SLEEPMINDER™: a non-contact, bedside, nocturnal respiratory monitor

Sleep-disordered breathing in heart failure

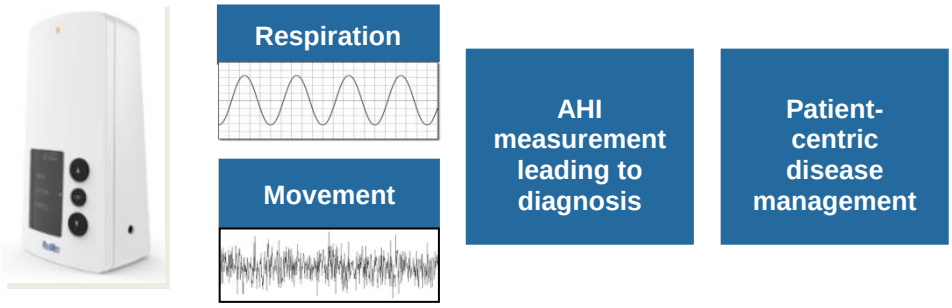
- Sleep-disordered breathing (SDB) is abnormal breathing during sleep. It is one of the most common co-morbidities in people with chronic heart failure (HF) and can lead to poorer outcomes including mortality, increased hospitalisations and reduced quality of life.[1,2]

SleepMinder™

- SleepMinder™ is a non-contact, bedside, nocturnal respiratory monitor which can be placed next to or above the patient to monitor their breathing patterns during sleep.
- It is a radio frequency-based sensor with sub-millimetre precision.

How does SleepMinder™ diagnose SDB?

- SDB, or sleep apnoea as it is also known, is diagnosed by calculating the Apnoea Hypopnea Index (AHI), which is achieved by recording the number of abnormal breathing events that a patient experiences during sleep.
- Traditionally, this requires patients to undergo a night's assessment as an inpatient in a specialist sleep centre or hospital, a procedure known as polysomnography (PSG) where the patient is wired up to specialist equipment and monitored for a single night.
- SleepMinder™ offers a different, more practical approach. It sits on a patient's bedside and carefully monitors the patient's respiration during sleep.
- By using smart algorithms, the device interprets this data and calculates the mean AHI for a patient over several weeks or months.
- By calculating the mean AHI, it offers a potentially more accurate diagnosis of the presence and severity of SDB in cardiac patients.



SleepMinder™ as an effective diagnostic tool

- Due to frequent changes of volume load in HF patients, taking the phenomenon of fluid shift into account, a single night's monitoring could be insufficient to diagnose SDB in the cardiac patient population.[3]

- Compared to a current gold-standard of diagnosis - a single night assessment via inpatient PSG - SleepMinder™, when used for at least two weeks, may provide more accurate diagnosis of SDB presence and severity in heart failure patients.[3]
- A study, led by the 2013 Heart Failure Congress Young Investigator Award winner, Henry Savage, has also shown that SleepMinder™ is comparable to full in-hospital PSG in detecting heart failure patients with SDB and Cheyne Stokes Respiration (CSR).[4]

SleepMinder™ in the patient care pathway

- SleepMinder™ provides effective diagnosis in a lower cost care setting, as the device can be used within the home rather than having to be conducted in a hospital or specialist sleep centre.
- Clinicians can then interpret the data provided by the SleepMinder™ device to provide an accurate diagnosis, leading to early intervention. This promotes faster recovery for patients, decreased hospitalisations and improved quality of life.

References

[1] Cowie M et al. Rationale and design of the SERVE-HF study: treatment of sleep-disordered breathing with predominant central sleep apnoea with adaptive servo-ventilation in patients with chronic HF. *Eur J Heart Fail,* 2013; 15(8):937-943.

[2] Javaheri. Basics of Sleep Apnoea and Heart Failure. Sleep Apnoea and CV Disease – A CardioSource Clinical Community. Available online at http://apnea.cardiosource.org/Basics/2013/02/Basics-of-Sleep-Apnea-and-Heart-Failure.aspx (last accessed, August 2014).

[3] H. Savage et al. The Mean Apnoea Hypopnea Index as a Diagnostic Criterion For Sleep Disordered Breathing In Patients with Heart Failure. ESC Congress 2014, abstract FP# P2758 – presented 31 August 2014.

[4] Savage, H. et al. Cheyne Stokes respiration in patients with heart failure detected by a novel non-contact monitor of nocturnal respiration. *European Journal of Heart Failure*, 2013; 15 (S1).