



## Clinical trial results: Amyloid imaging in late life depression Summary

|                          |                |
|--------------------------|----------------|
| EudraCT number           | 2009-018064-95 |
| Trial protocol           | BE             |
| Global end of trial date | 13 June 2023   |

### Results information

|                                   |   |
|-----------------------------------|---|
| Result version number             | v1 (current)                                  |
| This version publication date     | 24 January 2026                               |
| First version publication date    | 24 January 2026                               |
| Summary attachment (see zip file) | published_data (Takamiya_2021_Scireports.pdf) |

### Trial information

#### Trial identification

|                       |        |
|-----------------------|--------|
| Sponsor protocol code | S52151 |
|-----------------------|--------|

#### Additional study identifiers

|                                    |   |
|------------------------------------|---|
| ISRCTN number                      | - |
| ClinicalTrials.gov id (NCT number) | - |
| WHO universal trial number (UTN)   | - |

Notes:

#### Sponsors

|                              |  |
|------------------------------|--|
| Sponsor organisation name    | KU Leuven  |
| Sponsor organisation address | Oude Markt 13, Leuven, Belgium, 3000   |
| Public contact               | Mathieu Vandenbulcke, KU Leuven, 32 16346790, mathieu.vandenbulcke@uzleuven.be |
| Scientific contact           | Mathieu Vandenbulcke, KU Leuven, 32 16346790, mathieu.vandenbulcke@uzleuven.be |

Notes:

#### Paediatric regulatory details

|  |    |
|--|----|
| Is trial part of an agreed paediatric investigation plan (PIP)       | No |
| Does article 45 of REGULATION (EC) No 1901/2006 apply to this trial? | No |
| Does article 46 of REGULATION (EC) No 1901/2006 apply to this trial? | No |

Notes:

## Results analysis stage

|  |                  |
|--|------------------|
| Analysis stage                                       | Final            |
| Date of interim/final analysis                       | 03 August 2021   |
| Is this the analysis of the primary completion data? | Yes              |
| Primary completion date                              | 23 November 2015 |
| Global end of trial reached?                         | Yes              |
| Global end of trial date                             | 13 June 2023     |
| Was the trial ended prematurely?                     | No               |

Notes:

## General information about the trial

Main objective of the trial:

To investigate if late depression is associated with increased cerebral amyloid deposition, we will carry out a voxel-based comparison of the 18F-flutemetamol images between patients with life depression and healthy controls using a two-sample t test in SPM05.

Protection of trial subjects:

The protocol and all relevant documentation were approved by the Independent Ethics Committees at each participating site (University of Leuven and UPC Kortenberg before initiation. Written informed consent was obtained from all enrolled participants prior to any study procedure, including administration of [<sup>18</sup>F]flutemetamol. The trial was conducted in accordance with the principles of Good Clinical Practice, the Declaration of Helsinki, and applicable EU and Belgian regulations. Radiation exposure was minimized and monitored, with injection procedures standardized and supervised by qualified nuclear medicine physicians. Adverse events were actively monitored throughout the study and reviewed by the safety monitoring team to ensure participant wellbeing.

Background therapy: -

Evidence for comparator: -

|   |                  |
|---|------------------|
| Actual start date of recruitment                          | 01 December 2009 |
| Long term follow-up planned                               | No               |
| Independent data monitoring committee (IDMC) involvement? | No               |

Notes:

## Population of trial subjects

### Subjects enrolled per country

|                                      |              |
|--------------------------------------|--------------|
| Country: Number of subjects enrolled | Belgium: 108 |
| Worldwide total number of subjects   | 108          |
| EEA total number of subjects         | 108          |

Notes:

### Subjects enrolled per age group

|   |   |
|---|---|
| In utero                                  | 0 |
| Preterm newborn - gestational age < 37 wk | 0 |
| Newborns (0-27 days)                      | 0 |
| Infants and toddlers (28 days-23 months)  | 0 |
| Children (2-11 years)                     | 0 |
| Adolescents (12-17 years)                 | 0 |

|                      |    |
|----------------------|----|
| Adults (18-64 years) | 10 |
| From 65 to 84 years  | 92 |
| 85 years and over    | 6  |

## Subject disposition

### Recruitment

Recruitment details:

Between 2009-2014, 55 patients >55 yrs with major depressive disorder (DSM-IV) were recruited consecutively from UPC-KU Leuven, Belgium and 53 age- and gender-matched healthy controls were recruited locally via database and newspaper advertisement. 46 controls were from a prior study (PMID:27226443) and stratified by APOE ε4 status.

### Pre-assignment

Screening details:

Patients met DSM-IV criteria for major depressive disorder, age >55, without other major psychiatric or neurological illness. Controls had no depression or cognitive impairment, confirmed by clinical and neuropsychological assessment. APOE genotyping and MMSE (>26) were used for subgroup stratification.

### Period 1

|                              |                                |
|------------------------------|--------------------------------|
| Period 1 title               | overall trial (overall period) |
| Is this the baseline period? | Yes                            |
| Allocation method            | Non-randomised - controlled    |
| Blinding used                | Not blinded                    |

Blinding implementation details:

No blinding was implemented. Group allocation (depressed vs. control) was known during analysis

### Arms

|                              |                      |
|------------------------------|----------------------|
| Are arms mutually exclusive? | Yes                  |
| <b>Arm title</b>             | Late life depression |

Arm description:

Patients over age 55 with major depressive disorder.

|  |                             |
|--|-----------------------------|
| Arm type                               | Observational patient group |
| Investigational medicinal product name | NoIMP                       |
| Investigational medicinal product code |                             |
| Other name                             |                             |
| Pharmaceutical forms                   | Not assigned                |
| Routes of administration               | Not mentioned               |

Dosage and administration details:

Not applicable – no investigational medicinal product administered. 18F-flutemetamol radiotracer was used only for standard PET imaging procedures

|                  |               |
|------------------|---------------|
| <b>Arm title</b> | Control group |
|------------------|---------------|

Arm description:

Age- and gender-matched healthy controls with no history of depression or cognitive impairment.

|  |                             |
|--|-----------------------------|
| Arm type                               | Observational control group |
| Investigational medicinal product name | NoIMP                       |
| Investigational medicinal product code |                             |
| Other name                             |                             |
| Pharmaceutical forms                   | Not assigned                |
| Routes of administration               | Not mentioned               |

Dosage and administration details:

Not applicable – no investigational medicinal product administered. 18F-flutemetamol radiotracer was used only for standard PET imaging procedures

| <b>Number of subjects in period 1</b> | Late life depression | Control group |
|---------------------------------------|----------------------|---------------|
| Started                               | 55                   | 53            |
| Completed                             | 48                   | 52            |
| Not completed                         | 7                    | 1             |
| Consent withdrawn by subject          | 2                    | -             |
| incomplete PET + MRI dataset          | 3                    | -             |
| Vascular lesion                       | 1                    | -             |
| PET technical failure                 | 1                    | -             |
| Incomplete PET and MRI data           | -                    | 1             |

## Baseline characteristics

### Reporting groups

|  |               |
|--|---------------|
| Reporting group title  | overall trial |
| Reporting group description:   |               |
| Includes 55 patients and 53 controls that were enrolled in the study prior to exclusion/drop-out |               |

| Reporting group values                           | overall trial | Total |  |
|--|---------------|-------|--|
| Number of subjects                               | 108           | 108   |  |
| Age categorical                                  |               |       |  |
| Participants were aged 55 years or older.        |               |       |  |
| Units: Subjects                                  |               |       |  |
| 55 years or older                                | 108           | 108   |  |
| Gender categorical                               |               |       |  |
| Gender categorized as Male or Female at baseline |               |       |  |
| Units: Subjects                                  |               |       |  |
| Female   | 76            | 76    |  |
| Male   | 32            | 32    |  |

### Subject analysis sets

|                            |                    |
|----------------------------|--------------------|
| Subject analysis set title | Final analysis set |
| Subject analysis set type  | Full analysis      |

Subject analysis set description:

Includes 48 patients and 52 controls with complete data. Exclusions: 2 patient withdrawals, 1 patient excluded for vascular lesion, 1 patient excluded for PET technical failure, and 4 subjects (3 patients, 1 control) excluded due to missing data.

| Reporting group values                           | Final analysis set |  |  |
|--|--------------------|--|--|
| Number of subjects                               | 100                |  |  |
| Age categorical                                  |                    |  |  |
| Participants were aged 55 years or older.        |                    |  |  |
| Units: Subjects                                  |                    |  |  |
| 55 years or older                                | 100                |  |  |
| Gender categorical                               |                    |  |  |
| Gender categorized as Male or Female at baseline |                    |  |  |
| Units: Subjects                                  |                    |  |  |
| Female   | 70                 |  |  |
| Male   | 30                 |  |  |

## End points

### End points reporting groups

|   |                      |
|---|----------------------|
| Reporting group title   | Late life depression |
| Reporting group description:<br>Patients over age 55 with major depressive disorder.  |                      |
| Reporting group title   | Control group        |
| Reporting group description:<br>Age- and gender-matched healthy controls with no history of depression or cognitive impairment.   |                      |
| Subject analysis set title  | Final analysis set   |
| Subject analysis set type   | Full analysis        |
| Subject analysis set description:<br>Includes 48 patients and 52 controls with complete data. Exclusions: 2 patient withdrawals, 1 patient excluded for vascular lesion, 1 patient excluded for PET technical failure, and 4 subjects (3 patients, 1 control) excluded due to missing data. |                      |

### Primary: Cortical amyloid burden (SUVR PET)

|  |   |
|--|---|
| End point title  | Cortical amyloid burden (SUVR PET) <sup>[1]</sup> |
| End point description:   |   |
| End point type   | Primary   |
| End point timeframe:<br>Baseline (cross-sectional, single assessment)  |   |
| Notes:<br>[1] - No statistical analyses have been specified for this primary end point. It is expected there is at least one statistical analysis for each primary end point.<br>Justification: See attached publication for statistical analyses and results. |   |

| End point values                             | Late life depression | Control group   | Final analysis set   |  |
|--|----------------------|-----------------|----------------------|--|
| Subject group type                           | Reporting group      | Reporting group | Subject analysis set |  |
| Number of subjects analysed                  | 48                   | 52              | 100                  |  |
| Units: Subjects with amyloid PET scan (SUVR) | 48                   | 52              | 100                  |  |

|                            |   |
|----------------------------|---|
| Attachments (see zip file) | Full publication – Takamiya et al., Sci Rep |
|----------------------------|---|

### Statistical analyses

No statistical analyses for this end point

## Adverse events

### Adverse events information

Timeframe for reporting adverse events:

From first study assessment to last study assessment per subject

Adverse event reporting additional description:

No serious adverse events were reported during the trial. One non-serious AE occurred, but did not result in study withdrawal. Subject withdrawals occurred for non-AE reasons, including technical issues, no longer wishing to participate, or missing data.

|                 |                |
|-----------------|----------------|
| Assessment type | Non-systematic |
|-----------------|----------------|

### Dictionary used

|                 |        |
|-----------------|--------|
| Dictionary name | MedDRA |
|-----------------|--------|

|                    |    |
|--------------------|----|
| Dictionary version | 17 |
|--------------------|----|

### Reporting groups

|                       |               |
|-----------------------|---------------|
| Reporting group title | Overall trial |
|-----------------------|---------------|

Reporting group description:

All subjects enrolled in the trial (Late-life depression and Control groups)

| Serious adverse events                            | Overall trial   |  |  |
|---|-----------------|--|--|
| Total subjects affected by serious adverse events |                 |  |  |
| subjects affected / exposed                       | 0 / 100 (0.00%) |  |  |
| number of deaths (all causes)                     | 0               |  |  |
| number of deaths resulting from adverse events    | 0               |  |  |

Frequency threshold for reporting non-serious adverse events: 0.05 %

| Non-serious adverse events                            | Overall trial   |  |  |
|---|---|--|--|
| Total subjects affected by non-serious adverse events |   |  |  |
| subjects affected / exposed                           | 1 / 100 (1.00%)   |  |  |
| Cardiac disorders                                     |   |  |  |
| Bradycardia   | Additional description: Participant experienced sinus bradycardia with complaints of dizziness, cardiac palpitations and tinnitus. Immediate evaluation by cardiologist. Spontaneously cleared up after 30-60 minutes. Participant continued to participate in the study. |  |  |
| subjects affected / exposed                           | 1 / 100 (1.00%)   |  |  |
| occurrences (all)                                     | 1   |  |  |



## More information

### Substantial protocol amendments (globally)

Were there any global substantial amendments to the protocol? No

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### Interruptions (globally)

Were there any global interruptions to the trial? No

### Limitations and caveats

Limitations of the trial such as small numbers of subjects analysed or technical problems leading to unreliable data.

Cross-sectional study; some subjects excluded for technical issues or missing data. Imaging outcomes beyond primary objectives were exploratory. Planned longitudinal follow-up to assess conversion to Alzheimer's disease was not performed.

Notes:

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### Online references

<http://www.ncbi.nlm.nih.gov/pubmed/35091333>

<http://www.ncbi.nlm.nih.gov/pubmed/27539488>

<http://www.ncbi.nlm.nih.gov/pubmed/28672181>

<http://www.ncbi.nlm.nih.gov/pubmed/34354136>