# Clinical trial results:
# The Effects of Nitric Oxide for Inhalation on Myocardial Infarction Size.

## Summary

| | |
|---|---|
| EudraCT number | 2007-002931-95 |
| Trial protocol | BE DE HU |
| Global end of trial date | 01 May 2016 |

### Results information

| | |
|---|---|
| Result version number | v1 (current) |
| This version publication date | 15 March 2024 |
| First version publication date | 15 March 2024 |
| Summary attachment (see zip file) | NOMI publication (NOMI_EHJ_June2018.pdf) |

## Trial information

### Trial identification

| | |
|---|---|
| Sponsor protocol code | LCC2010.01102 |

### Additional study identifiers

| | |
|---|---|
| ISRCTN number | - |
| ClinicalTrials.gov id (NCT number) | NCT01398384 |
| WHO universal trial number (UTN) | - |

Notes:

### Sponsors

| | |
|---|---|
| Sponsor organisation name | UZ Leuven |
| Sponsor organisation address | Herestraat 49, LEUVEN, Belgium, 3000 |
| Public contact | Stefan Janssens, UZ Leuven, 32 16344246, stefan.janssens@uzleuven.be |
| Scientific contact | Stefan Janssens, UZ Leuven, 32 16344246, stefan.janssens@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 | 02 June 2016 |
| Is this the analysis of the primary completion data? | Yes |
| Primary completion date | 02 June 2014 |
| Global end of trial reached? | Yes |
| Global end of trial date | 01 May 2016 |
| Was the trial ended prematurely? | No |

Notes:

## General information about the trial

Main objective of the trial:

The primary objective of the trial is to assess whether or not inhaled nitric oxide can decrease myocardial infarction (MI) size as a fraction of left ventricular (LV) size at 48-72 hours in patients presenting with an ST segment elevation MI who undergo successful percutaneous coronary intervention.

Protection of trial subjects:

See protocol

Background therapy: -

Evidence for comparator: -

| | |
|---|---|
| Actual start date of recruitment | 01 October 2010 |
| Long term follow-up planned | No |
| Independent data monitoring committee (IDMC) involvement? | Yes |

Notes:

## Population of trial subjects

### Subjects enrolled per country

| | |
|---|---|
| Country: Number of subjects enrolled | Belgium: 93 |
| Country: Number of subjects enrolled | Hungary: 100 |
| Country: Number of subjects enrolled | Poland: 56 |
| Worldwide total number of subjects | 249 |
| EEA total number of subjects | 249 |

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) | 155 |
| From 65 to 84 years | 84 |

| | |
|---|---|
| 85 years and over | 10 |

## Subject disposition

### Recruitment

Recruitment details:

The patient must meet the following inclusion criteria:
1. Acute myocardial infarction (defined as an episode of chest pain or related symptom lasting greater than 2 hours but less than 12 hours and electrocardiographic evidence of ST elevation (measured as 0.08 seconds after the J point; sum > or = to 0.6 mV in leads I, II, III, AVL, AVF, V1-V6

### Pre-assignment

Screening details:

The patient must meet the following inclusion criteria:
1. Acute myocardial infarction (defined as an episode of chest pain or related symptom lasting greater than 2 hours but less than 12 hours and electrocardiographic evidence of ST elevation (measured as 0.08 seconds after the J point; sum > or = to 0.6 mV in leads I, II, III, AVL, AVF, V1-V6

### Period 1

| | |
|---|---|
| Period 1 title | Study period (overall period) |
| Is this the baseline period? | Yes |
| Allocation method | Randomised - controlled |
| Blinding used | Double blind |
| Roles blinded | Subject, Investigator |

### Arms

| | |
|---|---|
| Are arms mutually exclusive? | Yes |
| **Arm title** | Nitric oxide |

Arm description: -

| | |
|---|---|
| Arm type | Active comparator |
| Investigational medicinal product name | Nitric oxide |
| Investigational medicinal product code | |
| Other name | |
| Pharmaceutical forms | Inhalation solution |
| Routes of administration | Inhalation use |

Dosage and administration details:

80 ppm nitric oxide, 4 h inhalation

| | |
|---|---|
| **Arm title** | Placebo |

Arm description: -

| | |
|---|---|
| Arm type | Placebo |
| Investigational medicinal product name | nitrogen gas |
| Investigational medicinal product code | |
| Other name | |
| Pharmaceutical forms | Inhalation solution |
| Routes of administration | Inhalation use |

Dosage and administration details:

80 ppm nitrogen gas, 4h inhalation

| **Number of subjects in period 1** | Nitric oxide | Placebo |
|---|---|---|
| Started | 122 | 127 |
| Completed | 122 | 127 |

## Baseline characteristics

| Reporting groups | |
|---|---|
| Reporting group title | Nitric oxide |
| Reporting group description: - | |
| Reporting group title | Placebo |
| Reporting group description: - | |

| Reporting group values | Nitric oxide | Placebo | Total |
|---|---|---|---|
| Number of subjects | 122 | 127 | 249 |
| Age categorical<br>Units: Subjects | | | |

| | | | |
|---|---|---|---|
| Age continuous | | | |
| Age continuous | | | |
| Units: years | | | |
| arithmetic mean | 63 | 60 | |
| standard deviation | ± 13 | ± 11 | - |
| Gender categorical<br>Units: Subjects | | | |
| Female | 44 | 33 | 77 |
| Male | 78 | 94 | 172 |

## End points

| End points reporting groups | |
|---|---|
| Reporting group title | Nitric oxide |
| Reporting group description: - | |
| Reporting group title | Placebo |
| Reporting group description: - | |

| Primary: Primary endpoint | |
|---|---|
| End point title | Primary endpoint |
| End point description: | |
| The primary efficacy objective was myocardial infarction size as percentage of left ventricular mass at 48–72 h after randomisation measured using magnetic resonance imaging (MRI). | |
| End point type | Primary |
| End point timeframe: | |
| 48–72 h after randomisation | |

| End point values | Nitric oxide | Placebo | | |
|---|---|---|---|---|
| Subject group type | Reporting group | Reporting group | | |
| Number of subjects analysed | 109 | 116 | | |
| Units: MI size / LV mass (%) | | | | |
| arithmetic mean (standard deviation) | 18.0 (± 13.4) | 19.4 (± 15.4) | | |

### Statistical analyses

| Statistical analysis title | Myocardial Infarction Size as a Fraction of Left V |
|---|---|
| Comparison groups | Nitric oxide v Placebo |
| Number of subjects included in analysis | 225 |
| Analysis specification | Pre-specified |
| Analysis type | superiority |
| P-value | = 0.43 |
| Method | ANOVA |
| Parameter estimate | Mean difference (final values) |
| Point estimate | -1.52 |
| Confidence interval | |
| level | 95 % |
| sides | 2-sided |
| lower limit | -5.3 |
| upper limit | 2.2 |

## Adverse events

### Adverse events information

Timeframe for reporting adverse events:

48-72 hours and 4 months

Adverse event reporting additional description:

Any untoward or unfavorable medical occurrence in a participant, including any abnormal sign (for example, abnormal physical exam or laboratory finding), symptom, or disease, temporally associated with the participant's participation in the research, whether or not considered related to the participant's participation in the research.

| | |
|---|---|
| Assessment type | Systematic |

### Dictionary used

| | |
|---|---|
| Dictionary name | MedDRA |
| Dictionary version | 13 |

### Reporting groups

| | |
|---|---|
| Reporting group title | Nitric oxide |
| Reporting group description: - | |
| Reporting group title | Placebo |

Reporting group description: -

| Serious adverse events | Nitric oxide | Placebo | |
|---|---|---|---|
| Total subjects affected by serious adverse events | | | |
| subjects affected / exposed | 9 / 122 (7.38%) | 5 / 127 (3.94%) | |
| number of deaths (all causes) | 5 | 8 | |
| number of deaths resulting from adverse events | | | |
| Vascular disorders | | | |
| Hypotension | | | |
| subjects affected / exposed | 0 / 122 (0.00%) | 1 / 127 (0.79%) | |
| occurrences causally related to treatment / all | 0 / 0 | 0 / 1 | |
| deaths causally related to treatment / all | 0 / 0 | 0 / 0 | |
| Cardiac disorders | | | |
| left heart failure | | | |
| subjects affected / exposed | 1 / 122 (0.82%) | 0 / 127 (0.00%) | |
| occurrences causally related to treatment / all | 0 / 1 | 0 / 0 | |
| deaths causally related to treatment / all | 0 / 0 | 0 / 0 | |
| ventricular fibrillation | | | |
| subjects affected / exposed | 3 / 122 (2.46%) | 0 / 127 (0.00%) | |
| occurrences causally related to treatment / all | 0 / 3 | 0 / 0 | |
| deaths causally related to treatment / all | 0 / 0 | 0 / 0 | |
| cardiogenic shock | | | |

| | | | |
|---|---|---|---|
| subjects affected / exposed | 3 / 122 (2.46%) | 0 / 127 (0.00%) | |
| occurrences causally related to treatment / all | 0 / 3 | 0 / 0 | |
| deaths causally related to treatment / all | 0 / 2 | 0 / 0 | |
| ventricular tachycardia | | | |
| subjects affected / exposed | 2 / 122 (1.64%) | 1 / 127 (0.79%) | |
| occurrences causally related to treatment / all | 0 / 2 | 0 / 1 | |
| deaths causally related to treatment / all | 0 / 0 | 0 / 0 | |
| total AV block | | | |
| subjects affected / exposed | 2 / 122 (1.64%) | 0 / 127 (0.00%) | |
| occurrences causally related to treatment / all | 0 / 2 | 0 / 0 | |
| deaths causally related to treatment / all | 0 / 0 | 0 / 0 | |
| stenosis | | | |
| subjects affected / exposed | 1 / 122 (0.82%) | 1 / 127 (0.79%) | |
| occurrences causally related to treatment / all | 0 / 1 | 0 / 1 | |
| deaths causally related to treatment / all | 0 / 0 | 0 / 0 | |
| Respiratory, thoracic and mediastinal disorders | | | |
| Pulmonary oedema | | | |
| subjects affected / exposed | 0 / 122 (0.00%) | 1 / 127 (0.79%) | |
| occurrences causally related to treatment / all | 0 / 0 | 0 / 1 | |
| deaths causally related to treatment / all | 0 / 0 | 0 / 0 | |

Frequency threshold for reporting non-serious adverse events: 5 %

| **Non-serious adverse events** | Nitric oxide | Placebo | |
|---|---|---|---|
| Total subjects affected by non-serious adverse events | | | |
| subjects affected / exposed | 11 / 122 (9.02%) | 11 / 127 (8.66%) | |
| Vascular disorders | | | |
| Ischaemia | | | |
| subjects affected / exposed | 11 / 122 (9.02%) | 11 / 127 (8.66%) | |
| occurrences (all) | 11 | 11 | |

## More information

### Substantial protocol amendments (globally)

Were there any global substantial amendments to the protocol? No

### Interruptions (globally)

Were there any global interruptions to the trial? No

### Limitations and caveats

None reported

### Online references

http://www.ncbi.nlm.nih.gov/pubmed/29800130