

Oral versus intramuscular glucocorticoids in rheumatoid arthritis

Submission date 26/11/2024	Recruitment status Recruiting	<input checked="" type="checkbox"/> Prospectively registered <input type="checkbox"/> Protocol
Registration date 04/02/2025	Overall study status Ongoing	<input type="checkbox"/> Statistical analysis plan <input type="checkbox"/> Results
Last Edited 10/04/2026	Condition category Musculoskeletal Diseases	<input type="checkbox"/> Individual participant data <input checked="" type="checkbox"/> Record updated in last year

Plain English summary of protocol

Background and study aims

Rheumatoid Arthritis (RA) causes joint pain and swelling affecting people's daily activities and quality of life. The National Institute for Health and Care Excellence advise treatment with drugs called anti-rheumatic medicines, but they can take up to 6 months to work. Whilst waiting for these medicines to take effect, patients are offered another type of drug, steroids, which act quickly to control symptoms. Unfortunately, steroids have long-term side effects such as diabetes, weight gain and skin changes, so should only be used for short periods of time. Steroids can be given as an injection into the muscle or as a daily tablet. Doctors currently do not know whether it matters which of these and what dose has the best balance between side effects and rapid symptom relief.

The LEADER trial aims to find the most effective and safest way of using steroids for patients with uncontrolled RA who are starting a new anti-rheumatic medicine.

Who can participate?

To join this study, participants must be 18 or older and have rheumatoid arthritis that meets specific criteria. They should have active disease with at least three tender and three swollen joints. Participants must be planning to start, switch, or increase their medication for rheumatoid arthritis. They need to be open to being assigned to any treatment group in the study and must be able to give informed consent.

What does the study involve?

The trial will compare 4 different doses/ways of taking steroids: 1) higher dose steroid tablets that reduce in dose over six weeks, 2) lower dose steroid tablets that reduce in dose over four weeks, 3) a one-off higher dose steroid injection or 4) a one-off lower dose steroid injection. Participants will be assessed regularly during the first 3 months and at 6 months to see how the treatment has affected their symptoms. The trial will compare how active the RA is, between tablets and injection and also dose levels, to find out which treatment is most effective. The trial will also look at what impact the different doses and ways of taking steroids have on fatigue, ability to do day-to-day activities and work, quality of life, the amount of pain killers used and value for money to the NHS. Side effects such as weight gain and mood changes will be assessed and an at-home finger-prick blood sample will test if the steroid has affected the ability to produce a key hormone that controls the body's stress response and blood pressure.

What are the possible benefits and risks of participating?

Benefits:

Not provided at time of registration

Risks:

The LEADER trial is comparing different routes of administration and regimes that are commonly used for standard care treatment. The IMPs (oral prednisolone tablets and intramuscular methylprednisolone) are being used in the LEADER trial within their licensed indications and have well established safety profiles. The prescribing and dispensing of all IMPs will follow usual practice at participating sites. Treatment is therefore comparable with standard medical care.

Burdens: One extra visit, Completion of weekly pain VAS, Longer standard of care visits, Completion of questionnaires

Completion of finger prick blood test at home.

Extra blood needed for the trial is being collected at the same time of routine blood when ever possible, so only 1 additional blood draw will be needed - at the week 2 visit which is an additional visit for the study only.

Where is the study run from?

University of Manchester (UK)

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

November 2024 to March 2027

Who is funding the study?

National Institute for Health and Care Research (NIHR) (UK).

Who is the main contact?

leader@ndorms.ox.ac.uk

Contact information

Type(s)

Public, Scientific

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Type(s)

Principal investigator

Contact name

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Additional identifiers

Integrated Research Application System (IRAS)

1010280

Central Portfolio Management System (CPMS)

57018

Protocol serial number

R130178

Study information

Scientific Title

The clinical and cost effectiveness of oral vErsus intrAmuscular glucocorticoiDs in rhEumatoid aRthritis

Acronym

LEADER

Study objectives

Primary objective:

To compare the mean DAS(CRP)-28 over 12 weeks in adult patients with active RA commencing IM or oral short-term bridging GC therapy who are initiating, escalating or switching DMARD therapy.

Secondary objectives:

1. To compare the effect of:

1.1. Two IM GC dose regimens on mean DAS(CRP)-28, American College of Rheumatology (ACR) response, and EULAR Modified Boolean remission over 24 weeks.

1.2. Two PO GC dose regimens on mean DAS(CRP)-28, ACR response, and EULAR Modified Boolean remission over 24 weeks.

1.3. Oral and IM GC on analgesic use.

1.4. Oral and IM GC on patient-reported outcomes.

1.5. Oral and IM GC on toxicity.

1.6. Oral and IM GC on cumulative GC dose.

2. To conduct an economic evaluation.

3. To assess GC bridging therapy acceptability.

4. To conduct a qualitative study of GC bridging therapy acceptability.

5. To conduct a qualitative study of patients who decide not to take part during the pilot phase

to explore their views and perspectives of non-participation to identify barriers to recruitment.
6. To conduct a qualitative study of healthcare professionals to explore their experiences and views of delivering LEADER and recruitment and retention of trial participants.

Ethics approval required

Ethics approval required

Ethics approval(s)

approved 03/02/2025, Leicester Central Research Ethics Committee (2 Redman Place, Stratford, London, E20 1JQ, United Kingdom; +44 2071048227; leicestercentral.rec@hra.nhs.uk), ref: 24/EM/0277

Study design

Interventional assessor blinded randomized parallel group controlled trial

Primary study design

Interventional

Study type(s)

Efficacy, Safety

Health condition(s) or problem(s) studied

Rheumatoid arthritis

Interventions

Current interventions as of 10/04/2026:

Arm A (PO30): Oral glucocorticoid (prednisolone) tablets. Starting dose of 30 mg once daily tapered down after each week over 5 weeks to 5 mg once daily. Total treatment duration is 6 weeks.

Arm B (PO15): Oral glucocorticoid (prednisolone) tablets. Starting dose of 15 mg once daily tapered down after each week over 3 weeks to 5 mg once daily. Total treatment duration is 4 weeks.

Arm C (IM120): One-off 120 mg intramuscular glucocorticoid injection (methylprednisolone). Treatment duration is 1 day.

Arm D (IM80): One-off 80 mg intramuscular glucocorticoid injection (methylprednisolone). Treatment duration is 1 day.

Each participant will be followed up for 24 weeks from randomisation, with in-person appointments at Baseline, Weeks 4, 12 and 24. The follow-up schedule is the same across all four trial arms.

The participant randomisation process will be completed online using a randomisation tool embedded within the trial database.

Previous interventions:

Arm A (PO30): Oral glucocorticoid (prednisolone) tablets. Starting dose of 30 mg once daily tapered down after each week over 5 weeks to 5 mg once daily. Total treatment duration is 6 weeks.

Arm B (PO15): Oral glucocorticoid (prednisolone) tablets. Starting dose of 15 mg once daily tapered down after each week over 3 weeks to 5 mg once daily. Total treatment duration is 4 weeks.

Arm C (IM120): One-off 120 mg intramuscular glucocorticoid injection (methylprednisolone). Treatment duration is 1 day.

Arm D (IM80): One-off 80 mg intramuscular glucocorticoid injection (methylprednisolone). Treatment duration is 1 day.

Each participant will be followed up for 24 weeks from randomisation, with in-person appointments at Weeks 2, 4, 8, 12 and 24. The follow-up schedule is the same across all four trial arms.

The participant randomisation process will be completed online using a randomisation tool embedded within the trial database.

Intervention Type

Drug

Phase

Phase III

Drug/device/biological/vaccine name(s)

Prednisolone, methylprednisolone

Primary outcome(s)

Current primary outcome as of 10/04/2026:

DAS(CRP)-28 - disease activity at Baseline, Weeks 4, 12

Previous primary outcome:

DAS(CRP)-28 - disease activity at Baseline, Weeks 2, 4, 8, 12

Key secondary outcome(s)

Current secondary outcomes as of 10/04/2026:

1. Disease activity is measured using EULAR Boolean remission and ACR20/50/70 at Baseline, Weeks 4, 12 and 24; and using DAS(CRP)-28 at Baseline, Weeks 2, 4, 8 and 12.
2. Patient-reported outcomes are measured using FACIT, VAS (pain), RA-QoL, WPAI, and HAQ-DI at Baseline, Weeks 4, 12, and 24; pain is measured weekly from Baseline to Week 24.
3. Analgesic use is measured by collecting patient's analgesic usage at Baseline, Weeks 4, 12, and 24.
4. Toxicity is measured using an early morning cortisol suppression at Week 12; collecting a GTI (glucocorticoid toxicity index) at Baseline, Weeks 12 and 24; collecting adverse events of special interest (AESIs) at Weeks 12 and 24; and by assessing for skin changes at injection site (IM arms only) at Weeks 4, 12 and 24.
5. Cumulative dose is measured by two methods: first, by collecting data from patient's medical notes on their GC dose prescribed, collected at Baseline, Weeks 4, 12, and 24; and secondly, by collecting data on patient's GC adherence to treatment allocation, collected from
 - (i) Oral Arm participants weekly from Baseline to Week 24 via participant-reported steroid diaries, and
 - (ii) from IM Arm participants at Baseline, Weeks 4, 12 and 24 via participant's medical notes.

6. Economic evaluation is measured using a healthcare resource utilisation questionnaire at Baseline, Weeks 4, 12, and 24; EQ-5D-5L at Baseline, Weeks 4, 12 and 24; and collecting Medication usage at Baseline, Weeks 4, 12 and 24.
7. Therapy acceptability to patients is measured using TFA at Weeks 12 and 24; BMQ-specific at Baseline, Weeks 12 and 24; and interviews and/or focus groups post-Week 24.
8. Barriers to recruitment are measured using 1:1 interviews with patients who decline participation.
9. Experience and views of healthcare professionals are measured using 1:1 interviews and/or focus groups from the start of recruitment to the end of the trial.

Previous secondary outcomes:

1. Disease activity is measured using EULAR Boolean remission and ACR20/50/70 at Baseline, Weeks 2, 4, 8, 12 and 24; and using DAS(CRP)-28 at Baseline, Weeks 2, 4, 8 and 12.
2. Patient-reported outcomes are measured using FACIT, VAS (pain), RA-QoL, WPAI, and HAQ-DI at Baseline, Weeks 2, 4, 8, 12, and 24; pain is measured weekly from Baseline to Week 24.
3. Analgesic use is measured by collecting patient's analgesic usage at Baseline, Weeks 2, 4, 8, 12, and 24.
4. Toxicity is measured using an early morning cortisol suppression at Week 12; collecting a GTI (glucocorticoid toxicity index) at Baseline, Weeks 12 and 24; collecting adverse events of special interest (AESIs) at Weeks 12 and 24; and by assessing for skin changes at injection site (IM arms only) at Weeks 2, 4, 8, 12 and 24.
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 - (i) Oral Arm participants weekly from Baseline to Week 24 via participant-reported steroid diaries, and
 - (ii) from IM Arm participants at Baseline, Weeks 2, 4, 8, 12 and 24 via participant's medical notes.
6. Economic evaluation is measured using a healthcare resource utilisation questionnaire at Baseline, Weeks 2, 4, 8, 12, and 24; EQ-5D-5L at Baseline, Weeks 4, 12 and 24; and collecting Medication usage at Baseline, Weeks 2, 4, 8, 12 and 24.
7. Therapy acceptability to patients is measured using TFA at Weeks 12 and 24; BMQ-specific at Baseline, Weeks 12 and 24; and interviews and/or focus groups post-Week 24.
8. Barriers to recruitment are measured using 1:1 interviews with patients who decline participation during the first 9 months of recruitment.
9. Experience and views of healthcare professionals are measured using 1:1 interviews and/or focus groups from the start of recruitment to the end of the trial.

Completion date

31/03/2027

Eligibility

Key inclusion criteria

Current inclusion criteria as of 10/04/2026:

1. Aged 18 years or over
2. Diagnosed with rheumatoid arthritis
3. Active disease defined as ≥ 3 tender and ≥ 3 swollen joints
4. Planning on initiating/switching to/escalating to one conventional synthetic (cs), biologic (b) or targeted synthetic (ts) DMARD
5. Willing and able to accept either trial arm allocation
6. Willing and able to give informed consent

Previous inclusion criteria:

1. Aged 18 years or over
2. Diagnosed with rheumatoid arthritis that either currently or historically fulfils 2010 ACR /EULAR RA classification criteria
3. Active disease defined as ≥ 3 tender and ≥ 3 swollen joints
4. Planning on initiating/switching to/escalating to a conventional synthetic (cs), biologic (b) or targeted synthetic (ts) DMARD
5. Willing and able to accept either trial arm allocation
6. Willing and able to give informed consent

Participant type(s)

Patient

Healthy volunteers allowed

No

Age group

Mixed

Lower age limit

18 years

Upper age limit

150 years

Sex

All

Total final enrolment

0

Key exclusion criteria

Current exclusion criteria as of 10/04/2026:

1. Oral, intramuscular or intra-articular glucocorticoid therapy within the past 28 days
2. Glucocorticoid therapy contraindicated (as determined by treating clinician)
3. Diagnosed within the last 6 months with fibromyalgia or chronic widespread pain
4. Known to be pregnant or female patient trying to conceive
5. Unstable or uncontrolled diabetes
6. Participating or planning to participate in another interventional clinical study/trial during the study period that in the opinion of the Investigator could affect LEADER outcomes
7. Any other severe concomitant disease that, in the opinion of the investigator, might interfere with trial procedures and/or assessments

Previous exclusion criteria:

1. Oral, intramuscular or intra-articular glucocorticoid therapy within the past 3 months
2. Glucocorticoid therapy contraindicated (as determined by treating clinician)
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4. Known to be pregnant or female patient trying to conceive
5. Unstable or uncontrolled diabetes
6. Participating or planning to participate in another interventional clinical study/trial during the

study period that in the opinion of the Investigator could affect LEADER outcomes
7. Any other severe concomitant disease that, in the opinion of the investigator, might interfere with trial procedures and/or assessments

Date of first enrolment

04/07/2025

Date of final enrolment

30/06/2026

Locations

Countries of recruitment

United Kingdom

Study participating centre

Pennine MSK Partnership Ltd

Integrated Care Centre

New Radcliffe Street

Oldham

England

OL1 1NL

Study participating centre

University Hospitals Plymouth NHS Trust

Derriford Hospital

Derriford Road

Derriford

Plymouth

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PL6 8DH

Study participating centre

East Sussex Healthcare NHS Trust

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TN37 7PT

Study participating centre

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SE5 9RS

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Warrington Road
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L35 5DR

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Whitehall Street
Rochdale
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OL12 0NB

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

Study participating centre
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Airedale General Hospital
Skipton Road
Steeton
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England
BD20 6TD

Study participating centre
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Darlington Memorial Hospital
Hollyhurst Road
Darlington
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DL3 6HX

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Barts Health NHS Trust
The Royal London Hospital
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London
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E1 2ES

Study participating centre
Sandwell and West Birmingham Hospitals NHS Trust
Midland Metropolitan University Hos
Grove Lane
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B66 2QT

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CW1 4QJ

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NN1 5BD

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CM20 1QX

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BN11 2DH

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Study participating centre
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Rothwell Road
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NN16 8UZ

Sponsor information

Organisation
University of Manchester

ROR
<https://ror.org/027m9bs27>

Funder(s)

Funder type
Government

Funder Name
National Institute for Health and Care 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

Individual participant data (IPD) sharing plan

The datasets generated during and/or analysed during the current study are/will be available upon request from the Chief Investigator and in accordance with the data sharing policies of OCTRU, the Sponsor and funder(s).

IPD sharing plan summary

Available on request

Study outputs

Output type	Details	Date created	Date added	Peer reviewed?	Patient-facing?
Study website	Study website	11/11/2025	11/11/2025	No	Yes