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PROspective Study of Pravastatin in the Elderly at Risk (PROSPER)

Submission date
13/06/2013

Recruitment status
No longer recruiting

Registration date
21/06/2013

Overall study status
Completed

Last Edited
11/04/2025

Condition category
Circulatory System

[_] Prospectively registered
[X] Protocol
[_] Statistical analysis plan
[X] Results
[_] Individual participant data

Plain English summary of protocol

Background and study aims
Research in younger people has shown that high levels of cholesterol, especially LDL cholesterol (commonly referred to as bad cholesterol), are associated with increased risks of heart attacks and death due to heart disease. Clinical trials have also shown that reduction of cholesterol levels with drugs called statins reduces the risk of heart attack and death due to heart disease. In fact, these trials have also reduced the risk of stroke. However in older people the link between raised cholesterol and increased risk disappears, raising the question as to whether lowering cholesterol in older people will be beneficial. The aim of the PROSPER trial was to investigate this question.

Who can participate?
The study aimed to recruit men and women aged 70-82 years, in Scotland, Ireland and the Netherlands, who had a history of heart disease, stroke or other vascular problems, or were at increased risk because the had diabetes, high blood pressure or were current smokers. The study aimed to recruit 5500 participants.

What does the study involve?
The participants were randomly allocated to two groups, half received treatment with a cholesterol lowering drug called pravastatin (taken as a 40mg tablet once per day) and half with a dummy tablet with no effect on cholesterol. The objective was to reduce the risk of deaths due to heart disease and stroke and to reduce non-fatal heart attacks and strokes. Participants attended screening visits before randomisation and then attended study visits every three months to have study medication issued and to have study data recorded. Blood samples were taken every six months to measure cholesterol levels.

What are the possible benefits and risks of participating?
The potential benefits to participants in the study were regular health assessments during the trial, the possible reduction in risk of cardiovascular events in the pravastatin treated group. Potential risks to participants in the pravastatin treated group were minor abnormalities in liver function tests and in some cases increased risk of muscle pain as reported in previous statin trials.

Where is the study run from?
The trial was run from co-ordinating centres in Glasgow, Cork and Leiden with the main co-ordinating centre at the Glasgow Royal Infirmary and the study data centre at the Robertson Centre for Biostatistics in Glasgow.

When is the study starting and how long is it expected to run for?
The study started in December 1997 and finished in November 2002.

Who is funding the study?
The study was funded by Bristol Meyer's Squibb.

Who is the main contact?
Professor Ian Ford
University of Glasgow

Contact information

Type(s)
Scientific

Contact name
Prof Ian Ford

Contact details
Robertson Centre for Biostatistics
University of Glasgow
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Additional identifiers

EudraCT/CTIS number

IRAS number

ClinicalTrials.gov number

Secondary identifying numbers
CV123-166

Study information

Scientific Title
A multicentre, randomised, double-blind, placebo controlled trial to evaluate the efficacy of pravastatin for the prevention of vascular events in the elderly

Acronym

PROSPER

Study objectives
The objective of this trial is to examine the hypothesis that pravastatin 40mg will reduce cardiovascular and cerebrovascular events in elderly subjects with vascular disease or who are at high risk for vascular disease.

Ethics approval required
Old ethics approval format

Ethics approval(s)
Ethics approval was obtained from the following committees:
Greater Glasgow Community/Primary Care Local Research Ethics Committee
Dumfries and Galloway Health Board Local Research Ethics Committee
Argyll and Clyde Health Board Local Research Ethics Committee (reference LREC 85/97)
Lanarkshire Research Ethics Committee (reference ER/9/97/37).
Research Ethics Committee of the Cork Teaching Hospitals (CREC).
Medical Ethical Committee (METc) of the Leiden University Medical Center.

Study design
Multicentre double-blind placebo-controlled randomized trial

Primary study design
Interventional

Secondary study design
Randomised controlled trial

Study setting(s)
Hospital

Study type(s)
Prevention

Participant information sheet
Not available in web format, please use the contact details below to request a patient information sheet

Health condition(s) or problem(s) studied
Cardiovascular disease

Interventions
Pravastatin 40 mg or matching placebo tablets to be taking orally once per day throughout the period of follow-up. Because of the expected 2-year period of recruitment and variable follow-up, treatment was expected to be for a maximum period of just over four years.

Intervention Type
Drug

Phase
Not Applicable

Drug/device/biological/vaccine name(s)
Pravastatin

Primary outcome measure
The primary outcome measure was the combined endpoint of coronary heart disease (CHD) death (definite plus suspect), nonfatal myocardial infarction (definite plus suspect), and fatal plus nonfatal stroke.

Secondary analyses was performed for the primary endpoint in the following subgroups:
1. Men
2. Women
3. Subjects with or without evidence of previous vascular disease defined as stable angina or intermittent claudication; or stroke, transient ischemic attack (TIA), myocardial infarction (MI), arterial surgery, or amputation for vascular disease prior to study entry, but who are considered to be at high risk on the basis of smoking history, diabetes or hypertension.
4. Subjects with previous vascular disease including stable angina or intermittent claudication; or stroke, transient ischemic attack (TIA), myocardial infarction (MI), arterial surgery, or amputation for vascular disease more than 6 months prior to study entry.

All analyses were carried out on a time to first event basis with analysis censored at end of follow-up, death from other causes or withdrawal of consent. Outcomes could occur continuously throughout the study.

Secondary outcome measures
1. Fatal plus nonfatal stroke
2. Coronary events: definite plus suspect CHD death, definite plus suspect nonfatal MI

Overall study start date
01/12/1997

Completion date
30/11/2002

Eligibility

Key inclusion criteria
1. Males or females
2. Aged 70-82 years
3. As diagnosed by the primary care physician, evidence of vascular disease including stable angina or intermittent claudication or stroke, transient ischaemic attack (TIA), myocardial infarction (MI), arterial surgery, or amputation for vascular disease more than 6 months prior to study entry
4. No evidence of previous vascular disease as stated above, but considered to be at high risk for vascular disease on the basis of:
4.1. Current smoking status
4.2. Hypertension, currently receiving drug treatment
4.3. Known diabetes mellitus
4.4. Total cholesterol 4.0 - 9.0 mmol/L

Participant type(s)

Patient

Age group
Senior

Lower age limit
70 Years

Upper age limit
82 Years

Sex
Both

Target number of participants
5500

Key exclusion criteria
1. Recent stroke, TIA, MI, arterial surgery, or amputation for vascular disease less than 6 months prior to study entry
2. Any surgery requiring overnight hospitalisation (including angioplasty) less than 6 months prior to study entry
3. Poor cognitive function at baseline (Mini Mental Status Examination Score [MMSE] < 24)
4. Physically or mentally unable to attend the clinic for the screening visit
5. Cholesterol: Total cholesterol (TC < 4.0 mmol/L or TC > 9.0 mmol/L), Triglycerides (TG > 6.0 mmol/L)
6. Severe renal impairment (serum creatinine > 200 µmol/L)
7. Significant liver disease (aspartate aminotransferase (AST) or alanine aminotransferase (ALT) > 3.0 X upper limit of normal for the laboratory)
8. History of malignancy within the past 5 years except localised basal cell carcinoma of the skin
9. Congestive heart failure (New York Heart Association Functional Class III or IV)
10. ECG evidence of atrial fibrillation, atrial flutter, or other significant arrhythmia, or Wolff-Parkinson-White Syndrome (WPW)
11. Significant untreated thyroid disease
12. Organ transplant recipient
13. Current lipid-lowering treatment
14. Previous participation in a clinical trial using an HMG CoA reductase inhibitor
15. Inability to give informed consent
16. Planned long-term travel or emigration within next 3 years
17. Current alcohol or drug abuse
18. Co-habitation with another trial participant
19. Less than 75% or greater than 120% compliance with placebo lead-in medication
20. Receipt of any investigational drugs (including placebo) within 30 days of enrolment
21. Inability to tolerate oral medication or a history of significant malabsorption
22. Any other medical condition which renders the patient unable to complete the study which would interfere with optimal participation in the study or produce significant risk to the patient

Abnormal laboratory findings include:
1. Hemoglobin < 11 g/dl
2. Hematocrit < 33%
3. Platelet count < 100,000/mm^3

4. White blood cell count < 3,500/mm³ or > 15,000/mm³
5. Serum creatinine > 200 µmol/L
6. Potassium < 3.0 mmol/L or 5.0 mmol/L
7. Sodium < 130 mmol/L or 150 > mmol/L
8. Aspartate aminotransferase/alanine aminotransferase (AST or ALT) > 3.0 X upper limit of normal for the laboratory
9. Creatine kinase (CK) > 3 times upper limit of normal for the laboratory

Date of first enrolment
01/12/1997

Date of final enrolment
30/11/2002

Locations

Countries of recruitment
Ireland

Netherlands

Scotland

United Kingdom

Study participating centre
Robertson Centre for Biostatistics
Glasgow
United Kingdom
G12 8QQ

Sponsor information

Organisation
Bristol-Myers Squibb Company (USA)

Sponsor details
Corporate Headquarters
345 Park Avenue
New York
United States of America
10154

Sponsor type
Industry

ROR
https://ror.org/00gtmwv55

Funder(s)

Funder type
Industry

Funder Name
Bristol-Myers Squibb

Alternative Name(s)
Bristol-Myers Squibb Company, BMS

Funding Body Type
Government organisation

Funding Body Subtype
For-profit companies (industry)

Location
United States of America

Results and Publications

Publication and dissemination plan
Not provided at time of registration

Intention to publish date

Individual participant data (IPD) sharing plan

IPD sharing plan summary
Not provided at time of registration

Study outputs

Output type	Details	Date created	Date added	Peer reviewed?	Patient-facing?
Protocol article	protocol	15/11/1999		Yes	No
Results article	results	20/05/2002		Yes	No
Results article	results	23/11/2002		Yes	No
Results article	results	02/09/2013		Yes	No

Other publications	Post hoc analysis	07/02/2025	11/04/2025	Yes	No