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Comparing dementia diagnostics in primary care and in memory clinics: which makes older patients fare better in the long term?

Submission date
08/03/2023

Recruitment status
No longer recruiting

Registration date
15/03/2023

Overall study status
Ongoing

Last Edited
22/10/2025

Condition category
Mental and Behavioural Disorders

[X] Prospectively registered
[X] Protocol
[ ] Statistical analysis plan
[ ] Results
[ ] Individual participant data
[ ] Record updated in last year

Plain English summary of protocol

Background and study aims
The number of older persons with memory complaints rises. The Dutch Dementia guidelines support diagnostics in primary care. General practitioners (GPs) are competent to observe and interpret changes in cognition and behavior in their patients' functioning. However, over 60% of 20.000 dementia diagnoses per year in the Netherlands are made in a memory clinic (MC). An early MC diagnosis may be faster and more accurate in the short term, but how do these advantages outweigh the possible drawbacks of expensive and burdensome tests such as neuropsychological tests, MRI, lumbar puncture or PET scan, which may lead to over-diagnosis and incidental findings? GPs argue for a timely diagnosis, as with no effective treatment available, the urgency for an early diagnosis is limited and determined by patient and caregiver preferences.
At this moment, GPs and persons with memory complaints decide together whether further diagnostic workup is done, and if so whether this is done in either primary care or a memory clinic. Both diagnostic trajectories comprise forms of regular care. However, to date it has not been investigated whether the place of diagnostic work-up is related to clinically relevant outcomes such as daily functioning.
This long-term cost-effectiveness study aims to find out whether a diagnostic trajectory in primary care is not inferior to a memory clinic with respect to long-term outcomes relevant to patients and caregivers, and generates lower healthcare costs.

Who can participate?
Persons aged 70 years and older presenting to the general practitioner with memory problems, and without signs of uncommon types of dementia or intracranial pathology.

What does the study involve?
Participants will be randomly assigned to the intervention or control group. Participants in the intervention group will receive further diagnostic procedures in primary care, where the GP follows diagnostic work-up as described in the Dementia Guideline of the Dutch College of General Practitioners. Participants in the control group will be referred to a memory clinic for further diagnostic procedures. Exact diagnostic procedures in both arms are left to the

discretion of the diagnosing physician. Participants unwilling to be randomized will be invited to participate in the prospective cohort instead.
Participants and their caregivers will be asked to complete questionnaires at the start of the study and after 6, 18 and 24 months. The time to complete the combination of questionnaires is less than 1 hour. Furthermore, patient characteristics and data from electronic medical records will be collected. Participation in an additional interview is voluntary and will take about an additional hour at the start of the study and after 6 and 24 months.
A researcher administers questionnaires and clinical instruments to participants and caregivers in order to assess daily functioning, quality of life, cognition, mood, behaviour, and caregiver burden. In addition, data on diagnostic accuracy, time to final diagnosis, hospital admissions, costs, and death rate will be collected.

What are the possible benefits and risks of participating?
Both diagnostic trajectories comprise forms of regular care. Therefore, there are no direct possible benefits of participating in this study. On the other hand, risks in both study groups are also considered low. In the memory clinic group, risks could consist of incidental findings during the diagnostic trajectory or a complication of a diagnostic procedure, which could cause anxiety and/or additional (diagnostic) procedures and treatments. In the primary care group, the main consequence may be a delayed diagnosis or worrying due to less diagnostic certainty. Appropriate counseling may mitigate the burden of this uncertainty. Most importantly, a potentially delayed diagnosis does not affect the prognosis, because no disease-modifying treatment for dementia exists.

Where is the study run from?
The study is run by the research department of primary and community care, Radboudumc Nijmegen (Netherlands), and participating general practitioner practices throughout the Netherlands. The team collaborates with researchers from Amsterdam UMC and LUMC.

When is the study starting and how long is it expected to run for?
December 2022 to April 2028.

Who is funding the study?
The Netherlands Organisation for Health Research and Development (ZonMw) (Netherlands)

Who is the main contact?
Demi Ronner, MD, demi.ronner@radboudumc.nl

Contact information

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Additional identifiers

Protocol serial number
CCMO / Medical ethical committee file number: NL83486.091.22; ZonMw file number: 10390012110040

Study information

Scientific Title
Primary care diagnostics or diagnostics in a memory clinic in older persons with memory complaints: a long-term cost-effectiveness trial with a non-inferiority design

Acronym
PRIMED

Study objectives
1. Primary care diagnostics is not inferior to memory care diagnostics with regard to clinically relevant outcomes including daily functioning (primary outcome), informal caregiver burden, number of acute admissions in hospitals or nursing homes, and time to institutionalization (clinical effectiveness)
2. Outcomes of primary care diagnostics are not inferior to outcomes after memory clinic referral and generate lower healthcare costs (cost-effectiveness)
3. A primary care diagnostic trajectory does not cause more insecurity, anxiety or dissatisfaction in older persons and their informal caregivers (safety)

If GP diagnostics is not inferior to specialist diagnostics, GPs are supported to take up a more prominent role in diagnostics for older people with memory complaints, which is concordant with the National Research Agenda General Practice, and consistent with national guidelines and regional initiatives. Moreover, a shift towards more primary care diagnoses leads to a decrease in unnecessary and potentially burdensome testing and healthcare costs, and to more efficient use of available specialist expertise for those who really need it.

Ethics approval required
Ethics approval required

Ethics approval(s)
Approved 30/05/2023, MREC Oost-Nederland (p/a Radboudumc, house post 628, PO Box 9101, Nijmegen, 6500 HB, Netherlands; +31 (0)24 361 31 54; METCoost-en-CMO@radboudumc.nl), ref: 2022-16059

Primary study design
Interventional

Study design
Monocenter prospective randomized open blinded end-point controlled trial with a non-inferiority design

(added 20/11/2024) Complemented by an additional prospective cohort study

Study type(s)
Diagnostic

Health condition(s) or problem(s) studied
Persons aged 70 years and older with memory complaints

Interventions
Current interventions as of 13/07/2023:

Intervention:
For the primary care arm, the diagnostic procedures are described in the Dementia Guideline of the Dutch College of General Practitioners. The minimum diagnostic work-up includes: history taking with the patient (and caregiver if available), cognitive screening (MMSE and clock drawing

test) and assessment of daily functioning. Additional diagnostics may be performed at the discretion of the GP and may include blood tests, practice nurse consultation, consultation with an elderly care physician (ECP), as available in the practice or regional settings. The diagnostic criteria according to McKahn are used.

All will receive a summary of the GP guideline in a flowchart format and an overview of local diagnostic services and collaboration agreements. All are in line with current guidelines and without additional diagnostic procedures. The training will be provided by a GP experienced with dementia diagnostics and a neurologist.

Comparator:
In the referral arm, the diagnostic procedures at the MC are completely at the discretion of the physician/multidisciplinary team and may include neuroimaging with CT/MRI, neuropsychological examination, cerebrospinal fluid (CSF) examination, electroencephalogram (EEG) and nuclear imaging.

The use of diagnostic instruments, initial diagnosis and the time to diagnosis are collected in both arms. All professionals provide care as usual over the long-term follow-up.

Randomization:
Participants will be randomly assigned to further diagnostic workup in primary care or by referral to a memory clinic. These are both pre-existing diagnostic trajectories and thus comprise usual forms of care.

Randomization will be 1:1 and performed at the individual level, to avoid selection bias that may result from cluster randomization at the general practitioner (GP) level, as GPs may tend to recruit patients for the trial that fit their allocation. In this study, participants cannot be blinded. The researcher will be blinded to the allocation of the patient when performing baseline and follow-up assessments and when extracting data from electronic medical records.

The primary outcome is daily functioning, since most aspects of dementia (cognition, behavior, mood, motor function), including factors related to caregivers, eventually impact daily functioning. In addition, functioning determines the need for home care, institutionalization and thus costs. Moreover, living at home independently is a priority outcome for older persons.

Outcome assessment is performed by a researcher blinded to allocation. Because of the heterogeneity of the population, the researchers use both disease-specific and more generic instruments, developed in the Netherlands or validated in the Dutch healthcare setting.

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Participating GPs are offered a short training on dementia diagnostics in primary care, to refresh their knowledge of the primary care guidelines (NHG standard). All will receive a summary of the GP guideline in a flowchart format and an overview of local diagnostic services and collaboration agreements. All are in line with current guidelines and without additional diagnostic procedures. The training will be provided by a GP experienced with dementia diagnostics and a neurologist.

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Intervention Type
Other

Primary outcome(s)
Current primary outcome measures as of 22/10/2025:

Daily functioning measured using the Amsterdam Instrumental Activities of Daily Living Questionnaire Short Version (A-iADL-Q-SV). Both primary and secondary outcomes are measured at baseline, 6 months, 18 months and 24 months (four time points including baseline) or until attrition due to death, because the relatively short diagnostic trajectories are likely to have long-term consequences due to disease management decisions following diagnosis.

Previous primary outcome measure as of 20/11/2024:

Daily functioning measured using the Amsterdam Instrumental Activities of Daily Living Questionnaire Short Version (A-iADL-Q-SV). Both primary and secondary outcomes are measured at baseline, 6 months, 18 months and (24-)30 months (four time points including baseline) or until attrition due to death, because the relatively short diagnostic trajectories are likely to have long-term consequences due to disease management decisions following diagnosis. In case of institutionalization, primary outcome assessment continues, other outcomes if feasible and appropriate.

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Previous primary outcome measure:

Daily functioning measured using the Amsterdam Instrumental Activities of Daily Living Questionnaire (A-iADL-Q). Both primary and secondary outcomes are measured at baseline, 6 months, 18 months and 30 months (four time points including baseline) or until attrition due to death, because the relatively short diagnostic trajectories are likely to have long-term consequences due to disease management decisions following diagnosis. In case of institutionalization, primary outcome assessment continues, other outcomes if feasible and appropriate.

Key secondary outcome(s)

Current secondary outcome measures as of 22/10/2025:

1. Diagnostic accuracy, measured using the first dementia diagnosis as the index diagnosis and the diagnosis at 24 months as the reference standard.
2. Time to dementia diagnosis assessed based on information available in electronic medical records
3. Acute admissions and time to institutionalization (months): information available in electronic medical records
4. (Time to) mortality reported by caregiver or general practitioner
5. Quality of life measured using EQ-5D
6. Costs measured using Resource Utilization in Dementia (RUD)
7. Cognition measured using the short cognitive screening test Mini-Mental State Examination (MMSE)
8. Behavior measured using the Neuro-Psychiatric Inventory Questionnaire (NPI-Q)
9. Mood measured using the Geriatric Depression Scale (GDS-15)
10. Caregiver burden measured using perseverance time

Both primary and secondary outcomes are measured at baseline, 6 months, 18 months and 24 months (four time points including baseline) or until attrition due to death, because the

relatively short diagnostic trajectories are likely to have long-term consequences due to disease management decisions following diagnosis.

A short questionnaire will be administered to caregivers who decline to complete the A-IADL-Q-SV at follow-up. It collects a minimal dataset on mortality, changes in residence, and hospital admissions/ER visits, using questions from the RUD

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Previous secondary outcome measures as of 20/11/2024:

1. Diagnostic accuracy, measured using the first dementia diagnosis as the index diagnosis and the diagnosis at 30 months as the reference standard. Dementia diagnosis will be assessed using an algorithmic approach, with all clinical information available in electronic medical records.
2. Time to dementia diagnosis assessed based on information available in electronic medical records
3. Acute admissions and time to institutionalization (months): information available in electronic medical records
4. (Time to) mortality reported by caregiver or general practitioner
5. Quality of life measured using EQ-5D
6. Costs measured using Resource Utilization in Dementia (RUD)
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Both primary and secondary outcomes are measured at baseline, 6 months, 18 months and (24-) 30 months (four time points including baseline) or until attrition due to death, because the relatively short diagnostic trajectories are likely to have long-term consequences due to disease management decisions following diagnosis. In case of institutionalization, primary outcome assessment continues, other outcomes if feasible and appropriate.

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Completion date
30/04/2028

Eligibility

Key inclusion criteria
All patients 70 years and older consulting the GP with memory problems are eligible if the patient and GP consider starting diagnostic evaluation

Participant type(s)
Patient

Healthy volunteers allowed
No

Age group
Senior

Lower age limit
70 Years

Sex
All

Key exclusion criteria
1. Patients are excluded if referral is clearly indicated due to suspicion of an uncommon form of dementia or another brain disease with accompanying memory problems, based on history or focal signs on neurological examination, such as extrapyramidal signs, hemiparesis or Babinski's sign
2. Patients are also excluded if the GP considers referral undesirable, e.g. in case of concomitant terminal illness

(added 20/11/2024) If patients do not want to be randomized, they are invited to participate in the prospective cohort study.

Date of first enrolment
01/07/2023

Date of final enrolment

30/04/2026

Locations

Countries of recruitment
Netherlands

Study participating centre
Radboudumc
Geert Grooteplein Zuid 10
Nijmegen
Netherlands
6525GA

Study participating centre
Amsterdam UMC
Meibergdreef 9
Amsterdam
Netherlands
1105AZ

Sponsor information

Organisation
Radboud University Nijmegen Medical Centre

ROR
https://ror.org/05wg1m734

Funder(s)

Funder type
Research organisation

Funder Name
ZonMw

Alternative Name(s)
Netherlands Organisation for Health Research and Development

Funding Body Type
Private sector organisation

Funding Body Subtype
Other non-profit organizations

Location
Netherlands

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 from Demi Ronner (demi.ronner@radboudumc.nl). Anonymized data will be made available for future research questions by other researchers after the primary results are published, given the data are adequate to answer this question and it is of sufficient scientific quality.

Data that will be shared consists of:
1. Final (definitive) versions of data including syntax used for analysis, possibly also raw and processed data
2. Documentation/codebooks necessary for understanding the data
3. Questionnaires that were used in and/or developed for this project
4. The .xml file that contains the full structure of the eCRF build in Castor EDC
5. Read me.txt for understanding the structure and content of the documents
Data will become available after publication, expected no later than 31/12/2028.
Consent from participants was required and obtained in the informed consent form. Participants gave permission to use their pseudonymized data in future research with different research questions.
The national data repository DANS (Data Archiving and Networked Services) will be used to guarantee the long-term accessibility of the research data from this project. A DOI will be assigned to the dataset to make the data findable. The pseudonymized data will be accessible in DANS data stations under restricted access. Requests for access will be checked, by a data access committee (DAC) formed by the consortium, against the conditions for sharing the data as described in the signed Informed Consent.
The license applied is CC BY-NC: This license allows reuse for non-commercial purposes only, and only for the period that is given. Anyone reusing the data must provide credit to the original author.

IPD sharing plan summary
Available on request

Study outputs

Output type	Details	Date created	Date added	Peer reviewed?	Patient-facing?
Protocol file	version 2.2	21/04/2023	10/03/2025	No	No
Protocol file	version 2.3	14/06/2023	11/03/2025	No	No
Protocol file	version 2.4	18/11/2024	11/03/2025	No	No

Protocol file	version 2.5	07/07/2025	22/10/2025	No	No