ISRCTN16912075 https://doi.org/10.1186/ISRCTN16912075

RECOVERY Respiratory Support: Respiratory Strategies in patients with coronavirus COVID-19 – CPAP, high-flow nasal oxygen, and standard care

Submission date
02/04/2020

Recruitment status
No longer recruiting

Registration date
06/04/2020

Overall study status
Completed

Last Edited
25/01/2022

Condition category
Respiratory

[X] Prospectively registered
[X] Protocol
[_] Statistical analysis plan
[X] Results
[_] Individual participant data

Plain English summary of protocol

Current plain English summary as of 04/05/2021:
Background and study aims:
Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) emerged at the end of 2019 as a novel coronavirus. It has been declared as a global pandemic. Some people develop no symptoms, whilst others develop worsening breathing problems and may die. Throughout the world, a huge burden has been placed on intensive care units due to the number of people with worsening breathing problems that need to be placed on a ventilator (breathing machine). It is essential that we avoid ventilator use wherever possible to allow as many individuals as possible to benefit.

In this trial, we will test whether two treatments are better than standard treatment at preventing people from dying or needing to go on a ventilator.

Who can participate?
Adult hospital inpatients with suspected or proven COVID-19

What does the study involve?
Individuals that have or are believed to have COVID-19 that are requiring a certain amount of oxygen will be randomly allocated to receive one of three interventions. In the first group, participants will be placed on a tight-fitting mask (CPAP). In the second group, participants will receive oxygen blown quickly up their nose by a machine (HFNO). In the third arm, participants will receive standard treatment (a normal oxygen mask). Both CPAP and HFNO are already used routinely in the NHS for other conditions.

Where possible, we will seek informed consent from participants prior to trial enrolment. In some cases, the urgency of treatment may require that participants are enrolled and their

consent sought later. This is because some participants are likely to be confused and, due to COVID-19, visiting is restricted. In addition, for treatments to be effective, they will need to be started as quickly as possible to have the best possible outcomes.

We will record the need for people to be placed on a ventilator and death over a 30-day period. We will also see how long people spend on intensive care units and in hospital.

What are the possible benefits and risks of participating?
The planned interventions are already in routine use across NHS Hospitals. The interventions (HFNO and CPAP) may help to reduce the need for patients to go on a ventilator. However, they have some side-effects such as nausea, dryness to the mouth and nose, and pressure sores to the face.

Where is the study run from?
The trial is led by the University of Warwick Clinical Trials Unit

When is the study starting and how long is it expected to run for?
From March 2020 to June 2021

Who is funding the study?
The National Institute for Health Research (UK)

Who is the main contact?
Unfortunately, this study is not recruiting public volunteers at this time. This is because the research isn't ready for volunteers yet or the researchers are directly identifying volunteers in certain areas or hospitals. Please do not contact the research team as they will not be able to respond. For more information about COVID-19 research, visit the Be Part of Research homepage.

Previous plain English summary:
Background and study aims:
Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) emerged at the end of 2019 as a novel coronavirus. It has been declared as a global pandemic. Some people develop no symptoms, whilst others develop worsening breathing problems and may die. Throughout the world, a huge burden has been placed on intensive care units due to the number of people with worsening breathing problems that need to be placed on a ventilator (breathing machine). It is essential that we avoid ventilator use wherever possible to allow as many individuals as possible to benefit.

In this trial, we will test whether two treatments are better than standard treatment at preventing people from dying or needing to go on a ventilator.

Who can participate?
Adult patients with suspected or proven COVID-19 admitted to hospital

What does the study involve?
Individuals that have or are believed to have COVID-19 that are requiring a certain amount of oxygen will be randomly allocated to receive one of three interventions. In the first group, participants will be placed on a tight-fitting mask (CPAP). In the second group, participants will receive oxygen blown quickly up their nose by a machine (HFNO). In the third arm, participants will receive standard treatment (a normal oxygen mask). Both CPAP and HFNO are already used routinely in the NHS for other conditions.

Due to the urgency of treatment, we plan to enrol potential participants immediately and seek their consent later. This is because many participants are likely to be confused and due to COVID-19 visiting will be restricted. In addition, for the treatments to be effective, they will need to be started as quickly as possible to have the best outcomes.

We will record the need for people to be placed on a ventilator and death over a 30-day period. We will also see how long people spend on intensive care units and in hospital.

What are the possible benefits and risks of participating?
The planned interventions are already in routine use across NHS Hospitals. The interventions (HFNO and CPAP) may help to reduce the need for patients to go on a ventilator. However, they have some side-effects such as nausea, dryness to the mouth and nose, and pressure sores to the face.

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The trial is led by the University of Warwick Clinical Trials Unit

When is the study starting and how long is it expected to run for?
From March 2020 to May 2021

Who is funding the study?
The National Institute for Health Research (UK)

Who is the main contact?
Unfortunately, this study is not recruiting public volunteers at this time. This is because the research isn't ready for volunteers yet or the researchers are directly identifying volunteers in certain areas or hospitals. Please do not contact the research team as they will not be able to respond. For more information about COVID-19 research, visit the Be Part of Research homepage.

Study website
https://warwick.ac.uk/fac/sci/med/research/ctu/trials/recovery-rs/

Contact information

Type(s)
Public

Contact name
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Additional identifiers

EudraCT/CTIS number
Nil known

IRAS number
282338

ClinicalTrials.gov number
Nil known

Secondary identifying numbers
Sponsor: 26/19-20, IRAS 282338

Study information

Scientific Title
In adult patients with known or suspected COVID-19, does the use of Continuous Positive Airway Pressure (CPAP) or high-flow nasal oxygen (HFNO), compared with standard care reduce mortality or need for tracheal intubation?

Acronym
Recovery-RS

Study objectives
CPAP is superior to standard care in reducing mortality or need for tracheal intubation in COVID-19 patients
HFNO is superior to standard care in reducing mortality or need for tracheal intubation in COVID-19 patients
CPAP is superior to HFNO in reducing mortality or need for tracheal intubation in COVID-19 patients

Ethics approval required
Old ethics approval format

Ethics approval(s)
Approved 03/04/2020, the London - Brighton & Sussex Research Ethics Committee (Health Research Authority, Ground Floor, Skipton House, 80 London Road, London SE1 6LH; +44 0207 104 8241; brightonandsussex.rec@hra.nhs.uk), ref: 20/HRA/1696

Study design
Adaptive (group-sequential), pragmatic, randomised controlled, open-label, multi-centre, effectiveness trial

Primary study design
Interventional

Secondary study design
Randomised controlled trial

Study setting(s)
Hospital

Study type(s)
Treatment

Participant information sheet
Not available in web format, please use contact details to request a participant information sheet

Health condition(s) or problem(s) studied
Respiratory failure in patients with known or suspected COVID-19 (SARS-CoV-2 infection)

Interventions
Patients will be randomised in a 1:1:1 ratio to:
Arm 1: Continuous positive airway pressure (CPAP), administered according to local protocol /guidelines. Administration will be left to clinical discretion.
Arm 2: High flow nasal oxygen (HFNO) will be administered according to local protocol /guidelines. Administration will be left to clinical discretion.
Arm 3: Standard care. Standard oxygen therapy according to local protocol/guidelines.

Intervention Type
Procedure/Surgery

Primary outcome measure
Composite outcome comprising tracheal intubation or mortality within 30 days. Mortality will be reported from hospital records up until discharge and tracked after discharge. Intubation will be obtained from hospital data.

Secondary outcome measures
Current secondary outcome measures as of 04/05/2021:
All outcome measures are assessed at up to 30-days or hospital discharge, whichever is later, and obtained from hospital records unless otherwise specified.
1. Intubation rate
2. Time to intubation
3. Time to death (mortality), obtained from hospital record or other source
4. Mortality in critical care (level 2/3)
5. Mortality during hospital stay
6. Mortality at 30 days, obtained from hospital record or other source
7. Length of stay in critical care (level 2/3)
8. Length of stay in hospital
9. Duration of invasive ventilation
10. Admission to ICU

Previous secondary outcome measures:
All outcome measures are assessed at up to 30-days or hospital discharge, whichever is later, and obtained from hospital records unless otherwise specified.

1. Intubation rate
2. Time to intubation
3. Time to death (mortality), obtained from hospital record or other source
4. Mortality in critical care (level 2/3)
5. Mortality during hospital stay
6. Mortality at 30 days, obtained from hospital record or other source
7. Length of stay in critical care (level 2/3)
8. Length of stay in hospital

Overall study start date
30/03/2020

Completion date
02/06/2021

Eligibility

Key inclusion criteria
Current participant inclusion criteria as of 04/05/2021:
1. Adults ≥18 years
2. Hospital inpatient with suspected or proven COVID-19
3. FiO2 ≥0.4 and SpO2 ≤94%
4. Plan for escalation to intubation if needed

Previous participant inclusion criteria:
1. Adults ≥ 18 years
2. Admitted to hospital with suspected or proven COVID-19
3. On 40% oxygen (or greater) with SpO2 <94%
4. Plan for escalation to intubation if needed

Participant type(s)
Patient

Age group
Adult

Lower age limit
18 Years

Sex
Both

Target number of participants
4002

Key exclusion criteria
Current participant exclusion criteria as of 04/05/2021:
1. Planned intubation and mechanical ventilation imminent within 1 hour
2. Known or clinically apparent pregnancy
3. Any absolute contraindication to CPAP or HFNO

4. Decision not to intubate due to ceiling of treatment or withdrawal of treatment anticipated
5. Equipment for both CPAP and HFNO not available

Previous participant exclusion criteria:
1. Planned intubation and mechanical ventilation imminent within 1 hour
2. Known or clinically apparent pregnancy
3. Any absolute contraindication to CPAP or HFNO
4. Decision not to intubate due to ceiling of treatment or withdrawal of care anticipated
5. Equipment for both CPAP and HFNO not available

Date of first enrolment
06/04/2020

Date of final enrolment
03/05/2021

Locations

Countries of recruitment
England

Northern Ireland

Scotland

United Kingdom

Wales

Study participating centre
Warwick Clinical Trials Unit
Warwick Medical School
University of Warwick
Coventry
United Kingdom
CV4 7AL

Study participating centre
Aintree Hospital
Lower Lane
Liverpool
United Kingdom
L9 7AL

Study participating centre

Altnagelvin Hospital
Glenshane Road
Londonderry
United Kingdom
BT47 6SB

Study participating centre
Barnet Hospital
Wellhouse Lane
Barnet
United Kingdom
EN5 3DJ

Study participating centre
Bedford Hospital
Kempston Road
Bedford
United Kingdom
MK42 9DJ

Study participating centre
Belfast City Hospital
51 Lisburn Road
Belfast
United Kingdom
BT9 7AB

Study participating centre
Castle Hill Hospital
Castle Road
Cottingham
United Kingdom
HU16 5JQ

Study participating centre
Charing Cross Hospital (Lead Centre)
Fulham Palace Road
London
United Kingdom
W6 8RF

Study participating centre
Colchester General Hospital
Turner Road
Colchester
United Kingdom
CO4 5JL

Study participating centre
Conquest Hospital, Hastings
The Ridge
St. Leonards-On-Sea
United Kingdom
TN37 7RD

Study participating centre
Croydon University Hospital
London Road
Croydon
United Kingdom
CR7 7YE

Study participating centre
Derriford Hospital
Derriford Road
Crownhill
Plymouth
United Kingdom
PL6 8DH

Study participating centre
Diana, Princess Of Wales Hospital
Scartho Road
Grimsby
United Kingdom
DN33 2BA

Study participating centre
Eastbourne District General
Kings Drive

Eastbourne
United Kingdom
BN21 2UD

Study participating centre
Fairfield General Hospital
Rochdale Old Road
Bury
United Kingdom
BL9 7TD

Study participating centre
Freeman Hospital
Freeman Road
High Heaton
Newcastle Upon Tyne
United Kingdom
NE7 7DN

Study participating centre
Glenfield Hospital
Groby Road
Leicester
United Kingdom
LE3 9QP

Study participating centre
Good Hope Hospital
Rectory Road
Sutton Coldfield
United Kingdom
B75 7RR

Study participating centre
Harefield Hospital
Hill End Road
Harefield
United Kingdom
UB9 6JH

Study participating centre
Heartlands Hospital
Bordesley Green East
Birmingham
United Kingdom
B9 5SS

Study participating centre
Hull Royal Infirmary
Anlaby Road
Hull
United Kingdom
HU3 2JZ

Study participating centre
Inverclyde Royal Hospital
Larkfield Road
Greenock
United Kingdom
PA16 0XN

Study participating centre
Ipswich Hospital
Heath Road
Ipswich
United Kingdom
IP4 5PD

Study participating centre
James Paget University Hospital
Lowestoft Road
Gorleston
Great Yarmouth
United Kingdom
NR31 6LA

Study participating centre
Jersey General Hospital
The Parade
Jersey

United Kingdom
JE1 3UH

Study participating centre
Kent & Canterbury
Ethelbert Road
Canterbury
United Kingdom
CT1 3NG

Study participating centre
King's College (Denmark Hill)
Denmark Hill
London
United Kingdom
SE5 9RS

Study participating centre
Leighton Hospital
Leighton
Crewe
United Kingdom
CW1 4QJ

Study participating centre
Lister Hospital
Coreys Mill Lane
Stevenage
United Kingdom
SG1 4AB

Study participating centre
Macclesfield District General Hospital
Victoria Road
Macclesfield
United Kingdom
SK10 3BL

Study participating centre

Manor Hospital
Moat Road
Walsall
United Kingdom
WS2 9PS

Study participating centre
Medway Maritime Hospital
Windmill Road
Gillingham
United Kingdom
ME7 5NY

Study participating centre
Musgrove Park Hospital
Musgrove Park
Taunton
United Kingdom
TA1 5DA

Study participating centre
New Cross Hospital
Wolverhampton Road
Heath Town
Wolverhampton
United Kingdom
WV10 0QP

Study participating centre
Norfolk And Norwich University Hospital
Colney Lane
Colney
Norwich
United Kingdom
NR4 7UY

Study participating centre
North Manchester
Delaunays Road

Manchester
United Kingdom
M8 5RB

Study participating centre
Nottingham City Hospital
Hucknall Road
Nottingham
United Kingdom
NG5 1PB

Study participating centre
Princess Of Wales Hospital (Wales)
Coity Road
Bridgend
United Kingdom
CF31 1RQ

Study participating centre
Princess Royal Hospital, Telford
Apley Castle
Grainger Drive
Telford
United Kingdom
TF1 6TF

Study participating centre
Princess Royal University Hospital
Farnborough Common
Orpington
United Kingdom
BR6 8ND

Study participating centre
Queen Alexandra Hospital
Southwick Hill Road
Cosham
Portsmouth
United Kingdom
PO6 3LY

Study participating centre
Queen Elizabeth Hospital – Gateshead
Sheriff Hill
Gateshead
United Kingdom
NE9 6SX

Study participating centre
Queen Elizabeth Hospital (Birmingham)
Queen Elizabeth Medical Centre
Edgbaston
Birmingham
United Kingdom
B15 2TH

Study participating centre
Queen Elizabeth University Hospital, Glasgow
1345 Govan Road
Glasgow
United Kingdom
G51 4TF

Study participating centre
Queens Medical Centre
Nottingham University Hospital
Derby Road
Nottingham
United Kingdom
NG7 2UH

Study participating centre
Raigmore Hospital
Old Perth Rd
Inverness
United Kingdom
IV2 3UJ

Study participating centre

Royal Alexandra Hospital, Paisley
Corsebar Road
Paisley
United Kingdom
PA2 9PN

Study participating centre
Royal Brompton
Sydney Street
London
United Kingdom
SW3 6NP

Study participating centre
Royal Gwent Hospital
Cardiff Road
Newport
Gwent
United Kingdom
NP20 2UB

Study participating centre
Royal Liverpool University Hospital
Prescot Street
Liverpool
United Kingdom
L7 8XP

Study participating centre
Royal Marsden (London)
Fulham Road
London
United Kingdom
SW3 6JJ

Study participating centre
Royal Marsden (Surrey)
Downs Road
Sutton
United Kingdom
SM2 5PT

Study participating centre
Royal Oldham Hospital
Rochdale Road
Oldham
United Kingdom
OL1 2JH

Study participating centre
Russell's Hall
Pensnett Road
Dudley
United Kingdom
DY1 2HQ

Study participating centre
Salford Royal Hospital
Stott Lane
Salford
United Kingdom
M6 8HD

Study participating centre
Scunthorpe General Hospital
Cliff Gardens
Scunthorpe
United Kingdom
DN15 7BH

Study participating centre
South Tyneside District Hospital
Harton Ln
South Shields
United Kingdom
NE34 0PL

Study participating centre
Southmead Hospital
Southmead Road

Westbury-On-Trym
Bristol
United Kingdom
BS10 5NB

Study participating centre
St George's Hospital
Blackshaw Road
London
United Kingdom
SW17 0QT

Study participating centre
St Mary's Hospital
Praed Street
London
United Kingdom
W2 1NY

Study participating centre
St Thomas' Hospital
Westminster Bridge Road
London
United Kingdom
SE1 7EH

Study participating centre
Stepping Hill Hospital
Poplar Grove
Stockport
United Kingdom
SK2 7JE

Study participating centre
Sunderland Royal Hospital
Kayll Road
Sunderland
United Kingdom
SR4 7TP

Study participating centre
The Christie NHS Foundation Trust
550 Wilmslow Road
Withington
Manchester
United Kingdom
M20 4BX

Study participating centre
The Grange University Hospital
Caerleon Road
Cwmbran
United Kingdom
NP44 8YN

Study participating centre
The Royal Victoria Infirmary
Queen Victoria Road
Newcastle Upon Tyne
United Kingdom
NE1 4LP

Study participating centre
Torbay Hospital
Newton Road
Torquay
United Kingdom
TQ2 7AA

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

Study participating centre
Victoria Hospital
Hayfield Road
Kirkcaldy

United Kingdom
KY2 5AH

Study participating centre
Warwick Hospital
Lakin Road
Warwick
United Kingdom
CV34 5BW

Study participating centre
Watford General Hospital
Vicarage Road
Watford
United Kingdom
WD18 0HB

Study participating centre
West Suffolk Hospital
Hardwick Lane
Bury St. Edmunds
United Kingdom
IP33 2QZ

Study participating centre
William Harvey Hospital, Ashford
Kennington Road
Willesborough
Ashford
United Kingdom
TN24 0LZ

Study participating centre
Wishaw General Hospital
50 Netherton Street
Wishaw
United Kingdom
ML2 0DP

Study participating centre
Wrexham Maelor Hospital
Croesnewydd Road
Wrexham Technology Park
Wrexham
United Kingdom
LL13 7TD

Study participating centre
Wythenshawe Hospital
Southmoor Road
Wythenshawe
Manchester
United Kingdom
M23 9LT

Sponsor information

Organisation
University of Warwick

Sponsor details
Gibbet Hill Road
Coventry
Coventry
England
United Kingdom
CV4 7AL
+44 247 652 2746
wmssponsorship@warwick.ac.uk

Sponsor type
University/education

Website
http://www2.warwick.ac.uk/

ROR
https://ror.org/01a77tt86

Funder(s)

Funder type

Government

Funder Name
National Institute for Health Research

Alternative Name(s)
National Institute for Health Research, NIHR Research, NIHRresearch, NIHR - National Institute for Health Research, NIHR (The National Institute for Health and Care Research), NIHR

Funding Body Type
Government organisation

Funding Body Subtype
National government

Location
United Kingdom

Results and Publications

Publication and dissemination plan
Trial results will be published as soon as data are analysed. Dissemination will include development of lay summaries and publication in a peer-reviewed journal.

Intention to publish date
03/10/2021

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?
Protocol article	protocol	29/07/2020	03/08/2020	Yes	No
Preprint results		04/08/2021	31/08/2021	No	No
Results article		24/01/2022	25/01/2022	Yes	No
HRA research summary			28/06/2023	No	No