vaccine are relevant to Pfizer-BioNTech COVID 19 Vaccine, Bivalent because these vaccines are manufactured using the same process.
- The clinical study that evaluated the safety of a booster dose of the bivalent vaccine included ~600 participants >55 years of age who had previously received a 2-dose primary series, one booster dose of the monovalent Pfizer-BioNTech COVID-19 Vaccine, and then 4.7 to 13.1 months later, received a second booster dose of either the monovalent Pfizer-BioNTech COVID-19 Vaccine or Pfizer-BioNTech's investigational bivalent COVID-19 vaccine. Among study participants who received the bivalent vaccine, the most commonly reported side effects included pain, redness and swelling at the injection site, fatigue, headache, muscle pain, chills, joint pain, and fever.

COVID-19 Vaccine, Bivalent FACT SHEETS

1. Moderna: Healthcare Providers -or- Recipients and Caregivers
2. Pfizer-BioNTech: Healthcare Providers -or- Recipients and Caregivers

Mandatory Requirements under the Emergency Use Authorization *(all requirements must be met)*

- Use each COVID-19 Vaccine, Bivalent only in authorized patients described in the respective Fact Sheets.
- Communicate to recipients or caregivers, as age appropriate, information consistent with the "Fact Sheet for Recipients and Caregivers" prior to the individual receiving each respective COVID-19 Vaccine, Bivalent.
- Include vaccination information in the local jurisdiction's Immunization Information System or other system.
- Mandatory reporting of the following to the Vaccine Adverse Event Reporting System (VAERS):
  - Vaccine administration errors whether or not associated with an adverse event,
  - Serious adverse events (irrespective of attribution to vaccination),
  - Cases of myocarditis and pericarditis
  - Cases of Multisystem Inflammatory Syndrome (MIS) in adults and children, and
  - Cases of COVID-19 that result in hospitalization or death.
- *Federal, Tribal, and Urban programs are all encouraged to* ***put "IHS" into field #26 of the form.***

References:
1. U.S. Food and Drug Administration. Coronavirus (COVID-19) Update: FDA Authorizes Moderna, Pfizer-BioNTech Bivalent COVID-19 Vaccines for Use as a Booster Dose. Published August 31, 2022.