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A clinical trial of nebulized (fine spray) surfactant (chemical compounds that decrease the surface tension between two liquids) for the treatment of severe COVID-19 and viral pneumonia in adults (COVSurf)

Submission date
02/05/2025

Recruitment status
Recruiting

Registration date
08/08/2025

Overall study status
Ongoing

Last Edited
21/01/2026

Condition category
Infections and Infestations

[_] Prospectively registered
[X] Protocol
[_] Statistical analysis plan
[_] Results
[_] Individual participant data
[X] Record updated in last year

Plain English summary of protocol

Background and study aims
Lung surfactant is present in the lungs. It covers the alveolar surface, where it reduces the work of breathing and prevents the lungs from collapsing. In some respiratory diseases and in patients who require ventilation, this substance does not function normally. The hypothesis behind this research is that a deficiency of functionally intact surfactant contributes to the deterioration in pulmonary function in patients with moderate to severe viral pneumonia, including COVID-19. This study aims to find out whether administering doses of surfactant corrects this deficiency and leads to an improvement in lung function in patients with viral pneumonia, including COVID-19. The research team want to conduct a study to assess what dosing schedule produces the best response in patients who receive this treatment.

Who can participate?
Patients with viral pneumonia, including COVID-19, who are hospitalised and require endotracheal intubation.

What does the study involve?
Patients will be randomly allocated at a 3:2 ratio to receive treatment with the study drug or act as a control. Patients in the treatment arm will be allocated sequentially into one of four dosing groups with escalating dosing schedules. Patients in the control arm will not receive surfactant therapy.

Bovactant (Alveofact®) is the selected surfactant for this study. It will be administered via a modified nebuliser at Day 0 and again at 8 hours and 24 hours post first dose. The nebuliser is modified to generate particles of sufficiently small diameter, which provides the potential to

deliver significantly larger surfactant volumes for effective delivery to the lungs. The improvement in oxygenation and pulmonary ventilation will be measured. Safety data will be reviewed throughout the patient's hospitalisation.

What are the possible benefits and risks of participating?
The possible benefits of this study are the possibility of reduced time on a ventilator.

No changes in lifestyle or inconvenience are expected as patients will be hospitalised. Blood samples will be taken from existing lines. BAL sample collection is not expected to cause discomfort.

Regarding the administration of AF-COVID to intubated, mechanically ventilated adult patients, the risks are in 3 groups:
1. Risks associated with the use of the Device are controlled in the Warning Section of the Directions for Use.
2. Risks associated with SF-RI 1 surfactant are risks related to bolus instillation delivery via the endotracheal tube.
3. Risks associated with the combination product:
• Hypoventilation, hypoxemia
• Pneumothorax (associated with treatment-related changes in lung compliance)
• Progression of COVID-19-related ARDS
• Irritation of the airways
• Introduction of pathogens other than COVID-19 to the respiratory tract
• Further dissemination of COVID-19 by aerosol

These clinical risks will be properly controlled and/or mitigated relative to the device design, e.g. verification testing or labelling (instructions, warnings and cautions). Furthermore, the drug delivery system will be tested for its safety following ISO and IEC standards for materials, biological and electrical safety, and electromagnetic compatibility.

Where is the study run from?
University Hospital Southampton NHS Foundation Trust, UK

When is the study starting and how long is it expected to run for?
April 2025 to August 2027

Who is funding the study?
Gates Family Foundation

Who is the main contact?
Dr Ahilanadan Dushianthan, Ahilanadan.Dushianthan@uhs.nhs.uk

Contact information

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Public, Scientific

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Additional identifiers

Integrated Research Application System (IRAS)
1007224

Protocol serial number
RHMCRI0431

Study information

Scientific Title
A clinical trial of nebulized surfactant for the treatment of severe COVID-19 and viral pneumonia in adults (COVSurf)

Acronym
COVSurf 2

Study objectives
To assess whether administration of surfactant therapy via the modified Aerogen nebuliser results in improved PaO2/FiO2 ratio, if there is a need for invasive mechanical ventilation (IMV), and the overall feasibility of surfactant delivery in patients with pneumonia including COVID-19 after last dose of surfactant and the optimal dosing schedule to be used

To assess the safety of surfactant therapy via the modified Aerogen nebuliser and mean clinical improvement of patients with COVID-19 following administration.

Ethics approval required
Old ethics approval format

Ethics approval(s)
Pending approval; ref: 25/NE/0091

Primary study design
Interventional

Study design
Randomized controlled open-label study

Study type(s)
Efficacy, Safety

Health condition(s) or problem(s) studied
Viral pneumonia, including COVID-19

Interventions
For the treatment arm, patients will be administered surfactant via COVSurf Drug Delivery System, they will receive 5 vials (540mg) of Alveofact® at a dosing time of 0 hours, 12, 24, 36 and 48 hours with an optional dose at 72 hours. For the Control Arm, patients will receive standard of care. Follow-up information is collected on a near-hourly basis as these patients are in Intensive Care. Patients will be randomised in a 3:2 ratio for the treatment and control arms using ALEA Randomisation (internet-based service) separately for each arm of the study.

Intervention Type
Drug

Phase
Phase II

Drug/device/biological/vaccine name(s)
Alveofact® [SF-RI 1]

Primary outcome(s)
1. Change in PaO2/FiO2 ratio 48 hours after study initiation - assess the improvement in oxygenation as determined by the PaO2/FiO2 ratio 48 hours after study initiation; the PaO2 /FiO2 ratio is measured by dividing the partial pressure of oxygen in arterial blood (PaO2) by the fraction of inspired oxygen (FiO2). PaO2 is measured through an arterial blood gas (ABG) test, while FiO2 represents the percentage of oxygen the patient is receiving, expressed as a decimal.
2. Need for invasive mechanical ventilation (IMV) measured using data recorded by the assessing clinician every day after study initiation
3. Feasibility of surfactant delivery measured using data recorded by the assessing clinician at all time points of surfactant delivery

Key secondary outcome(s)
1. To assess safety as judged by the frequency and severity of adverse events (AEs), Adverse Device Effects (ADEs), Serious Adverse Events (SAEs) and Serious Adverse Device Events (SADEs) measured using data recorded by the assessing clinician daily over the first 28 days after study initiation
2. Mean change in PaO2/FiO2 ratio at 24 and 48 hours after study initiation at 24 and 48 hours after study initiation; the PaO2/FiO2 ratio is measured by dividing the partial pressure of oxygen in arterial blood (PaO2) by the fraction of inspired oxygen (FiO2). PaO2 is measured through an

arterial blood gas (ABG) test, while FiO2 represents the percentage of oxygen the patient is receiving, expressed as a decimal.
3. To evaluate clinical improvement defined by time to one improvement point on an ordinal scale, as described in the WHO master protocol (2020), daily while hospitalised and on days 15 and 28, measured using data from daily assessments while hospitalised and on Days 15 and 28
4. The number of days of overall mechanical ventilation (NIV/CPAP and MV) measured using recorded data of days measured every day after study initiation
5. The number of days of ventilatory support (CPAP or NIV) measured using recorded data of days measured every day after study initiation
6. Ventilator support (CPAP/NIV or MV) free days at day 21, measured using recorded data of days measured every day after study initiation until day 21
7. Length of intensive care unit stay measured using recorded data of days measured every day after study initiation
8. The number of days hospitalised measured using recorded data of days measured every day after study initiation
9. Mortality at Day 28 measured using recorded data on day 28 after the study initiation

Completion date
31/08/2027

Eligibility

Key inclusion criteria
1. Age ≥18 years old
2. Confirmed viral pneumonia (including COVID-19)
3. Within 48 hours of needing CPAP or NIV
4. Assent obtained from personnel (PerLR) or professional legal representative (ProfLR)

Participant type(s)
Patient

Healthy volunteers allowed
No

Age group
Mixed

Lower age limit
18 Years

Upper age limit
100 Years

Sex
All

Total final enrolment
0

Key exclusion criteria

1. Imminent expected death within 24 hours
2. Specific contraindications to surfactant administration (e.g. known allergy, pneumothorax, pulmonary haemorrhage)
3. Known or suspected pregnancy
4. Stage 4 severe chronic kidney disease or requiring dialysis (i.e., eGFR < 30)
5. Liver failure (Child-Pugh Class C)
6. Anticipated transfer to another hospital, which is not a study site within 72 hours.
7. Current participation or participation in another study within the last month that in the opinion of the investigator would prevent enrollment for safety purposes.
8. Consent declined

Date of first enrolment
30/07/2024

Date of final enrolment
30/07/2027

Locations

Countries of recruitment
United Kingdom

England

Study participating centre
University Hospital Southampton
Tremona Road
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SO16 6YD

Sponsor information

Organisation
University Hospital Southampton NHS Foundation Trust

ROR
https://ror.org/0485axj58

Funder(s)

Funder type
Charity

Funder Name
Gates Family Foundation

Alternative Name(s)
Gates Foundation, FUNDACIÓN DE LA FAMILIA GATES, Fundación Gates, GFF

Funding Body Type
Private sector organisation

Funding Body Subtype
Trusts, charities, foundations (both public and private)

Location
United States of America

Results and Publications

Individual participant data (IPD) sharing plan
The datasets generated and analysed during the current study will be available upon request from Dr Ahilanadan Dushianthan, Ahilanadan.Dushianthan@uhs.nhs.uk. Anonymous data will be available for request from three months after publication of the article to researchers who provide a completed Data Sharing request form that describes a methodologically sound proposal, for the purpose of the approved proposal, and, if appropriate, sign a Data Sharing Agreement. Proposals will be reviewed by the study team. Data will be shared once all parties have signed relevant data sharing documentation, covering the study team conditions for sharing and, if required, an additional Data Sharing Agreement from the Sponsor.

IPD sharing plan summary
Available on request

Study outputs

Output type	Details	Date created	Date added	Peer reviewed?	Patient-facing?
Protocol file	version 1.1	23/04/2025	04/06/2025	No	No