

# Clinical Trial Protocol

## Iranian Registry of Clinical Trials

23 Feb 2026

### Human Placenta-Derived Mesenchymal Stem Cell Transplantation in Acute Respiratory Distress Syndrome (ARDS) Caused by COVID-19: Phase I Clinical Trial

#### Protocol summary

##### Study aim

The safety evaluation of placenta-derived mesenchymal stem cell transplantation after in vitro culture in patients with COVID-19 related acute respiratory distress syndrome

##### Design

The study is a single arm, non randomized, non-blinded Phase 1 clinical trial in 10 patients with COVID-19-induced early ARDS

##### Settings and conduct

PLMSCs are manufactured according to GMP rules in a cleanroom facility. After passing QC tests, 1 million/kg of PLMSCs are packed in a bag and injected intravenously (during 15 minutes). The injections are done in university hospitals which located in Tehran.

##### Participants/Inclusion and exclusion criteria

Inclusion Criteria: The confirmed positive result of RT-PCR test for SARS-COV2 acute infection Bilateral opacity of the lungs on CT scan PaO<sub>2</sub> / FiO<sub>2</sub> ratio <200 Exclusion Criteria: Presence of severe and irreversible disease with a life expectancy of fewer than 6 months Moderate to severe liver failure (Childs-Pugh score>12) History of chronic lung disease with PaCO<sub>2</sub>> 50 mmHg or history of oxygen consumption at home

##### Intervention groups

Patients with COVID-19-induced early ARDS will receive a single dose of approximately 1 million/kg human-derived placental mesenchymal stem cells intravenously in addition to routine treatments.

##### Main outcome variables

1. Acute complications of cell transplantation in the first 24 hours after transplantation and up to 28 days after treatment
- 2- Change in the severity of pneumonia during hospitalization up to 28 days after treatment
- 3- Changing the oxygen supply (PaO<sub>2</sub> / FiO<sub>2</sub>) up to 28 days after treatment
- 4- Number of days of connection to the mechanical ventilation device and number of days of

hospitalization in the ICU

#### General information

##### Reason for update

##### Acronym

##### IRCT registration information

IRCT registration number: **IRCT20200621047859N4**

Registration date: **2021-01-03, 1399/10/14**

Registration timing: **registered\_while\_recruiting**

Last update: **2021-01-03, 1399/10/14**

Update count: **0**

##### Registration date

2021-01-03, 1399/10/14

##### Registrant information

##### Name

Ramin Sarrami Forooshani

##### Name of organization / entity

##### Country

Iran (Islamic Republic of)

##### Phone

+98 21 8879 6003

##### Email address

rsf1351@gmail.com

##### Recruitment status

**Recruitment complete**

##### Funding source

##### Expected recruitment start date

2020-10-28, 1399/08/07

##### Expected recruitment end date

2021-03-10, 1399/12/20

##### Actual recruitment start date

empty

##### Actual recruitment end date

empty

**Trial completion date**

empty

**Scientific title**

Human Placenta-Derived Mesenchymal Stem Cell Transplantation in Acute Respiratory Distress Syndrome (ARDS) Caused by COVID-19: Phase I Clinical Trial)

**Public title**

The effects of mesenchymal stem cells in COVID-19

**Purpose**

Treatment

**Inclusion/Exclusion criteria****Inclusion criteria:**

COVID-19 infection confirmed with positive PCR test results with clinical signs including respiratory distress, cough, fever, decreased blood oxygen saturation, and imaging results in favor of ARDS Over 18 years of age Bilateral opacity of lungs on CT scan PaO<sub>2</sub>/FiO<sub>2</sub> ratio < 200 Requires mechanical ventilation to increase oxygen saturation Written informed consent (according to the patient's condition, in case of unconscious consent, the consent will be obtained from the patient's guardian).

**Exclusion criteria:**

Less than 18 years of age More than 96 hours passed from the diagnosis of ARDS (Based on the Berlin definition of ARDS) Pregnancy or breastfeeding Presence of active malignancy which has been treated in the past two years Presence of severe and irreversible disease with a life expectancy of less than 6 months Moderate to severe liver failure (Childs-Pugh Score > 12) History of chronic lung disease with PaCO<sub>2</sub> > 50 mm Hg or history of oxygen consumption at home Extensive trauma in the past 5 days History of lung transplantation Inability to provide informed consent or meet test conditions Class 3 or 4 pulmonary hypertension (WHO classification) History of pulmonary embolism or deep vein thrombosis (DVT) in the past three months

**Age**

From **18 years** old

**Gender**

Both

**Phase**

1

**Groups that have been masked**

*No information*

**Sample size**

Target sample size: **20**

**Randomization (investigator's opinion)**

Not randomized

**Randomization description****Blinding (investigator's opinion)**

Not blinded

**Blinding description****Placebo**

Not used

**Assignment**

Single

**Other design features****Secondary Ids**

empty

**Ethics committees****1****Ethics committee****Name of ethics committee**

Research Ethics Committee of Motamed Cancer Institute Academic Center for Education Culture and Rese

**Street address**

No 146, South Ghandi, Vanaq Square, Tehran, Iran

**City**

Tehran

**Province**

Tehran

**Postal code**

1517964311

**Approval date**

2020-05-06, 1399/02/17

**Ethics committee reference number**

IR.ACECR.IBCRC.REC.1399.009

**Health conditions studied****1****Description of health condition studied**

Acute Respiratory Distress Syndrome

**ICD-10 code**

J80

**ICD-10 code description**

Acute respiratory distress syndrome

**Primary outcomes****1****Description**

Safety of PLMSCs intravenous injection

**Timepoint**

During hospitalization up to 28 days after treatment

**Method of measurement**

Physical examinations and blood tests

**2****Description**

Change the amount of oxygen supply

**Timepoint**

Up to 28 days after treatment

**Method of measurement**

Measurement of PaO<sub>2</sub> / FiO<sub>2</sub>

**3****Description**

mortality

**Timepoint**

Up to 28 days after intervention

**Method of measurement**

The patients follow up

**4**

**Description**

Change in the severity of pneumonia

**Timepoint**

During hospitalization up to 28 days after treatment

**Method of measurement**

Physical examination - percentage of oxygen in the ventilator

**Secondary outcomes**

**1**

**Description**

Investigation of visceral insufficiency

**Timepoint**

Up to 28 days after transplantation

**Method of measurement**

Perform liver and kidney function tests on days 0, 7, 14 and 28

**2**

**Description**

C-reactive protein changes

**Timepoint**

Daily to +28

**Method of measurement**

Measurement of blood C-reactive protein

**3**

**Description**

Change in the number of lymphocytes

**Timepoint**

Day zero to week 12

**Method of measurement**

blood test

**4**

**Description**

Lung CT scan changes

**Timepoint**

Within 28 days after treatment

**Method of measurement**

Perform a CT scan of the lungs

**5**

**Description**

Duration of ICU admission

**Timepoint**

at the time of ICU discharge

**Method of measurement**

Number of admission days

**Intervention groups**

**1**

**Description**

Intervention group: Patients with resistant pneumonia caused by COVID-19 infection with acute symptoms of ARDS who have not responded to routine treatments. This group will receive about 10<sup>6</sup> cells/Kg Good manufacturing practices (GMP)-grade mesenchymal stem cells infusion over 10 minutes. The common treatments of patients will not be stopped.

**Category**

Treatment - Other

**Recruitment centers**

**1**

**Recruitment center**

**Name of recruitment center**

Imam Khomeini Hospital

**Full name of responsible person**

Dr Samrand Fattah Ghazi

**Street address**

Imam Khomeini Hospital Complex, Dr Gharib Ave, Keshavarz Blvd, Tehran, Iran

**City**

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**Postal code**

1419733141

**Phone**

+98 21 1186 1190

**Email**

samrand1@gmail.com

**Sponsors / Funding sources**

**1**

**Sponsor**

**Name of organization / entity**

Modiriati Atiye Bahman Company

**Full name of responsible person**

Sina Hasnalizadeh

**Street address**

No.1, Tabatabaei ALY, Shahid Ghasemi Ave, Tehran, Iran

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1459973114

**Phone**

+98 21 8879 6003

**Email**

rsf1351@gmail.com

**Grant name**

**Grant code / Reference number**

**Is the source of funding the same sponsor organization/entity?**

Yes

**Title of funding source**

Modiriat Atiye Bahman Company

**Proportion provided by this source**

90

**Public or private sector**

Private

**Domestic or foreign origin**

Domestic

**Category of foreign source of funding**

*empty*

**Country of origin****Type of organization providing the funding**

Academic

**2****Sponsor****Name of organization / entity**

Motamed Cancer Institute

**Full name of responsible person**

Dr Keivan Majidzadeh Ardebili

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No.146, South Ghandi, Vanaq Square, Tehran, Iran

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**Grant name****Grant code / Reference number****Is the source of funding the same sponsor organization/entity?**

No

**Title of funding source**

Cell therapy budget of the Islamic Consultative Assembly

**Proportion provided by this source**

10

**Public or private sector**

Public

**Domestic or foreign origin**

Domestic

**Category of foreign source of funding**

*empty*

**Country of origin****Type of organization providing the funding**

Other

**Person responsible for general inquiries****Contact****Name of organization / entity**

Iranian academic center for education culture and research

**Full name of responsible person**

Dr Ramin Sarrami Forooshani

**Position**

Associated Professor

**Latest degree**

Ph.D.

**Other areas of specialty/work**

Virology

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**Person responsible for scientific inquiries****Contact****Name of organization / entity**

Iranian academic center for education culture and research

**Full name of responsible person**

Dr Ramin Sarrami Forooshani

**Position**

Associated professor

**Latest degree**

Ph.D.

**Other areas of specialty/work**

Virology

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**Person responsible for updating data****Contact****Name of organization / entity**

Iranian academic center for education culture and research

**Full name of responsible person**

Fatemeh Salimian

**Position**

Researcher

**Latest degree**

Master

**Other areas of specialty/work**

Others

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**Sharing plan****Deidentified Individual Participant Data Set (IPD)**

Undecided - It is not yet known if there will be a plan to make this available

**Study Protocol**

Undecided - It is not yet known if there will be a plan to make this available

**Statistical Analysis Plan**

Not applicable

**Informed Consent Form**

Undecided - It is not yet known if there will be a plan to make this available

**Clinical Study Report**

Undecided - It is not yet known if there will be a plan to make this available

**Analytic Code**

Not applicable

**Data Dictionary**

Not applicable