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FACT SHEET FOR HEALTHCARE PROVIDERS ADMINISTERING VACCINE: EMERGENCY USE AUTHORIZATION OF MODERNA COVID-19 VACCINE (2023-2024 FORMULA), FOR INDIVIDUALS 6 MONTHS THROUGH 11 YEARS OF AGE

HIGHLIGHTS OF EMERGENCY USE AUTHORIZATION (EUA)
These highlights of the EUA do not include all the information needed to use Moderna COVID-19 Vaccine under the EUA. See the FULL FACT SHEET FOR HEALTHCARE PROVIDERS for Moderna COVID-19 Vaccine.

Moderna COVID-19 Vaccine
Suspension for injection, for intramuscular use
2023-2024 Formula
Original EUA Authorized Date: 12/2020
Most Recent EUA Authorized Date: 9/2023

----------RECENT MAJOR CHANGES----------
Dosage and Administration
- Preparation for Administration (2.1) 9/2023
- Dosing and Schedule (2.3) 9/2023

----------EMERGENCY USE AUTHORIZATION----------
The U.S. Food and Drug Administration (FDA) has issued an Emergency Use Authorization (EUA) for the emergency use of Moderna COVID-19 Vaccine (2023-2024 Formula) for active immunization to prevent coronavirus disease 2019 (COVID-19) caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) in individuals 6 months through 11 years of age.

See Full Fact Sheet for Healthcare Providers for the justification for emergency use of Moderna COVID-19 Vaccine (2023-2024 Formula), information on available alternatives, and additional information on COVID-19.

----------DOSAGE AND ADMINISTRATION----------
For intramuscular injection only. (2)

Individuals 6 Months Through 4 Years of Age by Moderna COVID-19 Vaccination Status (2.3)

Number of Previous Doses of Moderna COVID-19 Vaccine(s)[a]	Moderna COVID-19 Vaccine (2023-2024 Formula) Dosing Regimen, Dose and Schedule[b]
0[c]	2 doses,[d] 0.25 mL each Dose 1: month 0 Dose 2: month 1
1	Single Dose, 0.25 mL One month after receipt of a previous dose of Moderna COVID-19 vaccine[a]
≥2	Single dose, 0.25 mL ≥2 months after receipt of the last previous dose of Moderna COVID-19 vaccine[a]

[a] Previous dose(s) of Moderna COVID-19 vaccine(s) refers to Moderna COVID-19 Vaccine (Original monovalent) and Moderna COVID-19 Vaccine, Bivalent (Original and Omicron BA.4/BA.5). These vaccines are no longer authorized for use in the United States.
[b] For individuals with certain kinds of immunocompromise previously vaccinated with a Moderna COVID-19 vaccine, see text following the tables for dosing information.
[c] Not previously vaccinated with any COVID-19 vaccine.
[d] Individuals turning from 4 years to 5 years of age during the vaccination series should receive both doses with Moderna COVID-19 Vaccine (2023-2024 Formula).

Individuals 5 Years Through 11 Years of Age Irrespective of COVID-19 Vaccination Status (2.3)

Moderna COVID-19 Vaccine (2023-2024 Formula) Dosing Regimen, Dose and Schedule[a]
Single dose, 0.25 mL If previously vaccinated, ≥2 months after receipt of the last previous dose of COVID-19 vaccine[a,b]

[a] For individuals with certain kinds of immunocompromise, see text below tables for further dosing information.
[b] COVID-19 vaccine refers to the monovalent COVID-19 vaccines that encode the spike protein of the original SARS-CoV-2 and the bivalent COVID-19 vaccines encoding the spike protein of original SARS-CoV-2 and of the Omicron variant lineages BA.4 and BA.5 that are no longer authorized for use in the United States.

Individuals with Certain Kinds of Immunocompromise

Individuals with certain kinds of immunocompromise 6 months through 11 years of age should complete at least a three-dose series with a COVID-19 vaccine, each dose one month apart. At least 1 dose should be with a COVID-19 vaccine (2023-2024 Formula). Certain kinds of immunocompromise refers to individuals who have undergone solid organ transplantation, or who are diagnosed with conditions that are considered to have an equivalent level of immunocompromise. (2.3)

----------DOSAGE FORMS AND STRENGTHS----------
Moderna COVID-19 Vaccine is a suspension for injection.

A single dose is 0.25 mL. (3)

----------CONTRAINDICATIONS----------
History of a severe allergic reaction (e.g., anaphylaxis) to any component of Moderna COVID-19 Vaccine or following a previous dose of a Moderna COVID-19 vaccine. (4)

----------WARNINGS AND PRECAUTIONS----------
Postmarketing data with authorized or approved mRNA COVID-19 vaccines demonstrate increased risks of myocarditis and pericarditis, particularly within the first week following vaccination. For Moderna COVID-19 Vaccine, the observed risk is highest in males 18 years through 24 years of age. (5.2)

----------ADVERSE REACTIONS----------
Solicited adverse reactions included:
- **6 months through 36 months of age:** Injection site erythema, pain and swelling; axillary (or groin) swelling/tenderness, fever, irritability/crying, loss of appetite and sleepiness.
- **37 months through 11 years of age:** Injection site erythema, pain and swelling; arthralgia, axillary (or groin) swelling/tenderness, chills, fatigue, fever, headache, myalgia and nausea/vomiting. (6.1)

Vaccination providers enrolled in the federal COVID-19 Vaccination Program must report all vaccine administration errors, all serious adverse events, cases of myocarditis, cases of pericarditis, cases of Multisystem Inflammatory Syndrome (MIS), and cases of COVID-19 that result in hospitalization or death following administration of Moderna COVID-19 Vaccine (2023-2024 Formula) to the Vaccine Adverse Event Reporting System (VAERS) by submitting online at https://vaers.hhs.gov/reportevent.html. For further assistance with reporting to VAERS call 1-800-822-7967. To the extent

feasible, report adverse events to ModernaTX, Inc. at 1-866-MODERNA (1-866-663-3762) or provide a copy of the VAERS form to ModernaTX, Inc. (https://report.moderna.convergehealthsafety.com/) (6.3)

See FACT SHEET FOR RECIPIENTS AND CAREGIVERS

TABLE OF CONTENTS*

* Sections or subsections omitted from the EUA are not listed

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FULL FACT SHEET FOR HEALTHCARE PROVIDERS

1 EMERGENCY USE AUTHORIZATION

The U.S. Food and Drug Administration (FDA) has issued an Emergency Use Authorization (EUA) for the emergency use of Moderna COVID-19 Vaccine (2023-2024 Formula) for active immunization to prevent coronavirus disease 2019 (COVID-19) caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) in individuals 6 months through 11 years of age.

Justification for Emergency Use of Vaccines During the COVID-19 Pandemic

There is currently an outbreak of COVID-19 caused by SARS-CoV-2. The Secretary of the Department of Health and Human Services (HHS) has:

- Determined that there is a public health emergency, or a significant potential for a public health emergency related to COVID-19.[1]
- Declared that circumstances exist justifying the authorization of emergency use of drugs and biological products during the COVID-19 pandemic.[2]

An EUA is an FDA authorization for the emergency use of an unapproved product or unapproved use of an approved product (i.e., drug, biological product, or device) in the United States under certain circumstances including, but not limited to, when the Secretary of HHS declares that the use of EUA authority is justified, based on a determination that there is a public health emergency, or a significant potential for a public health emergency, that affects or has a significant potential to affect, national security or the health and security of United States citizens living abroad, and that involves biological agent(s) or a disease or condition that may be attributable to such agent(s). Criteria for issuing an EUA include:

- The biological agent(s) can cause a serious or life-threatening disease or condition;

[1] *See* U.S. Department of Health and Human Services, Determination of a Public Health Emergency and Declaration that Circumstances Exist Justifying Authorizations Pursuant to Section 564(b) of the Federal Food, Drug, and Cosmetic Act, 21 U.S.C. § 360bbb-3. February 4, 2020; https://www.federalregister.gov/documents/2020/02/07/2020-02496/determination-of-public-health-emergency. *See also* U.S. Department of Health and Human Services, Amended Determination of a Public Health Emergency or Significant Potential for a Public Health Emergency Pursuant to Section 564(b) of the Federal Food, Drug, and Cosmetic Act, 21 U.S.C. § 360bbb-3(b). March 15, 2023 ("Amended Determination"); https://www.federalregister.gov/documents/2023/03/20/2023-05609/covid-19-emergency-use-authorization-declaration.

[2] *See* U.S. Department of Health and Human Services, Declaration that Circumstances Exist Justifying Authorizations Pursuant to Section 564(b) of the Federal Food, Drug, and Cosmetic Act, 21 U.S.C. § 360bbb-3, 85 FR 18250 (April 1, 2020); https://www.federalregister.gov/documents/2020/04/01/2020-06905/emergency-use-authorization-declaration. *See also* Amended Determination ("The declarations issued pursuant to section 564(b)(1) of the FD&C Act that circumstances exist justifying the authorization of emergency use of certain in vitro diagnostics, personal respiratory protective devices, other medical devices and drugs and biological products, as set forth in those declarations, and that are based on the February 4, 2020 determination, remain in effect until those declarations are terminated in accordance with section 564 of the FD&C Act.").

- Based on the totality of the available scientific evidence (including data from adequate and well-controlled clinical trials, if available), it is reasonable to believe that:
    - The product may be effective in diagnosing, treating, or preventing the serious or life-threatening disease or condition;
    - The known and potential benefits of the product – when used to diagnose, prevent, or treat such disease or condition – outweigh the known and potential risks of the product, taking into consideration the material threat posed by the biological agent(s); and
- There is no adequate, approved, and available alternative to the product for diagnosing, preventing, or treating the serious or life-threatening disease or condition.

Information Regarding Available Alternative Vaccines for the Prevention of COVID-19 in Individuals 6 Months Through 11 Years of Age

There may be clinical trials or availability under EUA of other COVID-19 vaccines, including vaccines that contain or encode the spike protein of the Omicron variant XBB.1.5 of SARS-CoV-2.

For information on clinical studies of Moderna COVID-19 Vaccine and other vaccines for the prevention of COVID-19, see www.clinicaltrials.gov.

2 DOSAGE AND ADMINISTRATION

For intramuscular injection only.

2.1 Preparation for Administration

- Moderna COVID-19 Vaccine single dose vials contain a frozen suspension that does not contain a preservative and must be thawed prior to administration.
- Thaw each vial before use following the instructions below.

Thaw in Refrigerator	Thaw at Room Temperature
Thaw between 2°C to 8°C (36°F to 46°F) for 45 minutes. Let each vial stand at room temperature for 15 minutes before administering.	Alternatively, thaw between 15°C to 25°C (59°F to 77°F) for 15 minutes.

- After thawing, do not refreeze.
- Swirl vial gently after thawing and between each withdrawal. **Do not shake.** Do not dilute the vaccine.
- Parenteral drug products should be inspected visually for particulate matter and discoloration prior to administration, whenever solution and container permit.
- Moderna COVID-19 Vaccine is a white to off-white suspension. It may contain white or translucent product-related particulates. Do not administer if vaccine is discolored or contains other particulate matter.
- Each single dose vial contains one dose of 0.25 mL for ages 6 months through 11 years.

Discard vial after single use.

2.2 Administration

Administer Moderna COVID-19 Vaccine intramuscularly.

2.3 Dose and Schedule

Individuals 6 Months Through 4 Years of Age by Moderna COVID-19 Vaccination Status

Number of Previous Doses of Moderna COVID-19 Vaccine(s)[a]	Moderna COVID-19 Vaccine (2023-2024 Formula) Dosing Regimen, Dose and Schedule[b]
0[c]	2 doses,[d] 0.25 mL each Dose 1: month 0 Dose 2: month 1
1	Single Dose, 0.25 mL One month after receipt of a previous dose of Moderna COVID-19 vaccine[a]
≥2	Single dose, 0.25 mL ≥2 months after receipt of the last previous dose of Moderna COVID-19 vaccine[a]

[a] Previous dose(s) of Moderna COVID-19 vaccine(s) refers to Moderna COVID-19 Vaccine (Original monovalent) and Moderna COVID-19 Vaccine, Bivalent (Original and Omicron BA.4/BA.5). These vaccines are no longer authorized for use in the United States.
[b] For individuals with certain kinds of immunocompromise previously vaccinated with a Moderna COVID-19 vaccine, see text following the tables for dosing information.
[c] Not previously vaccinated with any COVID-19 vaccine.
[d] Individuals turning from 4 years to 5 years of age during the vaccination series should receive both doses with Moderna COVID-19 Vaccine (2023-2024 Formula).

Individuals 5 Years Through 11 Years of Age Irrespective of COVID-19 Vaccination Status

Moderna COVID-19 Vaccine (2023-2024 Formula) Dosing Regimen, Dose and Schedule[a]
Single dose, 0.25 mL If previously vaccinated, ≥2 months after receipt of the last previous dose of COVID-19 vaccine[a,b]

[a] For individuals with certain kinds of immunocompromise, see text following tables for dosing information.
[b] COVID-19 vaccine refers to the monovalent COVID-19 vaccines (original) and the bivalent COVID-19 vaccines (Original and Omicron BA.4/BA.5). These vaccines are no longer authorized for use in the United States.

Individuals 6 Months through 11 Years of Age with Certain Kinds of Immunocompromise

Individuals 6 months through 11 years of age with certain kinds of immunocompromise[3] should complete at least a three-dose series with a COVID-19 vaccine, each dose one month apart.[4] At least 1 dose should be with a COVID-19 vaccine (2023-2024 Formula).

- If previously not vaccinated, complete the three-dose series with Moderna COVID-19 Vaccine (2023-2024 Formula).
- If previously vaccinated with one or two dose(s) of Moderna COVID-19 Vaccine (Original monovalent) and/or the Moderna COVID-19 Vaccine, Bivalent, complete the remaining dose(s) in the three-dose series with Moderna COVID-19 Vaccine (2023-2024 Formula).
- If previously vaccinated with three or more doses, administer a single dose of Moderna COVID-19 Vaccine (2023-2024 Formula) at least two months following the last previous dose.[5,6]

An additional dose of Moderna COVID-19 Vaccine (2023-2024 Formula) may be administered at least 2 months following the last dose of a COVID-19 vaccine (2023-2024 Formula).[7,8] Additional doses of Moderna COVID-19 Vaccine (2023-2024 Formula) may be administered at the discretion of the healthcare provider, taking into consideration the individual's clinical circumstances. The timing of the additional doses may be based on the individual's clinical circumstances.

3 DOSAGE FORMS AND STRENGTHS

Moderna COVID-19 Vaccine is a suspension for injection.

A single dose is 0.25 mL.

4 CONTRAINDICATIONS

Do not administer Moderna COVID-19 Vaccine to individuals with a history of a severe allergic reaction (e.g., anaphylaxis) to any component of Moderna COVID-19 Vaccine *[see Description*

[3] Certain kinds of immunocompromise refers to individuals who have undergone solid organ transplantation, or who are diagnosed with conditions that are considered to have an equivalent level of immunocompromise.
[4] COVID-19 vaccine, each dose of the three-doses series given one month apart, refers to Moderna COVID-19 vaccines. Individuals turning from 11 to 12 years of age during the vaccination series may complete the series with doses of Moderna COVID-19 Vaccine (2023-2024 Formula).
[5] For immunocompromised individuals 6 months through 4 years of age, the last previous dose refers to the last dose of Moderna COVID-19 Vaccine (Original monovalent) or Moderna COVID-19 Vaccine, Bivalent which are no longer authorized for use in the U.S.
[6] For immunocompromised individuals 5 years through 11 years of age, the last previous dose refers to the last dose of a COVID-19 vaccine (Original monovalent) or bivalent COVID-19 vaccine which are no longer authorized for use in the U.S.
[7] For immunocompromised individuals 6 months through 4 years of age, the last dose of a COVID-19 vaccine (2023-2024 Formula) refers to a dose with Moderna COVID-19 Vaccine (2023-2024 Formula).
[8] For immunocompromised individuals 5 years through 11 years of age, the last dose of a COVID-19 vaccine (2023-2024 Formula) refers to a dose with Pfizer-BioNTech COVID-19 Vaccine (2023-2024 Formula) or Moderna COVID-19 Vaccine (2023-2024 Formula).

(11)] or to individuals who had a severe allergic reaction (e.g., anaphylaxis) following a previous dose of a Moderna COVID-19 vaccine.

5 WARNINGS AND PRECAUTIONS

5.1 Management of Acute Allergic Reactions

Appropriate medical treatment to manage immediate allergic reactions must be immediately available in the event an acute anaphylactic reaction occurs following administration of Moderna COVID-19 Vaccine.

Monitor Moderna COVID-19 Vaccine recipients for the occurrence of immediate adverse reactions according to the Centers for Disease Control and Prevention (CDC) guidelines (https://www.cdc.gov/vaccines/covid-19/clinical-considerations/managing-anaphylaxis.html).

5.2 Myocarditis and Pericarditis

Postmarketing data with authorized or approved mRNA COVID-19 vaccines demonstrate increased risks of myocarditis and pericarditis, particularly within the first week following vaccination. For Moderna COVID-19 Vaccine, the observed risk is highest in males 18 years through 24 years of age. Although some cases required intensive care support, available data from short-term follow-up suggest that most individuals have had resolution of symptoms with conservative management. Information is not yet available about potential long-term sequelae.

The CDC has published considerations related to myocarditis and pericarditis after vaccination, including for vaccination of individuals with a history of myocarditis or pericarditis (https://www.cdc.gov/vaccines/covid-19/clinical-considerations/myocarditis.html).

5.3 Syncope

Syncope (fainting) may occur in association with administration of injectable vaccines. Procedures should be in place to avoid injury from fainting.

5.4 Altered Immunocompetence

Immunocompromised persons, including individuals receiving immunosuppressive therapy, may have a diminished response to Moderna COVID-19 Vaccine.

5.5 Limitations of Vaccine Effectiveness

Moderna COVID-19 Vaccine may not protect all vaccine recipients.

6 ADVERSE REACTIONS

In clinical studies contributing to the safety assessment of Moderna COVID-19 Vaccine (2023-2024 Formula), participants received a 2-dose series one month apart (referred to as primary series) and subsequent doses referred to as booster doses, as described in Table 1 below.

Table 1: Clinical Studies

Study	Age	Dosing Regimen	Vaccine Recipients
Study 1 (NCT04470427)	18 years of age and older	Primary Series: 2 doses (100 mcg mRNA per dose) of Moderna COVID-19 Vaccine (Original Monovalent)[a] 1 month apart	15,184
Study 2 (NCT04405076)	18 years of age and older	First Booster Dose: Single dose (50 mcg mRNA) of Moderna COVID-19 Vaccine (Original Monovalent)	171
Study 3 (NCT04649151)	12 years through 17 years of age	Primary Series: 2 doses (100 mcg mRNA per dose) of Moderna COVID-19 Vaccine (Original Monovalent) 1 month apart	2,486
		First Booster Dose: Single dose (50 mcg mRNA) of Moderna COVID-19 Vaccine (Original Monovalent)	1,405
Study 4 (NCT04796896)	6 years through 11 years of age	Primary Series: 2 doses (50 mcg mRNA per dose) of Moderna COVID-19 Vaccine (Original Monovalent) 1 month apart	3,007
		First Booster Dose: Single dose (25 mcg mRNA) of Moderna COVID-19 Vaccine (Original Monovalent)	1,294
	6 months through 5 years of age	Primary Series: 2 doses (25 mcg mRNA per dose) of Moderna COVID-19 Vaccine (Original Monovalent) 1 month apart	4,792
		First Booster Dose: Single dose (10 mcg mRNA) of Moderna COVID-19 Vaccine (Original Monovalent)	145
Study 5 (NCT04927065)	18 years of age and older	Second Booster Dose: Single dose (50 mcg mRNA) of bivalent vaccine (Original and Omicron BA.1)[b]	437

[a] Vaccine encoding the viral spike (S) glycoprotein of SARS-CoV-2 Wuhan-Hu 1 strain (Original)
[b] Vaccine encoding the viral spike (S) glycoprotein of SARS-CoV-2 Wuhan-Hu 1 strain (Original) and Omicron variant lineage BA.1 (Omicron BA.1), not authorized or approved in the U.S.

The safety data accrued with the Moderna COVID-19 Vaccine (Original monovalent, no longer authorized for use in the U.S.), Moderna's bivalent COVID-19 vaccine (Original and Omicron BA.1) [not authorized or approved in the U.S., hereafter referred to as bivalent vaccine (Original and Omicron BA.1)] and Moderna COVID-19 Vaccine, Bivalent (Original and Omicron BA.4/BA.5) (no longer authorized for use in the U.S.) are relevant to Moderna COVID-19 Vaccine (2023-2024 Formula) because these vaccines are manufactured using the same process.

6.1 Clinical Trials Experience

Because clinical trials are conducted under widely varying conditions, adverse reaction rates

observed in the clinical trials of a vaccine cannot be directly compared with rates in the clinical trials of another vaccine and may not reflect the rates observed in practice.

Moderna COVID-19 Vaccine (Original Monovalent) Administered as a Two-Dose Primary Series

Participants 18 Years of Age and Older

The safety of Moderna COVID-19 Vaccine was evaluated in an ongoing Phase 3 clinical trial with multiple parts. The randomized, placebo-controlled, observer-blind phase of the trial was conducted in the United States involving 30,346 participants 18 years of age and older who received at least one dose of Moderna COVID-19 Vaccine (100 mcg mRNA; n=15,184) or placebo (n=15,162) (Study 1, NCT04470427). Upon issuance of the Emergency Use Authorization (December 18, 2020) for Moderna COVID-19 Vaccine, participants were unblinded in a phased manner over a period of months to offer placebo participants Moderna COVID-19 Vaccine. The median duration of follow-up for safety after the second injection during the blinded phase was 4 months. The median duration of follow up for safety after the second injection including both the blinded phase and the open-label phase was 6 months.

In Study 1, the median age of the population was 52 years (range 18-95); 75.2% of participants were 18 years through 64 years of age and 24.8% were 65 years of age and older. Overall, 52.6% of the participants were male, 47.4% were female, 20.5% were Hispanic or Latino, 79.2% were White, 10.2% were African American, 4.6% were Asian, 0.8% were American Indian or Alaska Native, 0.2% were Native Hawaiian or Pacific Islander, 2.0% were other races, and 2.1% were Multiracial. Demographic characteristics were similar between participants who received Moderna COVID-19 Vaccine and those who received placebo.

Unsolicited Adverse Events

Participants were monitored for unsolicited adverse events for 28 days following each dose. Serious adverse events and medically attended adverse events will be recorded for the entire study duration (2 years). Among the 30,346 participants who had received at least 1 dose of vaccine (N=15,184) or placebo (N=15,162), unsolicited adverse events that occurred within 28 days following any vaccination were reported by 31.3% of participants (n=4,752) who received Moderna COVID-19 Vaccine and 28.6% of participants (n=4,338) who received placebo.

During the 28-day follow-up period following any dose, lymphadenopathy-related events were reported by 1.7% of vaccine recipients and 0.8% of placebo recipients. These events included lymphadenopathy, lymphadenitis, lymph node pain, vaccination-site lymphadenopathy, injection-site lymphadenopathy, and axillary mass. This imbalance is consistent with the imbalance observed for solicited axillary swelling/tenderness at the injected arm.

During the 7-day follow-up period of any vaccination, hypersensitivity events of injection site rash or injection site urticaria, likely related to vaccination, were reported by 6 participants in the Moderna COVID-19 Vaccine group and none in the placebo group. Delayed injection site reactions that began >7 days after vaccination were reported in 1.4% of vaccine recipients and

0.7% of placebo recipients. Delayed injection site reactions included pain, erythema, and swelling and are likely related to vaccination.

In the blinded portion of the study, there were 8 reports of facial paralysis (including Bell's palsy) in the Moderna COVID-19 Vaccine group, and 3 in the placebo group. In the 28-day follow-up period there were two cases of facial paralysis in the Moderna COVID-19 Vaccine group, which occurred on 8 and 22 days, respectively, after vaccination, and one in the placebo group, which occurred 17 days after vaccination. Currently available information on facial paralysis is insufficient to determine a causal relationship with the vaccine.

In the blinded portion of the study, there were 50 reports of herpes zoster in the Moderna COVID-19 Vaccine group, and 23 in the placebo group. In the 28-day period after any vaccination, there were 22 cases of herpes zoster in the Moderna COVID-19 Vaccine group, and 15 in the placebo group. Currently available information on herpes zoster infection is insufficient to determine a causal relationship with the vaccine.

There were no other notable patterns or numerical imbalances between treatment groups for specific categories of adverse events (including other neurologic, neuro-inflammatory, and thrombotic events) that would suggest a causal relationship to Moderna COVID-19 Vaccine.

Serious Adverse Events

During the blinded phase of the study, serious adverse events were reported by 1.8% (n=268) of participants who received Moderna COVID-19 Vaccine and 1.9% (n=292) of participants who received placebo.

There were three serious adverse events of angioedema/facial swelling in the vaccine group in recipients with a history of injection of dermatological fillers. The onset of swelling was reported 1-2 days after the second dose and was likely related to vaccination.

There were no other notable patterns or imbalances between treatment groups for specific categories of serious adverse events (including neurologic, neuro-inflammatory, and thrombotic events) that would suggest a causal relationship to Moderna COVID-19 Vaccine.

Participants 12 Years Through 17 Years of Age

The safety of Moderna COVID-19 Vaccine was evaluated in an ongoing Phase 3 clinical trial with multiple parts. The randomized, placebo-controlled, observer-blind clinical trial was conducted in the United States involving 3,726 participants 12 years through 17 years of age who received at least one dose of Moderna COVID-19 Vaccine (100 mcg mRNA; n=2,486) or placebo (n=1,240) (Study 3, NCT04649151). Participants started to enter an open-label, observational phase after May 10, 2021. After October 1, 2021, cases of potential myocarditis and/or pericarditis that were identified by the investigator or Applicant were adjudicated by an independent Cardiac Event Adjudication Committee (CEAC) to determine if they met the CDC definition of confirmed or probable myocarditis and/or pericarditis. A safety analysis was conducted in participants who received Moderna COVID-19 Vaccine (n=2,486) with a cut-off

date of January 31, 2022. In these analyses, the median duration of follow-up including both the blinded and open-label phases was 312 days after Dose 2 and 95.7% of study participants had at least 6 months of follow-up after Dose 2.

Overall, 51.4% were male, 48.6% were female, 11.6% were Hispanic or Latino, 83.8% were White, 3.4% were African American, 6.0% were Asian, 0.5% were American Indian or Alaska Native, <0.1% were Native Hawaiian or Pacific Islander, 1.0% were other races, and 4.5% were Multiracial. Demographic characteristics were similar among participants who received Moderna COVID-19 Vaccine and those who received placebo.

Unsolicited Adverse Events

Participants were monitored for unsolicited adverse events for 28 days following each dose. Serious adverse events and medically attended adverse events were recorded for the entire study duration. Among the 3,726 participants who had received at least 1 dose of vaccine (n=2,486) or placebo (n=1,240), unsolicited adverse events that occurred within 28 days following any vaccination were reported by 23.4% of participants (n=582) who received Moderna COVID-19 Vaccine and 19.1% of participants (n=237) who received placebo.

In the open-label portion of the study, a 14-year-old male experienced probable myocarditis with onset of symptoms 1 day after Dose 2 of Moderna COVID-19 Vaccine. Symptoms resolved after 8 days and no sequelae were observed at 5 months. This event was considered related to Moderna COVID-19 Vaccine and was subsequently adjudicated by the CEAC as probable myocarditis. There were no cases of myocarditis among placebo recipients.

During the 28-day follow-up period following any dose, lymphadenopathy-related events were reported by 6.0% of vaccine recipients and 0.6% of placebo recipients. These events included lymphadenopathy, vaccination-site lymphadenopathy, and injection-site lymphadenopathy which were plausibly related to vaccination. This imbalance is consistent with the imbalance observed for solicited axillary swelling/tenderness in the injected arm.

During the 28-day follow-up period following any dose, hypersensitivity events of injection site rash or injection site urticaria, likely related to vaccination, were reported by 0.3% of participants in the Moderna COVID-19 Vaccine group and <0.1% in the placebo group. Delayed injection site reactions that began >7 days after vaccination were reported in 1.5% of vaccine recipients and in <0.1% of placebo recipients. Delayed injection site reactions included pain, erythema, and swelling and are likely related to vaccination.

There were no other notable patterns or numerical imbalances between treatment groups for specific categories of adverse events (including other neurologic, neuro-inflammatory, and thrombotic events) that would suggest a causal relationship to Moderna COVID-19 Vaccine.

Serious Adverse Events

During the blinded portion of the study, serious adverse events were reported by 0.4% (n=9) of participants who received Moderna COVID-19 Vaccine and 0.2% (n=3) of participants who

received placebo. In the open-label phase, an additional 12 Moderna COVID-19 Vaccine recipients reported serious adverse events. There were no serious adverse events considered causally related to the vaccine.

There were no notable patterns or imbalances between treatment groups for specific categories of serious adverse events (including neurologic, neuro-inflammatory, and thrombotic events) that would suggest a causal relationship to Moderna COVID-19 Vaccine.

Participants 6 Years Through 11 Years of Age

Study 4 (NCT04796896) is a Phase 2/3 clinical trial with multiple parts. The study included a randomized, placebo-controlled, observer-blind clinical trial component conducted in the United States and Canada. Safety data for Moderna COVID-19 Vaccine from the blinded portion of Study 3 included data in 4,002 participants 6 years through 11 years of age who received at least one dose of Moderna COVID-19 Vaccine (50 mcg mRNA; n=3,007) or placebo (n=995). As of the data cutoff date of November 10, 2021, the median duration of blinded follow-up for safety was 51 days after Dose 2, and 1,284 participants had been followed for at least 2 months after Dose 2 (vaccine=1,006, placebo=218).

Demographic characteristics in Study 4 were similar among participants who received Moderna COVID-19 Vaccine and those who received placebo. Overall, 50.8% were male, 49.2% were female, 18.5% were Hispanic or Latino, 65.6% were White, 10.0% were African American, 9.9% were Asian, 0.4% were American Indian or Alaska Native, <0.1% were Native Hawaiian or Pacific Islander, 2.1% were other races, and 10.6% were Multiracial.

Solicited Adverse Reactions

Local and systemic adverse reactions and use of antipyretic medication were solicited in an electronic diary for 7 days following each injection (i.e., day of vaccination and the next 6 days) among participants receiving Moderna COVID-19 Vaccine (n=3,006) and participants receiving placebo (n=994) with at least 1 documented dose. Events that persisted for more than 7 days were followed until resolution.

The reported number and percentage of the solicited local and systemic adverse reactions in participants 6 years through 11 years of age by dose in Study 4 are presented in Table 2.

Table 2: Number and Percentage of Participants With Solicited Local and Systemic Adverse Reactions Starting Within 7 Days* After Each Dose in Participants 6 Years Through 11 Years (Solicited Safety Set, Dose 1 and Dose 2)†

	Moderna COVID-19 Vaccine		Placebo[a]	
	Dose 1 (N=3,004) n (%)	**Dose 2** (N=2,988) n (%)	**Dose 1** (N=993) n (%)	**Dose 2** (N=969) n (%)
Local Adverse Reactions				
Pain	2,796 (93.1)	2,832 (94.8)	465 (46.8)	480 (49.5)
Pain, Grade 3[b]	28 (0.9)	81 (2.7)	0 (0)	2 (0.2)
Axillary swelling/tenderness	465 (15.5)	537 (18.0)	84 (8.5)	65 (6.7)
Axillary swelling/tenderness, Grade 3[b]	3 (<0.1)	3 (0.1)	1 (0.1)	2 (0.2)
Swelling (hardness) ≥25 mm	354 (11.8)	507 (17.0)	12 (1.2)	12 (1.2)
Swelling (hardness), Grade 3: >100 mm	19 (0.6)	20 (0.7)	1 (0.1)	0 (0)
Erythema (redness) ≥25 mm	349 (11.6)	559 (18.7)	13 (1.3)	10 (1.0)
Erythema (redness), Grade 3: >100 mm	16 (0.5)	33 (1.1)	1 (0.1)	1 (0.1)
Systemic Adverse Reactions				
Fatigue	1,298 (43.2)	1,925 (64.5)	334 (33.6)	335 (34.6)
Fatigue, Grade 3[c]	31 (1.0)	191 (6.4)	8 (0.8)	8 (0.8)
Headache	938 (31.2)	1,622 (54.3)	306 (30.8)	275 (28.4)
Headache, Grade 3[c]	18 (0.6)	119 (4.0)	4 (0.4)	8 (0.8)
Myalgia	438 (14.6)	843 (28.2)	96 (9.7)	105 (10.8)
Myalgia, Grade 3[c]	11 (0.4)	71 (2.4)	1 (0.1)	1 (0.1)
Arthralgia	260 (8.7)	482 (16.1)	75 (7.6)	84 (8.7)
Arthralgia, Grade 3[c]	3 (<0.1)	25 (0.8)	1 (0.1)	0 (0)
Chills	309 (10.3)	904 (30.3)	67 (6.7)	74 (7.6)
Chills, Grade 3[d]	3 (<0.1)	19 (0.6)	0 (0)	0 (0)
Nausea/vomiting	325 (10.8)	716 (24.0)	107 (10.8)	97 (10.0)
Nausea/vomiting, Grade 3[b]	5 (0.2)	19 (0.6)	0 (0)	0 (0)

	Moderna COVID-19 Vaccine		Placebo[a]	
	Dose 1 (N=3,004) n (%)	**Dose 2** (N=2,988) n (%)	**Dose 1** (N=993) n (%)	**Dose 2** (N=969) n (%)
Fever ≥38.0°C / >100.4°F	99 (3.3)	714 (23.9)	15 (1.5)	19 (2.0)
Fever, Grade 3: 39.0° - 40.0°C / 102.1° - 104.0°F	17 (0.6)	115 (3.8)	2 (0.2)	2 (0.2)
Use of antipyretic or pain medication	730 (24.3)	1,423 (47.6)	95 (9.6)	93 (9.6)

* 7 days included day of vaccination and the subsequent 6 days. Events and use of antipyretic or pain medication were collected in the electronic diary (e-diary).
† No Grade 4 adverse reactions were reported.
[a] Placebo was a saline solution.
[b] Grade 3 pain, axillary swelling/tenderness, nausea/vomiting: Defined as prevents daily activity.
[c] Grade 3 fatigue, headache, myalgia, arthralgia: Defined as significant; prevents daily activity.
[d] Grade 3 chills: Defined as prevents daily activity and requires medical intervention.

Solicited local and systemic adverse reactions reported following administration of Moderna COVID-19 Vaccine had a median duration of 2 to 3 days.

An assessment of reactogenicity among participants with evidence of prior SARS-CoV-2 infection (immunologic or virologic evidence of prior SARS-CoV-2 infection [defined as positive RT-PCR test and/or positive Elecsys immunoassay result at Day 1]) compared to those with no evidence of infection at baseline (negative RT-PCR test and negative Elecsys immunoassay result at Day 1) was conducted. In ages 6 years through 11 years, 8.6% of participants (vaccine=257, placebo=87) had evidence of prior SARS-CoV-2 infection at baseline. Table 3 presents the number and percentage of the solicited local and systemic adverse reactions in Moderna COVID-19 Vaccine participants starting within 7 days after each dose by SARS-CoV-2 status.

Table 3: Number and Percentage of Participants 6 Years Through 11 Years Who Received Vaccine With Solicited Local and Systemic Adverse Reactions Starting Within 7 Days* After Each Dose by SARS-CoV-2 Status (Solicited Safety Set, Dose 1 and Dose 2)†

	Baseline SARS-CoV-2 Positive		Baseline SARS-CoV-2 Negative	
	Dose 1 (N=257) n (%)	**Dose 2** (N= 255) n (%)	**Dose 1** (N=2,700) n (%)	**Dose 2** (N=2,686) n (%)
Local Adverse Reactions				
Pain	234 (91.1)	240 (94.1)	2,522 (93.4)	2,547 (94.8)
Pain, Grade 3[a]	3 (1.2)	8 (3.1)	23 (0.9)	72 (2.7)
Axillary swelling/tenderness	63 (24.5)	48 (18.8)	394 (14.6)	474 (17.6)

	Baseline SARS-CoV-2 Positive		Baseline SARS-CoV-2 Negative	
	Dose 1 (N=257) n (%)	**Dose 2** (N= 255) n (%)	**Dose 1** (N=2,700) n (%)	**Dose 2** (N=2,686) n (%)
Axillary swelling/tenderness, Grade 3[a]	1 (0.4)	0 (0)	2 (<0.1)	3 (0.1)
Swelling (hardness) ≥25 mm	29 (11.3)	29 (11.4)	317 (11.7)	468 (17.4)
Swelling (hardness), Grade 3: >100 mm	1 (0.4)	2 (0.8)	17 (0.6)	18 (0.7)
Erythema (redness) ≥25 mm	26 (10.1)	34 (13.3)	317 (11.7)	518 (19.3)
Erythema (redness), Grade 3: >100 mm	0 (0)	1 (0.4)	15 (0.6)	32 (1.2)
Systemic Adverse Reactions				
Fatigue	129 (50.2)	145 (56.9)	1,145 (42.4)	1,744 (65.0)
Fatigue, Grade 3[b]	11 (4.3)	14 (5.5)	20 (0.7)	169 (6.3)
Headache	127 (49.4)	134 (52.5)	796 (29.5)	1,458 (54.3)
Headache, Grade 3[b]	8 (3.1)	11 (4.3)	10 (0.4)	103 (3.8)
Myalgia	63 (24.5)	75 (29.4)	367 (13.6)	747 (27.8)
Myalgia, Grade 3[b]	2 (0.8)	3 (1.2)	9 (0.3)	63 (2.3)
Arthralgia	33 (12.8)	43 (16.9)	224 (8.3)	427 (15.9)
Arthralgia, Grade 3[b]	0 (0)	1 (0.4)	3 (0.1)	22 (0.8)
Chills	51 (19.8)	68 (26.7)	251 (9.3)	815 (30.4)
Chills, Grade 3[c]	1 (0.4)	1 (0.4)	2 (<0.1)	17 (0.6)
Nausea/vomiting	36 (14.0)	54 (21.2)	281 (10.4)	646 (24.1)
Nausea/vomiting, Grade 3[a]	1 (0.4)	0 (0)	4 (0.1)	18 (0.7)
Fever ≥38.0°C / >100.4°F	42 (16.3)	61 (23.9)	55 (2.0)	635 (23.6)
Fever, Grade 3: 39.0° - 40.0°C / 102.1° - 104.0°F	5 (1.9)	6 (2.4)	12 (0.4)	108 (4.0)

* 7 days included day of vaccination and the subsequent 6 days. Events were collected in the electronic diary (e-diary).

† No Grade 4 adverse reactions were reported.

[a] Grade 3 pain, axillary swelling/tenderness, nausea/vomiting: Defined as prevents daily activity.

[b] Grade 3 fatigue, headache, myalgia, arthralgia: Defined as significant; prevents daily activity.

[c] Grade 3 chills: Defined as prevents daily activity and requires medical intervention.

Unsolicited Adverse Events

Participants were monitored for unsolicited adverse events for up to 28 days following each dose. Serious adverse events and medically attended adverse events will be recorded for the entire study duration. As of November 10, 2021, among participants who had received at least 1 dose of vaccine or placebo (vaccine=3,007, placebo=995), unsolicited adverse events that occurred within 28 days following each vaccination were reported by 29.6% of participants (n=891) who received Moderna COVID-19 Vaccine and 25.1% of participants (n=250) who received placebo. In these analyses, 98.6% of study participants had at least 28 days of follow-up after Dose 2.

During the 28-day follow-up period following any dose, lymphadenopathy-related events were reported by 1.8% of vaccine recipients and 0.6% of placebo recipients. These events included lymphadenopathy, lymph node pain, injection-site lymphadenopathy, and vaccination-site lymphadenopathy which were plausibly related to vaccination. This imbalance is consistent with the imbalance observed for solicited axillary swelling/tenderness in the injected arm.

During the 28-day follow-up period following any dose, hypersensitivity adverse events were reported in 4.3% of vaccine recipients and 2.1% of placebo recipients. Hypersensitivity events in the vaccine group included injection site rash and injection site urticaria, which are likely related to vaccination. Delayed injection site reactions that began >7 days after vaccination were reported in 2.7% of vaccine recipients and in 0.2% of placebo recipients. Delayed injection site reactions included pain, erythema, and swelling and are likely related to vaccination.

During the 28-day follow-up period following any dose, events of abdominal pain (including abdominal pain, abdominal pain upper, and abdominal pain lower) were reported by 1.1% of vaccine recipients and 0.6% of placebo recipients. Currently available information is insufficient to determine a causal relationship with the vaccine.

There were no other notable patterns or numerical imbalances between treatment groups for specific categories of adverse events that would suggest a causal relationship to Moderna COVID-19 Vaccine.

Serious Adverse Events

As of November 10, 2021, serious adverse events were reported by 0.2% (n=6) of participants who received Moderna COVID-19 Vaccine and 0.2% (n=2) participants who received placebo. None of the events in the Moderna COVID-19 Vaccine group were considered related to vaccine. In these analyses, 98.6% of study participants had at least 28 days of follow-up after Dose 2, and the median follow-up time for all participants was 51 days after Dose 2.

There were no notable patterns or imbalances between treatment groups for specific categories of serious adverse events that would suggest a causal relationship to Moderna COVID-19 Vaccine.

Additional Safety Analyses

Participants 6 years through 11 years in Study 4 started to enter an open-label, observational phase after November 1, 2021. A long-term safety analysis was conducted in participants 6 years through 11 years from Study 4 who received Moderna COVID-19 Vaccine (n=3,007) with a cut-off date of February 21, 2022. In these analyses, the median duration of follow-up including both the blinded and open-label phases was 158 days after Dose 2. Through the cut-off date, there were no serious adverse events causally related to the vaccine.

Participants 6 Months Through 5 Years of Age

Study 4 (NCT04796896) is a Phase 2/3 clinical trial with multiple parts. The study included a randomized, placebo-controlled, observer-blind clinical trial component conducted in the United States and Canada. Safety data for Moderna COVID-19 Vaccine from the blinded portion of Study 4 included data in 6,388 participants 6 months through 5 years of age who received at least one dose of Moderna COVID-19 Vaccine (25 mcg mRNA; n=4,792) or placebo (n=1,596). As of the data cutoff date of February 21, 2022, the median duration of blinded follow-up for safety for participants 6 months through 23 months was 68 days after Dose 2. For participants 2 years through 5 years, the median duration of blinded follow-up for safety was 71 days after Dose 2.

For participants 6 months through 23 months, 51.1% were male, 48.9% were female, 13.2% were Hispanic or Latino, 79.0% were White, 3.1% were African American, 4.9% were Asian, 0.2% were American Indian or Alaska Native, 0.0% were Native Hawaiian or Pacific Islander, 1.5% were other races, and 10.6% were Multiracial. For participants 2 years through 5 years, 50.8% were male, 49.2% were female, 14.2% were Hispanic or Latino, 76.5% were White, 4.5% were African American, 6.0% were Asian, 0.4% were American Indian or Alaska Native, 0.3% were Native Hawaiian or Pacific Islander, 1.5% were other races, and 10.4% were Multiracial. Demographic characteristics were similar among participants who received Moderna COVID-19 Vaccine and those who received placebo.

Solicited Adverse Reactions

Local and systemic adverse reactions and use of antipyretic medication were solicited in an electronic diary for 7 days following each injection (i.e., day of vaccination and the next 6 days) among participants receiving Moderna COVID-19 Vaccine and participants receiving placebo with at least 1 documented dose (for participants 6 through 23 months, vaccine=1,758, placebo=585; for participants 24 months to 36 months, vaccine=986, placebo=338; for participants 37 months to 5 years, vaccine=2,030, placebo=659). Events that persisted for more than 7 days were followed until resolution.

The reported number and percentage of the solicited local and systemic adverse reactions by dose in Study 4 participants 6 months through 23 months of age are presented in Table 4, participants 24 months through 36 months of age are presented in Table 5, and participants 37 months to 5 years are presented in Table 6.

Table 4: Number and Percentage of Participants With Solicited Local and Systemic Adverse Reactions Starting Within 7 Days* After Each Dose in Participants 6 Months Through 23 Months (Solicited Safety Set, Dose 1 and Dose 2)†

	Moderna COVID-19 Vaccine		Placebo[a]	
	Dose 1 (N= 1,746) n (%)	**Dose 2** (N=1,596) n (%)	**Dose 1** (N= 582) n (%)	**Dose 2** (N=526) n (%)
Local Adverse Reactions				
Pain	652 (37.4)	738 (46.2)	175 (30.1)	135 (25.7)
Axillary (or groin) swelling/tenderness	102 (5.9)	148 (9.3)	26 (4.5)	28 (5.3)
Erythema (redness) ≥5 mm	150 (8.6)	216 (13.5)	24 (4.1)	20 (3.8)
Erythema (redness) Grade 3: >50 mm	5 (0.3)	14 (0.9)	2 (0.3)	0 (0)
Swelling (hardness) ≥5 mm	146 (8.4)	244 (15.3)	15 (2.6)	11 (2.1)
Swelling (hardness) Grade 3: >50 mm	5 (0.3)	14 (0.9)	0 (0)	0 (0)
Systemic Adverse Reactions				
Irritability/crying	1,175 (67.6)	1,021 (64.3)	361 (62.1)	307 (58.5)
Irritability/crying, Grade 3[b]	24 (1.4)	25 (1.6)	6 (1.0)	5 (1.0)
Sleepiness	645 (37.1)	558 (35.1)	217 (37.3)	175 (33.3)
Sleepiness, Grade 3[c]	4 (0.2)	1 (<0.1)	1 (0.2)	1 (0.2)
Loss of appetite	524 (30.2)	510 (32.1)	152 (26.2)	132 (25.1)
Loss of appetite, Grade 3[d]	10 (0.6)	16 (1.0)	1 (0.2)	2 (0.4)
Fever >38.0°C / >100.4°F	191 (11.0)	232 (14.6)	49 (8.4)	44 (8.4)
Fever, Grade 3: 39.6° - 40.0°C / 103.2° - 104.0°F	11 (0.6)	7 (0.4)	3 (0.5)	6 (1.1)
Fever, Grade 4: >40.0°C / >104.0°F	1 (<0.1)	3 (0.2)	1 (0.2)	0 (0)
Use of antipyretic or pain medication	482 (27.6)	543 (34.0)	141 (24.2)	111 (21.1)

N=Included 16 individuals aged 2 years to 4 years randomized in the 6 months through 23 months of age group stratum (13 in the Moderna COVID-19 Vaccine group and 3 in the placebo group).

* 7 days included day of vaccination and the subsequent 6 days. Events and use of antipyretic or pain medication were collected in the electronic diary (e-diary).

† Absence of rows for Grade 3 or Grade 4 adverse reactions indicates no events were reported.

[a] Placebo was a saline solution.

[b] Grade 3 irritability/crying: Defined as lasting >3 hours or inconsolable.
[c] Grade 3 sleepiness: Defined as sleeps most of the time, hard to arouse.
[d] Grade 3 loss of appetite: Defined as missed >2 feeds/meals completely or refuses most feeds/meals.

Table 5: Number and Percentage of Participants With Solicited Local and Systemic Adverse Reactions Starting Within 7 Days* After Each Dose in Participants 24 Months Through 36 Months (Solicited Safety Set, Dose 1 and Dose 2)†

	Moderna COVID-19 Vaccine		**Placebo[a]**	
	Dose 1 (N=944) n (%)	**Dose 2** (N=963) n (%)	**Dose 1** (N=320) n (%)	**Dose 2** (N=330) n (%)
Local Adverse Reactions				
Pain	500 (53.1)	654 (67.9)	119 (37.2)	146 (44.2)
Pain, Grade 3[b]	3 (0.3)	5 (0.5)	0 (0)	0 (0)
Axillary (or groin) swelling/tenderness	49 (5.2)	84 (8.7)	18 (5.6)	15 (4.5)
Axillary (or groin) swelling/tenderness, Grade 3[b]	0 (0)	1 (0.1)	0 (0)	0 (0)
Erythema (redness) ≥5 mm	94 (10.0)	117 (12.1)	13 (4.1)	10 (3.0)
Erythema (redness), Grade 3: >50 mm	6 (0.6)	9 (0.9)	2 (0.6)	0 (0)
Swelling (hardness) ≥5 mm	77 (8.2)	111 (11.5)	11 (3.4)	7 (2.1)
Swelling (hardness), Grade 3: >50 mm	5 (0.5)	8 (0.8)	2 (0.6)	0 (0)
Systemic Adverse Reactions				
Irritability/crying	513 (54.5)	523 (54.3)	163 (51.1)	148 (44.8)
Irritability/crying, Grade 3[c]	12 (1.3)	10 (1.0)	6 (1.9)	2 (0.6)
Sleepiness	285 (30.3)	347 (36.0)	92 (28.8)	89 (27.0)
Sleepiness, Grade 3[d]	2 (0.2)	1 (0.1)	0 (0)	0 (0)
Loss of appetite	225 (23.9)	294 (30.5)	71 (22.3)	69 (20.9)
Loss of appetite, Grade 3[e]	7 (0.7)	8 (0.8)	1 (0.3)	0 (0)
Fever ≥38.0°C / >100.4°F	106 (11.3)	182 (18.9)	25 (7.8)	35 (10.6)
Fever, Grade 3: 39.6° - 40.0°C / 103.2° - 104.0°F	3 (0.3)	12 (1.2)	3 (0.9)	0 (0)
Fever, Grade 4: >40.0°C / >104.0°F	3 (0.3)	3 (0.3)	1 (0.3)	0 (0)

	Moderna COVID-19 Vaccine		Placebo[a]	
	Dose 1 (N=944) n (%)	**Dose 2** (N=963) n (%)	**Dose 1** (N=320) n (%)	**Dose 2** (N=330) n (%)
Use of antipyretic or pain medication	193 (20.4)	292 (30.3)	59 (18.4)	62 (18.8)

N=Included 36 individuals younger than 2 years of age randomized in the 2 years through 5 years of age group stratum (24 in the Moderna COVID-19 Vaccine group and 12 in the placebo group). All of these 36 individuals had eDiary for 6 months to ≤36 months age group.

* 7 days included day of vaccination and the subsequent 6 days. Events and use of antipyretic or pain medication were collected in the electronic diary (e-diary).

† Absence of rows for Grade 3 or Grade 4 adverse reactions indicates no events were reported.

[a] Placebo was a saline solution.

[b] Grade 3 pain, axillary swelling/tenderness: Defined as prevents daily activity.

[c] Grade 3 irritability/crying: Defined as lasting >3 hours or inconsolable.

[d] Grade 3 sleepiness: Defined as sleeps most of the time, hard to arouse.

[e] Grade 3 loss of appetite: Defined as missed >2 feeds/meals completely or refuses most feeds/meals.

Table 6: Number and Percentage of Participants With Solicited Local and Systemic Adverse Reactions Starting Within 7 Days* After Each Dose in Participants 37 Months Through 5 Years (Solicited Safety Set, Dose 1 and Dose 2)†

	Moderna COVID-19 Vaccine		Placebo[a]	
	Dose 1 (N=2,013) n (%)	**Dose 2** (N= 1,975) n (%)	**Dose 1** (N=650) n (%)	**Dose 2** (N= 629) n (%)
Local Adverse Reactions				
Pain	1,313 (65.2)	1,445 (73.2)	263 (40.5)	249 (39.6)
Pain, Grade 3[b]	1 (<0.1)	6 (0.3)	0 (0)	0 (0)
Axillary (or groin) swelling/tenderness	156 (7.7)	183 (9.3)	38 (5.8)	16 (2.5)
Erythema (redness) ≥25 mm	70 (3.5)	143 (7.2)	1 (0.2)	5 (0.8)
Erythema (redness), Grade 3: >100 mm	6 (0.3)	3 (0.2)	1 (0.2)	0 (0)
Swelling (hardness) ≥25 mm	57 (2.8)	129 (6.5)	6 (0.9)	4 (0.6)
Swelling (hardness), Grade 3: >100 mm	5 (0.2)	5 (0.3)	0 (0)	0 (0)
Systemic Adverse Reactions				
Fatigue	807 (40.1)	956 (48.4)	236 (36.3)	185 (29.4)
Fatigue, Grade 3[c]	21 (1.0)	45 (2.3)	11 (1.7)	8 (1.3)
Headache	232 (11.5)	310 (15.7)	78 (12.0)	51 (8.1)

	Moderna COVID-19 Vaccine		Placebo[a]	
	Dose 1 (N=2,013) n (%)	**Dose 2** (N= 1,975) n (%)	**Dose 1** (N=650) n (%)	**Dose 2** (N= 629) n (%)
Headache, Grade 3[c]	5 (0.2)	8 (0.4)	2 (0.3)	1 (0.2)
Fever ≥38.0°C / >100.4°F	155 (7.7)	316 (16.0)	33 (5.1)	28 (4.5)
Fever, Grade 3: 39.0° - 40.0°C / 102.1° - 104.0°F	23 (1.1)	58 (2.9)	4 (0.6)	2 (0.3)
Fever, Grade 4: >40.0°C / >104.0°F	0 (0)	2 (0.1)	1 (0.2)	0 (0)
Myalgia	200 (9.9)	310 (15.7)	60 (9.2)	47 (7.5)
Myalgia, Grade 3[c]	5 (0.2)	9 (0.5)	2 (0.3)	3 (0.5)
Chills	129 (6.4)	245 (12.4)	40 (6.2)	31 (4.9)
Chills, Grade 3[c]	1 (<0.1)	4 (0.2)	0 (0)	2 (0.3)
Nausea/vomiting	137 (6.8)	194 (9.8)	50 (7.7)	30 (4.8)
Nausea/vomiting, Grade 3[c]	7 (0.3)	6 (0.3)	2 (0.3)	0 (0)
Arthralgia	124 (6.2)	168 (8.5)	32 (4.9)	28 (4.5)
Arthralgia, Grade 3[c]	2 (<0.1)	3 (0.2)	1 (0.2)	0 (0)
Use of antipyretic or pain medication	305 (15.2)	508 (25.7)	62 (9.5)	43 (6.8)

* 7 days included day of vaccination and the subsequent 6 days. Events and use of antipyretic or pain medication were collected in the electronic diary (e-diary).
† Absence of rows for Grade 3 or Grade 4 adverse reactions indicates no events were reported.
[a] Placebo was a saline solution.
[b] Grade 3 pain: Defined as prevents daily activity.
[c] Grade 3 fatigue, headache, myalgia, arthralgia, chills, nausea/vomiting: Defined as prevents daily activity.

Solicited local and systemic adverse reactions reported following administration of Moderna COVID-19 Vaccine had a median duration of 2 to 3 days for participants 6 months through 23 months years of age and 2 days for participants 2 years through 5 years of age.

Solicited Adverse Reactions Among Participants with Evidence of Prior SARS-CoV-2 Infection

An assessment of reactogenicity among participants with evidence of prior SARS-CoV-2 infection (immunologic or virologic evidence of prior SARS-CoV-2 infection [defined as positive RT-PCR test and/or positive Elecsys immunoassay result at Day 1]) compared to those with no evidence of infection at baseline (negative RT-PCR test and negative Elecsys immunoassay result at Day 1) was conducted. In the 6 months through 23 months of age cohort, 6.1% of participants (vaccine=106, placebo=38) had evidence of prior SARS-CoV-2 infection at

baseline. In the 2 years through 5 years of age cohort, 8.6% of participants (vaccine=266, placebo=82) had evidence of prior SARS-CoV-2 infection at baseline. In each age cohort, fever (temperature >38°C) was reported in a greater proportion of baseline SARS-CoV-2 positive vaccine participants compared to baseline SARS-CoV-2 negative vaccine participants. There were no notable differences in other reactogenicity events.

Safety of a 25-mcg dose in children 6 months through 4 years of age previously vaccinated with 2 or more doses of a Moderna COVID-19 vaccine is supported by these data on solicited adverse reactions in participants with evidence of prior SARS-CoV-2 infection, since the second dose represents a third exposure to the SARS-CoV-2 Spike antigen.

Unsolicited Adverse Events

Participants were monitored for unsolicited adverse events for up to 28 days following each dose and follow-up is ongoing. Serious adverse events and medically attended adverse events will be recorded for the entire study duration.

As of February 21, 2022, among participants 6 months through 23 months of age who had received at least 1 dose of vaccine or placebo (vaccine=1,761, placebo=589), unsolicited adverse events that occurred within 28 days following each vaccination were reported by 49.3% of participants (n=869) who received Moderna COVID-19 Vaccine and 48.2% of participants (n=284) who received placebo. In these analyses, 83.1% of study participants 6 months through 23 months of age had at least 28 days of follow-up after Dose 2. Among participants 2 years through 5 years of age who had received at least 1 dose of vaccine or placebo (vaccine=3,031, placebo=1,007), unsolicited adverse events that occurred within 28 days following each vaccination were reported by 40.0% of participants (n=1,212) who received Moderna COVID-19 Vaccine and 37.5% of participants (n=378) who received placebo. In these analyses, 89.3% of study participants 2 years through 5 years of age had at least 28 days of follow-up after Dose 2.

During the 28-day follow-up period following any dose, lymphadenopathy-related events were reported by 1.5% of vaccine recipients and 0.2% of placebo recipients who were 6 months through 23 months of age and 0.9% of vaccine recipients and <0.1% of placebo recipients who were 2 years through 5 years of age. These events included lymphadenopathy, injection-site lymphadenopathy, and vaccination-site lymphadenopathy which were plausibly related to vaccination. This imbalance is consistent with the imbalance observed for solicited axillary (or groin) swelling/tenderness in the injected limb.

During the 28-day follow-up period following any dose, hypersensitivity adverse events were reported in 3.9% of vaccine recipients and 5.3% of placebo recipients who were 6 months through 23 months of age and 3.5% of vaccine recipients and 2.5% of placebo recipients who were 2 years through 5 years of age. Hypersensitivity events in the vaccine group included injection site rash and injection site urticaria, which are likely related to vaccination. Delayed injection site reactions that began >7 days after vaccination were reported in 1.2% of vaccine recipients and no placebo recipients who were 6 months through 23 months of age and 1.4% of vaccine recipients and <0.1% of placebo recipients who were 2 years through 5 years of age.

Delayed injection site reactions included pain, erythema, and swelling and are likely related to vaccination.

During the 28-day follow-up period following any dose, events of abdominal pain (including abdominal pain, abdominal pain upper, and abdominal discomfort) were reported by 0.7% of vaccine recipients and 0.4% of placebo recipients who were 2 years through 5 years of age. Currently available information is insufficient to determine a causal relationship with the vaccine.

There were no other notable patterns or numerical imbalances between treatment groups for specific categories of adverse events that would suggest a causal relationship to Moderna COVID-19 Vaccine.

Serious Adverse Events

As of February 21, 2022, serious adverse events were reported by 0.9% (n=15) of participants who received vaccine and 0.2% (n=1) of participants who received placebo who were 6 months through 23 months of age and 0.3% (n=9) of participants who received Moderna COVID-19 Vaccine and 0.2% (n=2) of participants who received placebo who were 2 years through 5 years of age. In these analyses, 83.1% of study participants 6 months through 23 months of age had at least 28 days of follow-up after Dose 2, and the median follow-up time for all participants was 68 days after Dose 2. In these analyses, 89.3% of study participants 2 years through 5 years of age had at least 28 days of follow-up after Dose 2, and the median follow-up time for all participants was 71 days after Dose 2.

In participants 6 months through 23 months of age who received the vaccine, a 1-year-old female experienced serious adverse events of a Grade 3 fever 6 hours after Dose 1 and a febrile convulsion 1 day after Dose 1. These events were considered related to vaccination. In participants 2 years through 5 years of age who received Moderna COVID-19 Vaccine, none of the events were considered related to vaccine.

Moderna COVID-19 Vaccine (Original Monovalent) Administered as a First Booster Dose Following a Primary Series of Moderna COVID-19 Vaccine (Original Monovalent)

Participants 18 Years of Age and Older

Study 2 was a Phase 2, randomized, observer-blind, placebo-controlled, dose-confirmation study to evaluate the safety, reactogenicity, and immunogenicity of Moderna COVID-19 Vaccine in participants 18 years of age and older (NCT04405076). In this study, 198 participants received two doses 1 month apart of Moderna COVID-19 Vaccine primary series (100 mcg mRNA per dose). In an open-label-phase of the study, 171 of those participants received a single booster dose (50 mcg mRNA) at least 6 months (range of 5.8 to 8.5 months) after receiving the second dose of the primary series.

Among the 171 booster dose recipients, the median age was 55 years (range 18-87); 77.8% of participants were 18 years through 64 years of age, 22.2% were 65 years of age and older, 39.2%

were male, 60.8% were female, 5.8% were Hispanic or Latino, 95.9% were White, 2.9% were African American, 0.6% were Asian, and 0.6% were American Indian or Alaska Native.

Unsolicited Adverse Events

Overall, the 171 participants who received a booster dose had a median follow-up time of 176 days after the booster dose to the database lock date (November 23, 2021). Through 28 days after the booster dose, unsolicited adverse events were reported by 14.6% of participants (n=25) after the booster dose. There were no unsolicited adverse events not already captured by solicited local and systemic reactions that were considered causally related to Moderna COVID-19 Vaccine.

Serious Adverse Events

There were no serious adverse events reported from the booster dose through 28 days after the booster dose. Through the database lock date (November 23, 2021), there were no serious adverse events following the booster dose considered causally related to Moderna COVID-19 Vaccine.

Participants 12 Years Through 17 Years of Age

Safety data for a booster dose of Moderna COVID-19 Vaccine in adolescents were collected in an ongoing Phase 3 clinical trial with multiple parts. The open-label booster portion of the study included 1,405 participants who were 12 years through 17 years of age at the time of first dose of the primary series and who received a booster dose of Moderna COVID-19 Vaccine (50 mcg mRNA) at least 5 months (range 2.1 to 16.9 months) after the second dose of the primary series (Study 3, NCT04649151). Overall, 51.5% were male, 48.5% were female, 13.4% were Hispanic or Latino, 84.9% were White, 3.1% were African American, 4.9% were Asian, 0.5% were American Indian or Alaska Native, <0.1% were Native Hawaiian or Pacific Islander, 0.7% were other races, and 5.2% were Multiracial. The median duration of follow-up for safety after the booster dose was 204 days.

Unsolicited Adverse Events

Participants were monitored for unsolicited adverse events for up to 28 days following the booster dose. Serious adverse events and medically attended adverse events were recorded for the entire study duration. As of August 15, 2022, among the 1,405 participants who had received a booster dose of Moderna COVID-19 Vaccine, unsolicited adverse events that occurred within 28 days following vaccination were reported by 14.9% of participants (n=209). In these analyses, 85.7% of study participants had at least 6 months of follow-up after the booster dose. Overall, there were no notable differences in the safety profiles observed between participants who had received a booster dose of Moderna COVID-19 Vaccine and those who had received a primary series.

Serious Adverse Events

Through the cut-off date of August 15, 2022, with a median follow-up duration of 204 days after the booster dose, there were no serious adverse events considered causally related to the vaccine.

Participants 6 Years Through 11 Years of Age

Safety data for a booster dose of Moderna COVID-19 Vaccine in individuals 6 years through 11 years of age were collected in an ongoing Phase 2/3 clinical trial with multiple parts. The open-label booster portion of the study involved 1,294 participants 6 years through 11 years of age who received a booster dose of Moderna COVID-19 Vaccine (25 mcg mRNA) at least 6 months after the second dose of the primary series (Study 4, NCT04796896). Overall, 51.9%% were male, 48.1% were female, 15.6% were Hispanic or Latino, 65.7% were White, 11.0% were African American, 7.8% were Asian, 0.5% were American Indian or Alaska Native, <0.1% were Native Hawaiian or Pacific Islander, 1.9% were other races, and 11.8% were Multiracial. As of the data cutoff date of May 23, 2022, the median duration of follow-up for safety was 29 days after the booster dose.

Solicited Adverse Reactions

Local and systemic adverse reactions and use of antipyretic medication were solicited in an electronic diary for 7 days following the injection (i.e., day of vaccination and the next 6 days) among participants receiving Moderna COVID-19 Vaccine. Events that persisted for more than 7 days were followed until resolution.

Table 7 presents the frequency and severity of reported solicited local and systemic adverse reactions among Study 4 Moderna COVID-19 Vaccine booster dose recipients 6 years through 11 years of age within 7 days of a booster vaccination.

Table 7: Number and Percentage of Participants 6 Years Through 11 Years of Age With Solicited Local and Systemic Adverse Reactions Starting Within 7 Days* After the Moderna COVID-19 Vaccine Booster Dose (Solicited Safety Set)†

	Moderna COVID-19 Vaccine Booster Dose (N=1,280) n (%)
Local Adverse Reactions	
Pain	1,152 (90.1)
Pain, Grade 3[a]	24 (1.9)
Axillary swelling/tenderness	355 (27.8)
Axillary swelling/tenderness, Grade 3[a]	4 (0.3)
Swelling (hardness) ≥25 mm	139 (10.9)
Swelling (hardness), Grade 3: >100 mm	4 (0.3)
Erythema (redness) ≥25 mm	137 (10.7)
Erythema (redness), Grade 3: >100 mm	4 (0.3)
Systemic Adverse Reactions	
Fatigue	625 (48.9)
Fatigue, Grade 3[b]	47 (3.7)

	Moderna COVID-19 Vaccine Booster Dose (N=1,280) n (%)
Headache	489 (38.2)
Headache, Grade 3[b]	22 (1.7)
Myalgia	269 (21.0)
Myalgia, Grade 3[b]	19 (1.5)
Arthralgia	160 (12.5)
Arthralgia, Grade 3[b]	12 (0.9)
Chills	179 (14.0)
Chills, Grade 3[c]	4 (0.3)
Nausea/vomiting	168 (13.1)
Nausea/vomiting, Grade 3[a]	6 (0.5)
Fever ≥38.0°C / >100.4°F	108 (8.5)
Fever, Grade 3: 39.0° - 40.0°C / 102.1° - 104.0°F	16 (1.3)
Fever, Grade 4: >40° C / >104.0°F	1 (<0.1)
Use of antipyretic or pain medication	462 (36.1)

* 7 days included day of vaccination and the subsequent 6 days. Events and use of antipyretic or pain medication were collected in the electronic diary (e-diary).
† Absence of rows for Grade 4 adverse reactions indicates no events were reported.
[a] Grade 3 pain, axillary swelling/tenderness, nausea/vomiting: Defined as prevents daily activity.
[b] Grade 3 fatigue, headache, myalgia, arthralgia: Defined as significant; prevents daily activity.
[c] Grade 3 chills: Defined as prevents daily activity and requires medical intervention.

In participants who received a booster dose, the median duration of solicited local and systemic adverse reactions was 3 days.

Unsolicited Adverse Events

Participants were monitored for unsolicited adverse events for up to 28 days following the booster dose. Serious adverse events and medically attended adverse events will be recorded for the entire study duration. As of May 23, 2022, among the 1,294 participants who had received a booster dose, unsolicited adverse events that occurred within 28 days following vaccination were reported by 13.1% of participants (n=169). In these analyses, 55.4% of study participants had at least 28 days of follow-up after the booster dose. Serum sickness-like reaction with onset 10 days following administration of a booster dose was reported in an 8-year-old participant. This event was assessed as related to vaccination. After initiation of treatment with antihistamines and steroids, symptoms resolved within 15 days with the exception of intermittent urticaria that was ongoing 31 days after the onset of the reaction.

Serious Adverse Events

As of May 23, 2022, with a median follow-up duration of 29 days after the booster dose, there was one serious adverse event of abdominal pain reported 16 days following the booster dose by a 7-year-old participant. Currently available information is insufficient to determine a causal relationship with the vaccine.

Participants 17 Months Through 5 Years of Age

Safety data in support of a booster dose of Moderna COVID-19 Vaccine in individuals 6 months through 5 years of age were collected in participants 17 months through 5 years of age at the time of the booster dose in an ongoing Phase 2/3 clinical trial with multiple parts. The open-label booster portion of the study involved 145 participants 17 months through 5 years of age who received a booster dose of Moderna COVID-19 Vaccine (10 mcg mRNA) at least 6 months (range 8-13 months; median 10 months) after the completion of the Moderna COVID-19 Vaccine two-dose primary series (Study 4, NCT04796896). Overall, 55.2% were male, 44.8% were female, 10.3% were Hispanic or Latino, 80.0% were White, 2.8% were African American, 6.2% were Asian, 0.7% were American Indian or Alaska Native, 0.0% were Native Hawaiian or Pacific Islander, 2.8% were other races, and 7.6% were Multiracial. As of the data cutoff date of August 18, 2022, the median duration of follow-up for safety after the booster dose was 99 days.

Solicited Adverse Reactions

Local and systemic adverse reactions and use of antipyretic medication were solicited in an electronic diary for 7 days following the injection (i.e., day of vaccination and the next 6 days) among participants receiving Moderna COVID-19 Vaccine (10 mcg mRNA). Events that persisted for more than 7 days were followed until resolution.

The frequency and severity of reported solicited local and systemic adverse reactions within 7 days of a booster vaccination among participants 17 months through 36 months are presented in Table 8, and among participants 37 months through 5 years are presented in Table 9.

Table 8: Number and Percentage of Participants 17 Months Through 36 Months of Age With Solicited Local and Systemic Adverse Reactions Starting Within 7 Days* After the Moderna COVID-19 Vaccine Booster Dose (Solicited Safety Set)†

	Moderna COVID-19 Vaccine Booster Dose (N=120[a]) n (%)
Local Adverse Reactions	
Pain	50 (41.7)
Erythema (redness) ≥5 mm	13 (10.8)
Erythema (redness) Grade 3: >50 mm	1 (0.8)
Swelling (hardness) ≥5 mm	13 (10.8)
Axillary (or groin) swelling/tenderness	5 (4.2)
Systemic Adverse Reactions	
Irritability/crying	63 (52.5)
Sleepiness	32 (26.7)
Loss of appetite	28 (23.3)
Fever >38.0°C / >100.4°F	12 (10.1)
Fever, Grade 3: 39.6° - 40.0°C / 103.2° - 104.0°F	2 (1.7)
Fever, Grade 4: >40.0°C / >104.0°F	1 (0.8)
Use of antipyretic or pain medication	24 (20.0)

* 7 days included day of vaccination and the subsequent 6 days. Events and use of antipyretic or pain medication were collected in the electronic diary (e-diary).
† Absence of rows for Grade 3 or Grade 4 adverse reactions indicates no events were reported.
[a] Four participants were older than 36 months of age at the time of the booster dose; however, solicited adverse reactions were collected and graded using the diary card and grading scale for participants 6 months through 36 months of age.

Table 9: Number and Percentage of Participants 37 Months Through 5 Years With Solicited Local and Systemic Adverse Reactions Starting Within 7 Days* After the Moderna COVID-19 Vaccine Booster Dose (Solicited Safety Set)†

	Moderna COVID-19 Vaccine Booster Dose (N=25) n (%)
Local Adverse Reactions	
Pain	14 (56.0)
Swelling (hardness) ≥25 mm	3 (12.0)
Axillary (or groin) swelling/tenderness	1 (4.0)
Erythema (redness) ≥25 mm	1 (4.0)
Systemic Adverse Reactions	
Fatigue	8 (32.0)
Headache	5 (20.0)
Myalgia	3 (12.0)
Arthralgia	2 (8.0)
Chills	2 (8.0)
Fever >38.0°C / >100.4°F	1 (4.0)
Fever, Grade 3: 39.0° - 40.0°C / 102.1° - 104.0°F	1 (4.0)
Nausea/vomiting	1 (4.0)
Use of antipyretic or pain medication	6 (24.0)

* 7 days included day of vaccination and the subsequent 6 days. Events and use of antipyretic or pain medication were collected in the electronic diary (e-diary).
† Absence of rows for Grade 3 or Grade 4 adverse reactions indicates no events were reported.

In participants who received a booster dose, the median duration of solicited local and systemic adverse reactions was 3 days.

Unsolicited Adverse Events

Participants were monitored for unsolicited adverse events for up to 28 days following the booster dose. Serious adverse events and medically attended adverse events will be recorded for the entire study duration. As of August 18, 2022, among the 145 participants who had received a booster dose, unsolicited adverse events that occurred within 28 days following vaccination were reported by 24.1% of participants (n=35). In these analyses, 99.3% of study participants had at least 28 days of follow-up. Through the cut-off date, there were no unsolicited adverse events not already captured as solicited local and systemic reactions that were considered causally related to Moderna COVID-19 Vaccine.

Serious Adverse Events

As of August 18, 2022, with a median follow-up duration after the booster dose of 99 days, there were no serious adverse events reported following the booster dose.

Moderna COVID-19 Vaccine Administered as a First Booster Dose Following Primary Vaccination with Another Authorized or Approved COVID-19 Vaccine

The safety of a Moderna COVID-19 Vaccine booster dose in individuals who completed primary vaccination with another authorized or approved COVID-19 vaccine (heterologous booster dose) is inferred from the safety of a Moderna COVID-19 Vaccine booster dose administered following completion of a Moderna COVID-19 Vaccine primary series (homologous booster dose) and from data from an independent Phase 1/2 open-label clinical trial (NCT04889209) conducted in the United States that evaluated a booster dose of Moderna COVID-19 Vaccine. The booster dose that study participants received contained twice the amount of mRNA compared to the authorized booster dose of Moderna COVID-19 Vaccine. In this study, adults who had completed primary vaccination with a Moderna COVID-19 Vaccine 2-dose series (N=151), a Janssen COVID-19 Vaccine single dose (N=156), or a Pfizer-BioNTech COVID-19 Vaccine 2-dose series (N=151) at least 12 weeks (range 12 to 20 weeks) prior to enrollment and who reported no history of SARS-CoV-2 infection were randomized 1:1:1 to receive a booster dose of one of three vaccines: Moderna COVID-19 Vaccine, Janssen COVID-19 Vaccine, or Pfizer-BioNTech COVID-19 Vaccine. Adverse events were assessed through 28 days after the booster dose. An overall review of adverse reactions reported following the Moderna COVID-19 Vaccine heterologous booster dose did not identify any new safety concerns, as compared with adverse reactions reported following Moderna COVID-19 Vaccine primary series doses or homologous booster dose.

Moderna COVID-19 Vaccine Administered as a Second Booster Dose Following Primary and Booster Vaccination with Another Authorized or Approved COVID-19 Vaccine

In an independently conducted study (*Gili Regev-Yochay, Tal Gonen, Mayan Gilboa, et al. 2022 DOI: 10.1056/NEJMc2202542*), Moderna COVID-19 Vaccine was administered as a second booster dose to 120 participants 18 years of age and older who had received a 2-dose primary series and a first booster dose of Pfizer-BioNTech COVID-19 Vaccine at least 4 months prior. No new safety concerns were reported during up to three weeks of follow-up after the second booster dose.

Bivalent Vaccine (Original and Omicron BA.1) Administered as a Second Booster Dose in Participants 18 Years of Age and Older

Study 5 (NCT04927065), a Phase 2/3 open-label study conducted in the United States, evaluated the immunogenicity, safety, and reactogenicity of a booster dose of the bivalent vaccine (Original and Omicron BA.1) compared to a booster dose of Moderna COVID-19 Vaccine (50 mcg mRNA; previously but no longer authorized for booster vaccination in individuals 18 years of age and older) when administered as a second booster dose to participants 18 years of age and older who had previously received a primary series and a first booster dose with Moderna

COVID-19 Vaccine at least 3 months prior. The bivalent vaccine (Original and Omicron BA.1) contained 25 mcg of mRNA encoding the pre-fusion stabilized S-glycoprotein of SARS-CoV-2 Wuhan-Hu-1 strain (Original) and 25 mcg of mRNA encoding the S-glycoprotein of SARS-CoV-2 Omicron variant lineage BA.1, for a total of 50 mcg mRNA per dose. The safety analysis set included 437 participants in the bivalent vaccine (Original and Omicron BA.1) booster dose group and 377 participants in the Moderna COVID-19 Vaccine booster dose group.

The median age of the population was 60 years (range 20-96); 490 (60.2%) participants were 18 years through 64 years of age and 324 (39.8%) were 65 years and older. Overall, 44.8% were male, 55.2% were female, 10.2% were Hispanic or Latino, 86.4% were White, 7.4% were African American, 3.7% were Asian, 0.1% were American Indian or Alaska Native, 0.1% were Native Hawaiian or Pacific Islander, 0.6% were other races, and 1.1% were Multiracial. Demographic characteristics were similar among participants who received the bivalent vaccine (Original and Omicron BA.1) and those who received Moderna COVID-19 Vaccine. Following the booster dose through the cutoff date of April 27, 2022, the median follow-up time was 43 days among bivalent vaccine (Original and Omicron BA.1) recipients and 57 days among Moderna COVID-19 Vaccine recipients.

Unsolicited Adverse Events

Participants were monitored for unsolicited adverse events for up to 28 days following the booster dose. Serious adverse events and medically attended adverse events will be recorded for the entire study duration. As of April 27, 2022, among participants who had received a booster dose (bivalent vaccine [Original and Omicron BA.1]=437, Moderna COVID-19 Vaccine=377), unsolicited adverse events that occurred within 28 days following vaccination were reported by 18.5% of participants (n=81) who received bivalent vaccine (Original and Omicron BA.1) and 20.7% of participants (n=78) who received Moderna COVID-19 Vaccine. In these analyses, 99.9% of study participants had at least 28 days of follow-up after the booster dose. The incidence of unsolicited adverse events was similar between the vaccine groups and no new safety concerns were identified.

Serious Adverse Events

As of April 27, 2022, the median duration of follow-up was 43 days among bivalent vaccine (Original and Omicron BA.1) recipients and 57 days among Moderna COVID-19 Vaccine recipients. Serious adverse events were reported by 0.7% (n=3) of participants who received bivalent vaccine (Original and Omicron BA.1) and 0.3% (n=1) of participants who received Moderna COVID-19 Vaccine. None of the events in the bivalent vaccine (Original and Omicron BA.1) group or Moderna COVID-19 Vaccine group were considered related to vaccine.

6.2 Postmarketing Experience

The following adverse reactions have been identified during postmarketing use of SPIKEVAX, Moderna COVID-19 Vaccine and Moderna COVID-19 Vaccine, Bivalent. Because these reactions are reported voluntarily, it is not always possible to reliably estimate their frequency or establish a causal relationship to vaccine exposure.

Cardiac Disorders: myocarditis, pericarditis
Immune System Disorders: anaphylaxis, urticaria
Nervous System Disorders: syncope

6.3 Required Reporting for Adverse Events and Vaccine Administration Errors

Vaccination providers must report the listed events following administration of the Moderna COVID-19 Vaccine (2023-2024 Formula) 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
- Cases of pericarditis
- Cases of Multisystem Inflammatory Syndrome (MIS)
- Cases of COVID-19 that results in hospitalization or death

*Serious Adverse Events are defined as:

- Death;
- A life-threatening adverse event;
- Inpatient hospitalization or prolongation of existing hospitalization;
- A persistent or significant incapacity or substantial disruption of the ability to conduct normal life functions;
- A congenital anomaly/birth defect;
- An important medical event that based on appropriate medical judgement may jeopardize the individual and may require medical or surgical intervention to prevent one of the outcomes listed above.

Instructions for Reporting to VAERS

Vaccination providers should complete and submit a VAERS form to FDA using one of the following methods:

- Complete and submit the report online: https://vaers.hhs.gov/reportevent.html, or
- If you are unable to submit this form electronically, you may fax it to VAERS at 1-877-721-0366. If you need additional help submitting a report, you may call the VAERS toll-free information line at 1-800-822-7967 or send an email to info@vaers.org.

IMPORTANT: When reporting adverse events or vaccine administration errors to VAERS, please complete the entire form with detailed information. It is important that the information reported to FDA be as detailed and complete as possible. Information to include:

- Patient demographics (e.g., patient name, date of birth)
- Pertinent medical history
- Pertinent details regarding admission and course of illness
- Concomitant medications

- Timing of adverse event(s) in relationship to administration of Moderna COVID-19 Vaccine (2023-2024 Formula)
- Pertinent laboratory and virology information
- Outcome of the event and any additional follow-up information if it is available at the time of the VAERS report. Subsequent reporting of follow-up information should be completed if additional details become available.

The following steps are highlighted to provide the necessary information for safety tracking:

1. In Box 17, provide information on Moderna COVID-19 Vaccine (2023-2024 Formula) and any other vaccines administered on the same day; and in Box 22, provide information on any other vaccines received within one month prior.
2. In Box 18, description of the event:
    a. Write "Moderna COVID-19 Vaccine (2023-2024 Formula) EUA" as the first line
    b. Provide a detailed report of vaccine administration error and/or adverse event. It is important to provide detailed information regarding the patient and adverse event/medication error for ongoing safety evaluation of this unapproved vaccine. Please see information to include listed above.
3. Contact information:
    a. In Box 13, provide the name and contact information of the prescribing healthcare provider or institutional designee who is responsible for the report.
    b. In Box 14, provide the name and contact information of the best doctor/healthcare professional to contact about the adverse event.
    c. In Box 15, provide the address of the facility where vaccine was given (NOT the healthcare provider's office address).

Other Reporting Instructions

Vaccination providers may report to VAERS other adverse events that are not required to be reported using the contact information above.

To the extent feasible, report adverse events to ModernaTX, Inc. using the contact information below or by providing a copy of the VAERS form to ModernaTX, Inc.

Website	https://report.moderna.convergehealthsafety.com/
Fax number	1-866-599-1342
Telephone number	1-866-MODERNA (1-866-663-3762)

7 DRUG INTERACTIONS

There are no data to assess the concomitant administration of Moderna COVID-19 Vaccine with other vaccines.

8 USE IN SPECIFIC POPULATIONS

8.1 Pregnancy

Pregnancy Exposure Registry

There is a pregnancy exposure registry that monitors pregnancy outcomes in individuals exposed to Moderna COVID-19 Vaccine during pregnancy. Individuals who are vaccinated with Moderna COVID-19 Vaccine during pregnancy are encouraged to enroll in the registry by calling 1-866-MODERNA (1-866-663-3762).

Risk Summary

All pregnancies have a risk of birth defect, loss, or other adverse outcomes. In the U.S. general population, the estimated background risk of major birth defects and miscarriage in clinically recognized pregnancies is 2% to 4% and 15% to 20%, respectively. Available data on SPIKEVAX, Moderna COVID-19 Vaccine, Bivalent or Moderna COVID-19 Vaccine administered to pregnant individuals are insufficient to inform vaccine-associated risks in pregnancy.

In a developmental toxicity study, 0.2 mL of a vaccine formulation containing the same quantity of nucleoside-modified messenger ribonucleic acid (mRNA) (100 mcg) and other ingredients included in a single primary series dose of Moderna COVID-19 Vaccine for individuals 12 years of age and older was administered to female rats by the intramuscular route on four occasions: 28 and 14 days prior to mating, and on gestation days 1 and 13. No vaccine-related adverse effects on female fertility, fetal development, or postnatal development were reported in the study.

Clinical Considerations

Disease-Associated Maternal and/or Embryo/Fetal Risk

Pregnant individuals infected with SARS-CoV-2 are at increased risk of severe COVID-19 compared with non-pregnant individuals.

8.2 Lactation

Risk Summary

It is not known whether Moderna COVID-19 Vaccine is excreted in human milk. Data are not available to assess the effects of Moderna COVID-19 Vaccine on the breastfed infant or on milk production/excretion. The developmental and health benefits of breastfeeding should be considered along with the mother's clinical need for Moderna COVID-19 Vaccine and any potential adverse effects on the breastfed child from Moderna COVID-19 Vaccine or from the underlying maternal condition. For preventive vaccines, the underlying maternal condition is susceptibility to disease prevented by the vaccine.

8.4 Pediatric Use

Moderna COVID-19 Vaccine is authorized for use in individuals 6 months through 11 years of age.

Moderna COVID-19 Vaccine is not authorized for use in individuals younger than 6 months of age or individuals 12 years of age and older.

8.6 Use in Immunocompromised Individuals

Safety and effectiveness of the Moderna COVID-19 Vaccine in individuals 6 months through 11 years of age with immunocompromise have been extrapolated from adult data. In an independent study (*Hall VG, Ferreira VH, Ku T et al. Randomized Trial of a Third Dose of mRNA-1273 Vaccine in Transplant Recipients. N Engl J Med 2021 DOI: 10.1056/NEJMc2111462; NCT04885907*), safety and effectiveness of a third primary series dose of Moderna COVID-19 Vaccine have been evaluated in participants who received solid organ transplants. In this study, in 60 adult participants who had undergone various solid organ transplant procedures (heart, kidney, kidney-pancreas, liver, lung, pancreas) a median of 3.57 years previously (range 1.99-6.75 years) who received a third vaccine dose, the adverse event profile was similar to that after the second dose and no Grade 3 or Grade 4 events were reported. The administration of a third primary series vaccine dose appears to be only moderately effective in increasing antibody titers. Patients should be counseled to maintain physical precautions to help prevent COVID-19. In addition, close contacts of immunocompromised persons should be vaccinated, as appropriate for their health status.

11 DESCRIPTION

Moderna COVID-19 Vaccine is provided as a sterile white to off-white suspension for intramuscular injection.

Each 0.25 mL dose of Moderna COVID-19 Vaccine (2023-2024 Formula), supplied in a single dose vial with a dark blue cap and a label with a green box, contains 25 mcg nucleoside-modified messenger RNA (mRNA) encoding the pre-fusion stabilized Spike glycoprotein (S) of the SARS-CoV-2 Omicron variant lineage XBB.1.5. Each dose also contains the following ingredients: a total lipid content of 0.5 mg (SM-102, polyethylene glycol [PEG] 2000 dimyristoyl glycerol [DMG], cholesterol, and 1,2-distearoyl-sn-glycero-3-phosphocholine [DSPC]), 0.13 mg tromethamine, 0.62 mg tromethamine hydrochloride, 0.011 mg acetic acid, 0.049 mg sodium acetate trihydrate, and 21.8 mg sucrose.

Moderna COVID-19 Vaccine (2023-2024 Formula) does not contain a preservative.

The vial stoppers are not made with natural rubber latex.

12 CLINICAL PHARMACOLOGY

The nucleoside-modified mRNA in Moderna COVID-19 Vaccine is formulated in lipid particles,

which enable delivery of the nucleoside-modified mRNA into host cells to allow expression of the SARS-CoV-2 S antigen. The vaccine elicits an immune response to the S antigen, which protects against COVID-19.

14 CLINICAL STUDIES

The effectiveness of Moderna COVID-19 Vaccine (2023-2024 Formula) for individuals 6 months through 11 years of age is based on:

- effectiveness of Moderna COVID-19 Vaccine (Original monovalent) in individuals 6 months of age and older, and
- immunogenicity of the bivalent vaccine (Original and Omicron BA.1) in individuals 18 years of age and older

14.1 Efficacy of Two-Dose Primary Series of Moderna COVID-19 Vaccine (Original Monovalent) in Participants 18 Years of Age and Older

Study 1 is an ongoing Phase 3 clinical trial with multiple parts. The randomized, placebo-controlled, observer-blind phase evaluated the efficacy, safety, and immunogenicity of Moderna COVID-19 Vaccine in participants 18 years of age and older in the United States. Randomization was stratified by age and health risk: 18 to <65 years of age without comorbidities (not at risk for progression to severe COVID-19), 18 to <65 years of age with comorbidities (at risk for progression to severe COVID-19), and 65 years of age and older with or without comorbidities. Participants who were immunocompromised and those with a known history of SARS-CoV-2 infection were excluded from the study. Participants with no known history of SARS-CoV-2 infection but with positive laboratory results indicative of infection at study entry were included. The study allowed for the inclusion of participants with stable pre-existing medical conditions, defined as disease not requiring significant change in therapy or hospitalization for worsening disease during the 3 months before enrollment, as well as participants with stable human immunodeficiency virus (HIV) infection. A total of 30,415 participants were randomized equally to receive 2 doses of Moderna COVID-19 Vaccine or saline placebo 1 month apart. Participants will be followed for efficacy and safety until 2 years after the second dose.

The primary efficacy analysis population (referred to as the Per-Protocol Set) included 28,451 participants who received two doses (at 0 and 1 month) of either Moderna COVID-19 Vaccine (100 mcg mRNA per dose; n=14,287) or placebo (n=14,164), and had a negative baseline SARS-CoV-2 status. In the Per-Protocol Set, 47.5% of participants were female, 19.7% were Hispanic or Latino; 79.7% were White, 9.7% were African American, 4.7% were Asian, and 2.0% other races. The median age of participants was 53 years (range 18-95) and 25.4% of participants were 65 years of age and older. Of the study participants in the Per-Protocol Set, 22.8% were at increased risk of severe COVID-19 due to at least one pre-existing medical condition (chronic lung disease, significant cardiac disease, severe obesity, diabetes, liver disease, or HIV infection) regardless of age. There were no notable differences in demographics or pre-existing medical conditions between participants who received Moderna COVID-19 Vaccine and those who received placebo.

The population for the vaccine efficacy analysis included participants 18 years of age and older who were enrolled from July 27, 2020, and followed for the development of COVID-19 through the data cutoff of March 26, 2021, or the Participant Decision Visit for treatment unblinding, whichever was earlier. The median length of follow-up for participants in the blinded placebo-controlled phase of the study was 4 months following Dose 2.

Efficacy Against COVID-19

COVID-19 was defined based on the following criteria: The participant must have experienced at least two of the following systemic symptoms: fever (≥38ºC / ≥100.4ºF), chills, myalgia, headache, sore throat, new olfactory and taste disorder(s); or the participant must have experienced at least one of the following respiratory signs/symptoms: cough, shortness of breath or difficulty breathing, or clinical or radiographical evidence of pneumonia; and the participant must have at least one NP swab, nasal swab, or saliva sample (or respiratory sample, if hospitalized) positive for SARS-CoV-2 by RT-PCR. COVID-19 cases were adjudicated by a Clinical Adjudication Committee.

There were 55 COVID-19 cases in the Moderna COVID-19 Vaccine group and 744 cases in the placebo group, with a vaccine efficacy of 93.2% (95% confidence interval of 91.0% to 94.8%) (Table 10).

SARS-CoV-2 identified in the majority of COVID-19 cases in this study were sequenced to be the B.1.2 variant. Additional SARS-CoV-2 variants identified in this study included B.1.427/B.1.429 (Epsilon), P.1 (Gamma), and P.2 (Zeta). Representation of identified variants among cases in the vaccine versus placebo recipients did not suggest decreased vaccine effectiveness against these variants.

Table 10: Vaccine Efficacy Against COVID-19* in Participants 18 Years of Age and Older Starting 14 Days After Dose 2 per Adjudication Committee Assessments – Per-Protocol Set

Age Subgroup (Years)	Moderna COVID-19 Vaccine[a]			Placebo[b]			% Vaccine Efficacy (95% CI)[c]
	Participants (N)	COVID-19 Cases (n)	Incidence Rate of COVID-19 per 1,000 Person-Years	Participants (N)	COVID-19 Cases (n)	Incidence Rate of COVID-19 per 1,000 Person-Years	
All participants	14,287	55	9.6	14,164	744	136.6	93.2 (91.0, 94.8)
18 to <65	10,661	46	10.7	10,569	644	159.0	93.4 (91.1, 95.1)
≥65	3,626	9	6.2	3,595	100	71.7	91.5 (83.2, 95.7)

* COVID-19: symptomatic COVID-19 requiring positive RT-PCR result and at least two systemic symptoms (fever [≥38ºC / ≥100.4ºF], chills, myalgia, headache, sore throat, new olfactory and taste disorder[s]) or one respiratory symptom (cough, shortness of breath or difficulty breathing, or clinical or radiographical evidence of

pneumonia). Cases starting 14 days after Dose 2.
[a] Moderna COVID-19 Vaccine dosing was a two-dose series (100 mcg mRNA per dose) 1 month apart.
[b] Placebo dosing was a two-dose series (saline solution) 1 month apart.
[c] VE and 95% CI from the stratified Cox proportional hazard model.

Severe COVID-19 was defined based on confirmed COVID-19 as per the primary efficacy endpoint case definition, plus any of the following: Clinical signs indicative of severe systemic illness, respiratory rate ≥30 per minute, heart rate ≥125 beats per minute, SpO2 ≤93% on room air at sea level or PaO2/FIO2 <300 mm Hg; or respiratory failure or ARDS (defined as needing high-flow oxygen, non-invasive or mechanical ventilation, or ECMO), evidence of shock (systolic blood pressure <90 mmHg, diastolic BP <60 mmHg or requiring vasopressors); or significant acute renal, hepatic, or neurologic dysfunction; or admission to an intensive care unit or death.

Among all participants in the Per-Protocol Set analysis, which included COVID-19 cases confirmed by an adjudication committee, 2 cases of severe COVID-19 were reported in the Moderna COVID-19 Vaccine group compared with 106 cases reported in the placebo group, with a vaccine efficacy of 98.2% (95% confidence interval of 92.8% to 99.6%) (Table 11).

Table 11: Vaccine Efficacy Against Severe COVID-19* in Participants 18 Years of Age and Older Starting 14 Days After Dose 2 per Adjudication Committee Assessments – Per-Protocol Set

Moderna COVID-19 Vaccine[a]			Placebo[b]			
Participants (N)	Severe COVID-19 Cases (n)	Incidence Rate of COVID-19 per 1,000 Person-Years	Participants (N)	Severe COVID-19 Cases (n)	Incidence Rate of COVID-19 per 1,000 Person-Years	% Vaccine Efficacy (95% CI)[c]
14,287	2	0.3	14,164	106	19.1	98.2 (92.8, 99.6)

* Severe COVID-19: symptomatic COVID-19 requiring positive RT-PCR result and at least two systemic symptoms or one respiratory symptom, plus any of the following: Clinical signs indicative of severe systemic illness, respiratory rate ≥30 per minute, heart rate ≥125 beats per minute, SpO2 ≤93% on room air at sea level or PaO2/FIO2 <300 mm Hg; or respiratory failure or ARDS (defined as needing high-flow oxygen, non-invasive or mechanical ventilation, or ECMO), evidence of shock (systolic blood pressure <90 mmHg, diastolic BP <60 mmHg or requiring vasopressors); or significant acute renal, hepatic, or neurologic dysfunction; or admission to an intensive care unit or death. Cases starting 14 days after Dose 2.
[a] Moderna COVID-19 Vaccine dosing was a two-dose series (100 mcg mRNA per dose) 1 month apart.
[b] Placebo dosing was a two-dose series (saline solution) 1 month apart.
[c] VE and 95% CI from the stratified Cox proportional hazard model.

In an exploratory analysis, occurrence of asymptomatic SARS-CoV-2 infection was assessed among participants in the Per-Protocol Set (enrolled from July 27, 2020, and followed maximally through March 26, 2021). Asymptomatic SARS-CoV-2 infection was defined as having a positive scheduled serology test based on binding antibody against SARS-CoV-2 nucleocapsid protein as measured by the Roche Elecsys immunoassay (N-serology) and/or a positive RT-PCR

test for SARS-CoV-2, in the absence of any reported COVID-19 symptoms included as part of the primary efficacy endpoint case definition (described above) or symptoms included in the secondary COVID-19 endpoint case definition (fever ≥38°C / ≥100.4°F, chills, cough, shortness of breath or difficulty breathing, fatigue, muscle aches, body aches, headache, new loss of taste or smell, sore throat, congestion or runny nose, nausea, vomiting, or diarrhea) at any time during the study. To assess for asymptomatic infection starting 14 days after Dose 2, all participants had scheduled blood draws for N-serology collected at the 1-month post-Dose 2 visit and the 6-month post-Dose 2 visit (if still blinded to treatment arm), and scheduled N-serology and nasopharyngeal swab for RT-PCR collection at the Participant Decision Visit for treatment unblinding.

In the Per-Protocol Set, 14,287 participants in the Moderna COVID-19 Vaccine group and 14,164 participants in the placebo group had N-serology and/or RT-PCR results available from one or more of the pre-specified timepoints listed above. Among these participants, there were 180 cases of asymptomatic SARS-CoV-2 infection in the Moderna COVID-19 Vaccine group compared with 399 cases in the placebo group. Limitations of this analysis include the infrequently scheduled assessments for serology and PCR testing, which may not have captured all cases of asymptomatic infections which occurred during the study.

14.2 Effectiveness of Two-Dose Primary Series of Moderna COVID-19 Vaccine (Original Monovalent) in Participants 12 Years Through 17 Years of Age

Study 3 is an ongoing Phase 3 clinical trial with multiple parts. The randomized, placebo-controlled, observer-blind phase evaluated the safety, reactogenicity, and effectiveness of Moderna COVID-19 Vaccine in participants ages 12 years through 17 years in the United States. Participants with a known history of SARS-CoV-2 infection were excluded from the study. A total of 3,733 participants were randomized 2:1 to receive 2 doses of Moderna COVID-19 Vaccine (100 mcg mRNA per dose) or saline placebo 1 month apart. Among participants assessed for immunogenicity, 52.4% of participants were male, 47.6% were female, 7.6% were Hispanic or Latino; 83.5% were White, 1.2% were African American, 4.4% were Asian, 0.3% were Native Hawaiian or Pacific Islander, 2.1% were other races, and 5.6% were Multiracial.

Effectiveness in individuals 12 years through 17 years of age is based on a comparison of immune responses in this age group to adults 18 years through 25 years of age.

In Study 3, an analysis was conducted of SARS-CoV-2 50% neutralizing titers and seroresponse rates 28 days after Dose 2 in a subset of participants 12 years through 17 years of age in Study 3 and participants 18 years through 25 years of age in Study 1 who had no immunologic or virologic evidence of prior SARS-CoV-2 at baseline. Noninferior immune responses as assessed by geometric mean 50% neutralizing titers and seroresponse rates were demonstrated in a comparison of participants 12 years through 17 years of age to participants 18 years through 25 years of age (Table 12).

Table 12: Comparison of Geometric Mean Titer Ratio and Seroresponse Rate Against a Pseudovirus Expressing the Original SARS-CoV-2 Spike Protein (D614G) at 28 Days After Completion of the Primary Series of Moderna COVID-19 Vaccine,* Participants 12 Years Through 17 Years of Age vs Participants 18 Years Through 25 Years of Age – Per-Protocol Immunogenicity Subset

12 Years Through 17 Years N=340	18 Years Through 25 Years N=295	12 Years Through 17 Years/ 18 Years Through 25 Years	
GMT (95% CI)[a]	**GMT (95% CI)[a]**	**GMT Ratio (95% CI)[b]**	**Met Success Criteria[c]**
1401.7 (1276.2, 1539.5)	1299.9 (1175.4, 1437.5)	1.1 (0.9, 1.2)	Yes
Seroresponse % [d] (95% CI)[e]	**Seroresponse % [d] (95% CI)[e]**	**Difference in Seroresponse Rate % (95% CI)[f]**	**Met Success Criteria[c]**
98.8 (97.0, 99.7)	99.0 (97.1, 99.8)	-0.2 (-2.1, 1.9)	Yes

N=Number of subjects with non-missing data at the corresponding timepoint.
GMT=Geometric mean titers
***** Moderna COVID-19 Vaccine dosing was a two-dose series (100 mcg mRNA per dose) 1 month apart.
[a] Antibody values reported as below the lower limit of quantification (LLOQ) are replaced by 0.5 x LLOQ. Values greater than the upper limit of quantification (ULOQ) are replaced by the ULOQ if actual values are not available.
[b] The log-transformed antibody levels are analyzed using an analysis of covariance (ANCOVA) model with the group variable (adolescents in Study 3 and young adults in Study 1) as fixed effect. The resulted LS means, difference of LS means, and 95% CI are back transformed to the original scale for presentation.
[c] Noninferiority is declared if the lower bound of the 2-sided 95% CI for the GMT Ratio is greater than 0.67, with a point estimate of >0.8 and the lower bound of the 2-sided 95% CI for difference in seroresponse rate is greater than -10%, with a point estimate of >-5%.
[d] Proportion of participants who met seroresponse definition.
[e] Seroresponse due to vaccination specific to pseudovirus neutralizing antibody ID50 titer at a subject level is defined as at least 4-fold rise from baseline, where baseline titers <LLOQ are set to LLOQ for the analysis. 95% CI is calculated using the Clopper-Pearson method.
[f] Difference in seroresponse rate 95% CI is calculated using the Miettinen-Nurminen (score) confidence limits.
Note: SARS-CoV-2 50% inhibitory dose (ID50) neutralization titers were determined using a SARS-CoV-2 Spike-Pseudotyped Virus Neutralization Assay. Quantification of SARS-CoV-2 neutralizing antibodies utilizes lentivirus particles expressing SARS-CoV-2 Spike protein on their surface and contains a firefly luciferase (Luc) reporter gene for quantitative measurements of infection by relative luminescence units (RLU). Neutralization is measured as the serum dilution at which RLU is reduced by 50% (ID50) relative to mean RLU in virus control wells but after subtraction of mean RLU in cell control wells.

A descriptive efficacy analysis evaluating confirmed COVID-19 cases accrued up to the blinded data cutoff date of May 31, 2021, was performed in 3,186 participants who received two doses (at 0 and 1 month) of either Moderna COVID-19 Vaccine (n=2,142) or placebo (n=1,044) and had a negative baseline SARS-CoV-2 status (referred to as the Per-Protocol Set for Efficacy). In the Per-Protocol Set for Efficacy, 51.5% were male, 48.5% were female, 11.0% were Hispanic or Latino; 84.0% were White, 2.7% were African American, 6.2% were Asian, 0.5% were American Indian or Alaska Native, <0.1% were Native Hawaiian or Pacific Islander, 0.9% were other races, and 4.8% were Multiracial. There were no notable differences in demographics

between participants who received Moderna COVID-19 Vaccine and those who received placebo.

The population for the vaccine efficacy analysis included participants 12 years through 17 years of age who were enrolled from December 9, 2020, and followed for the development of COVID-19 through the data cutoff of May 31, 2021. The median length of follow-up for participants in the blinded, placebo-controlled phase of the study was 112 days following Dose 2.

The efficacy information in participants 12 years through 17 years of age is presented in Table 13.

Table 13: Efficacy Analyses: COVID-19 in Participants 12 Years Through 17 Years of Age Starting 14 Days After Dose 2 – Per-Protocol Set for Efficacy

	Moderna COVID-19 Vaccine[a] N=2,142		**Placebo[b]** N=1,044		
	COVID-19 Cases (n)	**Incidence Rate of COVID-19 per 1,000 Person-Years**	**COVID-19 Cases (n)**	**Incidence Rate of COVID-19 per 1,000 Person-Years**	**% Vaccine Efficacy (95% CI)[c]**
COVID-19 Case Definition 1[d]	0	0	6	21.5	100.0 (61.2, NE)
COVID-19 Case Definition 2[e]	2	3.3	9	32.4	89.9 (51.0, 98.9)

NE=Not estimable

[a] Moderna COVID-19 Vaccine dosing was a two-dose series (100 mcg mRNA per dose) 1 month apart.

[b] Placebo dosing was a two-dose series (saline solution) 1 month apart.

[c] Vaccine efficacy defined as 1 - ratio of incidence rate (Moderna COVID-19 Vaccine vs. placebo). The 95% CI of the ratio is calculated using the exact method conditional upon the total number of cases, adjusting for person-years.

[d] COVID-19 Case Definition 1: Participant must have experienced at least two of the following systemic symptoms: fever (≥38°C / ≥100.4°F), chills, myalgia, headache, sore throat, new olfactory and taste disorder(s); or the participant must have experienced at least one of the following respiratory signs/symptoms: cough, shortness of breath or difficulty breathing, or clinical or radiographical evidence of pneumonia; and the participant must have at least one NP swab, nasal swab, or saliva sample (or respiratory sample, if hospitalized) positive for SARS- CoV-2 by RT-PCR.

[e] COVID-19 Case Definition 2: Presence of at least one symptom from a list of COVID-19 symptoms and a positive NP swab or saliva sample for SARS-CoV-2 by RT-PCR. Listed symptoms were fever (temperature >38°C / ≥100.4°F), or chills, cough, shortness of breath or difficulty breathing, fatigue, muscle aches, or body aches, headache, new loss of taste or smell, sore throat, congestion or runny nose, nausea, or vomiting or diarrhea.

14.3 Effectiveness of Two-Dose Primary Series of Moderna COVID-19 Vaccine (Original Monovalent) in Participants 6 Years Through 11 Years of Age

Study 4 includes an ongoing Phase 2/3 randomized, placebo-controlled, observer-blind clinical trial component to evaluate the safety, reactogenicity, and effectiveness of Moderna COVID-19 Vaccine in individuals ages 6 years through 11 years in the United States and Canada (NCT04796896). Participants with a known history of SARS-CoV-2 infection within 2 weeks of

study vaccination were excluded from the study. A total of 4,016 participants were randomized 3:1 to receive 2 doses of Moderna COVID-19 Vaccine (50 mcg mRNA per dose) or saline placebo 1 month apart. Participants will be followed for occurrence of COVID-19 and safety until 1 year after the last dose.

Effectiveness in individuals 6 years through 11 years of age is based on a comparison of immune responses in this age group to adults 18 years through 25 years of age.

In Study 4, an analysis was conducted of SARS-CoV-2 50% neutralizing titers and seroresponse rates 28 days after Dose 2 in a subset of individuals 6 years through 11 years of age in Study 4 and participants 18 years through 25 years of age in Study 1 who had no immunologic or virologic evidence of prior SARS-CoV-2 at baseline. Noninferior immune responses as assessed by geometric mean 50% neutralizing titers and seroresponse rates were demonstrated in a comparison of individuals 6 years through 11 years of age to participants 18 years through 25 years of age (Table 14).

Table 14: Summary of Geometric Mean Titer Ratio and Seroresponse Rate – Comparison of Individuals 6 Years Through 11 Years of Age to Participants 18 Years Through 25 Years of Age – Per-Protocol Immunogenicity Set

		Moderna COVID-19 Vaccine			
		6 Years Through 11 Years[a] n=320	**18 Years Through 25 Years[b] n=295**	**6 Years Through 11 Years/ 18 Years Through 25 Years**	
Assay	**Time Point**	**GMT (95% CI)[c]**	**GMT (95% CI)[c]**	**GMT ratio (95% CI)[d]**	**Met Noninferiority Objective (Y/N)[e]**
SARS-CoV-2 neutralization assay – ID50 (titer)[f]	28 days after Dose 2	1610.2 (1456.6, 1780.0)	1299.9 (1171.2, 1442.7)	1.2 (1.1, 1.4)	Yes
		Seroresponse % (95% CI)[g]	**Seroresponse % (95% CI)[g]**	**Difference in Seroresponse Rate % (95% CI)[h]**	
		99.1 (97.3, 99.8)	99.0 (97.1, 99.8)	0.1 (-1.9, 2.1)	

GMT=Geometric mean titer

[a] Moderna COVID-19 Vaccine dosing was a two-dose series (50 mcg mRNA per dose) 1 month apart.

[b] Moderna COVID-19 Vaccine dosing was a two-dose series (100 mcg mRNA per dose) 1 month apart.

[c] Antibody values reported as below the lower limit of quantification (LLOQ) are replaced by 0.5 x LLOQ. Values greater than the upper limit of quantification (ULOQ) are replaced by the ULOQ if actual values are not available.

[d] The log-transformed antibody levels are analyzed using an analysis of covariance (ANCOVA) model with the group variable (individuals in Study 4 and young adults in Study 1) as fixed effect. The resulted LS means, difference of LS means, and 95% CI are back transformed to the original scale for presentation.

[e] Noninferiority is declared if the lower bound of the 2-sided 95% CI for the GMT ratio is greater than 0.67, with a point estimate of >0.8 and the lower bound of the 2-sided 95% CI for difference in seroresponse rate is greater than -10%, with a point estimate of >-5%.

[f] SARS-CoV-2 50% inhibitory dose (ID50) neutralization titers were determined using a SARS-CoV-2 Spike-Pseudotyped Virus Neutralization Assay. Quantification of SARS-CoV-2 neutralizing antibodies utilizes lentivirus particles expressing SARS-CoV-2 Spike protein on their surface and contains a firefly luciferase (Luc) reporter

gene for quantitative measurements of infection by relative luminescence units (RLU). Neutralization is measured as the serum dilution at which RLU is reduced by 50% (ID50) relative to mean RLU in virus control wells but after subtraction of mean RLU in cell control wells.

[g] Seroresponse due to vaccination specific to pseudovirus neutralizing antibody ID50 titer at a subject level is defined in protocol as a change from below LLOQ to equal or above 4 x LLOQ, or at least a 4-fold rise if baseline is equal to or above LLOQ. Seroresponse 95% CI is calculated using the Clopper-Pearson method.

[h] Difference in seroresponse rate 95% CI is calculated using the Miettinen-Nurminen method.

In a descriptive analysis, vaccine efficacy could not be determined reliably. An insufficient number of COVID-19 cases were accrued in the Per-Protocol population starting 14 days after Dose 2 due to treatment unblinding and cross-over vaccination after the availability of an authorized COVID-19 vaccine in this age group.

14.4 Effectiveness of Two-Dose Primary Series of Moderna COVID-19 Vaccine (Original Monovalent) in Participants 6 Months Through 5 Years of Age

Study 4 includes an ongoing Phase 2/3 randomized, placebo-controlled, observer-blind clinical trial component to evaluate the safety, reactogenicity, and effectiveness of Moderna COVID-19 Vaccine in individuals ages 6 months through 5 years in the United States and Canada (NCT04796896). Participants with a known history of SARS-CoV-2 infection within 2 weeks of study vaccination were excluded from the study. A total of 6,403 participants were randomized 3:1 to receive 2 doses of the Moderna COVID-19 Vaccine (25 mcg mRNA per dose) or saline placebo 1 month apart. Participants will be followed for occurrence of COVID-19 and safety until 1 year after the last dose.

Effectiveness in individuals 6 months through 5 years of age is based on a comparison of immune responses in this age group to adults 18 years through 25 years of age.

In Study 4, an analysis was conducted of SARS-CoV-2 neutralizing antibody concentrations and seroresponse rates 28 days after Dose 2 in a subset of individuals 6 months through 5 years of age in Study 4 and participants 18 years through 25 years of age in Study 1 who had no immunologic or virologic evidence of prior SARS-CoV-2 at baseline. Noninferior immune responses as assessed by neutralizing antibody concentrations in arbitrary units (AU)/mL and seroresponse rates were demonstrated in a comparison of individuals 6 months through 23 months of age to participants 18 years through 25 years of age (Table 15) and 2 years through 5 years of age to participants 18 years through 25 years of age (Table 16).

Table 15: Summary of Geometric Mean Concentration Ratio and Seroresponse Rate – Comparison of Individuals 6 Months Through 23 Months of Age to Participants 18 Years Through 25 Years of Age – Per-Protocol Immunogenicity Set

		Moderna COVID-19 Vaccine			
		6 Months Through 23 Months[a] n=230	18 Years Through 25 Years[b] n=291	6 Months Through 23 Months/ 18 Years Through 25 Years	
Assay	**Time Point**	**GMC (95% CI)[c]**	**GMC (95% CI)[c]**	**GMC Ratio (95% CI)[d]**	**Met Noninferiority Objective (Y/N)[e]**
SARS-CoV-2 neutralization assay[f]	28 days after Dose 2	1780.7 (1606.4, 1973.8)	1390.8 (1269.1, 1524.2)	1.3 (1.1, 1.5)	Yes
		Seroresponse % (95% CI)[g]	**Seroresponse % (95% CI)[g]**	**Difference in Seroresponse Rate % (95% CI)[h]**	
		100 (98.4, 100)	99.3 (97.5, 99.9)	0.7 (-1.0, 2.5)	

n=Number of participants with non-missing data at baseline and at Day 57.
GMC=Geometric mean concentration
[a] Moderna COVID-19 Vaccine dosing was a two-dose series (25 mcg mRNA per dose) 1 month apart.
[b] Moderna COVID-19 Vaccine dosing was a two-dose series (100 mcg mRNA per dose) 1 month apart.
[c] Antibody values reported as below the lower limit of quantification (LLOQ) are replaced by 0.5 x LLOQ. Values greater than the upper limit of quantification (ULOQ) are replaced by the ULOQ if actual values are not available.
[d] The log-transformed antibody levels are analyzed using an analysis of covariance (ANCOVA) model with the group variable (individuals in Study 4 and young adults in Study 1) as fixed effect. The resulted LS means, difference of LS means, and 95% CI are back transformed to the original scale for presentation.
[e] Noninferiority is declared if the lower bound of the 2-sided 95% CI for the GMC ratio is greater than 0.67, with a point estimate of >0.8 and the lower bound of the 2-sided 95% CI for difference in seroresponse rate is greater than -10%, with a point estimate of >-5%.
[f] Final geometric mean antibody concentrations (GMC) in AU/mL were determined using SARS-CoV-2 microneutralization assay. The SARS-CoV-2 MN is a cell-based assay that is designed to determine the ability of SARS-CoV-2 neutralizing antibodies to inhibit the infection of 293T-ACE2 cells by SARS-CoV-2 Reporter Virus Particles (RVP) which express green fluorescent protein (GFP). A given serum sample is pre-incubated with a known quantity of SARS-CoV-2-GFP for 60 (±5) minutes prior to infection of 293T-ACE2 cells. COVID-19 infection is monitored 48 (±4) hours following infection by counting the number of green fluorescent cells using the Cytation 5 cell imaging reader.
[g] Seroresponse due to vaccination specific to SARS-CoV-2 RVP neutralizing antibody concentration at a subject level is defined in protocol as a change from below LLOQ to equal or above 4 x LLOQ, or at least a 4-fold rise if baseline is equal to or above LLOQ. Seroresponse 95% CI is calculated using the Clopper-Pearson method.
[h] Difference in seroresponse rate 95% CI is calculated using the Miettinen-Nurminen (score) confidence limits.

Table 16: Summary of Geometric Mean Concentration Ratio and Seroresponse Rate – Comparison of Individuals 2 Years Through 5 Years of Age to Participants 18 Years Through 25 Years of Age – Per-Protocol Immunogenicity Set

		Moderna COVID-19 Vaccine			
		2 Years Through 5 Years[a] n=264	18 Years Through 25 Years[b] n=291	2 Years Through 5 Years/ 18 Years Through 25 Years	
Assay	**Time Point**	**GMC (95% CI)[c]**	**GMC (95% CI)[c]**	**GMC Ratio (95% CI)[d]**	**Met Noninferiority Objective (Y/N)[e]**
SARS-CoV-2 neutralization assay[f]	28 days after Dose 2	1410.0 (1273.8, 1560.8)	1390.8 (1262.5, 1532.1)	1.0 (0.9, 1.2)	Yes
		Seroresponse % (95% CI)[g]	**Seroresponse % (95% CI)[g]**	**Difference in Seroresponse Rate % (95% CI)[h]**	
		98.9 (96.7, 99.8)	99.3 (97.5, 99.9)	-0.4 (-2.7, 1.5)	

n=Number of participants with non-missing data at baseline and at Day 57.
GMC=Geometric mean concentration
[a] Moderna COVID-19 Vaccine dosing was a two-dose series (25 mcg mRNA per dose) 1 month apart.
[b] Moderna COVID-19 Vaccine dosing was a two-dose series (100 mcg mRNA per dose) 1 month apart.
[c] Antibody values reported as below the lower limit of quantification (LLOQ) are replaced by 0.5 x LLOQ. Values greater than the upper limit of quantification (ULOQ) are replaced by the ULOQ if actual values are not available.
[d] The log-transformed antibody levels are analyzed using an analysis of covariance (ANCOVA) model with the group variable (individuals in Study 4 and young adults in Study 1) as fixed effect. The resulted LS means, difference of LS means, and 95% CI are back transformed to the original scale for presentation.
[e] Noninferiority is declared if the lower bound of the 2-sided 95% CI for the GMC ratio is greater than 0.67, with a point estimate of >0.8 and the lower bound of the 2-sided 95% CI for difference in seroresponse rate is greater than -10%, with a point estimate of >-5%.
[f] Final geometric mean antibody concentrations (GMC) in AU/mL were determined using SARS-CoV-2 microneutralization assay. The SARS-CoV-2 MN is a cell-based assay that is designed to determine the ability of SARS-CoV-2 neutralizing antibodies to inhibit the infection of 293T-ACE2 cells by SARS-CoV-2 Reporter Virus Particles (RVP) which express green fluorescent protein (GFP). A given serum sample is pre-incubated with a known quantity of SARS-CoV-2-GFP for 60 (±5) minutes prior to infection of 293T-ACE2 cells. COVID-19 infection is monitored 48 (±4) hours following infection by counting the number of green fluorescent cells using the Cytation 5 cell imaging reader.
[g] Seroresponse due to vaccination specific to SARS-CoV-2 RVP neutralizing antibody concentration at a subject level is defined in protocol as a change from below LLOQ to equal or above 4 x LLOQ, or at least a 4-fold rise if baseline is equal to or above LLOQ. Seroresponse 95% CI is calculated using the Clopper-Pearson method.
[h] Difference in seroresponse rate 95% CI is calculated using the Miettinen-Nurminen (score) confidence limits.

A descriptive efficacy analysis evaluating confirmed COVID-19 cases accrued up to the data cutoff date February 21, 2022, was performed in 5,476 participants 6 months through 5 years of age who received two doses (at 0 and 1 month) of either Moderna COVID-19 Vaccine or placebo and had a negative baseline SARS-CoV-2 status (referred to as the Per-Protocol Set for Efficacy) (for participants 6 months through 23 months, vaccine=1,511, placebo=513; for participants 2 years through 5 years, vaccine=2,594, placebo=858). For participants 6 months through 23 months in the Per-Protocol Set for Efficacy, 51.2% were male, 48.8% were female,

12.7% were Hispanic or Latino; 78.9% were White, 3.1% were African American, 4.6% were Asian, 0.2% were American Indian or Alaska Native, 0.0% were Native Hawaiian or Pacific Islander, 1.8% were other races, and 10.7% were Multiracial. For participants 2 years through 5 years, 50.7% were male, 49.3% were female, 14.0% were Hispanic or Latino, 76.8% were White, 4.1% were African American, 6.1% were Asian, 0.4% were American Indian or Alaska Native, 0.3% were Native Hawaiian or Pacific Islander, 1.6% were other races, and 10.3% were Multiracial. Between participants who received Moderna COVID-19 Vaccine and those who received placebo, there were no notable differences in demographics.

The median length of follow-up for efficacy post-Dose 2 was 68 days for participants 6 months through 23 months of age and 71 days for participants 2 years through 5 years of age.

Vaccine efficacy among individuals 6 months through 5 years of age in Study 4 was evaluated during the period when the B.1.1.529 (Omicron) variant was the predominant variant in circulation.

The efficacy information in individuals 6 months through 23 months of age and 2 years through 5 years of age are presented in Table 17 and Table 18, respectively.

Table 17: Efficacy Analyses: COVID-19 in Participants 6 Months Through 23 Months of Age Starting 14 Days After Dose 2 – Per Protocol Set for Efficacy

	Moderna COVID-19 Vaccine[a] N=1,511		**Placebo[b]** N=513		
	Cases (n)	**Incidence Rate of COVID-19 per 1,000 Person-Years**	**Cases (n)**	**Incidence Rate of COVID-19 per 1,000 Person-Years**	**% Vaccine Efficacy (95% CI)[c]**
COVID-19 Cases - Definition 1[d]	37	99.981	18	146.042	31.5 (-27.7, 62.0)
COVID-19 Cases - Definition 2[e]	51	138.239	34	279.822	50.6 (21.4, 68.6)

N=Included 15 individuals aged 2 years to 4 years randomized in the 6 months through 23 months of age group stratum (12 in the Moderna COVID-19 Vaccine group and 3 in the placebo group), and none of them had a COVID-19 case starting 14 days after Dose 2.

[a] Moderna COVID-19 Vaccine dosing was a two-dose series (25 mcg mRNA per dose) 1 month apart.

[b] Placebo dosing was a two-dose series (saline solution) 1 month apart.

[c] Vaccine efficacy defined as 1 - ratio of incidence rate (Moderna COVID-19 Vaccine vs. placebo). The 95% CI of the ratio is calculated using the exact method conditional upon the total number of cases, adjusting for person-years.

[d] Participant must have experienced at least two of the following systemic symptoms: fever (≥38°C / ≥100.4°F), chills, myalgia, headache, sore throat, new olfactory and taste disorder(s); or the participant must have experienced at least one of the following respiratory signs/symptoms: cough, shortness of breath or difficulty breathing, or clinical or radiographical evidence of pneumonia; and the participant must have at least one NP swab, nasal swab, or saliva sample (or respiratory sample, if hospitalized) positive for SARS-CoV-2 by RT-PCR.

[e] Presence of at least one symptom from a list of COVID-19 symptoms and a positive NP swab or saliva sample for SARS-CoV-2 by RT-PCR. Listed symptoms were fever (temperature >38°C / ≥100.4°F), or chills, cough, shortness of breath or difficulty breathing, fatigue, muscle aches, or body aches, headache, new loss of taste or

smell, sore throat, congestion or runny nose, nausea, abdominal pain, poor appetite/poor feeding, or vomiting or diarrhea.

Table 18: Efficacy Analyses: COVID-19 in Participants 2 Years Through 5 Years of Age Starting 14 Days After Dose 2 – Per-Protocol Set for Efficacy

	Moderna COVID-19 Vaccine[a] N=2,594		Placebo[b] N=858		
	Cases (n)	Incidence Rate of COVID-19 per 1,000 Person-Years	Cases (n)	Incidence Rate of COVID-19 per 1,000 Person-Years	% Vaccine Efficacy (95% CI)[c]
COVID-19 Cases - Definition 1[d]	71	103.761	43	193.528	46.4 (19.8, 63.8)
COVID-19 Cases - Definition 2[e]	119	175.023	61	276.980	36.8 (12.5, 54.0)

N=Included 25 individuals younger than 2 years of age randomized in the 2 years through 5 years of age group stratum (18 in the Moderna COVID-19 Vaccine group and 7 in the placebo group), and one in each treatment group had a COVID-19 case starting 14 days after Dose 2.

[a] Moderna COVID-19 Vaccine dosing was a two-dose series (25 mcg mRNA per dose) 1 month apart.

[b] Placebo dosing was a two-dose series (saline solution) 1 month apart.

[c] Vaccine efficacy defined as 1 - ratio of incidence rate (Moderna COVID-19 Vaccine vs. placebo). The 95% CI of the ratio is calculated using the exact method conditional upon the total number of cases, adjusting for person-years.

[d] Participant must have experienced at least two of the following systemic symptoms: fever (≥38°C / ≥100.4°F), chills, myalgia, headache, sore throat, new olfactory and taste disorder(s); or the participant must have experienced at least one of the following respiratory signs/symptoms: cough, shortness of breath or difficulty breathing, or clinical or radiographical evidence of pneumonia; and the participant must have at least one NP swab, nasal swab, or saliva sample (or respiratory sample, if hospitalized) positive for SARS-CoV-2 by RT-PCR.

[e] Presence of at least one symptom from a list of COVID-19 symptoms and a positive NP swab or saliva sample for SARS-CoV-2 by RT-PCR. Listed symptoms were fever (temperature >38°C / ≥100.4°F), or chills, cough, shortness of breath or difficulty breathing, fatigue, muscle aches, or body aches, headache, new loss of taste or smell, sore throat, congestion or runny nose, nausea, abdominal pain, poor appetite/poor feeding, or vomiting or diarrhea.

14.5 Immunogenicity of Moderna COVID-19 Vaccine (Original Monovalent) Booster Dose Following Moderna COVID-19 Vaccine (Original Monovalent) Primary Series in Participants 6 Years Through 11 Years of Age

Effectiveness of a booster dose of Moderna COVID-19 Vaccine in participants 6 years through 11 years of age was based on a comparison of immune responses, as assessed by neutralizing antibody concentration against a pseudovirus expressing the SARS-CoV-2 Spike protein from a USA_WA1/2020 isolate carrying the D614G mutation, following the booster dose in this age group to that following the primary series in adults 18 years through 25 years.

In an open-label phase of Study 4, participants 6 years through 11 years of age received a single booster dose of Moderna COVID-19 Vaccine (25 mcg mRNA) at least 6 months after completion of the primary series (two doses 1 month apart). The primary immunogenicity

analysis population included 95 booster dose participants in Study 4 and a random subset of 295 participants 18 years through 25 years of age from Study 1 who received two doses of Moderna COVID-19 Vaccine 1 month apart. Study 1 and Study 4 participants included in the analysis population had no serologic or virologic evidence of SARS-CoV-2 infection prior to the first primary series dose and prior to the booster dose, respectively. Among participants 6 years through 11 years of age assessed for immunogenicity, 48.4% were male, 51.6% were female, 15.8% were Hispanic or Latino; 76.8% were White, 5.3% were Black or African American, 5.3% were Asian, 1.1% were American Indian or Alaskan Native, 1.1% were Native Hawaiian or Pacific Islander, 0.0% were other races, and 7.4% were Multiracial.

The primary immunogenicity analyses of the GMC ratio and difference in seroresponse rates following the booster dose in Study 4 compared to following the primary series in Study 1 met the pre-defined immunobridging success criteria. Seroresponse for a participant was defined as achieving a ≥4-fold rise of neutralizing antibody concentration from baseline (before the first dose of the primary series in Study 4 and Study 1). These analyses are summarized in Table 19.

Table 19: Comparison of Geometric Mean Concentration and Seroresponse Rate Against a Pseudovirus Expressing the SARS-CoV-2 Spike Protein (USA_WA1/2020 isolate carrying the D614G mutation) at 28 Days After a Booster Dose in Study 4 (Participants 6 Years Through 11 Years of Age) vs 28 Days After Completion of the Primary Series in Study 1 (Participants 18 Years Through 25 Years of Age) – Per-Protocol Immunogenicity Subsets

Study 4[a] Booster Dose[b] N=95 GMC (95% CI)	**Study 1[c] Primary Series[d] N=294 GMC (95% CI)**	**GMC Ratio (Study 4/Study 1)**	**Met Success Criterion**
5848 (5000, 6839)	1400 (1281, 1531)	4.2 (3.5, 5.0)	Yes[e]
Study 4 Booster Dose[b] Seroresponse[f] N=95 n/N1 (%) (95% CI)[g]	**Study 1 Primary Series[d] Seroresponse[f] N=294 n/N1 (%) (95% CI)[g]**	**Difference in Seroresponse Rate (Study 4-Study 1) % (95% CI)[h]**	**Met Success Criterion**
88/88 (100) (95.9, 100)	292/294 (99.3) (97.6, 99.9)	0.7 (-3.5, 2.4)	Yes[i]

N=Number of subjects with non-missing data at the corresponding timepoint.
n=Number of participants who achieved seroresponse at 28 days post-Booster Dose for Study 4 or 28 days post-Dose 2 for Study 1.
N1=Number of participants with non-missing data at pre-vaccination baseline and 28 days post-Booster Dose for Study 4 or 28 days post-Dose 2 for Study 1.
[a] Per-Protocol Immunogenicity Subset – Pre-Booster SARS-CoV-2 Negative for Study 4 included all subjects who had both pre-booster and post-booster immunogenicity samples, did not have SARS-CoV-2 infection at pre-booster, did not have a major protocol deviation that impacted immune response, and had post-booster immunogenicity assessment at timepoint of primary interest (28 days post-Booster Dose).
[b] Moderna COVID-19 Vaccine dosing was a single booster dose (25 mcg mRNA).

[c] Per-Protocol Immunogenicity Subset for Study 1 included all subjects who had both baseline (pre-vaccination) and post-vaccination immunogenicity samples, did not have SARS-CoV-2 infection at baseline, did not have a major protocol deviation that impacted immune response, and had post-injection immunogenicity assessment at timepoint of primary interest (28 days post-Dose 2).
[d] Moderna COVID-19 Vaccine dosing was a two-dose series (100 mcg mRNA per dose) 1 month apart.
[e] Immunobridging success is declared if the lower limit of the 2-sided 95% CI for the GMC Ratio is ≥0.667.
[f] Seroresponse is defined as ≥4-fold rise of pseudovirus neutralizing antibody concentration from baseline (pre-Dose 1 of primary series in Study 4 and Study 1), where baseline concentration < LLOQ is set to LLOQ for the analysis.
[g] 95% CI is calculated using the Clopper-Pearson method.
[h] 95% CI is calculated using the Miettinen-Nurminen (score) confidence limits.
[i] Immunobridging success is declared if the lower limit of the 2-sided 95% CI for the percentage difference is ≥-10%.
Note: Antibody values < the lower limit of quantitation (LLOQ) are replaced by 0.5 × LLOQ. Values > the upper limit of quantitation (ULOQ) are replaced by the ULOQ if actual values are not available.

A descriptive analysis evaluated seroresponse rates using pre-booster neutralizing antibody concentration. The booster dose seroresponse rate, with seroresponse defined as at least a 4-fold rise relative to the pre-booster concentration, was 92.6%. The difference in seroresponse rates in this post-hoc analysis was -6.7% (95% CI -13.8, -2.7).

14.6 Immunogenicity of Moderna COVID-19 Vaccine (Original Monovalent) Booster Dose Following Moderna COVID-19 Vaccine (Original Monovalent) Primary Series in Participants 17 Months Through 5 Years of Age

Effectiveness of a booster dose of Moderna COVID-19 Vaccine in individuals 6 months through 5 years of age is based on a comparison of immune responses, as assessed by neutralizing antibody concentration against a pseudovirus expressing the SARS-CoV-2 Spike protein from a USA_WA1/2020 isolate carrying the D614G mutation, following the booster dose in study participants 17 months through 5 years of age to that following the primary series in adults 18 years through 25 years of age.

In an open-label phase of Study 4, participants 17 months through 5 years of age received a single booster dose of Moderna COVID-19 Vaccine (10 mcg mRNA) at least 6 months after completion of a Moderna COVID-19 Vaccine primary series (two doses 1 month apart). The primary immunogenicity analysis population included 56 booster dose participants in Study 4 and a random subset of 295 participants 18 years through 25 years of age from Study 1 who had completed primary vaccination with two doses of Moderna COVID-19 Vaccine (100 mcg mRNA per dose) 1 month apart. Study 1 and Study 4 participants included in the analysis population had no serologic or virologic evidence of SARS-CoV-2 infection prior to the first primary series dose and prior to the booster dose, respectively. Among participants 17 months through 5 years of age assessed for immunogenicity, 50.0% were male, 50.0% were female, 7.1% were Hispanic or Latino; 78.6% were White, 1.8% were Black or African American, 7.1% were Asian, 0.0% were American Indian or Alaskan Native, 0.0% were Native Hawaiian or Pacific Islander, 3.6% were other races, and 8.9% were Multiracial. Among the 56 participants in the primary immunogenicity analysis population, the median age for receipt of the booster dose was 2.3 years (range 1.4-5.6 years).

The primary immunogenicity analyses of the GMC ratio and difference in seroresponse rates following the booster dose in Study 4 compared to following the primary series in Study 1 met

the pre-defined immunobridging success criteria. Seroresponse for a participant was defined as achieving a ≥4-fold rise of neutralizing antibody concentration from baseline (before the first dose of the primary series in Study 4 and Study 1). These analyses are summarized in Table 20.

Table 20: Comparison of Geometric Mean Concentration and Seroresponse Rate Against a Pseudovirus Expressing the SARS-CoV-2 Spike Protein (USA_WA1/2020 isolate carrying the D614G mutation) at 28 Days After a Booster Dose in Study 4 (Participants 17 Months Through 5 Years of Age) vs 28 Days After Completion of the Primary Series in Study 1 (Participants 18 Years Through 25 Years of Age) – Per-Protocol Immunogenicity Subsets

Study 4[a] Booster Dose N=56 GMC (95% CI)	**Study 1[c] Primary Series[d] N=294 GMC (95% CI)**	**GMC Ratio (Study 4/Study 1)**	**Met Success Criterion**
5713 (4604, 7089)	1400 (1275, 1539)	4.1 (3.2, 5.2)	Yes[e]
Study 4 Booster Dose Seroresponse[f] N=56 n/N1 (%) (95% CI)[g]	**Study 1 Primary Series Seroresponse[f] N=294 n/N1 (%) (95% CI)[g]**	**Difference in Seroresponse Rate (Study 4-Study 1) % (95% CI)[h]**	**Met Success Criterion**
53/53 (100) (93.3, 100.0)	292/294 (99.3) (97.6, 99.9)	0.7 (-6.1, 2.4)	Yes[i]

N=Number of subjects with non-missing data at the corresponding timepoint.
n=Number of participants who achieved seroresponse at 28 days post-Booster Dose for Study 4 or 28 days post-Dose 2 for Study 1.
N1=Number of participants with non-missing data at pre-vaccination baseline and 28 days post-Booster Dose for Study 4 or 28 days post-Dose 2 for Study 1.
[a] Per-Protocol Immunogenicity Subset – Pre-Booster SARS-CoV-2 Negative for Study 4 included all subjects who had both pre-booster and post-booster immunogenicity samples, did not have SARS-CoV-2 infection at pre-booster, did not have a major protocol deviation that impacted immune response, and had post-booster immunogenicity assessment at timepoint of primary interest (28 days post-Booster Dose).
[b] Moderna COVID-19 Vaccine dosing was a single booster dose (10 mcg mRNA).
[c] Per-Protocol Immunogenicity Subset for Study 1 included all subjects who had both baseline (pre-vaccination) and post-vaccination immunogenicity samples, did not have SARS-CoV-2 infection at baseline, did not have a major protocol deviation that impacted immune response, and had post-injection immunogenicity assessment at timepoint of primary interest (28 days post-Dose 2).
[d] Moderna COVID-19 Vaccine dosing was a two-dose series (100 mcg mRNA per dose) 1 month apart.
[e] Immunobridging success is declared if the lower limit of the 2-sided 95% CI for the GMC Ratio is ≥0.667.
[f] Seroresponse is defined as ≥4-fold rise of pseudovirus neutralizing antibody concentration from baseline (pre-Dose 1 of primary series in Study 4 and Study 1), where baseline concentration < LLOQ is set to LLOQ for the analysis.
[g] 95% CI is calculated using the Clopper-Pearson method.
[h] 95% CI is calculated using the Miettinen-Nurminen (score) confidence limits.
[i] Immunobridging success is declared if the lower limit of the 2-sided 95% CI for the percentage difference is ≥-10%.
Note: Antibody values < the lower limit of quantitation (LLOQ) are replaced by 0.5 × LLOQ. Values > the upper limit of quantitation (ULOQ) are replaced by the ULOQ if actual values are not available.

In a descriptive analysis, the booster dose seroresponse rate among participants 17 months through 5 years of age, with seroresponse defined as at least a 4-fold rise relative to the pre-booster concentration, was 94.6%. The difference in seroresponse rates (Study 4 participants minus Study 1 participants) in this post-hoc analysis was -4.7% (95% CI -14.0, -0.9).

14.7 Immunogenicity of Moderna COVID-19 Vaccine Administered as a First Booster Dose Following Primary Vaccination with Another Authorized or Approved COVID-19 Vaccine

Effectiveness of a Moderna COVID-19 Vaccine booster dose in individuals who completed primary vaccination with another authorized or approved COVID-19 vaccine (heterologous booster dose) is inferred from immunogenicity data supporting effectiveness of a Moderna COVID-19 Vaccine booster dose administered following completion of a Moderna COVID-19 Vaccine primary series and from immunogenicity data from an independent Phase 1/2 open-label clinical trial (NCT04889209) conducted in the United States that evaluated a booster dose of the Moderna COVID-19 Vaccine. The booster dose that study participants received contained twice the amount of mRNA compared to the authorized booster dose of the Moderna COVID-19 Vaccine. In this study, adults who had completed primary vaccination with a Moderna COVID-19 Vaccine 2-dose series (N=151), a Janssen COVID-19 Vaccine single dose (N=156), or a Pfizer-BioNTech COVID-19 Vaccine 2-dose series (N=151) at least 12 weeks (range 12 to 20 weeks) prior to enrollment and who reported no history of SARS-CoV-2 infection were randomized 1:1:1 to receive a booster dose of one of three vaccines: Moderna COVID-19 Vaccine, Janssen COVID-19 Vaccine, or Pfizer-BioNTech COVID-19 Vaccine. Neutralizing antibody titers, as measured by a pseudovirus neutralization assay using a lentivirus expressing the SARS-CoV-2 Spike protein with D614G mutation, were assessed on Day 1 prior to administration of the booster dose and on Day 15 after the booster dose. A booster response to the Moderna COVID-19 Vaccine was demonstrated regardless of the vaccine used for primary vaccination.

14.8 Immunogenicity of Bivalent Vaccine (Original and Omicron BA.1) Administered as a Second Booster Dose in Participants 18 Years of Age and Older

Study 5 is a Phase 2/3 open-label study in which participants 18 years of age and older, who had previously received a two-dose primary series and one booster dose of Moderna COVID-19 Vaccine, received a second booster dose with the bivalent vaccine (Original and Omicron BA.1) at least 3 months after the first booster dose. The bivalent vaccine (Original and Omicron BA.1) contained a total of 50 mcg mRNA per dose. The primary immunogenicity analysis population included 334 participants who received a booster dose of bivalent vaccine (Original and Omicron BA.1) and 260 participants who received a booster dose of Moderna COVID-19 Vaccine. Participants included in the analysis population had no serologic or virologic evidence of SARS-CoV-2 infection prior to the second booster dose.

Among participants assessed for immunogenicity, the median age of the population was 62 years (range 20-96). For the bivalent vaccine (Original and Omicron BA.1) group, 195 (58.4%) participants were age 18 years through 64 years of age and 139 (41.6%) were 65 years of age and older; 43.4% were male, 56.6% were female, 7.2% were Hispanic or Latino, 87.1% were White,

7.2% were African American, 3.3% were Asian, 0.0% were American Indian or Alaska Native, 0.0% were Native Hawaiian or Pacific Islander, 0.6% were other races, and 1.8% were Multiracial. For the Moderna COVID-19 Vaccine group, 140 (53.8%) of participants were age 18 years through 64 years of age and 120 (46.2%) were 65 years of age and older; 48.5% of participants were male, 51.5% were female, 8.5% were Hispanic or Latino, 90.0% were White, 4.2% were African American, 4.2% were Asian, 0.0% were American Indian or Alaska Native, 0.0% were Native Hawaiian or Pacific Islander, 0.4% were other races, and 0.0% were Multiracial. Demographic characteristics were similar among participants who received bivalent vaccine (Original and Omicron BA.1) and those who received Moderna COVID-19 Vaccine.

In Study 5, the neutralizing antibody titers (50% inhibitory dose [ID50]) against a pseudovirus expressing the original SARS-CoV-2 Spike protein (D614G) and a pseudovirus expressing the Omicron BA.1 Spike protein were evaluated. Primary immunogenicity analyses compared the ID50 GMTs and seroresponse rates (the proportion achieving a ≥4-fold rise in ID50 from pre-dose 1 of the primary series) 28 days following a second booster dose with bivalent vaccine (Original and Omicron BA.1) to those following a second booster dose with Moderna COVID-19 Vaccine. Analyses of GMTs met predefined success criteria for superiority against Omicron BA.1 and noninferiority against the Original strain. The analysis of seroresponse against Omicron BA.1 met the criterion for noninferiority: Lower limit of the 2-sided 97.5% CI for the percentage difference in seroresponse rate (bivalent vaccine [Original and Omicron BA.1] minus Moderna COVID-19 Vaccine) >-10%. Table 21 presents the analyses of ID50 GMTs; the primary analysis of seroresponse is not shown.

Post-hoc analyses evaluated the differences in seroresponse rates (the proportion achieving a ≥4-fold rise in ID50 from pre-second booster) against both the Original strain and Omicron BA.1 (Table 22).

Table 21: Neutralizing Antibody Titers (ID50) at 28 Days After a Second Booster Dose with Bivalent Vaccine (Original and Omicron BA.1) or Moderna COVID-19 Vaccine in Participants 18 Years of Age and Older – Per-Protocol Immunogenicity SARS-CoV-2 Negative Set*

Assay	Bivalent Vaccine (Original and Omicron BA.1)[a] N=334 GMT[b] (95% CI)	Moderna COVID-19 Vaccine[c] N=260 GMT[b] (95% CI)	GMT Ratio[b] (Bivalent Vaccine [Original and Omicron BA.1]/Moderna COVID-19 Vaccine) (97.5% CI)	Met Success Criteria
Omicron BA.1	2479.9 (2264.5, 2715.8)	1421.2 (1283.0, 1574.4)	1.7 (1.5, 2.0)	Lower limit of 97.5% CI >1 Criterion: Yes[d]
Original SARS-CoV-2 (D614G)	6422.3 (5990.1, 6885.7)	5286.6 (4887.1, 5718.9)	1.2 (1.1, 1.4)	Lower limit of 97.5% CI ≥0.67 Criterion: Yes[e]

* Per-Protocol Immunogenicity SARS-CoV-2 Negative Set included all subjects who received the planned dose of study vaccine per schedule, had pre-booster and Day 29 neutralizing antibody data against Omicron BA.1, had no

major protocol deviations that impact key or critical data, had no history of HIV infection, and had no serologic or virologic evidence of SARS-CoV-2 infection prior to the second booster dose.

[a] Bivalent vaccine (Original and Omicron BA.1) dosing was a single booster dose (50 mcg mRNA).

[b] The log-transformed antibody levels are analyzed using an analysis of covariance (ANCOVA) model with the treatment variable as fixed effect, adjusting for age group (<65, ≥65 years) and pre-booster antibody titer level (in log 10 scale). The treatment variable corresponds to each individual study arm dose. The resulted least square (LS) means, difference of LS means, and confidence intervals are back transformed to the original scale for presentation.

[c] Moderna COVID-19 Vaccine dosing was a single booster dose (50 mcg mRNA).

[d] Superiority is declared if the lower limit of the 2-sided 97.5% CI for the GMT ratio is >1.

[e] Non-inferiority is declared if the lower limit of the 2-sided 97.5% CI for the GMT ratio is ≥0.67.

Note: Antibody values < the lower limit of quantitation (LLOQ) are replaced by 0.5 × LLOQ. Values > the upper limit of quantitation (ULOQ) are replaced by the ULOQ if actual values are not available.

Table 22: Post-hoc Analyses of Seroresponse Rates at 28 Days After a Second Booster Dose with Bivalent Vaccine (Original and Omicron BA.1) or Moderna COVID-19 Vaccine in Participants 18 Years of Age and Older – Per-Protocol Immunogenicity SARS-CoV-2 Negative Set*

Assay	Bivalent Vaccine (Original and Omicron BA.1)[a] Seroresponse[b] N=334 n/N1 (%) (95% CI)[c]	Moderna COVID-19 Vaccine[d] Seroresponse[b] N=260 n/N1 (%) (95% CI)[c]	Difference in Seroresponse Rate (Bivalent Vaccine [Original and Omicron BA.1]-Moderna COVID-19 Vaccine) % (97.5% CI)[e]
Omicron BA.1	250/334 (74.9) (69.8, 79.4)	138/260 (53.1) (46.8, 59.3)	21.6 (12.9, 30.3)
Original SARS-CoV-2 (D614G)	180/334 (53.9) (48.4, 59.3)	111/260 (42.7) (36.6, 49.0)	11.2 (2.1, 20.3)

* Per-Protocol Immunogenicity SARS-CoV-2 Negative Set included all subjects who received the planned dose of study vaccine per schedule, had pre-booster and Day 29 neutralizing antibody data against Omicron BA.1, had no major protocol deviations that impact key or critical data, had no history of HIV infection, and had no serologic or virologic evidence of SARS-CoV-2 infection prior to the second booster dose.

n=Number of participants who achieved seroresponse at 28 days after booster dose.

N1=Number of participants with non-missing data at pre-booster baseline and 28 days after second booster dose.

[a] Bivalent vaccine (Original and Omicron BA.1) dosing was a single booster dose (50 mcg mRNA).

[b] For post-hoc assessment of seroresponse rates, baseline was pre-second booster dose; seroresponse was defined as a change from below the LLOQ to equal or above 4 x LLOQ if participant pre-second booster dose baseline was below the LLOQ, or at least a 4-fold rise if baseline is equal to or above the LLOQ.

[c] 95% CI is calculated using the Clopper-Pearson method.

[d] Moderna COVID-19 Vaccine dosing was a single booster dose (50 mcg mRNA).

[e] Common risk difference and 97.5% CI is calculated using the stratified Miettinen-Nurminen method to adjust for age group (<65, ≥65 years).

14.9 Immunogenicity of a Single Dose of Moderna COVID-19 Vaccine (Original Monovalent) in Participants 6 Years of Age and Older with Evidence of Prior SARS-CoV-2 Infection

Seroprevalence surveys estimate that almost all of the U.S. population 5 years of age and older now have antibodies (from vaccination and/or infection) against SARS-CoV-2 (*Centers for Disease Control and Prevention. COVID Data Tracker. Atlanta, GA: US Department of Health and Human Services, CDC; 2023, March 31.* https://covid.cdc.gov/covid-data-tracker).

A comparison of neutralizing antibody titers against a pseudovirus expressing the original SARS-CoV-2 Spike protein (D614G) at baseline (pre-Dose 1), at 28 days after Dose 1 for participants with evidence of prior SARS-CoV-2 infection, and at 28 days after Dose 2 for participants without evidence of prior SARS-CoV-2 infection from clinical studies evaluating a primary series of Moderna COVID-19 Vaccine is shown in Table 23 for the following age groups: 6 years through 11 years of age and 18 years of age and older. In both age groups, neutralizing antibody titers at 28 days post-Dose 1 in participants with evidence of prior infection were not statistically different from those of participants without evidence of prior infection at 28 days post-Dose 2. The effectiveness of a single dose of Moderna COVID-19 Vaccine in individuals 5 years of age with prior evidence of infection is extrapolated from these data in participants 6 years through 11 years of age.

Table 23: Geometric Mean Antibody Titers Against a Pseudovirus Expressing the SARS-CoV-2 Spike Protein (USA_WA1/2020 isolate carrying the D614G mutation) 28 Days Post-Dose 1 of Moderna COVID-19 Vaccine in Participants With Evidence of Prior SARS-CoV-2 Infection and 28 Days Post-Dose 2 of Moderna COVID-19 Vaccine in Participants Without Evidence of Prior SARS-CoV-2 Infection

	Study 4 6 Years Through 11 Years (50 mcg mRNA)		**Study 1 ≥18 Years (100 mcg mRNA)**	
Baseline SARS-CoV-2 status	Positive[a]	Negative[b]	Positive[a]	Negative[b]
Baseline GMT	(n=15) 59.4	(n=318) 9.3	(n=130) 68.1	(n=1,050) 9.6
Timepoint	28 days post-Dose 1	28 days post-Dose 2	28 days post-Dose 1	28 days post-Dose 2
Post-Vaccination GMT (95% CI)	(n^1=15) 2110.0 (845.1, 5268.4)	(n^1=321) 1616.5 (1463.1, 1786.1)	(n^1=130) 1478.9 (1069.6, 2044.9)	(n^1=1,053) 1081.1 (1019.8, 1146.1)

Populations used for the analyses were the Immunogenicity Subset for Study 4 and the Per Protocol Random Subcohort for Immunogenicity (PPRSI) for Study 1. The immunogenicity subset for Study 4 consisted of randomized participants who had received at least one dose of study intervention and were included in the subset selected for immunogenicity sampling and testing. The PPRSI for Study 1 consisted of all participants who were included in the random subcohort and who had received both planned doses of study intervention as scheduled and had no major protocol deviations.
n=Number of participants with non-missing data at both baseline and post-vaccination specific timepoint.
n^1=Number of participants with non-missing data at the corresponding post-vaccination timepoint.

[a] Baseline SARS-CoV-2 status positive: Positive RT-PCR test for SARS-CoV-2 OR a positive serology test based on Elecsys immunoassay specific to SARS-CoV-2 nucleocapsid at baseline.
[b] Baseline SARS-CoV-2 status negative: Negative RT-PCR test for SARS-CoV-2 AND a negative serology test based on Elecsys immunoassay specific to SARS-CoV-2 nucleocapsid at baseline.

16 HOW SUPPLIED/STORAGE AND HANDLING

How Supplied

Moderna COVID-19 Vaccine (2023-2024 Formula): single dose vials with dark blue caps and labels with a green box.

NDC 80777-287-92	Carton of 10 single dose vials
NDC 80777-287-07	Single dose vial containing 0.25 mL

Storage and Handling

Minimize exposure to room light, and avoid exposure to direct sunlight and ultraviolet light.

Frozen Storage

- Store frozen between -50°C to -15°C (-58°F to 5°F).

Storage after Thawing

- Storage at 2°C to 8°C (36°F to 46°F):
    - Vials may be stored refrigerated between 2°C to 8°C (36°F to 46°F) for up to 30 days prior to first use.
    - Vials should be discarded after single use.

- Storage at 8°C to 25°C (46°F to 77°F):
    - Vials may be stored between 8°C to 25°C (46°F to 77°F) for a total of 24 hours.
    - Vials should be discarded after single use.
    - Total storage at 8°C to 25°C (46°F to 77°F) must not exceed 24 hours.

Do not refreeze once thawed.

Thawed vials can be handled in room light conditions.

Transportation of Thawed Vials at 2°C to 8°C (36°F to 46°F)
If transport at -50°C to -15°C (-58°F to 5°F) is not feasible, available data support transportation of one or more thawed vials for up to 12 hours at 2°C to 8°C (36°F to 46°F) when shipped using shipping containers which have been qualified to maintain 2°C to 8°C (36°F to 46°F) and under routine road and air transport conditions with shaking and vibration minimized. Once thawed and transported at 2°C to 8°C (36°F to 46°F), vials should not be refrozen and should be stored at 2°C to 8°C (36°F to 46°F) until use.

17 PATIENT COUNSELING INFORMATION

Advise the recipient or caregiver to read the Fact Sheet for Recipients and Caregivers.

The vaccination provider must include vaccination information in the state/local jurisdiction's Immunization Information System (IIS) or other designated system. Advise recipient or caregiver that more information about IISs can be found at: https://www.cdc.gov/vaccines/programs/iis/about.html.

18 MANUFACTURER INFORMATION

For general questions, send an email or call the telephone number provided below.

Email	Telephone number
medinfo@modernatx.com	1-866-MODERNA (1-866-663-3762)

This EUA Prescribing Information may have been updated. For the most recent Full EUA Prescribing Information, please visit www.modernatx.com/covid19vaccine-eua.

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Patent(s): www.modernatx.com/patents
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