

The New Hoorn Study

Submission date 22/12/2016	Recruitment status No longer recruiting	☐ Prospectively registered
Registration date 24/03/2017	Overall study status Ongoing	☐ Protocol
Last Edited 20/06/2025	Condition category Nutritional, Metabolic, Endocrine	☐ Statistical analysis plan
		☐ Results
		☐ Individual participant data
		☐ Record updated in last year

Plain English summary of protocol

Current plain English summary as of 26/04/2022:

Background and study aims:

Type 2 diabetes mellitus (T2DM) is a long term condition where a person is unable to control their blood sugar (glucose) levels as they do not produce enough insulin to function properly (insulin deficiency), or that the body's cells don't react to insulin as they should do (insulin resistance). T2DM is a multi-factorial disease, meaning that it is associated with the effects of multiple genes in combination with lifestyle and environmental factors. The aim of this study is to look at the prevalence (commonness) and risk factors of impaired glucose metabolism (sugar breakdown) and diabetes in the general population.

Who can participate?

Men and women, aged between 40 and 65 years, registered at the municipal population registry of Hoorn.

What does the study involve?

In the year 2006, participants are asked to join the cohort (collection of participants). In the past 15 years, they visit the study centre four times, whilst being actively followed up for vital status by linking with the municipality register and for occurrence of long-term diseases. When they visit the centre, participants have a number of blood and urine samples taken to assess their blood sugar control, are weighted and measured, and fill out several questionnaires.

What are the possible benefits and risks of participating?

There are no notable benefits of participating. There is a small risk of pain and bruising following blood tests.

Where is the study run from?

The Diabetes Care and research Center in Hoorn (Netherlands)

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

January 2006 to January 2080

Who is funding the study?

Amsterdam UMC, VU University Medical Center (Netherlands)

Who is the main contact?

1. Prof Joline Beulens (scientific)
j.beulens@amsterdamumc.nl
 2. Dr Femke Rutters (scientific)
f.rutters@amsterdamumc.nl
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Previous plain English summary:

Background and study aims:

Type 2 diabetes mellitus (T2DM) is a long term condition where a person is unable to control their blood sugar (glucose) levels as they do not produce enough insulin to function properly (insulin deficiency), or that the body's cells don't react to insulin as they should do (insulin resistance). T2DM is a multi-factorial disease, meaning that it is associated with the effects of multiple genes in combination with lifestyle and environmental factors. The aim of this study is to look at the prevalence (commonness) and risk factors of impaired glucose metabolism (sugar breakdown) and diabetes in the general population.

Who can participate?

Men and women, aged between 40 and 65 years, registered at the municipal population registry of Hoorn.

What does the study involve?

In the year 2006, participants are asked to join the cohort (collection of participants). In the past 10 years, they visit the study centre three times, whilst being actively followed up for vital status by linking with the municipality register and for occurrence of long-term diseases. When they visit the centre, participants have a number of blood and urine samples taken to assess their blood sugar control, are weighted and measured, and fill out several questionnaires.

What are the possible benefits and risks of participating?

There are no notable benefits of participating. There is a small risk of pain and bruising following blood tests.

Where is the study run from?

The Diabetes Care and research Center in Hoorn (Netherlands)

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

January 2006 to January 2050

Who is funding the study?

VU University Medical Center (Netherlands)

Who is the main contact?

1. Dr Joline Beulens (scientific)
j.beulens@vumc.nl
2. Dr Femke Rutters (scientific)
f.rutters@vumc.nl

Contact information

Type(s)

Scientific

Contact name

Prof Joline Beulens

Contact details

VU University Medical Center
De Boelelaan 1089a
Amsterdam
Netherlands
1081HV
+31 20 4445860
j.beulens@amsterdamumc.nl

Type(s)

Scientific

Contact name

Dr Femke Rutters

Contact details

VU University Medical Center
De Boelelaan 1089a
Amsterdam
Netherlands
1081HV
+31 20 4445860
f.rutters@amsterdamumc.nl

Additional identifiers

Protocol serial number

1

Study information

Scientific Title

A population-based study on glucose tolerance: the New Hoorn Study

Acronym

Hoorn study

Study objectives

The aim of this study is to investigate whether the increasing rates of longevity, physical inactivity and obesity affected the prevalence and risk factors of disturbances in glucose metabolism.

Ethics approval required

Ethics approval required

Ethics approval(s)

Approved 11/05/2006, Medical Ethics Committee of the VU University Medical Center Amsterdam (de boelelaan 7, Amsterdam, 6200 MD, Netherlands; -; metc@amsterdamumc.nl), ref: 2006/93

Primary study design

Observational

Study design

Observational prospective cohort study

Study type(s)

Other

Health condition(s) or problem(s) studied

Type 2 diabetes

Interventions

Current interventions as of 26/04/2022:

Participants are enrolled from the Hoorn study, a population-based survey carried out in the city of Hoorn between 2006-2007. The first visit takes place in 2006-2007. In a subgroup, around 250 participants a follow up visit takes place after three years. The third and fourth visit take place 8 and 15 years after baseline in the entire cohort.

For each visit, participants are requested to refrain from eating and drinking (except water) from 8:00 P.M. the night before the visit and from drinking alcohol from 5:00 P.M. the day before the visit. They are instructed to follow their usual diet the day before each visit and to be consistent in their diet (both in content and in approximate timing of evening meals and snacks) and physical activities on the pre-visit days. In addition, participants are requested not to smoke on the morning of the visit and not to come by bicycle. Participants do not follow these instructions will be asked to reschedule the visit. Upon arrival at the Diabetes Research Center, written informed consent is obtained. During the visit, height and weight are measured without shoes and heavy clothes. Waist circumference, hip circumference and blood pressure is measured. Fasting whole blood glucose from a capillary vein in the finger was determined on the spot. In participants with a fasting whole blood glucose level <10 mmol/l, a standard 75-g OGTT is performed. Venous blood samples are drawn before and 120 min after glucose ingestion. Finally, participants fill out questionnaires on lifestyle, medication, disease and SES. During the visit three years after baseline, microvascular function will be determined using capillary videomicroscopy of the dorsal skin of the nail fold.

Previous interventions:

Participants are enrolled from the Hoorn study, a population-based survey carried out in the city of Hoorn between 2006-2007. The first visit takes place in 2006-2007. In a subgroup, around 250 participants a follow up visit takes place after three years. The third visit takes place 8 years after baseline in the entire cohort.

For each visit, participants are requested to refrain from eating and drinking (except water) from 8:00 P.M. the night before the visit and from drinking alcohol from 5:00 P.M. the day before the visit. They are instructed to follow their usual diet the day before each visit and to be consistent in their diet (both in content and in approximate timing of evening meals and snacks) and physical activities on the pre-visit days. In addition, participants are requested not to smoke on the morning of the visit and not to come by bicycle. Participants do not follow these instructions will be asked to reschedule the visit. Upon arrival at the Diabetes Research Center, written informed consent is obtained. During the visit, height and weight are measured without shoes and heavy clothes. Waist circumference, hip circumference and blood pressure is measured. Fasting whole blood glucose from a capillary vein in the finger was determined on the spot. In participants with a fasting whole blood glucose level <10 mmol/l, a standard 75-g OGTT is performed. Venous blood samples are drawn before and 120 min after glucose ingestion. Finally, participants fill out questionnaires on lifestyle, medication, disease and SES. During the visit three years after baseline, microvascular function will be determined using capillary videomicroscopy of the dorsal skin of the nail fold.

Intervention Type

Behavioural

Primary outcome(s)

Current primary outcome measure as of 26/04/2022:

Disturbances in glucose metabolism is measured by fasting plasma glucose, 75-g Oral Glucose Tolerance Test and HbA1c at baseline and at the three follow-up measurements in 2010-2011 and 2013-2015 and 2021-2023.

Previous primary outcome measure:

Disturbances in glucose metabolism is measured by fasting plasma glucose, 75-g Oral Glucose Tolerance Test and HbA1c at baseline and at the two follow-up measurements in 2010-2011 and 2013-2015.

Key secondary outcome(s)

1. Depressive symptoms are measured using CES-D questionnaire at baseline and 7 year follow up
2. Quality of life is measured using questionnaires at baseline and 7 year follow up
3. Cardiovascular complications of diabetes are measured by a check of the medical records of the participants every three years

Completion date

01/01/2080

Eligibility

Key inclusion criteria

1. Men and women
2. Aged 40-65 years
3. From the municipal registry in the city of Hoorn

Participant type(s)

All

Healthy volunteers allowed

No

Age group

Adult

Sex

All

Key exclusion criteria

No exclusion criteria

Date of first enrolment

13/07/2006

Date of final enrolment

01/11/2007

Locations**Countries of recruitment**

Netherlands

Study participating centre

Diabetes Zorgsysteem locatie Hoorn

Maelsonstraat 7

Hoorn

Netherlands

1624 NP

Sponsor information**Organisation**

VU University Medical Center

ROR

<https://ror.org/00q6h8f30>

Funder(s)

Funder type

Hospital/treatment centre

Funder Name

VU University Medical Center of Amsterdam

Funder Name

Novartis Pharma B.V

Funder Name

the European Union

Funder Name

the Innovative Medicine Initiative

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 Prof Joline Beulens (j.beulens@amsterdamumc.nl)

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