



## Clinical trial results:

### Can Intravenous Iron Reduce Transfusion rates in Anaemic patients undergoing Cardiac Surgery

#### Summary

EudraCT number	2012-005666-35
Trial protocol	GB
Global end of trial date	08 February 2019

#### Results information

Result version number	v1 (current)
This version publication date	23 December 2021
First version publication date	23 December 2021

#### Trial information

##### Trial identification

Sponsor protocol code	2012-003-0301-CARD
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##### Additional study identifiers

ISRCTN number	ISRCTN22158788
ClinicalTrials.gov id (NCT number)	-
WHO universal trial number (UTN)	-

Notes:

#### Sponsors

Sponsor organisation name	The Royal Wolverhampton NHS Trust
Sponsor organisation address	New Cross Hospital, Wolverhampton, United Kingdom, WV10 0QP
Public contact	Lorraine Jacques, Royal Wolverhampton NHS trust, 01902 307999, lorraine.jacques@nhs.net
Scientific contact	Lorraine Jacques, Royal Wolverhampton NHS trust, 01902 307999, lorraine.jacques@nhs.net

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	31 December 2015
Is this the analysis of the primary completion data?	Yes
Primary completion date	31 December 2015
Global end of trial reached?	Yes
Global end of trial date	08 February 2019
Was the trial ended prematurely?	No

Notes:

## General information about the trial

Main objective of the trial:

To assess the effect of pre-operative intravenous ferric carboxymaltose(Ferinject) therapy as compared to current practice(oral iron 200mg BD), on pre-operative haemoglobin levels in anaemic (Female <11.5g/dl or Male <12.5g/dl) patients undergoing elective cardiac surgery. Does its use lead to an increase in the patient's haemoglobin pre-surgery?

Protection of trial subjects:

The inconvenience to participants has been kept to a minimum by scheduling the screening blood test to coincide

with the routine surgical outpatient appointment. Consent and intravenous iron therapy as well as the questionnaires will all be administered at the time of the preoperative admission clinic visit. The effect of the intravenous iron therapy on Hb levels will be assessed at the time of admission for surgery. Finally, the postoperative questionnaires will be completed at the time of the postop visit to OPD. Hence patients will not need any additional hospital visit. The administration of intravenous iron can sometimes result in local skin reactions and slight discomfort and gastrointestinal disturbances. The participants will be advised of what to expect and be given contact details of members of the research team to contact if they require any advice.

Background therapy: -

Evidence for comparator: -

Actual start date of recruitment	03 October 2013
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: 50
Worldwide total number of subjects	50
EEA total number of subjects	0

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)	26
From 65 to 84 years	24
85 years and over	0

## Subject disposition

### Recruitment

Recruitment details:

50 recruited.

03/10/2013 recruitment start date

31/12/2015 recruitment end date

### Pre-assignment

Screening details:

2626 patients were screened.

Prior to study entry, each patient's inclusion/exclusion criteria was checked.

Our database shows that every year around 20% of elective all cardiac surgical patients was eligible

### Period 1

Period 1 title	Overall Trial (overall period)
Is this the baseline period?	Yes
Allocation method	Randomised - controlled
Blinding used	Not blinded

### Arms

Are arms mutually exclusive?	Yes
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<b>Arm title</b>	IV Ferric carboxymaltose (Ferinject) group
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Arm description:

Patients randomised to IV iron

Arm type	Active comparator
Investigational medicinal product name	Ferric carboxymaltose
Investigational medicinal product code	
Other name	Ferinject
Pharmaceutical forms	Injection/infusion
Routes of administration	Intravenous use

Dosage and administration details:

Intravenous, 1 Gram

<b>Arm title</b>	Control
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Arm description:

Standard current practice (Oral iron 200mg bd).

Arm type	Active comparator
Investigational medicinal product name	Iron
Investigational medicinal product code	
Other name	
Pharmaceutical forms	Tablet
Routes of administration	Oral use

Dosage and administration details:

200mg bd

Number of subjects in period 1	IV Ferric carboxymaltose (Ferinject) group	Control
Started	26	24
Completed	26	24

## Baseline characteristics

### Reporting groups

Reporting group title	IV Ferric carboxymaltose (Ferinject) group
Reporting group description: Patients randomised to IV iron	
Reporting group title	Control
Reporting group description: Standard current practice (Oral iron 200mg bd).	

Reporting group values	IV Ferric carboxymaltose (Ferinject) group	Control	Total
Number of subjects	26	24	50
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)	16	10	26
From 65-84 years	10	14	24
85 years and over	0	0	0
Age continuous Units: years			
arithmetic mean	73	75	
standard deviation	± 12	± 10	-
Gender categorical Units: Subjects			
Female	11	9	20
Male	15	15	30

## End points

### End points reporting groups

Reporting group title	IV Ferric carboxymaltose (Ferinject) group
Reporting group description:	
Patients randomised to IV iron	
Reporting group title	Control
Reporting group description:	
Standard current practice (Oral iron 200mg bd).	

### Primary: change in haemoglobin concentration before and approximately 3 weeks after iron therapy

End point title	change in haemoglobin concentration before and approximately 3 weeks after iron therapy
End point description:	
End point type	Primary
End point timeframe:	
3 weeks	

End point values	IV Ferric carboxymaltose (Ferinject) group	Control		
Subject group type	Reporting group	Reporting group		
Number of subjects analysed	26	24		
Units: g/l				
median (inter-quartile range (Q1-Q3))	1 (-3.25 to 7.25)	3 (-1.25 to 6.25)		

### Statistical analyses

Statistical analysis title	haemoglobin increment
Comparison groups	IV Ferric carboxymaltose (Ferinject) group v Control
Number of subjects included in analysis	50
Analysis specification	Pre-specified
Analysis type	other
P-value	= 0.42
Method	t-test, 2-sided

## Adverse events

### Adverse events information

Timeframe for reporting adverse events:

Up to 8 weeks after surgery

Assessment type	Systematic
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### Dictionary used

Dictionary name	MedDRA
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Dictionary version	10
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### Reporting groups

Reporting group title	IV Ferric carboxymaltose (Ferinject) group
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Reporting group description:

Patients randomised to IV iron

Reporting group title	Control
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Reporting group description:

Standard current practice (Oral iron 200mg bd).

Serious adverse events	IV Ferric carboxymaltose (Ferinject) group	Control	
Total subjects affected by serious adverse events			
subjects affected / exposed	16 / 26 (61.54%)	9 / 24 (37.50%)	
number of deaths (all causes)	1	0	
number of deaths resulting from adverse events	0	0	
Cardiac disorders			
Chest pain			
subjects affected / exposed	2 / 26 (7.69%)	0 / 24 (0.00%)	
occurrences causally related to treatment / all	0 / 2	0 / 0	
deaths causally related to treatment / all	0 / 0	0 / 0	
Atrial fibrillation			
subjects affected / exposed	1 / 26 (3.85%)	1 / 24 (4.17%)	
occurrences causally related to treatment / all	0 / 1	0 / 1	
deaths causally related to treatment / all	0 / 0	0 / 0	
Death			
subjects affected / exposed	1 / 26 (3.85%)	0 / 24 (0.00%)	
occurrences causally related to treatment / all	0 / 1	0 / 0	
deaths causally related to treatment / all	0 / 1	0 / 0	
Heart block congenital			



subjects affected / exposed	0 / 26 (0.00%)	1 / 24 (4.17%)	
occurrences causally related to treatment / all	0 / 0	0 / 1	
deaths causally related to treatment / all	0 / 0	0 / 0	
Tachyarrhythmia			
subjects affected / exposed	1 / 26 (3.85%)	0 / 24 (0.00%)	
occurrences causally related to treatment / all	0 / 2	0 / 0	
deaths causally related to treatment / all	0 / 0	0 / 0	
Surgical and medical procedures			
Tooth extraction			
subjects affected / exposed	1 / 26 (3.85%)	0 / 24 (0.00%)	
occurrences causally related to treatment / all	0 / 1	0 / 0	
deaths causally related to treatment / all	0 / 0	0 / 0	
Nervous system disorders			
Dizziness			
subjects affected / exposed	1 / 26 (3.85%)	0 / 24 (0.00%)	
occurrences causally related to treatment / all	0 / 1	0 / 0	
deaths causally related to treatment / all	0 / 0	0 / 0	
Confusional state			
subjects affected / exposed	1 / 26 (3.85%)	0 / 24 (0.00%)	
occurrences causally related to treatment / all	0 / 1	0 / 0	
deaths causally related to treatment / all	0 / 0	0 / 0	
Hemiparesis			
subjects affected / exposed	1 / 26 (3.85%)	0 / 24 (0.00%)	
occurrences causally related to treatment / all	0 / 1	0 / 0	
deaths causally related to treatment / all	0 / 0	0 / 0	
Delirium			
subjects affected / exposed	0 / 26 (0.00%)	1 / 24 (4.17%)	
occurrences causally related to treatment / all	0 / 0	0 / 1	
deaths causally related to treatment / all	0 / 0	0 / 0	
Blood and lymphatic system disorders			
Cellulitis			
subjects affected / exposed	0 / 26 (0.00%)	1 / 24 (4.17%)	
occurrences causally related to treatment / all	0 / 0	0 / 1	
deaths causally related to treatment / all	0 / 0	0 / 0	

Hyperkalaemia			
subjects affected / exposed	0 / 26 (0.00%)	1 / 24 (4.17%)	
occurrences causally related to treatment / all	0 / 0	0 / 1	
deaths causally related to treatment / all	0 / 0	0 / 0	
Bleeding time abnormal			
subjects affected / exposed	1 / 26 (3.85%)	0 / 24 (0.00%)	
occurrences causally related to treatment / all	0 / 1	0 / 0	
deaths causally related to treatment / all	0 / 0	0 / 0	
Gastrointestinal disorders			
Tumour excision			
subjects affected / exposed	0 / 26 (0.00%)	1 / 24 (4.17%)	
occurrences causally related to treatment / all	0 / 0	0 / 1	
deaths causally related to treatment / all	0 / 0	0 / 0	
Respiratory, thoracic and mediastinal disorders			
Pleural effusion			
subjects affected / exposed	1 / 26 (3.85%)	3 / 24 (12.50%)	
occurrences causally related to treatment / all	0 / 1	0 / 3	
deaths causally related to treatment / all	0 / 0	0 / 0	
Emphysema			
subjects affected / exposed	1 / 26 (3.85%)	0 / 24 (0.00%)	
occurrences causally related to treatment / all	0 / 1	0 / 0	
deaths causally related to treatment / all	0 / 0	0 / 0	
Pulmonary oedema			
subjects affected / exposed	1 / 26 (3.85%)	0 / 24 (0.00%)	
occurrences causally related to treatment / all	0 / 1	0 / 0	
deaths causally related to treatment / all	0 / 0	0 / 0	
Infections and infestations			
Infection	Additional description: Chest Infection		
subjects affected / exposed	1 / 26 (3.85%)	0 / 24 (0.00%)	
occurrences causally related to treatment / all	0 / 1	0 / 0	
deaths causally related to treatment / all	0 / 0	0 / 0	

Frequency threshold for reporting non-serious adverse events: 0 %

<b>Non-serious adverse events</b>	IV Ferric carboxymaltose (Ferinject) group	Control	
Total subjects affected by non-serious adverse events subjects affected / exposed	0 / 26 (0.00%)	3 / 24 (12.50%)	
Gastrointestinal disorders			
Diarrhoea			
subjects affected / exposed	0 / 26 (0.00%)	3 / 24 (12.50%)	
occurrences (all)	0	3	
Constipation			
subjects affected / exposed	0 / 26 (0.00%)	3 / 24 (12.50%)	
occurrences (all)	0	3	

## More information

### Substantial protocol amendments (globally)

Were there any global substantial amendments to the protocol? Yes

Date	Amendment
01 October 2014	In July 2014 we received approval for the following elements (1 & 2) 1. Changes in eligibility criteria: 2. Platelet analysis: Unfortunately we have problems with funding with respect to the second element. We continued recruiting patients using first element (Changes in eligibility criteria) and remove the second element (Platelet analysis) from the study.
13 January 2016	Study poster added
07 February 2017	Additional analysis of the stored serum samples: Addition of measuring platelet count, soluble P-selectin and any potential serum or plasma biomarkers which might influence iron metabolism.
04 October 2017	Alteration to PI

Notes:

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### Interruptions (globally)

Were there any global interruptions to the trial? No

### Limitations and caveats

None reported

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### Online references

<http://www.ncbi.nlm.nih.gov/pubmed/30107449>