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Phase I vaccine study of pEVAC-PS coronavirus vaccine

Submission date	Recruitment status	[X] Prospectively registered
23/11/2021	No longer recruiting	[X] Protocol
Registration date	**Overall study status**	[_] Statistical analysis plan
29/11/2021	Completed	[_] Results
Last Edited	**Condition category**	[_] Individual participant data
12/09/2023	Infections and Infestations	[_] Record updated in last year

Plain English summary of protocol

Background and study aims
There is currently no licensed vaccine that can protect across a whole range of the family of Coronaviruses that affect humans (known as Sarbeco Coronaviruses), such as SARS-CoV-2 which causes COVID-19, and SARS. Whilst highly effective vaccines have been produced for COVID-19, variants of the virus have evolved which are somewhat able to evade the immune responses given by vaccination or by previous infection. It is therefore important to develop a vaccine with a very broad range of coverage across the SARS-CoV-2 virus that causes COVID-19, and all its relatives. A vaccine that protects against other Sarbeco coronaviruses will also be useful to provide protection against future potential pandemic viruses.
The purpose of this study is to evaluate a new vaccine designed to protect against all Sarbeco Coronaviruses (and has the potential to protect against the variants of SARS-CoV-2) called pEVAC_PS, at different doses to assess its safety and immune response in healthy volunteers. This is the first study to use the pEVAC_PS vaccine in human participants. It is planned that up to a total of 36 volunteers will participate in the study.

Who can participate?
Healthy adults aged 18 to 50 years, immunised no less than 12 weeks prior with 2 doses of SARS-CoV-2 vaccine, and no evidence of prior SARS-CoV-2 infection.

What does the study involve?
Participants will come to their research site for up to 11 scheduled visits. They will also have a follow-up telephone call 1 day after your first dose of vaccine. All volunteers will attend a screening visit and if you are eligible, will receive two doses of the study vaccine, one month apart. The rest of the visits will be follow-up visits. These visits will be spread across 6 months, but up to 12 months if the dose of vaccine administered is found to be highly effective. Participants will be asked to complete a diary, recording any symptoms you experience after the vaccination for one month following each injection. The first 6 volunteers will take part in Group 1. Further volunteers will be enrolled in subsequent groups depending on the results of the immune responses of participants in Group 1.

What are the possible benefits and risks of participating?
Benefits:

Information gained from the study might help to develop a vaccine for use in preventing infections from Sarbeco Coronaviruses including variants of the SARS-CoV-2 virus which causes COVID-19.
There are no known benefits to participants from taking part in this study.

Risks:
Some procedures in the study may cause discomfort or symptoms.
Vaccine Associated Risks: pEVAC_PS has not previously been studied in human participants and the potential side effects of the vaccine are currently unknown. Most symptoms are expected to be mild, although some effects may also be moderate or severe.
It is important to remember that this vaccine is in the early stages of development and the amount of safety data available is limited, which is part of the reason this study is being conducted.

Where is the study run from?
The study is run from and sponsored by the University Hospital Southampton NHS Foundation Trust, from the NIHR Southampton Clinical Research Facility (UK). There is an additional site at the NIHR Cambridge Clinical Research Facility.

When is the study starting and how long is it expected to run for?
May 2020 to September 2024

Who is funding the study?
UK Research and Innovation.

Who is the main contact?
Professor Saul Faust, s.faust@soton.ac.uk

Contact information

Type(s)
Scientific

Contact name
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Additional identifiers

Clinical Trials Information System (CTIS)
2021-002227-38

Integrated Research Application System (IRAS)
304756

ClinicalTrials.gov (NCT)
Nil known

Protocol serial number
IRAS 304756, CPMS 50779

Study information

Scientific Title
A phase I safety, immunogenicity and dose escalation study of the candidate pan-Sarbeco Coronavirus vaccine pEVAC-PS in SARS-CoV-2 immunised UK healthy adult volunteers

Study objectives
A vaccine containing DNA coding for a pan-Sarbeco Coronavirus antigen designed using Digital Immune Optimised Synthetic Vaccine (DIOSynVax) technology is safe and tolerable and provides immunity across the range of Sarbeco Coronaviruses, including SARS-CoV and SARS-CoV-2

Ethics approval required
Ethics approval required

Ethics approval(s)
approved 29/09/2021, South Central - Berkshire Research Ethics Committee (Bristol REC Centre, Temple Quay House, 2 The Square, Temple Quay, Bristol, BS1 6PN, United Kingdom; +44 207 104 8121; berkshire.rec@hra.nhs.uk), ref: 21/SC/0337

Study design
Open label single-centre first-in-human adaptive dose escalation phase I trial

Primary study design
Interventional

Study type(s)
Treatment

Health condition(s) or problem(s) studied
Prevention of COVID-19 and other severe beta-coronavirus infections

Interventions
Current interventions as of 24/07/2023:
Investigational product: pEVAC-PS
Doses: 1.2mg Intradermal (ID), 0.8mg ID, 0.4mg ID, 0.2mg ID
Total: 36 volunteers
Group 1: 9 volunteers; 2 doses of pEVAC-PS at 0.2mg intradermally
Group 2: 9 volunteers; 2 doses of pEVAC-PS at 0.4mg intradermally

Group 3: 9 volunteers; 2 doses of pEVAC-PS at 0.8mg intradermally
Group 4: 9 volunteers; 2 doses of pEVAC-PS at 1.2mg intradermally

Previous interventions:
Investigational product: pEVAC-PS
Doses: 1.2mg Intradermal (ID), 0.8mg ID, 0.4mg ID, 0.2mg ID
Total: 36 volunteers

Stage 1
Group 1: 6 volunteers; 2 doses of pEVAC-PS at 0.2mg (lowest dose) intradermally

Stage 2 subject to safety and immunogenicity analysis from stage 1 after 4 weeks post 2nd dose
- Primary immunogenicity target met
Expanded group 1: 12 volunteers; 2 doses of pEVAC-PS at 0.2mg intradermally
Review for plan of reduced dose formulation and testing if continued safety and immunogenicity targets met in expanded group
- Primary immunogenicity target not met
Group 2a: 9 volunteers; 2 doses of pEVAC-PS at 0.4mg intradermally PLUS
Group 2b: 9 volunteers; 2 doses of pEVAC-PS at 0.8mg intradermally
- Very Poor/No response
Group 2a: 9 volunteers; 2 doses of pEVAC-PS at 0.8mg intradermally PLUS
Group 2b: 9 volunteers; 2 doses of pEVAC-PS at 1.2mg intradermally

Stage 3 subject to safety and immunogenicity analysis from stage 2 after 4 weeks post 2nd dose
- Primary immunogenicity target met
Group 3: 12 volunteers, 2 doses of pEVAC-PS at the dose with the best immunogenicity and reactogenicity profile from Groups 2a or 2b
- Primary immunogenicity target not met at 2x 0.8mg ID
Group 2c: 12 volunteers; 2 doses of pEVAC-PS at 1.2mg intradermally

Intervention Type
Biological/Vaccine

Phase
Phase I

Drug/device/biological/vaccine name(s)
pEVAC-PS

Primary outcome(s)
Safety and reactogenicity measured as:
1. Solicited local reactogenicity signs and symptoms for 7 days following vaccination measured using participant symptom diary entries
2. Solicited systemic reactogenicity signs and symptoms for 7 days following vaccination measured using participant symptom diary entries
3. Unsolicited adverse events (AEs) for 28 days following vaccination measured using participant symptom diary entries
4. Safety laboratory measures measured using routine Haematology and Biochemistry at day 0, 3, 7 and 42
5. Occurrence of disease enhancement episodes measured using surveillance for COVID-19 hospitalisations during the whole study period

Key secondary outcome(s))
1. Humoral immunogenicity of pEVAC-PS through the analysis of SARS-CoV and SARS-CoV-2 RBD antibody titres at 28 days (4 weeks) after 2 doses of pEVAC-PS have been administered 28 days apart, measured as serology: receptor binding domain (RBD) responses in the majority of vaccinees per group for SARS-CoV and SARS-CoV-2
2. Dose tolerability at 28 days (4 weeks) after the second dose of vaccine measured using participant symptom diary entries
3. Results of immunogenicity at 28 days (4 weeks) after the second dose of vaccine measured using ELISpot
3. Long term (up to 12 months) humoral immunogenicity measured as serology: receptor binding domain (RBD) for SARS-CoV and SARS- CoV-2 RBD pre and post- immunisation.

Completion date
01/09/2024

Eligibility

Key inclusion criteria
Current participant inclusion criteria as of 24/07/2023:
1. Healthy males and non-pregnant females
2. Aged 18 - 50 years
3. Immunised no less than 12 weeks prior with 2 or 3 doses of SARS-CoV-2 vaccine
4. No history of SARS-CoV-2 infection within the past 180 days

Previous participant inclusion criteria:
1. Healthy males and non-pregnant females
2. Aged 18 - 50 years
3. Immunised no less than 12 weeks prior with 2 doses of SARS-CoV-2 vaccine
4. No history of serological evidence of prior SARS-CoV-2 infection (seronegative for N)

Participant type(s)
Healthy volunteer

Healthy volunteers allowed
No

Age group
Adult

Lower age limit
18 years

Upper age limit
50 years

Sex
All

Total final enrolment
39

Key exclusion criteria

Current participant exclusion criteria as of 24/07/2023:
1. History of laboratory-confirmed MERS, SARS-CoV-1 or SARS-CoV-2 infection
2. Have an anti-SARS-CoV-2 and a SARS-CoV-1 RBD response of less than 0.5 or more than 2 AUC (Area Under the Curve) units
3. Planned receipt of any vaccine other than the study intervention within 30 days before and after each study vaccination
4. Administration of immunoglobulins and/or any blood products within the three months preceding the planned administration of the vaccine candidate
5. Any confirmed or suspected immunosuppressive or immunodeficient state, including HIV infection; asplenia; recurrent severe infections and use of immunosuppressant medication within the past 6 months, except topical steroids or short-term oral steroids (course lasting <14 days)
6. Any autoimmune conditions, except mild psoriasis, well-controlled autoimmune thyroid disease, vitiligo or stable coeliac disease not requiring immunosuppressive or immunomodulatory therapy
7. History of allergic disease or reactions likely to be exacerbated by any component of the pEVAC-PS vaccine
8. Any history of angioedema
9. Any history of anaphylaxis
10. Pregnancy, lactation or willingness/intention to become pregnant for 3 months following the last personal dose of vaccine in this trial

Previous participant exclusion criteria:
1. History of laboratory-confirmed MERS, SARS-CoV-1 or SARS-CoV-2 infection
2. Seropositive for SARS-CoV-2 Nucleocapsid IgG at screening
3. Have an anti-SARS-CoV-2 and a SARS-CoV-1 RBD response of more than 2 AUC (Area Under the Curve) units
4. Planned receipt of any vaccine other than the study intervention within 30 days before and after each study vaccination.
5. Administration of immunoglobulins and/or any blood products within the three months preceding the planned administration of the vaccine candidate.
6. Any confirmed or suspected immunosuppressive or immunodeficient state, including HIV infection; asplenia; recurrent severe infections and use of immunosuppressant medication within the past 6 months, except topical steroids or short-term oral steroids (course lasting <14 days).
7. Any autoimmune conditions, except mild psoriasis, well-controlled autoimmune thyroid disease, vitiligo or stable coeliac disease not requiring immunosuppressive or immunomodulatory therapy.
8. History of allergic disease or reactions likely to be exacerbated by any component of the pEVAC-PS vaccine
9. Any history of angioedema.
10. Any history of anaphylaxis.
11. Pregnancy, lactation or willingness/intention to become pregnant for 3 months following the last personal dose of vaccine in this trial.

Date of first enrolment

14/12/2021

Date of final enrolment

01/09/2023

Locations

Countries of recruitment
United Kingdom

England

Study participating centre
University Hospital Southampton NHS Foundation Trust
Tremona Road
Southampton
United Kingdom
SO16 6YD

Study participating centre
NIHR Cambridge Clinical Research Facility
Cambridge Biomedical Campus
Hills Road
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CB2 0QQ

Sponsor information

Organisation
University Hospital Southampton NHS Foundation Trust

ROR
https://ror.org/0485axj58

Funder(s)

Funder type
Government

Funder Name
UK Research and Innovation

Alternative Name(s)

UKRI

Funding Body Type
Government organisation

Funding Body Subtype
National government

Location
United Kingdom

Results and Publications

Individual participant data (IPD) sharing plan
The data-sharing plans for the current study are unknown and will be made available at a later date

IPD sharing plan summary
Data sharing statement to be made available at a later date

Study outputs

Output type	Details	Date created	Date added	Peer reviewed?	Patient-facing?
HRA research summary			28/06/2023	No	No
Participant information sheet	Participant information sheet	11/11/2025	11/11/2025	No	Yes
Protocol file	version 1.0	17/09/2021	24/11/2021	No	No