A NOVEL SEE-THROUGH-WALL TECHNOLOGY AIMING TO REVOLUTIONIZE HEART FAILURE TREATMENT

December 2017
About Sensible

➢ Leaders in medical RF monitoring & imaging technology

➢ 45 granted patents and pending applications

➢ HQ in Israel with an office in NYC; US Nation-wide service

➢ Cleared for market in the USA and CE marked

➢ CFDA underway
The Skyrocketing Cost of Heart Failure

- #1 reason for hospital admissions in patients over 65 (1)

- By 2030, Heart Failure costs are expected to more than double to $70B in the U.S. (2)

- 1% - 2% of total healthcare spending in developed countries is attributed to heart failure costs (1)

- For each patient, the lifetime direct costs of heart failure are an estimated $110K (3)

- Hospitalizations account for 77% of the direct costs to treat a patient (3)

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A Vicious Cycle of Hospital Readmissions

- Over **1 million** heart failure hospitalizations occur each year *(1)*

- **25% of patients** are re-admitted within 30 days *(2)*

- Patient condition **deteriorates** with each hospital re-admission *(3)*

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*(3) Graph adapted from: Gheorghiade MD, et al. Am J. Cardiol. 2005*
The **missing link** to manage Heart Failure, improve quality of life & reduce readmissions is **accurate lung fluid measurement to guide treatment**.
ReDS™
See-through-wall Technology

Radar (RF) monitoring and imaging technology

Military see-through-wall technology

Direct, Absolute, Safe and Actionable measurement of lung fluid
What does it measure?

- **Direct & Absolute** measurement of lung fluid content
- Focused electromagnetic RADAR beam through the right middle lobe (7cm diameter)
- Normal lung measures 20-35% fluid content (normal target range)
- IP Portfolio: 14 granted patents, 31 pending
ReDS™ Product offering by Segment

Point of Care system for Hospitals, Clinics, SNF

- Point of Care system
- Multiple patient use
- Each measurement takes 90 sec
- Data quality is confirmed by cloud

For Home monitoring

- Self-measurement at home
- Once a day
- Vest is adjusted and locked by nurse
- Easy to use by elders at home
- Data is automatically uploaded to cloud
4 Layers of Clinical Data

The focus of today:

Real-life implementation results & health economics in leading HF programs
Clinical Evidence examples

Comparison with Pressure gold standard (Swan)

Comparison with Fluid gold standard (CT)

Readmission reduction outcome study

Ongoing monitoring at home
Publications (current)


Usage across the continuum of Hospital-to-Home care

BREAKING THE VICIOUS CYCLE
Usage across the continuum of Hospital-to-Home care

Breaking the vicious cycle
Usage across the continuum of Hospital-to-Home care
Usage across the continuum of Hospital-to-Home care

BREAKING THE VICIOUS CYCLE
Usage across the continuum of Hospital-to-Home care

BREAKING THE VICIOUS CYCLE
Proving the value across the continuum of care

- 75% readmits reduction
- 70% readmits reduction
ReDS Point of Care: Rapid Follow-Up (RFU)

Sean Pinney, MD
Professor of Medicine
Icahn School of Medicine at Mount Sinai
Director, Advanced Heart Failure & Cardiac Transplant Program
30 days HF related readmissions

Prior to ReDS: 12%
With ReDS: 3.5%

70% Reduction
Geisinger Caring Experience
Sanjay Doddamani, MD
Cardiologist, Advanced Heart Failure and Transplant Cardiologist
Reduction of HF hospitalizations
At Geisinger Health system

HF Readmissions

<table>
<thead>
<tr>
<th>30 days prior to ReDS</th>
<th>30 days with ReDS</th>
</tr>
</thead>
<tbody>
<tr>
<td>16</td>
<td>4</td>
</tr>
</tbody>
</table>

75% Reduction
Cone Health Experience
Daniel Bensimhon, MD
Director of Cone Health Advanced Heart Failure Clinic
Secondary EP: First Readmissions in 1m & 3m for wet groups

90 days 1\textsuperscript{st} readmission events in wet patients

- Wet – No Treatment: 4 events, 75% readmission reduction
- Wet – HF Clinic: 1 event, 0 in 30 days

N = 18
N = 17

75% readmission reduction
At HFSA 2017 Geisinger, Mt Sinai and Cone presented real-life data of 70%-75% readmission reduction with POC, comparable to the 87% readmission reduction demonstrated in the REDS-HF pilot study.

The opportunity at large hospital chains can be 100 systems. Being a simple-to-use device, every general cardiologist and GP clinic would need one to manage their HF patients.
Patients are mapped and selected in pockets of high concentration in the NE and NC regions.
**Heart Failure Post-Discharge Process**

1. **Symptoms Maintenance Improvement**: Post Discharge Education
   - Nurse Calls & Self-Monitoring

2. **Symptoms Worsen**: Nurse Home Visit: RedS™ Monitoring
   - Daily Vitals
   - Unit Normal Range: Achieved
   - Refer to attributed PCP if abnormal or needed
   - Monitor: RedS™ and plan or L prescriptions if urgent
   - Nurse Calls & Self-Monitoring for any symptoms and/or outcomes
   - Patient Education

3. **Elevated Reading**: RedS™ Protocol
   - Consider admitting if
   - No Improvements
   - Patient Sustains Self-Monitoring
   - Symptoms Worsen
   - Maintain or Improve

4. **No Improvement**: Consider admitting if
   - Elevated Reading
   - No Improvement

5. **Discharge Information**: Discharge this patient (additional signs and symptoms to assess for symptoms)
   - Refer to attributed PCP
   - Monitor: RedS™ and plan or L prescriptions if urgent

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**Community Home Visit Workflow**

- **Home Visits**: Nurse Home Visit: RedS™ Monitoring
- **Patient Assessment**: Patient Home Visit
- **RedS Measurement Prep**: Daily Vitals
- **Taking a reading**: Unit Normal Range: Achieved
- **Interactions to Clinical Team**: Nurse Calls & Self-Monitoring
- **Document**: RedS™ and plan or L prescriptions if urgent

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**Workflows**

**Post-Discharge Education**

- Inpatient discharge

**Nurse Calls & Self-Monitoring**

- **CHA visits are scheduled.**
  - CHA calls nurse via phone for any abnormal RedS values or symptoms
  - CHA documents

- **Nurse Home Visit:**
  - RedS™ measurement complete
  - Values are obtained by CHA
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**Randolph Health**

- **Heart Failure Post-Discharge Process**
  - Symptoms Maintenance Improvement
  - Nurse Calls & Self-Monitoring

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**Sensible Medical**

- **Seeing through walls**

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**Orlando Health**

- **Protocol**
  - Consider admitting if
  - Elevated Reading
  - Refer to attributed PCP

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**Orlando Health**

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  - Consider admitting if
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## Methods for assessing lung fluid

### Comparison Matrix

<table>
<thead>
<tr>
<th>Weight monitoring</th>
<th>Non-invasive Bio-impedance</th>
<th>Implantable sensors</th>
<th>Swan-Ganz Catheter</th>
<th>CT scan</th>
<th>ReDS scan</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Accurate &amp; Actionable</strong></td>
<td>No</td>
<td>No</td>
<td>It Depends</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Accurate &amp; Actionable</td>
<td>Non-specific. Tele-HF / Tim-HF. Proved no efficacy</td>
<td>Does not measure lung fluid accurately</td>
<td>ABT CardioMEMS – YES MDT OptiVol – Partial BSX HeartLogic – Partial</td>
<td>Considered the gold standard for pressure sensing</td>
<td></td>
</tr>
<tr>
<td>Easy to use, Non-invasive</td>
<td>Non-invasive</td>
<td>Multiple electrodes on the skin</td>
<td>Implantation required. Measurement with external reader.</td>
<td>Not routinely used. Bleeding, infection ... Requires high proficiency.</td>
<td>High radiation</td>
</tr>
<tr>
<td>Cost</td>
<td>Low</td>
<td>Low</td>
<td>High</td>
<td>High</td>
<td>High</td>
</tr>
<tr>
<td>Fit for HOSPITAL use</td>
<td>Yes</td>
<td>Goof fit, but seldom used</td>
<td>No</td>
<td>Cath lab. Not routinely used</td>
<td>NO</td>
</tr>
<tr>
<td>Fit for HOME use</td>
<td>Yes</td>
<td>Cumbersome. seldom used</td>
<td>Home only</td>
<td>No</td>
<td>NO</td>
</tr>
</tbody>
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- The performance of CT with the ease-of-use of a statoscope or a scale
- “The non-invasive CardioMEMS” for HF management at home
Would you ever manage your diabetic patient without a glucose monitor?

Why would you ever manage your heart failure patient without ReDS?
Join the ReDS™ revolution
In the management of Heart Failure