

ASCEND: A study of cardiovascular events in diabetes

Submission date 14/07/2005	Recruitment status No longer recruiting	☐ Prospectively registered
Registration date 01/09/2005	Overall study status Ongoing	☐ Protocol
Last Edited 24/02/2026	Condition category Nutritional, Metabolic, Endocrine	☐ Statistical analysis plan
		☒ Results
		☐ Individual participant data

Plain English summary of protocol

Background and study aims

ASCEND is a clinical trial which aimed to find out whether aspirin and/or omega-3 fatty acids (fish oils) reduced the risk of heart attacks and strokes in people with diabetes who did not already have any existing problems with their heart or blood circulation, when they started the study.

The main trial has now ended. Participants stopped taking study treatment in 2017, and results were reported in 2018. These main trial results showed that aspirin prevented serious vascular events (such as heart attacks and strokes) in these individuals, but the benefits were largely counterbalanced by an increase in major bleeds and there was no effect on the development of cancers.

ASCEND researchers continue to collect information on health outcomes by obtaining routinely collected data via central data registries and NHS sources. This Long-term Follow-up (LTFU) research will continue until 2037. The ASCEND researchers are especially interested in finding out whether taking aspirin protects against cancer, dementia/cognitive decline, or development of heart failure.

Additional information about this LTFU work is given on the study website: <https://www.ctsu.ox.ac.uk/research/ascend>

Who can participate?

The original study participants were people who had diabetes, but did not already have cardiovascular disease. This is now a static cohort. Recruitment stopped in July 2011.

What does the study involve?

The ongoing Long-term Follow-up research is collecting Healthcare Systems Data (HSD) directly from NHS Custodians e.g. NHS England, NHS Wales (the Secure Anonymised Information Linkage Databank (SAIL), Digital Health and Care Wales (DHCW)), and NHS Scotland (Public Health Scotland (PHS) and the NHS Central Register (NHSCR)). Other Central Registries holding Healthcare Systems Data may also provide data. There is no further direct involvement for the participants.

What are the possible benefits and risks of participating?

Participants stopped study treatment in 2017 so there are no direct risks to them of the Long-

term Follow-up research. All participants were informed of the main trial results in 2018. We are no longer in contact with the participants, but disseminate data about new results via the ASCEND website.

Where is the study run from?

The University of Oxford, managed by researchers at the Nuffield Department of Population Health (NDPH)

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

Participants were first recruited between June 2005 and July 2011. The main trial (when participants were on active treatment) ended in 2017. The Long-term Follow-up (via Healthcare Systems Data) will continue until 2037.

Who is funding the study?

Current funding is being provided by the British Heart Foundation (BHF).

In the past the study has received funding from: the BHF, Bayer Healthcare, Abbott Laboratories, Alzheimer's Research UK, and the Macular Society.

Who is the main contact?

Associate Professor Marion Mafham
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Contact information

Type(s)

Scientific

Contact name

Prof Marion Mafham

ORCID ID

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Contact details

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Additional identifiers

ClinicalTrials.gov (NCT)

NCT00135226

Integrated Research Application System (IRAS)

341798

Protocol serial number

CTSU ASCEND 1

Study information

Scientific Title

A randomised 2 x 2 factorial study of aspirin versus placebo, and of omega-3 fatty acid supplementation versus placebo, for primary prevention of cardiovascular events in people with diabetes

Acronym

ASCEND

Study objectives

To determine whether 100 mg daily aspirin versus placebo and/or supplementation with 1 g daily omega-3 fatty acids or placebo prevents 'serious vascular events' (i.e. non-fatal heart attack, non-fatal stroke or death from vascular causes) in patients with diabetes who are not known to have occlusive arterial disease and to assess the effects on serious bleeding or other adverse events.

Ethics approval required

Old ethics approval format

Ethics approval(s)

Approved 29/12/2003, North West - Haydock REC (previously North West Multi-centre Research Ethics Committee) (Barlow House, 4 Minshull St, Manchester, M1 3DZ, UK; +44 2071048138; haydock.rec@hra.nhs.uk), ref: 03/8/087

Primary study design

Interventional

Study design

Randomized controlled trial

Study type(s)

Prevention

Health condition(s) or problem(s) studied

Diabetes (type 1 & 2)

Interventions

100 mg daily aspirin versus placebo and/or supplementation with 1 g daily omega-3 fatty acids or placebo.

Intervention Type

Drug

Phase

Phase IV

Drug/device/biological/vaccine name(s)

Aspirin, omega-3 fatty acids

Primary outcome(s)

Current primary outcome measure as of 15/11/2024:

Long-term Follow-up Primary Outcome:

The primary long-term efficacy assessment of aspirin will involve intention-to-treat comparisons among all randomized participants of the original allocation to aspirin versus placebo on the first occurrence of any incident gastrointestinal tract cancer.

Previous primary outcome measure as of 07/05/2019:

1. The primary efficacy assessments involve intention-to-treat comparisons among all randomized participants of allocation to aspirin versus placebo and, separately, of omega-3 fatty acids versus placebo on the first occurrence of any "Serious Vascular Event" (SVE), defined as:

1.1. Non-fatal myocardial infarction; or

1.2. Non-fatal stroke (excluding confirmed intracranial hemorrhage) or TIA; or

1.3. Vascular death excluding confirmed intracranial hemorrhage (defined as International Classification of Diseases 10th revision [ICD-10] I00-52 or I63-99, i.e. excluding subarachnoid hemorrhage [I60], intracerebral hemorrhage [I61], and other non-traumatic intracranial hemorrhage [I62]).

Time frame: Randomised treatment phase during a mean of 7.4 years.

2. The primary safety assessments involve intention-to-treat comparisons among all randomized patients of allocation to aspirin versus placebo on the first occurrence of "any major bleed", defined as:

2.1. Any confirmed intracranial hemorrhage (including intracerebral, subarachnoid, subdural or any other intracranial hemorrhage); or

2.2. Sight-threatening eye bleeding; or

2.3. Any other serious bleeding episode

Time frame: Randomised treatment phase during a mean of 7.4 years.

From 26/05/2016 to 07/05/2019:

Effect of aspirin versus placebo and separately omega-3 fatty acids versus placebo on serious vascular events or TIA (defined as the combination of non-fatal myocardial infarction, non-fatal stroke or vascular death, excluding confirmed cerebral haemorrhage, or TIA) at the end of the scheduled treatment period (average of 7.5 years).

Original:

The combination of non-fatal myocardial infarction, non-fatal stroke or vascular death, excluding confirmed cerebral haemorrhage

Key secondary outcome(s)

Current secondary outcome measures as of 15/11/2024:

Long-term Follow-up Secondary Outcomes:

Secondary long-term efficacy assessments of aspirin will involve intention-to-treat comparisons among all randomized participants of the original allocation to aspirin versus placebo on the first occurrence of:

- i. Any cancer (excluding non-fatal non-melanoma skin cancer);
- ii. Colorectal cancer;
- iii. Death from cancer;
- iv. Incident GI tract cancer by time since randomization: <3; ≥3 <5; ≥5 <10; ≥10 <20; ≥20 years

Previous secondary outcome measures as of 07/05/2019:

1. Secondary efficacy assessments involve intention-to-treat comparisons among all randomized participants of allocation to aspirin versus placebo and, separately, of omega-3 versus placebo on the first occurrence of the expanded vascular endpoint of "SVE or revascularization" (including coronary and non-coronary revascularizations).

Time frame: Randomised treatment phase during a mean of 7.4 years

2. Secondary efficacy assessments of aspirin involve intention-to-treat comparisons during the scheduled treatment period among all randomized participants on the first occurrence of any incident gastrointestinal (GI) tract cancer (i.e. any GI cancer excluding pancreas and hepatobiliary), overall and after exclusion of the first three years of follow-up.

Time frame: Randomised treatment phase during a mean of 7.4 years

From 26/05/2016 to 07/05/2019:

1. Effect of aspirin versus placebo and separately omega-3 fatty acids versus placebo on serious vascular events in various prognostic groups at the end of the scheduled treatment period (average of 7.5 years)

2. Effect of aspirin versus placebo and separately omega-3 fatty acids versus placebo on cerebral haemorrhage at the end of the scheduled treatment period (average of 7.5 years)

Original:

1. Serious vascular event in various prognostic subgroups
2. Cerebral haemorrhage

Completion date

31/07/2037

Eligibility

Key inclusion criteria

1. Male or female with diabetes (Type 1 or 2)
2. Aged greater than or equal to 40 years
3. No previous history of vascular disease
4. No clear contra-indication to aspirin
5. No other predominant life-threatening medical problem

Participant type(s)

Patient

Healthy volunteers allowed

No

Age group

Mixed

Lower age limit

40 Years

Upper age limit

100 Years

Sex

All

Total final enrolment

15480

Key exclusion criteria

The following point has been amended as of 11/02/2009:

2. Currently prescribed warfarin

Initial information at time of registration:

1. Definite history of myocardial infarction, stroke or arterial revascularisation procedure
2. Currently prescribed aspirin, warfarin or any other blood thinning medication

Date of first enrolment

14/03/2005

Date of final enrolment

31/07/2011

Locations**Countries of recruitment**

United Kingdom

England

Study participating centre**ASCEND Office**

CTSU, Nuffield Department of Population Health
Richard Doll Building
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Old Road Campus
Roosevelt Drive
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OX3 7LF

Sponsor information**Organisation**

University of Oxford (UK)

ROR

<https://ror.org/052gg0110>

Funder(s)**Funder type**

Industry

Funder Name

British Heart Foundation

Alternative Name(s)

The British Heart Foundation, the_bhf, BHF

Funding Body Type

Private sector organisation

Funding Body Subtype

Trusts, charities, foundations (both public and private)

Location

United Kingdom

Results and Publications

Individual participant data (IPD) sharing plan

The datasets generated during and/or analysed during the current study will be available upon request. Procedures for accessing the data for this study are available at: <https://www.ndph.ox.ac.uk/data-access>.

IPD sharing plan summary

Available on request

Study outputs

Output type	Details	Date created	Date added	Peer reviewed?	Patient-facing?
Results article	Baseline paper	01/04/2018	01/02/2019	Yes	No
Results article	Aspirin	18/10/2018	07/05/2019	Yes	No
Results article	n-3 fatty acids	18/10/2018	07/05/2019	Yes	No
Results article	Effect of low-dose aspirin on urinary 11-dehydro-thromboxane B2 in the ASCEND (A Study of Cardiovascular Events in Diabetes) randomized controlled trial	04/03/2023	06/03/2023	Yes	No
Results article	Reliability of major bleeding events in UK routine data versus clinical trial adjudicated follow-up data	03/06/2023	05/06/2023	Yes	No
Results article	ASCEND-Eye: Rationale, design and baseline characteristics for a sub-study of the ASCEND randomised trial	05/07/2023	25/09/2023	Yes	No
Results article	Effects of aspirin and omega-3 fatty acids on composite and subdomain scores from the NEI-VFQ-25 questionnaire: the ASCEND-Eye randomized controlled trial	05/11/2024	06/11/2024	Yes	No
Results article	ASCEND-Eye: Effects of Aspirin on Diabetic Retinopathy	01/07/2024	15/11/2024	Yes	No
Results article	ASCEND-Eye: Effects of Omega-3 Fatty Acids on Diabetic Retinopathy	01/05/2024	15/11/2024	Yes	No
Results article	Comparison of the Accuracy and Completeness of Records of Serious Vascular Events in Routinely Collected Data vs Clinical Trial-Adjudicated Direct Follow-up Data in the UK: Secondary Analysis of the ASCEND Randomized Clinical Trial	01/12/2021	15/11/2024	Yes	No
Results article	Decrements in healthrelated quality of life associated with adverse events in people with diabetes	20/12/2021	15/11/2024	Yes	No
Results article	Effects of aspirin on dementia and cognitive function in diabetic patients: the ASCEND trial	01/06/2022	15/11/2024	Yes	No
Results article	Hospital costs associated with adverse events in people with diabetes in the UK	29/06/2022	15/11/2024	Yes	No
Results article	Thromboxane biosynthesis and future events in diabetes: the ASCEND trial	14/04/2024	15/11/2024	Yes	No
Results article	Effects of omega-3 fatty acid supplements on arrhythmias	27/01/2020	24/02/2026	Yes	No
Other publications	recruitment methods	13/06/2016		Yes	No
Other publications	ASCEND-Eye substudy	26/02/2025	24/02/2026	Yes	No
Other	ASCEND-Eye substudy	28/03	24/02		

publications		/2025	/2026	Yes	No
Participant information sheet	version V1	16/11/2016	07/05/2019	No	Yes
Participant information sheet	version V8	12/10/2010	07/05/2019	No	Yes
Plain English results				No	Yes
Study website		11/11/2025	11/11/2025	No	Yes