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SERVE-HF
Treatment of Sleep-Disordered Breathing by Adaptive Servo-Ventilation in HF patients

PaceWave™
MINUTE VENTILATION ASV

KEY FACTS

- Sponsored by ResMed, SERVE-HF is, to date, the largest randomised controlled study in the field of sleep-disordered breathing (SDB) related to chronic heart failure (HF) to investigate if treatment of predominantly central sleep apnea (CSA) improves survival and the hospitalisation rate of patients with stable HF.
- The study is being conducted across 80 centres throughout Europe and Australia.
- Results from SERVE-HF are expected in 2015.
- Findings of the study may have significant therapeutic implications by conclusively answering the question: what are the benefits of treating CSA in HF patients with PaceWave™ Adaptive Servo-Ventilation (ASV) therapy?
- The study seeks to assess impact of PaceWave™ ASV therapy on mortality, hospitalisation rate, cardiac function, biomarkers and quality of life.
- A health economics analysis will also be performed to assess the cost/benefits ratio of PaceWave™ ASV therapy in heart failure.

SERVE-HF

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- In 2013 SERVE-HF finished recruitment, with its 1,325th patient enrolled.

Rationale for SERVE-HF

- There are an estimated 15 million patients suffering from HF in Europe, which is likely to rise as life expectancy increases.[1,2,3]

- Among multiple HF co-morbidities, SDB is the most common, affecting 50-75% of these patients.[4,5] However it remains the least recognised by cardiologists.[6]

- Central sleep apnea with Cheyne–Stokes respiration (CSA-CSR) is a common type of central SDB in patients with HF, occurring in about 30-50% of them.[7,8]

- Studies have shown that central SDB is associated with increased mortality, cardiac hospital readmissions and lower quality of life in heart failure patients.[9,10,11]

- Effective treatment of central SDB can improve cardiac function and survival in these patients.[12,13] However, to date, no large-scale randomised trial has been conducted to

conclusively demonstrate the precise benefits of longer-term therapy on multiple outcomes.

- SERVE-HF is seeking to show the extent of benefit of PaceWave™ ASV therapy on patients with HF and central SDB as well as the cost/benefit ratio of the therapy.

SERVE-HF study design[10]

- The design of the SERVE-HF trial was developed in collaboration with a Steering Committee of highly experienced experts in the field of both HF and sleep medicine.

- Co-principal investigators of SERVE-HF are:
  - Prof. Martin Cowie, National Heart and Lung Institute (NHLI), Brompton Campus, London, UK
  - Prof. Helmut Teschler, Department of Respiratory Medicine, Ruhrlandklinik, Essen, Germany

- The first patient was randomised in 2008 and the last in May 2013. The study is likely to complete in Q4 2015.

- Patients will be followed up for an average of ~54 months (minimum 24 months).

Primary endpoints include time to:

- All-cause death
- Unplanned hospitalisation for worsening chronic heart failure

Secondary endpoints include:

- Changes in general and disease-specific quality of life and in heart failure symptoms
- Change in six minute walk distance
- Changes in cardiac function
- Changes in cognitive function
- Changes in biomarkers

In addition, a health economic analysis is being conducted to determine the cost effectiveness of ASV treatment.

SERVE-HF substudy[10]

The SERVE-HF substudy aims to assess ventricular remodelling, and changes in left and right ventricular function, sleep, breathing, cognitive function, anxiety, and depression. Evaluations to collect data for the substudy (echocardiography, cardiac MRI, PSG, and questionnaires) have been performed at baseline and at 3 and 12 months after randomisation.

Outcomes[10]

- SERVE-HF is an important randomised controlled trial that will assess, for the first time, whether treating SDB with PaceWave™ ASV can reduce morbidity and mortality in patients with HF.

- The findings may have important implications for individualised therapeutic strategies targeted at reducing the morbidity, mortality and economic burden of HF.
- Results may also offer the opportunity to review current practices in the diagnosis and treatment of SDB in HF.

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