COVID-19 is an emerging, rapidly evolving situation.

Public health information (CDC)

Research information (NIH)

SARS-CoV-2 data (NCBI)

Prevention and treatment information (HHS)

Study to Describe the Safety, Tolerability, Immunogenicity, and Efficacy of RNA Vaccine Candidates Against COVID-19 in Healthy Individuals

ClinicalTrials.gov Identifier: NCT04368728

Recruitment Status : Active, not recruiting
First Posted : April 30, 2020
Last Update Posted : February 10, 2021

Sponsor:
BioNTech SE

Collaborator:
Pfizer

Information provided by (Responsible Party):
BioNTech SE

Study Details | Tabular View | No Results Posted | Disclaimer | How to Read a Study Record

Study Description

Go to

Brief Summary:

This is a Phase 1/2/3, randomized, placebo-controlled, observer-blind, dose-finding, vaccine candidate-selection, and efficacy study in healthy individuals.

The study consists of 2 parts: Phase 1: to identify preferred vaccine candidate(s) and dose level(s); Phase 2/3: an expanded cohort and efficacy part.

The study will evaluate the safety, tolerability, and immunogenicity of 2 different SARS CoV 2 RNA vaccine candidates against COVID 19 and the efficacy of 1 candidate:

- As a 2-dose (separated by 21 days) schedule;
- At various different dose levels in Phase 1;
- In 3 age groups (Phase 1: 18 to 55 years of age, 65 to 85 years of age; Phase 2/3: ≥12 years of age [stratified as 12-15, 16-55 or >55 years of age]).

The candidate selected for evaluation in Phase 2/3 is BNT162b2 (mid-dose).

Participants ≥16 years of age who originally received placebo will be offered the opportunity to receive BNT162b2 at defined points as part of the study.

Condition or disease	Intervention/treatment	Phase
SARS-CoV-2 Infection COVID-19	Biological: BNT162b1 Biological: BNT162b2 Other: Placebo	Phase 2 Phase 3

Study Design

Go to

Study Type :

Interventional (Clinical Trial)

Estimated Enrollment :

43998 participants

Allocation:

Randomized

Intervention Model:

Parallel Assignment

Masking:

Triple (Participant, Care Provider, Investigator)

Primary Purpose:

Prevention

Official Title:

A PHASE 1/2/3, PLACEBO-CONTROLLED, RANDOMIZED, OBSERVER-BLIND, DOSE-FINDING STUDY TO EVALUATE THE SAFETY, TOLERABILITY, IMMUNOGENICITY, AND EFFICACY OF SARS-COV-2 RNA VACCINE CANDIDATES AGAINST COVID-19 IN HEALTHY INDIVIDUALS

Actual Study Start Date :

April 29, 2020

Estimated Primary Completion Date :

August 3, 2021

Estimated Study Completion Date :

January 31, 2023

Arms and Interventions

Go to

Arm	Intervention/treatment
Experimental: Low dose, 18-55 years of age (2 doses)	Biological: BNT162b1 Intramuscular injection Biological: BNT162b2 Intramuscular injection
Experimental: Low-mid dose, 18-55 years of age (2 doses)	Biological: BNT162b1 Intramuscular injection Biological: BNT162b2 Intramuscular injection
Experimental: Mid dose, 18-55 years of age (2 doses)	Biological: BNT162b1 Intramuscular injection Biological: BNT162b2 Intramuscular injection

Arm	Intervention/treatment
Experimental: Low dose, 65-85 years of age (2 doses)	Biological: BNT162b1 Intramuscular injection Biological: BNT162b2 Intramuscular injection
Experimental: Low-mid dose, 65-85 years of age (2 doses)	Biological: BNT162b1 Intramuscular injection Biological: BNT162b2 Intramuscular injection
Experimental: Mid dose, 65-85 years of age (2 doses)	Biological: BNT162b1 Intramuscular injection Biological: BNT162b2 Intramuscular injection
Experimental: Mid dose, ≥12 years of age (2 doses)	Biological: BNT162b2 Intramuscular injection
Placebo Comparator: Placebo, 18-55 years of age	Other: Placebo Intramuscular injection
Placebo Comparator: Placebo, 65-85 years of age	Other: Placebo Intramuscular injection
Placebo Comparator: Placebo, ≥12 years of age	Other: Placebo Intramuscular injection
Experimental: High dose, 18-55 years of age (2 doses)	Biological: BNT162b1 Intramuscular injection

Arm	Intervention/treatment
Vaccination of Placebo recipients with BNT162b2 - Stage 1 Participants ≥16 years of age who originally received placebo and are eligible for COVID-19 vaccination following any local or national recommendations will be offered the opportunity to receive BNT162b2 as part of the study.	Biological: BNT162b2 Intramuscular injection
Vaccination of placebo recipients with BNT162b2 - Stage 2 Participants ≥16 years of age who originally received placebo will be offered the opportunity to receive BNT162b2 at defined points as part of the study.	Biological: BNT162b2 Intramuscular injection

Outcome Measures

Go to

Primary Outcome Measures :

1. Percentage of participants in Phase 1 reporting local reactions [Time Frame: For 7 days after dose 1 and dose 2]

   Pain at the injection site, redness, and swelling as self-reported on electronic diaries.

2. Percentage of participants in Phase 1 reporting systemic events [Time Frame: For 7 days after dose 1 and dose 2]

   Fever, fatigue, headache, chills, vomiting, diarrhea, new or worsened muscle pain, and new or worsened joint pain as self-reported on electronic diaries.

3. Percentage of participants in Phase 1 reporting adverse events [Time Frame: From dose 1 through 1 month after the last dose]

   As elicited by investigational site staff

4. Percentage of participants in Phase 1 reporting serious adverse events [Time Frame: From dose 1 through 6 months after the last dose]

   As elicited by investigational site staff

5. Percentage of Phase 1 participants with abnormal hematology and chemistry laboratory values [Time Frame: 1 day after dose 1]

   As measured at the central laboratory

6. Percentage of Phase 1 participants with abnormal hematology and chemistry laboratory values [Time Frame: 7 days after dose 1]

   As measured at the central laboratory

7. Percentage of Phase 1 participants with abnormal hematology and chemistry laboratory values [Time Frame: 7 days after dose 2]

   As measured at the central laboratory

8. Percentage of Phase 1 participants with grading shifts in hematology and chemistry laboratory assessments [Time Frame: Between baseline and 1 day after dose 1]

   As measured at the central laboratory

9. Percentage of Phase 1 participants with grading shifts in hematology and chemistry laboratory assessments [Time Frame: Between baseline and 7 days after dose 1]

   As measured at the central laboratory

10. Percentage of Phase 1 participants with grading shifts in hematology and chemistry laboratory assessments [Time Frame: Between before dose 2 and 7 days after dose 2]

    As measured at the central laboratory

11. In the first 360 participants randomized into Phase 2/3, percentage of participants reporting local reactions [Time Frame: For 7 days after dose 1 and dose 2]

    Pain at the injection site, redness, and swelling as self-reported on electronic diaries.

12. In the first 360 participants randomized into Phase 2/3, percentage of participants reporting systemic events [Time Frame: For 7 days after dose 1 and dose 2]

    Fever, fatigue, headache, chills, vomiting, diarrhea, new or worsened muscle pain, and new or worsened joint pain as self-reported on electronic diaries.

13. In the first 360 participants randomized into Phase 2/3, percentage of participants reporting adverse events [Time Frame: From dose 1 through 1 month after the last dose]

    As elicited by investigational site staff

14. In the first 360 participants randomized into Phase 2/3, percentage of participants reporting serious adverse events [Time Frame: From dose 1 through 6 months after the last dose]

    As elicited by investigational site staff

15. In a subset of at least 6000 participants randomized in Phase 2/3, percentage of participants reporting local reactions [Time Frame: For 7 days after dose 1 and dose 2]

    Pain at the injection site, redness, and swelling as self-reported on electronic diaries.

16. In a subset of at least 6000 participants randomized in Phase 2/3, percentage of participants reporting systemic events [Time Frame: For 7 days after dose 1 and dose 2]

    Fever, fatigue, headache, chills, vomiting, diarrhea, new or worsened muscle pain, and new or worsened joint pain as self-reported on electronic diaries.

17. Percentage of participants in Phase 2/3 reporting adverse events [Time Frame: From dose 1 through 1 month after the last dose]

    As elicited by investigational site staff

18. Percentage of participants in Phase 2/3 reporting serious adverse events [Time Frame: From dose 1 through 6 months after the last dose]

    As elicited by investigational site staff

19. Confirmed COVID-19 in Phase 2/3 participants without evidence of infection before vaccination [Time Frame: From 7 days after the second dose of study intervention to the end of the study, up to 2 years]

    Per 1000 person-years of follow-up

20. Confirmed COVID-19 in Phase 2/3 participants with and without evidence of infection before vaccination [Time Frame: From 7 days after the second dose of study intervention to the end of the study, up to 2 years]

    Per 1000 person-years of follow-up

21. Percentage of participants 12-15 years of age in Phase 3 reporting adverse events [Time Frame: From dose 1 through 1 month after the last dose]

    As elicited by investigational site staff

22. Percentage of participants 12-15 years of age in Phase 3 reporting adverse events
[Time Frame: From dose 1 through 6 months after the last dose]

    As elicited by investigational site staff

23. In participants 12-15 years of age randomized in Phase 3, percentage of participants reporting local reactions [Time Frame: For 7 days after dose 1 and dose 2]

    Pain at the injection site, redness, and swelling as self-reported on electronic diaries.

24. In participants 12-15 years of age randomized in Phase 3, percentage of participants reporting systemic events [Time Frame: For 7 days after dose 1 and dose 2]

    Fever, fatigue, headache, chills, vomiting, diarrhea, new or worsened muscle pain, and new or worsened joint pain as self-reported on electronic diaries.

Secondary Outcome Measures :

1. In Phase 1 participants, SARS-CoV-2 serum neutralizing antibody levels, expressed as GMTs
[Time Frame: Through 2 years after the final dose]

    As measured at the central laboratory

2. In Phase 1 participants, GMFR in SARS-CoV-2 serum neutralizing titers from before vaccination to each subsequent time point [Time Frame: Through 2 years after the final dose]

    As measured at the central laboratory

3. Proportion of participants in Phase 1 achieving a greater than or equal to 4-fold rise from before vaccination in SARS-CoV-2 serum neutralizing antibody levels [Time Frame: Through 2 years after the final dose]

    As measured at the central laboratory

4. In Phase 1 participants, SARS-CoV-2 anti-S1 binding antibody levels and anti-RBD binding antibody levels, expressed as GMCs [Time Frame: Through 2 years after the final dose]

    As measured at the central laboratory

5. Proportion of participants in Phase 1 achieving a greater than or equal to 4-fold rise from before vaccination in SARS-CoV-2 anti-S1 binding antibody levels and anti-RBD binding antibody levels
[Time Frame: Through 2 years after the final dose]

    As measured at the central laboratory

6. In Phase 1 participants, GMFR in SARS-CoV-2 anti-S1 binding antibody levels and anti-RBD binding antibody levels from before vaccination to each subsequent time point [Time Frame: Through 2 years after the final dose]

   As measured at the central laboratory

7. In Phase 1 participants, GMR of the geometric mean of SARS-CoV-2 serum neutralizing titers to the geometric mean of SARS CoV 2 (anti-S1 and anti-RBD) binding antibody levels
   [Time Frame: Through 2 years after the final dose]

   As measured at the central laboratory

8. Confirmed COVID-19 in Phase 2/3 participants without evidence of infection before vaccination
   [Time Frame: From 14 days after the second dose of study intervention to the end of the study, up to 2 years]

   Per 1000 person-years of follow-up

9. Confirmed COVID-19 in Phase 2/3 participants with and without evidence of infection before vaccination [Time Frame: From 14 days after the second dose of study intervention to the end of the study, up to 2 years]

   Per 1000 person-years of follow-up

10. Confirmed severe COVID-19 in Phase 2/3 participants without evidence of infection before vaccination [Time Frame: From 7 days after the second dose of study intervention to the end of the study, up to 2 years]

    Per 1000 person-years of follow-up

11. Confirmed severe COVID-19 in Phase 2/3 participants without evidence of infection before vaccination [Time Frame: From 14 days after the second dose of study intervention to the end of the study, up to 2 years]

    Per 1000 person-years of follow-up

12. Confirmed severe COVID-19 in Phase 2/3 participants with and without evidence of infection before vaccination [Time Frame: From 7 days after the second dose of study intervention to the end of the study, up to 2 years]

    Per 1000 person-years of follow-up

13. Confirmed severe COVID-19 in Phase 2/3 participants with and without evidence of infection before vaccination [Time Frame: From 14 days after the second dose of study intervention to the end of the study, up to 2 years]

    Per 1000 person-years of follow-up

14. Confirmed COVID-19 (according to the CDC-defined symptoms) in Phase 2/3 participants without evidence of infection before vaccination [Time Frame: From 7 days after the second dose of study intervention to the end of the study, up to 2 years]

    Per 1000 person-years of follow-up

15. Confirmed COVID-19 (according to the CDC-defined symptoms) in Phase 2/3 participants without evidence of infection before vaccination [Time Frame: From 14 days after the second dose of study intervention to the end of the study, up to 2 years]

    Per 1000 person-years of follow-up

16. Confirmed COVID-19 (according to the CDC-defined symptoms) in Phase 2/3 participants with and without evidence of infection before vaccination [Time Frame: From 7 days after the second dose of study intervention to the end of the study, up to 2 years]

    Per 1000 person-years of follow-up

17. Confirmed COVID-19 (according to the CDC-defined symptoms) in Phase 2/3 participants with and without evidence of infection before vaccination [Time Frame: From 14 days after the second dose of study intervention to the end of the study, up to 2 years]

    Per 1000 person-years of follow-up

18. GMR of SARS CoV 2 neutralizing titers in the 2 age groups (12-15 years of age to 16-25 years of age) [Time Frame: 1 month after the second dose]

    As measured at the central laboratory

19. Incidence of asymptomatic SARS CoV-2 infection based on N binding antibody seroconversion in participants with no serological or virological evidence of past SARS CoV-2 infection or confirmed COVID-19 prior to 1 month after receipt of the second dose [Time Frame: Through 1 month after the second dose]

    Per 1000 person-years of follow-up

20. Incidence of asymptomatic SARS CoV-2 infection based on central laboratory-confirmed NAAT in participants with no serological or virological evidence (up to the start of the asymptomatic surveillance period) of past SARS-CoV-2 infection [Time Frame: Through 6 months after the second dose]

    Per 1000 person-years of follow-up

Eligibility Criteria

Go to

Information from the National Library of Medicine

Choosing to participate in a study is an important personal decision. Talk with your doctor and family members or friends about deciding to join a study. To learn more about this study, you or your doctor may contact the study research staff using the contacts provided below. For general information, Learn About Clinical Studies.

Ages Eligible for Study:

12 Years and older (Child, Adult, Older Adult)

Sexes Eligible for Study:

All

Accepts Healthy Volunteers:

Yes

Criteria

Inclusion Criteria:

- Male or female participants between the ages of 18 and 55 years, inclusive, 65 and 85 years, inclusive, or ≥12 years, inclusive, at randomization (dependent upon study phase). Note that participants <18 years of age cannot be enrolled in the EU.
- Participants who are willing and able to comply with all scheduled visits, vaccination plan, laboratory tests, lifestyle considerations, and other study procedures.
- Healthy participants who are determined by medical history, physical examination, and clinical judgment of the investigator to be eligible for inclusion in the study.
- Participants who, in the judgment of the investigator, are at risk for acquiring COVID-19.
- Capable of giving personal signed informed consent

Exclusion Criteria:

- Other medical or psychiatric condition including recent (within the past year) or active suicidal ideation/behavior or laboratory abnormality that may increase the risk of study participation or, in the investigator's judgment, make the participant inappropriate for the study.
- Phases 1 and 2 only: Known infection with human immunodeficiency virus (HIV), hepatitis C virus (HCV), or hepatitis B virus (HBV).
- History of severe adverse reaction associated with a vaccine and/or severe allergic reaction (eg, anaphylaxis) to any component of the study intervention(s).
- Receipt of medications intended to prevent COVID 19.
- Previous clinical (based on COVID-19 symptoms/signs alone, if a SARS-CoV-2 NAAT result was not available) or microbiological (based on COVID-19 symptoms/signs and a positive SARS-CoV-2 NAAT result) diagnosis of COVID 19
- Phase 1 only: Individuals at high risk for severe COVID-19, including those with any of the following risk factors:
    - Hypertension
    - Diabetes mellitus
    - Chronic pulmonary disease
    - Asthma
    - Current vaping or smoking
    - History of chronic smoking within the prior year
    - BMI >30 kg/m2
    - Anticipating the need for immunosuppressive treatment within the next 6 months
- Phase 1 only: Individuals currently working in occupations with high risk of exposure to SARS-CoV-2 (eg, healthcare worker, emergency response personnel).
- Immunocompromised individuals with known or suspected immunodeficiency, as determined by history and/or laboratory/physical examination.
- Phase 1 only: Individuals with a history of autoimmune disease or an active autoimmune disease requiring therapeutic intervention.
- Bleeding diathesis or condition associated with prolonged bleeding that would, in the opinion of the investigator, contraindicate intramuscular injection.
- Women who are pregnant or breastfeeding.
- Previous vaccination with any coronavirus vaccine.
- Individuals who receive treatment with immunosuppressive therapy, including cytotoxic agents or systemic corticosteroids, eg, for cancer or an autoimmune disease, or planned receipt throughout the study.
- Phase 1 only: Regular receipt of inhaled/nebulized corticosteroids.

- Receipt of blood/plasma products or immunoglobulin, from 60 days before study intervention administration or planned receipt throughout the study.
- Participation in other studies involving study intervention within 28 days prior to study entry and/or during study participation.
- Previous participation in other studies involving study intervention containing lipid nanoparticles.
- Phase 1 only: Positive serological test for SARS-CoV-2 IgM and/or IgG antibodies at the screening visit.
- Phase 1 only: Any screening hematology and/or blood chemistry laboratory value that meets the definition of a ≥ Grade 1 abnormality.
- Phase 1 only: Positive test for HIV, hepatitis B surface antigen (HBsAg), hepatitis B core antibodies (HBc Abs), or hepatitis C virus antibodies (HCV Abs) at the screening visit.
- Phase 1 only: SARS-CoV-2 NAAT-positive nasal swab within 24 hours before receipt of study intervention.
- Investigator site staff or Pfizer employees directly involved in the conduct of the study, site staff otherwise supervised by the investigator, and their respective family members.

Contacts and Locations

Go to

Information from the National Library of Medicine

To learn more about this study, you or your doctor may contact the study research staff using the contact information provided by the sponsor.

Please refer to this study by its ClinicalTrials.gov identifier (NCT number): ***NCT04368728***

Locations

▶ Show 155 study locations

Sponsors and Collaborators

BioNTech SE

Pfizer

Investigators

Study Director: Pfizer CT.gov Call Center Pfizer

More Information

Go to

Additional Information:

To obtain contact information for a study center near you, click here.

Publications automatically indexed to this study by ClinicalTrials.gov Identifier (NCT Number):

Vogel AB, Kanevsky I, Che Y, Swanson KA, Muik A, Vormehr M, Kranz LM, Walzer KC, Hein S, Güler A, Loschko J, Maddur MS, Ota-Setlik A, Tompkins K, Cole J, Lui BG, Ziegenhals T, Plaschke A, Eisel D, Dany SC, Fesser S, Erbar S, Bates F, Schneider D, Jesionek B, Sänger B, Wallisch AK, Feuchter Y, Junginger H, Krumm SA, Heinen AP, Adams-Quack P, Schlereth J, Schille S, Kröner C, de la Caridad Güimil Garcia R, Hiller T, Fischer L, Sellers RS, Choudhary S, Gonzalez O, Vascotto F, Gutman MR, Fontenot JA, Hall-Ursone S, Brasky K, Griffor MC, Han S, Su AAH, Lees JA, Nedoma NL, Mashalidis EH, Sahasrabudhe PV, Tan CY, Pavliakova D, Singh G, Fontes-Garfias C, Pride M, Scully IL, Ciolino T, Obregon J, Gazi M, Carrion R Jr, Alfson KJ, Kalina WV, Kaushal D, Shi PY, Klamp T, Rosenbaum C, Kuhn AN, Türeci Ö, Dormitzer PR, Jansen KU, Sahin U. BNT162b vaccines protect rhesus macaques from SARS-CoV-2. Nature. 2021 Feb 1. doi: 10.1038/s41586-021-03275-y. [Epub ahead of print]

Polack FP, Thomas SJ, Kitchin N, Absalon J, Gurtman A, Lockhart S, Perez JL, Pérez Marc G, Moreira ED, Zerbini C, Bailey R, Swanson KA, Roychoudhury S, Koury K, Li P, Kalina WV, Cooper D, Frenck RW Jr, Hammitt LL, Türeci Ö, Nell H, Schaefer A, Ünal S, Tresnan DB, Mather S, Dormitzer PR, Şahin U, Jansen KU, Gruber WC; C4591001 Clinical Trial Group. Safety and Efficacy of the BNT162b2 mRNA Covid-19 Vaccine. N Engl J Med. 2020 Dec 31;383(27):2603-2615. doi: 10.1056/NEJMoa2034577. Epub 2020 Dec 10.

Walsh EE, Frenck RW Jr, Falsey AR, Kitchin N, Absalon J, Gurtman A, Lockhart S, Neuzil K, Mulligan MJ, Bailey R, Swanson KA, Li P, Koury K, Kalina W, Cooper D, Fontes-Garfias C, Shi PY, Türeci Ö, Tompkins KR, Lyke KE, Raabe V, Dormitzer PR, Jansen KU, Şahin U, Gruber WC. Safety and Immunogenicity of Two RNA-Based Covid-19 Vaccine Candidates. N Engl J Med. 2020 Dec 17;383(25):2439-2450. doi: 10.1056/NEJMoa2027906. Epub 2020 Oct 14.

Mulligan MJ, Lyke KE, Kitchin N, Absalon J, Gurtman A, Lockhart S, Neuzil K, Raabe V, Bailey R, Swanson KA, Li P, Koury K, Kalina W, Cooper D, Fontes-Garfias C, Shi PY, Türeci Ö, Tompkins KR, Walsh EE, Frenck R, Falsey AR, Dormitzer PR, Gruber WC, Şahin U, Jansen KU. Phase I/II study of COVID-19 RNA vaccine BNT162b1 in adults. Nature. 2020 Oct;586(7830):589-593. doi: 10.1038/s41586-020-2639-4. Epub 2020 Aug 12. Erratum in: Nature. 2021 Feb;590(7844):E26.

Responsible Party:

BioNTech SE

ClinicalTrials.gov Identifier:

NCT04368728 History of Changes

Other Study ID Numbers:

C4591001

2020-002641-42 (EudraCT Number)

First Posted:

April 30, 2020 Key Record Dates

Last Update Posted:

February 10, 2021

Last Verified:

February 2021

Individual Participant Data (IPD) Sharing Statement:

Plan to Share IPD:

Yes

Plan Description:

Pfizer will provide access to individual de-identified participant data and related study documents (e.g. protocol, Statistical Analysis Plan (SAP), Clinical Study Report (CSR)) upon request from qualified researchers, and subject to certain criteria, conditions, and exceptions. Further details on Pfizer's data sharing criteria and process for requesting access can be found at: https://www.pfizer.com/science/clinical_trials/trial_data_and_results/data_requests.

URL:

https://www.pfizer.com/science/clinical_trials/trial_data_and_results/data_requests

Studies a U.S. FDA-regulated Drug Product:

Yes

Studies a U.S. FDA-regulated Device Product:

No

Keywords provided by BioNTech SE:

COVID-19
Coronavirus
Vaccine
SARS-CoV-2
RNA Vaccine