Clinical Study Results

This summary reports the results of only one study. Researchers must look at the results of many types of studies to understand if a study vaccine works, how it works, and if it is safe to prescribe to patients. The results of this study might be different than the results of other studies that the researchers review.

Sponsor:	BioNTech SE
Sponsor Agent:	Pfizer Inc.
Vaccine Studied:	Comirnaty® (BNT162b2 RNA-Based COVID-19 Vaccine)
Protocol Number:	C4591031 Substudy A
Dates of Study:	01 July 2021 to 01 September 2022
Title of this Study:	A Study to Learn If a Booster Dose of BNT162b2 Was Safe and Effective in Healthy Children and Adults [Substudy A Final Report: A Phase 3 Master Protocol to Evaluate Additional Dose(s) of BNT162b2 in Healthy Individuals Previously Vaccinated With BNT162b2]
Date of this Report:	11 June 2023

– Thank You –

If you or your child participated in this study, Pfizer, the Sponsor Agent, would like to thank you or your child for your participation.

This summary will describe the study results. If you or your child have any questions about the study or the results, please contact the doctor or staff at your study site.

Why was this study done?

What is COVID-19?

"Coronavirus disease 2019" (or COVID-19) is caused by a virus called **s**evere **a**cute **r**espiratory **s**yndrome **co**rona**v**irus **2** (SARS-CoV-2). People can catch COVID-19 from an infected person who has the virus, even if that person has no symptoms.

COVID-19 can cause a wide range of symptoms, such as fever, chills, cough, loss of taste or smell, and trouble breathing. Most people with COVID-19 have mild to moderate symptoms. But in some people, COVID-19 can be more severe, and they may need hospital care.

What is BNT162b2?

BNT162b2 (also called Comirnaty®) is an injectable vaccine that helps the body's immune system to defend against COVID-19.

- It does not contain a whole virus or any part of the virus that can cause COVID-19.
- It is made up of a part of the virus's genetic code called RNA (or "ribonucleic acid"). The RNA teaches the body's cells to make "spike proteins", which may help the body to produce antibodies to fight against COVID-19.

In this study, BNT162b2 is the original "monovalent" COVID-19 vaccine. This "monovalent" vaccine contains RNA that targets the original strain of the COVID-19 virus.

What was the purpose of this study?

The main goals of this study were:

- To see if a 3rd (booster) dose of BNT162b2 can prevent COVID-19 in participants who are 16 years of age or older and have received 2 doses of BNT162b2 at least 6 months before joining this study.
- To find out if a BNT162b2 booster is safe and well tolerated by participants.

Researchers wanted to know:

1. **Did a BNT162b2 booster dose help to prevent COVID-19?**
2. **How many participants had medical problems within 1 month of their booster dose?**
3. **How many participants had serious medical problems within 6 months of their booster dose?**

What happened during the study?

How was the study done?

Before this study started:

Participants took part in an earlier study that aimed to know if 2 doses of BNT162b2 vaccine can prevent COVID-19 in adults and children.

Some of these participants joined this study to receive a 3rd (booster) dose of BNT162b2 or a placebo.

At the start of this study:

- Researchers tested a booster dose of BNT162b2 on a group of study participants to see if it was safe and if it could prevent COVID-19.
- Researchers then compared the results of participants who got BNT162b2 to the results of those who got a placebo.

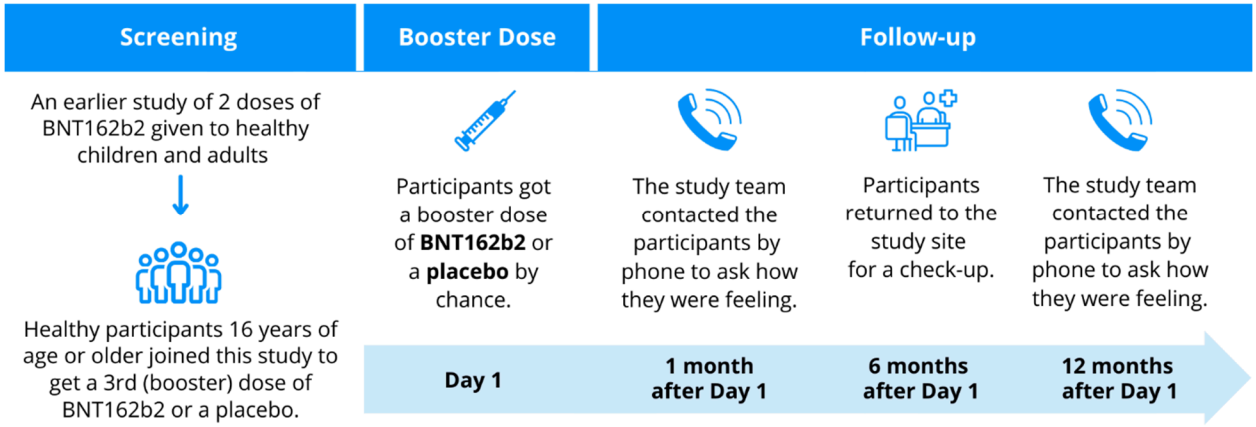
  A placebo does not have any medicine in it, but it is made to look just like BNT162b2.

The start of this study was "observer-blinded". This means that the healthcare staff who prepared and gave the vaccine knew which vaccine was given, but the study participants and researchers did not know.

Study participants were randomly assigned (by chance) to receive 1 booster dose of BNT162b2 or a placebo.

Figure 1 below shows what happened to participants who got a booster dose of BNT162b2 or a placebo at the start of this study.

Figure 1. What happened to participants who got a booster dose of BNT162b2 or a placebo at the start of this study?



Later in this study:

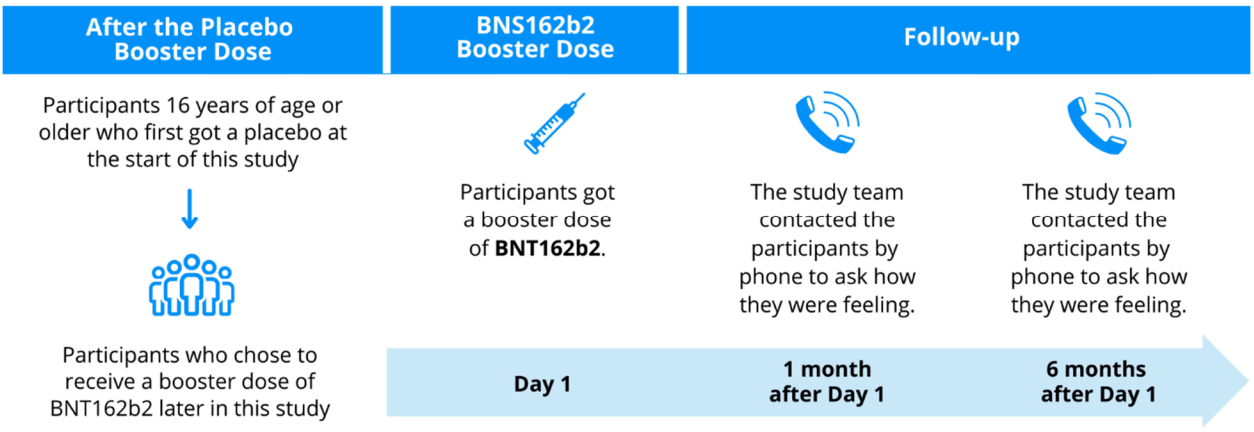
In September 2021, the United States (US) Food and Drug Administration (FDA) recommended a booster dose of BNT162b2 for people at high risk of severe COVID-19.

Then, participants who got a placebo at the start of this study were offered to receive 1 booster dose of BNT162b2. This was based on the participant's and study doctor's decision.

This part of the study was "open-label". This means that the study participants and researchers knew which vaccine was given.

Figure 2 below shows what happened to participants who first got a placebo at the start and then chose to get a booster dose of BNT162b2 later in this study.

Figure 2. What happened to participants who first got a placebo at the start and then chose to get a booster dose of BNT162b2 later in this study?



Where did this study take place?

The study ran at 123 sites in 3 countries (Brazil, South Africa, and the US).

When did this study take place?

It began on 01 July 2021 and ended on 01 September 2022.

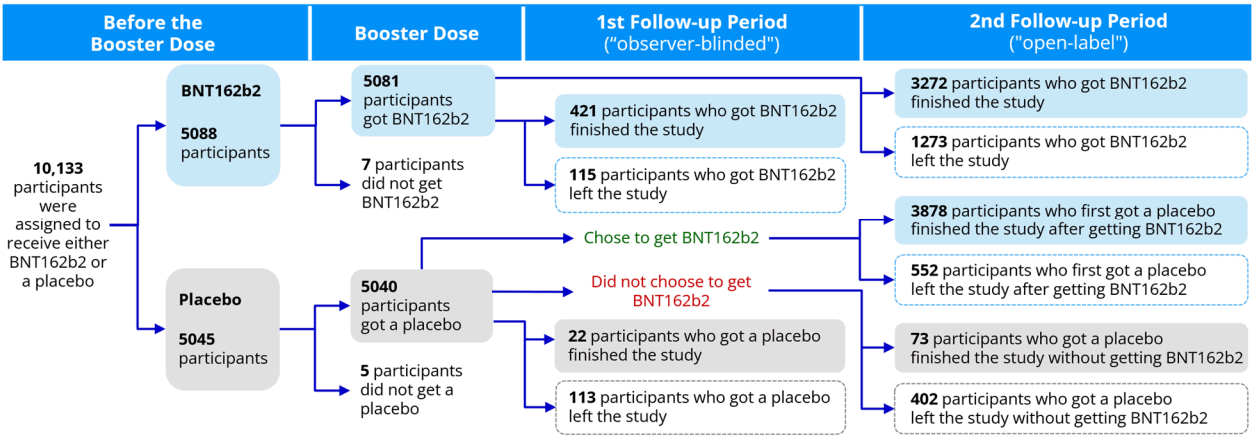
Who participated in this study?

The study included healthy children and adults aged 16 years or older who got 2 doses of BNT162b2 from an earlier study of BNT162b2.

- 4971 boys or men participated.
- 5150 girls or women participated.
- All participants were between the ages of 16 and 87 years.

Figure 3 below shows that 10,133 participants started the study. It also shows how many participants finished or left the study during the follow-up periods.

Figure 3. How many participants took part in this study?



The most common reason participants did not finish the study was that most of them signed up to join other studies related to this research.

How long did the study last?

Most of the participants were in the study for about 12 months. The entire study took about 14 months to complete.

When the study ended in September 2022, the Sponsor Agent began reviewing the information collected. The Sponsor Agent then created a report of the results. This is a summary of that report.

What were the results of the study?

1 Did a BNT162b2 booster dose help to prevent COVID-19?

To find out, researchers compared how many participants in the BNT162b2 and placebo groups got COVID-19 at any time between 7 days after the booster dose and 2 months after the booster dose.

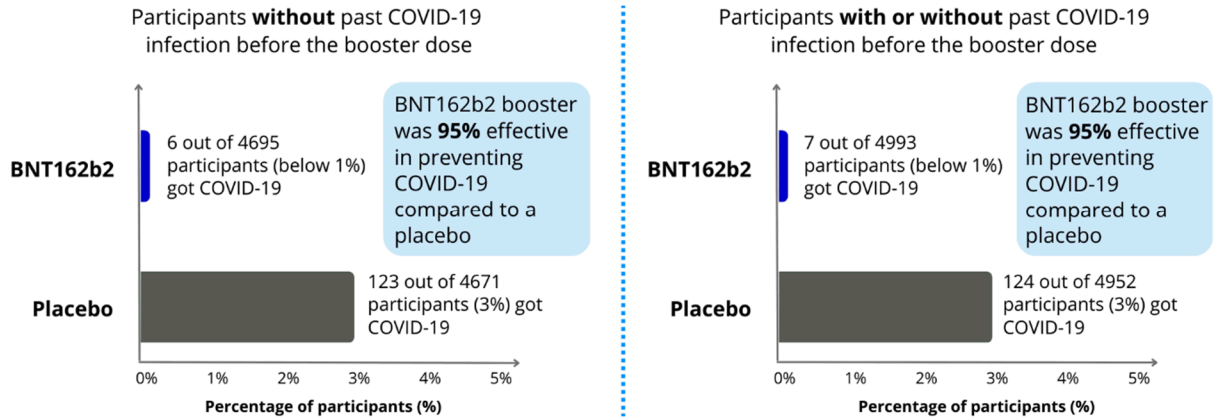
Researchers checked the results for 2 sets of participants:

- Those without past COVID-19 infection before their booster dose.
- Those with or without past COVID-19 infection before their booster dose.

Compared to a placebo, BNT162b2 was **95%** effective in preventing COVID-19 between 7 days after the booster dose and 2 months after the booster dose. The results were similar for the 2 sets of participants, regardless of past COVID-19 infection before their booster dose.

Figure 4 below shows the results.

Figure 4. How many participants got COVID-19 between 7 days after the booster dose and 2 months after the booster dose?



The researchers have decided that these results are not likely due to chance. A booster dose of BNT162b2 may offer protection against COVID-19 in people who are 16 years of age or older and have received 2 doses of BNT162b2 before. This was regardless of past COVID-19 infection before the booster dose.

This does not mean that everyone in this study had these results. This is a summary of just some of the main results of this study. Other studies may have different results.

What medical problems did participants have during the study?

The researchers recorded any medical problems the participants had during the study. Participants could have had medical problems for reasons not related to the study (for example, caused by an underlying disease or by chance). Or, medical problems could also have been caused

by a study vaccine or by another medicine the participant was taking. Sometimes the cause of a medical problem is unknown. By comparing medical problems across many vaccine groups in many studies, researchers try to understand what effects a study vaccine might have on a participant.

Overall, 5 participants left the study because of medical problems they had during the study. These were:

- 3 participants who got BNT162b2. These participants got BNT162b2 at the start, or they first got a placebo at the start and then got BNT162b2 later in this study.
- 2 participants who got a placebo at the start and then chose not to receive BNT162b2 later in this study.

2 How many participants had medical problems within 1 month of their booster dose?

This section describes the results for participants who got BNT162b2 or a placebo at the start of this study.

In total, the following had at least 1 medical problem within 1 month of their booster dose:

- 1327 out of 5054 participants (26%) in the BNT162b2 group.
- 354 out of 5016 participants (7%) in the placebo group.

Table 1 lists the most common medical problems – seen in at least 2% of participants – that happened within 1 month of receiving the booster dose.

Below are instructions on how to read Table 1.

Instructions for Understanding Table 1.

- The **1st** column of Table 1 lists medical problems commonly reported during the study. This table lists all medical problems seen in at least 2% of participants in either group.
- The **2nd** column tells how many of the 5054 participants in the BNT162b2 group reported each medical problem. Next to this number is the percentage of these 5054 participants in the BNT162b2 group who had the medical problem.
- The **3rd** column tells how many of the 5016 participants in the placebo group reported each medical problem. Next to this number is the percentage of these 5016 participants in the placebo group who had the medical problem.
- For example, using these instructions, you can see how many had swollen lymph nodes:
    - 141 out of 5054 participants (3%) in the BNT162b2 group.
    - 3 out of 5016 participants (below 1%) in the placebo group.

Table 1. Commonly reported medical problems by study participants within 1 month of their BNT162b2 or placebo booster dose at the start of this study		
Medical Problem	**BNT162b2 (5054 Participants)**	**Placebo (5016 Participants)**
Swollen lymph nodes	141 out of 5054 participants (3%)	3 out of 5016 participants (below 1%)
Pain in the injection site	673 out of 5054 participants (13%)	83 out of 5016 participants (2%)
Tiredness	383 out of 5054 participants (8%)	65 out of 5016 participants (1%)
Fever	258 out of 5054 participants (5%)	8 out of 5016 participants (below 1%)
Chills	243 out of 5054 participants (5%)	11 out of 5016 participants (below 1%)
Pain	138 out of 5054 participants (3%)	16 out of 5016 participants (below 1%)
Muscle ache	248 out of 5054 participants (5%)	21 out of 5016 participants (below 1%)
Headache	266 out of 5054 participants (5%)	54 out of 5016 participants (1%)

Did study participants have any serious medical problems?

A medical problem is considered “serious” when it is life-threatening, needs hospital care, or causes lasting problems.

This section describes the results of participants who got BNT162b2 during the study. These participants included:

- Those who got BNT162b2 booster at the start of this study.
- Those who first got a placebo at the start and then got BNT162b2 later in this study.

3 How many participants had serious medical problems within 6 months of their booster dose?

Overall, few participants had at least 1 serious medical problem within 6 months of their BNT162b2 booster dose:

- 73 out of 5054 participants (1%) who got BNT162b2 at the start.
- 44 out of 4405 participants (1%) who first got a placebo and then got BNT162b2 later in this study.

Based on the study doctors’ judgment, most of the serious medical problems were not related to the booster vaccine.

Table 2 lists the most common serious medical problems – seen in at least 2 participants – that happened within 6 months of receiving the booster dose.

Below are instructions on how to read Table 2.

Instructions for Understanding Table 2.

- The **1st** column of Table 2 lists medical problems commonly reported during the study. This table lists all medical problems seen in at least 2 participants in either group.
- The **2nd** column tells how many of the 5054 participants who got BNT162b2 at the start of the study reported each medical problem. Next to this number is the percentage of these 5054 participants in this group who had the medical problem.
- The **3rd** column tells how many of the 4405 participants who first got a placebo and later got BNT162b2 reported each medical problem. Next to this number is the percentage of these 4405 participants in this group who had the medical problem.
- For example, using these instructions, you can see how many participants had a sudden heart attack:
    - 3 out of the 5054 participants (below 1%) who got BNT162b2 at the start.
    - 0 out of the 4405 participants (0%) who first got a placebo and later got BNT162b2.

Table 2. Commonly reported serious medical problems by study participants within 6 months of their BNT162b2 booster dose		
Medical Problem	**BNT162b2 at the Start of the Study (5054 Participants)**	**Placebo at the Start Then BNT162b2 Later in the Study (4405 Participants)**
Sudden heart attack	3 out of 5054 participants (below 1%)	0 out of 4405 participants (0%)
Fast and irregular heartbeat	3 out of 5054 participants (below 1%)	2 out of 4405 participants (below 1%)
Heart attack	2 out of 5054 participants (below 1%)	1 out of 4405 participants (below 1%)
Inflamed appendix	3 out of 5054 participants (below 1%)	1 out of 4405 participants (below 1%)
High level of a liver enzyme in the blood	2 out of 5054 participants (below 1%)	0 out of 4405 participants (0%)
Prostate cancer	3 out of 5054 participants (below 1%)	0 out of 4405 participants (0%)
A type of breast cancer	2 out of 5054 participants (below 1%)	0 out of 4405 participants (0%)
Miscarriage	2 out of 5054 participants (below 1%)	1 out of 4405 participants (below 1%)
Kidney stone	3 out of 5054 participants (below 1%)	0 out of 4405 participants (0%)

Blockage in the gut	1 out of 5054 participants (below 1%)	2 out of 4405 participants (below 1%)
Stomach flu	1 out of 5054 participants (below 1%)	2 out of 4405 participants (below 1%)
Joint pain or stiffness	1 out of 5054 participants (below 1%)	4 out of 4405 participants (below 1%)
Sudden kidney problems	0 out of 5054 participants (0%)	2 out of 4405 participants (below 1%)

Overall, 12 participants died during the study. These were:

- 5 out of 5054 participants (below 1%) who got BNT162b2 at the start.
- 5 out of 4405 participants (below 1%) who first got a placebo and then later got BNT162b2.
- 2 out of 5016 participants (below 1%) who got a placebo at the start and then chose not to receive BNT162b2 later in this study.

Based on the study doctors' judgment, none of the deaths during the study were related to BNT162b2.

Where can I learn more about this study?

If you have questions about the results of your study, please speak with the doctor or staff at your study site.

For more details on your study protocol, please visit:

www.pfizer.com/research/research_clinical_trials/trial_results	Use the protocol number **C4591031 SSA**

The full scientific report of this study is available online at:

www.clinicaltrials.gov	Use the study identifier **NCT04955626**
www.clinicaltrialsregister.eu	Use the study identifier **2021-005197-25**

Please remember that researchers look at the results of many studies to find out which vaccines can work and are safe for patients.

Again, if you or your child participated in this study, **thank you** for volunteering. We do research to try to find the best ways to help patients, and you helped us to do that!