# Clinical Trial Protocol
# Iranian Registry of Clinical Trials

07 Nov 2026

## Investigating the safety and efficacy of active natural killer cell infusions in patients with MRD-positive Acute Lymphoblastic Leukemia after hematopoietic stem cell transplantation: a phase I/II trial

## Protocol summary

**Study aim**

To assess the safety and efficacy of administration of Natural Killer cells in patients with MRD-positive Acute Lymphoblastic Leukemia early after hematopoietic stem cell transplantation.

**Design**

This is a non-randomized, interventional, single-group assignment study to assess the safety and efficacy of allogeneic NK cell therapy on 36 patients with MRD-positive Acute Lymphoblastic Leukemia who are candidates for allogeneic hematopoietic stem cell transplantation.

**Settings and conduct**

The study is a single-group clinical trial to evaluate the safety and efficacy of Prophylactic administration of Natural Killer cells early after hematopoietic stem cell transplantation in adult patients with MRD-positive Acute Lymphoblastic Leukemia at the Hematology-Oncology-Stem Cell Transplantation Research Center (HORCSCT) of Tehran University.

**Participants/Inclusion and exclusion criteria**

Patients over and equal to 18 years of age with MRD-positive Acute Lymphoblastic Leukemia who are candidates for allogeneic hematopoietic stem cell transplantation from matched or mismatched donors are included in the study. Patients with uncontrolled infection or severe acute graft-versus-host disease are excluded from the study.

**Intervention groups**

All patients will be assigned to the only interventional arm of the study. Recipients of allogeneic Stem Cell Transplantation will receive the systemic intravenous infusion of natural killer cells at days +6 and +12 post-transplantation.

**Main outcome variables**

Natural Killer cell infusion-related Adverse Events, Relapse incidence for one year after infusion.

## General information

**Reason for update**

**Acronym**

**IRCT registration information**

IRCT registration number: **IRCT20140818018842N38**
Registration date: **2024-05-07, 1403/02/18**
Registration timing: **prospective**

Last update: **2024-05-07, 1403/02/18**
Update count: **0**

**Registration date**

2024-05-07, 1403/02/18

**Registrant information**

**Name**

Leyla Sharifi Aliabadi

**Name of organization / entity**

Research Institute for Hematology, Oncology and Stem Cell Transplantation,Tehran University of Medic

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Iran (Islamic Republic of)

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**Recruitment status**

**Recruitment complete**

**Funding source**

**Expected recruitment start date**

2024-05-09, 1403/02/20

**Expected recruitment end date**

2025-06-10, 1404/03/20

**Actual recruitment start date**

empty

**Actual recruitment end date**

empty

**Trial completion date**
empty

**Scientific title**
Investigating the safety and efficacy of active natural killer cell infusions in patients with MRD-positive Acute Lymphoblastic Leukemia after hematopoietic stem cell transplantation: a phase I/II trial

**Public title**
Natural Killer cell in Acute Lymphoblastic Leukemia
**Purpose**
Treatment
**Inclusion/Exclusion criteria**
**Inclusion criteria:**
Age 18 years old or more Patients with B-ALL or T-ALL who are MRD positive after receiving therapy.
**Exclusion criteria:**
Symptomatic coronary artery disease Karnofsky Performance Score < 60 Patients with uncontrolled bacterial, viral or fungal infection Acute graft versus host disease Females who are pregnant or breastfeeding.
**Age**
From **18 years** old to **65 years** old
**Gender**
Both

**Phase**
1-2
**Groups that have been masked**
*No information*
**Sample size**
Target sample size: **36**
**Randomization (investigator's opinion)**
N/A
**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**
Ethic committee of Hematology- Oncology and Stem Cell Transplantation Research Center, Tehran Univer
**Street address**
Kargar shomali Ave., Shariati hospital
**City**
Tehran
**Province**
Tehran
**Postal code**
1411713131
**Approval date**
2022-10-23, 1401/08/01
**Ethics committee reference number**
IR.TUMS.HORCSCT.REC.1401.039

## Health conditions studied

### 1

**Description of health condition studied**
acute lymphoblastic leukemia
**ICD-10 code**
C91.0
**ICD-10 code description**
Acute lymphoblastic leukemia [ALL]

## Primary outcomes

### 1

**Description**
Number of Patients With Grades 3-5 of Natural Killer cell infusion-related Adverse Events.
**Timepoint**
Daily during the first seven days after the injection
**Method of measurement**
History, Physical exam, and lab test

### 2

**Description**
Relapse Incidence
**Timepoint**
one year after infusion
**Method of measurement**
Bone marrow aspiration and biopsy

## Secondary outcomes

### 1

**Description**
Determination of MRD negativity in patients after injection of natural killer cells
**Timepoint**
1, 3, 6, 9 and 12 months post transplant
**Method of measurement**
Bone marrow aspiration and flowcytometry

### 2

**Description**
Incidence of acute graft versus host disease
**Timepoint**
Monthly for 4 months after transplantation
**Method of measurement**
Visiting the patient in person and performing monthly lab tests in outpatient clinique

## Intervention groups

### 1

**Description**
Intervention group: All patients are included in the only intervention arm of the study. Patients in the intervention arm will receive two doses of in-vitro expanded NK cells at the 6 and 12 days after transplantation under full supervision and in an isolated room. The process of isolation and preparation of NK cells will be done in a clean room with clinical grade and suitable conditions for producing NK cells. 20 to 30 cc of peripheral blood was taken from the third-party donor and after the isolation of mononuclear cells, CD56+/CD3- reproduced. A viability test is done using trypan blue and phenotyping is used to check the absolute number and purity of cells.

**Category**
Treatment - Drugs

## Recruitment centers

### 1

**Recruitment center**

**Name of recruitment center**
Hematology- Oncology and Stem Cell Transplantation Research Center, Tehran University of Medical Sci

**Full name of responsible person**
Tanaz Sayar Bahri

**Street address**
North Kargar Ave.

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Tehran

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## Sponsors / Funding sources

### 1

**Sponsor**

**Name of organization / entity**
Tehran University of Medical Sciences

**Full name of responsible person**
Dr. Ali Akbari Sari

**Street address**
Poursina St., 16 Azar St., Keshavarz Blvd.

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**Grant name**

**Grant code / Reference number**

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

**Title of funding source**
Tehran University of Medical Sciences

**Proportion provided by this source**
100

**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**
Academic

## Person responsible for general inquiries

**Contact**

**Name of organization / entity**
Tehran University of Medical Sciences

**Full name of responsible person**
Maryam Barkhordar

**Position**
Assistant professor

**Latest degree**
Subspecialist

**Other areas of specialty/work**
Hematology

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## Sharing plan

**Deidentified Individual Participant Data Set (IPD)**
No - There is not a plan to make this available
**Justification/reason for indecision/not sharing IPD**
Justification/reason for indecision/not sharing IPD
**Study Protocol**
No - There is not a plan to make this available
**Statistical Analysis Plan**
No - There is not a plan to make this available
**Informed Consent Form**
No - There is not a plan to make this available
**Clinical Study Report**
No - There is not a plan to make this available
**Analytic Code**
No - There is not a plan to make this available
**Data Dictionary**
No - There is not a plan to make this available