Clinical trial results:
Can muscle dysfunction in COPD be altered by oxygenation in patients with intermittent hypoxia on exertion?

Summary

EudraCT number	2011-003595-36
Trial protocol	GB
Global end of trial date	15 December 2014

Results information

Result version number	v1 (current)
This version publication date	04 January 2020
First version publication date	04 January 2020
Summary attachment (see zip file)	Summary Results (Abstract of trial results.docx)

Trial information

Trial identification

Sponsor protocol code	ERN_11-0670

Additional study identifiers

ISRCTN number	-
ClinicalTrials.gov id (NCT number)	NCT01722370
WHO universal trial number (UTN)	-

Notes:

Sponsors

Sponsor organisation name	University of Birmingham
Sponsor organisation address	Edgbaston, Birmingham, United Kingdom,
Public contact	Alice Wood, University of Birmingham, +44 1214143344, a.m.wood@bham.ac.uk
Scientific contact	Alice Wood, University of Birmingham, +44 1214143344, a.m.wood@bham.ac.uk

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	01 December 2015
Is this the analysis of the primary completion data?	Yes
Primary completion date	15 December 2014
Global end of trial reached?	Yes
Global end of trial date	15 December 2014
Was the trial ended prematurely?	No

Notes:

General information about the trial

Main objective of the trial:

Our primary question is whether changes in muscle structure including gene expression occur during normal daily life in patients with COPD that can be corrected by giving oxygen. To do this we will compare the appearance of and genes expressed in muscle of patients after they have received oxygen and after they have been given air to use at home for 12 weeks.

Protection of trial subjects:

Local anaesthetic was used for biopsies

Background therapy: -

Evidence for comparator: -

Actual start date of recruitment	23 January 2012
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	United Kingdom: 25
Worldwide total number of subjects	25
EEA total number of subjects	25

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)	2
From 65 to 84 years	23
85 years and over	0

Subject disposition

Recruitment

Recruitment details:

recruited between September 2012 and August 2014 in single site in England

Pre-assignment

Screening details:

32 subjects screened for inclusion of whom 25 recruited. All participants had completed pulmonary rehabilitation within 2 years prior to trial enrolment and demonstrated exercise induced desaturation to a nadir <88%.

Period 1

Period 1 title	ambulatory oxygen
Is this the baseline period?	Yes
Allocation method	Randomised - controlled
Blinding used	Double blind
Roles blinded	Subject, Investigator

Blinding implementation details:

Sealed envelope

Arms

Are arms mutually exclusive?	No
Arm title	ambulatory oxygen

Arm description:

oxygen used on walking

Arm type	Experimental
Investigational medicinal product name	oxygen
Investigational medicinal product code	
Other name	
Pharmaceutical forms	Inhalation vapour
Routes of administration	Inhalation use

Dosage and administration details:

Oxygen 2l/min or as required to maintain saturations

Arm title	ambulatory air

Arm description:

Air breathed from a cylinder blinded to look same as oxygen when walking

Arm type	Placebo
Investigational medicinal product name	medical air
Investigational medicinal product code	
Other name	
Pharmaceutical forms	Inhalation vapour
Routes of administration	Inhalation use

Dosage and administration details:

Medical air given by cylinder used when walking

Number of subjects in period 1	ambulatory oxygen	ambulatory air
Started	13	12
Completed	10	7
Not completed	3	5
Physician decision	1	-
Consent withdrawn by subject	-	4
Lost to follow-up	2	1

Period 2

Period 2 title	medical air
Is this the baseline period?	No
Allocation method	Randomised - controlled
Blinding used	Double blind
Roles blinded	Subject, Investigator

Blinding implementation details:
Sealed envelope

Arms

Are arms mutually exclusive?	No
Arm title	ambulatory oxygen

Arm description:
oxygen used on walking

Arm type	Experimental
Investigational medicinal product name	oxygen
Investigational medicinal product code	
Other name	
Pharmaceutical forms	Inhalation vapour
Routes of administration	Inhalation use

Dosage and administration details:
Oxygen 2l/min or as required to maintain saturations

Arm title	ambulatory air

Arm description:
Air breathed from a cylinder blinded to look same as oxygen when walking

Arm type	Placebo
Investigational medicinal product name	medical air
Investigational medicinal product code	
Other name	
Pharmaceutical forms	Inhalation vapour
Routes of administration	Inhalation use

Dosage and administration details:
Medical air given by cylinder used when walking

Number of subjects in period 2	ambulatory oxygen	ambulatory air
Started	13	12
Completed	10	7
Not completed	3	5
Physician decision	1	-
Consent withdrawn by subject	-	4
Lost to follow-up	2	1

Baseline characteristics

Reporting groups	
Reporting group title	ambulatory oxygen
Reporting group description:	
oxygen used on walking	
Reporting group title	ambulatory air
Reporting group description:	
Air breathed from a cylinder blinded to look same as oxygen when walking	

Reporting group values	ambulatory oxygen	ambulatory air	Total
Number of subjects	13	12	25
Age categorical			
Units: Subjects			
In utero	0	0	0
Preterm newborn infants (gestational age < 37 wks)	0	0	0
Newborns (0-27 days)	0	0	0
Infants and toddlers (28 days-23 months)	0	0	0
Children (2-11 years)	0	0	0
Adolescents (12-17 years)	0	0	0
Adults (18-64 years)	1	1	2
From 65-84 years	12	11	23
85 years and over	0	0	0
Age continuous			
Units: years			
arithmetic mean	67.35	66.45	
standard deviation	± 7.45	± 6.52	-
Gender categorical			
Units: Subjects			
Female	7	6	13
Male	6	6	12

End points

End points reporting groups	
Reporting group title	ambulatory oxygen
Reporting group description: oxygen used on walking	
Reporting group title	ambulatory air
Reporting group description: Air breathed from a cylinder blinded to look same as oxygen when walking	
Reporting group title	ambulatory oxygen
Reporting group description: oxygen used on walking	
Reporting group title	ambulatory air
Reporting group description: Air breathed from a cylinder blinded to look same as oxygen when walking	

Primary: Gene expression	
End point title	Gene expression
End point description: Not possible to give a single value as gene expression obtained for whole genome and analysed as gene set enrichment analyses, hence data inserted in this record entered as 1.0 to allow record completion. Data set can be found at https://www.ncbi.nlm.nih.gov/geo/query/acc.cgi?acc=GSE90154	
End point type	Primary
End point timeframe: Compared between 12 weeks ambulatiory oxygen and 12 weeks air.	

End point values	ambulatory oxygen	ambulatory air	ambulatory oxygen	ambulatory air
Subject group type	Reporting group	Reporting group	Reporting group	Reporting group
Number of subjects analysed	10	7	10	7
Units: IU				
arithmetic mean (standard deviation)	1.0 (± 1.0)	1.0 (± 1.0)	1.0 (± 1.0)	1.0 (± 1.0)

Statistical analyses

Statistical analysis title	Comparison of gene expression oxygen v air
Comparison groups	ambulatory oxygen v ambulatory air
Number of subjects included in analysis	17
Analysis specification	Pre-specified
Analysis type	superiority[1]
P-value	= 0.9 [2]
Method	Significance Analysis of Microarrays (SA

Notes:

[1] - No significant differences in any individual gene .At a single gene level differential expression between ambulatory oxygen and air was not detectable.
[2] - Many p values are obtained as this is genomewide, this is the average

Secondary: Change in 6MWT distance

End point title	Change in 6MWT distance

End point description:

End point type	Secondary

End point timeframe:

Compared between 12 weeks intervention and 12 weeks air, reported as change between periods (only one arm as crossed over)

End point values	ambulatory oxygen	ambulatory air	ambulatory oxygen	ambulatory air
Subject group type	Reporting group	Reporting group	Reporting group	Reporting group
Number of subjects analysed	10	7	10	7
Units: meters				
arithmetic mean (standard deviation)	34.06 (± 125.33)	16.25 (± 99.25)	34.06 (± 125.33)	16.25 (± 99.25)

Statistical analyses

No statistical analyses for this end point

Adverse events

Adverse events information	
Timeframe for reporting adverse events: 12 weeks oxygen treatment, 12 weeks air	
Assessment type	Systematic
Dictionary used	
Dictionary name	MedDRA
Dictionary version	15.0
Reporting groups	
Reporting group title	ambulatory oxygen
Reporting group description: oxygen used on walking	
Reporting group title	ambulatory air
Reporting group description: Air breathed from a cylinder blinded to look same as oxygen when walking	

Serious adverse events	ambulatory oxygen	ambulatory air	
Total subjects affected by serious adverse events			
subjects affected / exposed	0 / 25 (0.00%)	0 / 25 (0.00%)	
number of deaths (all causes)	0	0	
number of deaths resulting from adverse events	0	0	

Frequency threshold for reporting non-serious adverse events: 1 %

Non-serious adverse events	ambulatory oxygen	ambulatory air	
Total subjects affected by non-serious adverse events			
subjects affected / exposed	0 / 25 (0.00%)	1 / 25 (4.00%)	
Respiratory, thoracic and mediastinal disorders			
Epistaxis	Additional description: Small nose bleed, self limiting		
subjects affected / exposed	0 / 25 (0.00%)	1 / 25 (4.00%)	
occurrences (all)	0	1	

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