ISRCTN16213127 https://doi.org/10.1186/ISRCTN16213127

Evaluation of the safety and efficacy of the Optimizer™ II and III systems with active fixation leads in subjects with heart failure resulting from systolic dysfunction

Submission date 12/07/2006	**Recruitment status** No longer recruiting	[_] Prospectively registered [_] Protocol [_] Statistical analysis plan [X] Results [_] Individual participant data
Registration date 20/07/2006	**Overall study status** Completed	
Last Edited 29/10/2008	**Condition category** Circulatory System	

Plain English summary of protocol
Not provided at time of registration

Contact information

Type(s)
Scientific

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Additional identifiers

EudraCT/CTIS number

IRAS number

ClinicalTrials.gov number

Secondary identifying numbers
ID 2001-12

Study information

Scientific Title

Acronym
FIX-CHF-4

Study objectives
Cardiac contractility modulation (CCM) signals delivered by the Optimizer™ system will improve exercise tolerance and quality of life in subjects with heart failure resulting from systolic dysfunction.

Ethics approval required
Old ethics approval format

Ethics approval(s)
Ethics Committees of all participating sites (15) in five countries (Germany, Italy, Netherlands, France, Czech Republic) approved the study; all competent authorities have been notified. The first ethics committee approval was received on 18/03/2002 from Allgemeines Krankenhaus Wien (AKH) Hospital, Vienna, Austria.

Study design
Multicenter, randomised, double-blind, crossover trial

Primary study design
Interventional

Secondary study design
Randomised controlled trial

Study setting(s)
Not specified

Study type(s)
Treatment

Participant information sheet

Health condition(s) or problem(s) studied
Heart failure

Interventions
Intravenous application of three leads to the heart through the subclavian or cephalic veins, creation of subcoutaneous pocket and implantation of a pulse generator. All patients are implanted and then randomised to either on or off for the first three months, then they crossover.

Intervention Type
Other

Phase
Not Specified

Primary outcome measure
Co-primary efficacy endpoints:
1. Change in quality of life as assessed by Minnesota Living With Heart Failure Questionnaire (MLWHFQ)
2. Change in exercise tolerance as measured by peak oxygen consumption determined during cardiopulmonary stress test

Secondary outcome measures
Co-secondary efficacy endpoints:
1. Change in exercise tolerance as assessed by six minutes hall walk
2. Change in left ventricular function as assessed by echocardiography
3. Change in heart failure class as assessed by the New York Heart Association classification

Overall study start date
24/05/2002

Completion date
31/12/2005

Eligibility

Key inclusion criteria
1. Age - subjects who are 18 years of age or older
2. Gender - subjects who are either male or female
3. Condition:
3.1. Subjects with moderate to severe heart failure as evidenced by a baseline peak oxygen uptake between 10 and 20 ml O2/min/kg
3.2. Subjects with baseline ejection fraction of 35% or less by echocardiography
3.3. Subjects who are on optimal medical therapy for heart failure, consisting of the appropriate medications, doses and duration of treatment based on standard of care for the institution. Guidelines for defining optimal medical therapy and minimum durations of treatment may vary among participating centers. However, the following set of guidelines regarding minimum duration of treatment shall be required for each class of drugs:
3.3.1. Diuretics - sufficient dose for at least two weeks so that the subject is clinically euvolemic
3.3.2. Angiotensin converting enzyme (ACE)-inhibitor or angiotensin II receptor blocker at a stable dose for at least two weeks
3.3.3. Digoxin for at least two weeks
4. Beta-blocker:
4.1. If the subject is already taking a beta-blocker, he or she must have reached the clinically indicated target dose (i.e. no further dose titration) and must have been on a stable dose for a minimum of two weeks
4.2. If the subject is not already taking a beta-blocker, the subject and the referring physician must agree that a beta-blocker will not be started until the subject completes the six-month follow-up visit of the study

5. Subjects may have an implanted pacemaker. Subjects may have an implantable cardioverter defibrillator (ICD) system with true or dedicated bipolar sensing. Subjects may have dual chamber pacemakers and dual chamber ICDs as long as the device was implanted a minimum of one month prior to enrollment. Subjects who have a documented history of non-sustained ventricular tachycardia or unexplained syncope shall be required to have evidence of non-inducibility on clinical electrophysiologic testing or have an implanted cardiac defibrillator (ICD).
6. Subjects who are otherwise eligible to participate in the study may undergo Optimizer™ pulse generator implantation at the same time as an ICD and/or pacemaker, but if the ICD or pacemaker is a dual chamber device, the Optimizer™ pulse generator cannot be activated for one month
7. Subjects who are willing and able to return for all follow-up visits

Participant type(s)
Patient

Age group
Adult

Lower age limit
18 Years

Sex
Both

Target number of participants
250

Key exclusion criteria
1. Subjects with a potentially correctible cause of heart failure, such as valvular heart disease or congenital heart disease
2. Subjects with evidence of active ischemia consisting of, for example, angina or electrocardiogram (ECG) changes during exercise testing)
3. Subjects who have been hospitalized within one month prior to enrolment for heart failure, which has required the use of intravenous diuretics or inotropic support
4. Subjects without an ICD who have a documented history of sustained ventricular tachycardia (VT), or who have an indication for and ICD and are not scheduled for ICD implantation
5. Subjects with an ICD who have had appropriate ICD firing during the past one month
6. Subjects who have a clinically significant amount of ambient ectopy, defined as more than a total of 8,900 premature ventricular contractions (PVCs) per 24 hours on baseline Holter monitoring
7. Subjects with chronic atrial fibrillation or chronic atrial flutter
8. Subjects whose exercise tolerance is limited by a condition other than heart failure (e.g. angina, chronic obstructive pulmonary disease (COPD), peripheral vascular disease, orthopedic or rheumatologic conditions)
9. Subjects who are unable to participate in a six-minute walk and/or a cardiopulmonary stress test
10. Subjects who are scheduled for a coronary artery bypass grafting (CABG) or a percutaneous transluminal coronary angioplasty (PTCA) procedure, or who have undergone a CABG procedure within three months or a PTCA procedure within one month of enrolment
11. Subjects who, in the opinion of the principal investigator, have a clinical indication for bi-ventricular pacing

12. Subjects with a left ventricular pacing lead
13. Subjects who have had a myocardial infarction within three months of study enrolment
14. Subjects with mechanical tricuspid or aortic valves
15. Subjects with a prior heart transplant
16. Subjects already having an optimizer™ device
17. Subjects with a previously implanted ICD which employs unipolar or integrated bipolar sensing
18. Subjects who are participating in another experimental protocol
19. Subjects in vulnerable populations who are unable to provide informed consent

Date of first enrolment
24/05/2002

Date of final enrolment
31/12/2005

Locations

Countries of recruitment
Czech Republic

France

Germany

Italy

Netherlands

Study participating centre
Klinikum Mannheim GmbH
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Sponsor information

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Impulse Dynamics Inc. (USA)

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Sponsor type
Industry

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Funder(s)

Funder type
Industry

Funder Name
Impulse Dynamics Inc. (USA)

Results and Publications

Publication and dissemination plan
Not provided at time of registration

Intention to publish date

Individual participant data (IPD) sharing plan

IPD sharing plan summary
Not provided at time of registration

Study outputs

Output type	Details	Date created	Date added	Peer reviewed?	Patient-facing?
Results article	results	01/04/2008		Yes	No