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Public health emergency SOLIDARITY trial of treatments for COVID-19 infection in hospitalized patients

Submission date
25/03/2020

Recruitment status
No longer recruiting

Registration date
25/03/2020

Overall study status
Completed

Last Edited
30/09/2022

Condition category
Infections and Infestations

[X] Prospectively registered

[X] Protocol

[_] Statistical analysis plan

[X] Results

[_] Individual participant data

Plain English summary of protocol

Background and study aims

COVID-19 is a condition caused by the coronavirus (called SARS-CoV-2) that was first identified in late 2019. This virus can infect the respiratory (breathing) system. Some people do not have symptoms but can carry the virus and pass it on to others. People who have developed the condition may develop a fever and/or a continuous cough among other symptoms. This can develop into pneumonia. Pneumonia is a chest infection where the small air pockets of the lungs, called alveoli, fill with liquid and make it more difficult to breathe.

In 2020, the virus has spread to many countries around the world and neither a vaccine against the virus or specific treatment for COVID-19 has yet been developed. As of March 2020, it is advised that people minimize travel and social contact, and regularly wash their hands to reduce the spread of the virus.

Groups who are at a higher risk from infection with the virus, and therefore of developing COVID-19, include people aged over 70 years, people who have long-term health conditions (such as asthma or diabetes), people who have a weakened immune system and people who are pregnant. People in these groups, and people who might come into contact with them, can reduce this risk by following the up-to-date advice to reduce the spread of the virus.

There are currently no available vaccines or treatments for COVID-19. Although there have been some suggestions for untested treatments that could be added to the usual care in hospitals, none is known to help. The World Health Organization (WHO) is, therefore, organizing a study in many countries in which some of these untested treatments are compared with each other, to discover whether any do help. The study treatments are remdesivir, chloroquine or hydroxychloroquine, lopinavir plus ritonavir, and interferon-beta. Some are given as daily pills, and some as daily injections.

Who can participate?

Adults (aged over 18 years) hospitalized with definite COVID-19 and not already receiving any of the study drugs. Patients invited to join the study will be those who are admitted to a collaborating hospital. It is not possible for people to volunteer themselves or their relatives to participate.

What does the study involve?
Patients diagnosed with COVID-19 and who have consented to be part of the study will be randomly allocated to receive either local standard care alone or local standard care and one of a list of study drugs. During the study, some treatments may get removed from this list, and others may be added to it. Each patient will only receive one of the treatments.
The patients will be followed up for the entire length of their hospital stay. Death from any cause will be recorded and this will be the main result used to determine whether a drug is effective. Length of hospital stay and time to first receiving ventilation (or intensive care) will also be recorded and used to determine the drug's effectiveness.

What are the possible benefits and risks of participating?
All of the drugs tested in this study have been shown to be reasonably safe. Other than remdesivir the study drugs are used routinely to treat other conditions. All participants will receive the usual care for people with COVID-19 in each location as well as the study drug.
There are known side effects to each of the study medications. It is possible that unexpected serious side effects may occur as with any clinical trial of medicines. It is also possible that treatment with one or more of the test drugs worsens COVID-19 and increases the risk of severe illness or death.
It is possible that one or more of the drugs may reduce the severity of COVID-19, reduce need for ventilation, and reduce the risk of death.

Where is the study run from?
World Health Organization Headquarters (Switzerland)

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

Who is funding the study?
Multiple funders including the World Health Organization (Switzerland)

Who is the main contact?
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Additional identifiers

Clinical Trials Information System (CTIS)
Nil known

ClinicalTrials.gov (NCT)
Nil known

Protocol serial number

0003361

Study information

Scientific Title
An international randomized trial of additional treatments for COVID-19 in hospitalized patients who are all receiving the local standard of care

Acronym
SOLIDARITY

Study objectives
The addition of treatment to the local standard of care reduces all-cause mortality in COVID-19 patients compared to the local standard of care alone.

Ethics approval required
Old ethics approval format

Ethics approval(s)
Approved 04/05/2020, WHO Research Ethics Review Committee (20, Avenue Appia – Ch-1211 Geneva 27 – Switzerland; +41 227573052; ercsec@who.int), ref: ERC.0003361

Study design
Open-label randomized multicountry clinical trial

Primary study design
Interventional

Study type(s)
Treatment

Health condition(s) or problem(s) studied
COVID-19 (SARS-CoV-2 infection)

Interventions
Adults (aged ≥18 years) recently hospitalized, or already in the hospital, with definite COVID-19 and, in the view of the responsible doctor, no contra-indication to any of the study drugs will be randomly allocated between five groups:
1. Local standard of care alone
OR local standard of care plus one of
2. Remdesivir (daily infusion for 10 days)
3. Chloroquine or hydroxychloroquine (two oral loading doses, then orally twice daily for 10 days)
4. Lopinavir + ritonavir (orally twice daily for 14 days)
5. Lopinavir + ritonavir ((orally twice daily for 14 days) plus interferon-beta (daily injection for 6 days)

Follow-up is until death or discharge from hospital.
Randomization is performed at one central global location through an online portal.

Intervention Type

Drug

Phase
Phase III

Drug/device/biological/vaccine name(s)
Remdesivir, chloroquine or hydroxychloroquine, lopinavir + ritonavir (Kaletra), interferon-beta

Primary outcome(s)
All-cause mortality, subdivided by the severity of disease at the time of randomization, measured using patient records throughout the study

Key secondary outcome(s))
Measured using patient records:
1. Duration of hospital stay (hours)
2. Time to first receiving ventilation (or intensive care) (hours)

Completion date
25/03/2021

Eligibility

Key inclusion criteria
1. Adults (aged ≥18 years) hospitalized with definite COVID-19
2. Not already receiving any of the study drugs
3. Without known allergy or contraindications to any of them (in the view of the physician responsible for their care)
4. Without anticipated transfer within 72 h to a non-study hospital

Patients invited to join the study will be those who are admitted to a collaborating hospital; no wider recruitment efforts are expected

Participant type(s)
Patient

Healthy volunteers allowed
No

Age group
Adult

Lower age limit
18 years

Sex
All

Total final enrolment
11266

Key exclusion criteria
Current exclusion criteria as of 21/04/2020:
1. Any of the available study drugs are contra-indicated (e.g. because of patient characteristics, chronic liver or heart disease, or some concurrent medication)
2. Declined to participate in the study

Previous exclusion criteria:
1. Any of the available study drugs are contra-indicated (e.g. because of patient characteristics, chronic liver or heart disease, or some concurrent medication)
2. Pregnant
3. Declined to participate in the study

Date of first enrolment
26/03/2020

Date of final enrolment
28/02/2021

Locations

Countries of recruitment
Argentina

Brazil

Canada

Germany

Honduras

India

Indonesia

Iran

Ireland

Israel

Italy

Kenya

Lebanon

Malaysia

Norway

Peru

Philippines

Qatar

Saudi Arabia

South Africa

Spain

Switzerland

Thailand

Study participating centre
Multiple hospital sites (to be confirmed)
Switzerland
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Sponsor information

Organisation
World Health Organization

ROR
https://ror.org/01f80g185

Funder(s)

Funder type
Research organisation

Funder Name
World Health Organization

Alternative Name(s)
, , Всемирная организация здравоохранения, Organisation mondiale de la Santé, Organización Mundial de la Salud, WHO, , ВОЗ, OMS

Funding Body Type
Government organisation

Funding Body Subtype
International organizations

Location
Switzerland

Results and Publications

Individual participant data (IPD) sharing plan
The current data sharing plans for this study are unknown and will be 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?
Results article	interim results for remdesivir, hydroxychloroquine, lopinavir and interferon	11/02/2021	25/03/2021	Yes	No
Results article	final results and updated meta-analyses	02/05/2022	06/05/2022	Yes	No
Interim results article	interim results in preprint	15/10/2020	19/10/2020	Yes	No
Participant information sheet	Participant information sheet	11/11/2025	11/11/2025	No	Yes
Protocol file	version 10	22/03/2020	30/09/2022	No	No