A Descriptive Analysis of ReDS Technology Across the Continuum of Care

Lisa Curran PharmD, Kelly Peck MS, Daniel Bensimhon MD

Background

Heart failure (HF) affects over 6 million patients in the US and is associated with a significant health and economic burden. Volume overload is a major determinant in the symptoms and quality of life in patients with HF and is the most common cause for HF admissions. The degree of pulmonary congestion can be difficult to assess on standard exam. The Remote Dielectric Sensing (ReDS) Wearable System is an FDA-approved device developed by Sensible Medical Innovations that allows clinicians and other health care providers to quickly and accurately measure lung fluid in patients, noninvasively. Using the ReDS technology our center sought to directly measure the degree of pulmonary congestion in HF patients at various points of care.

Methods

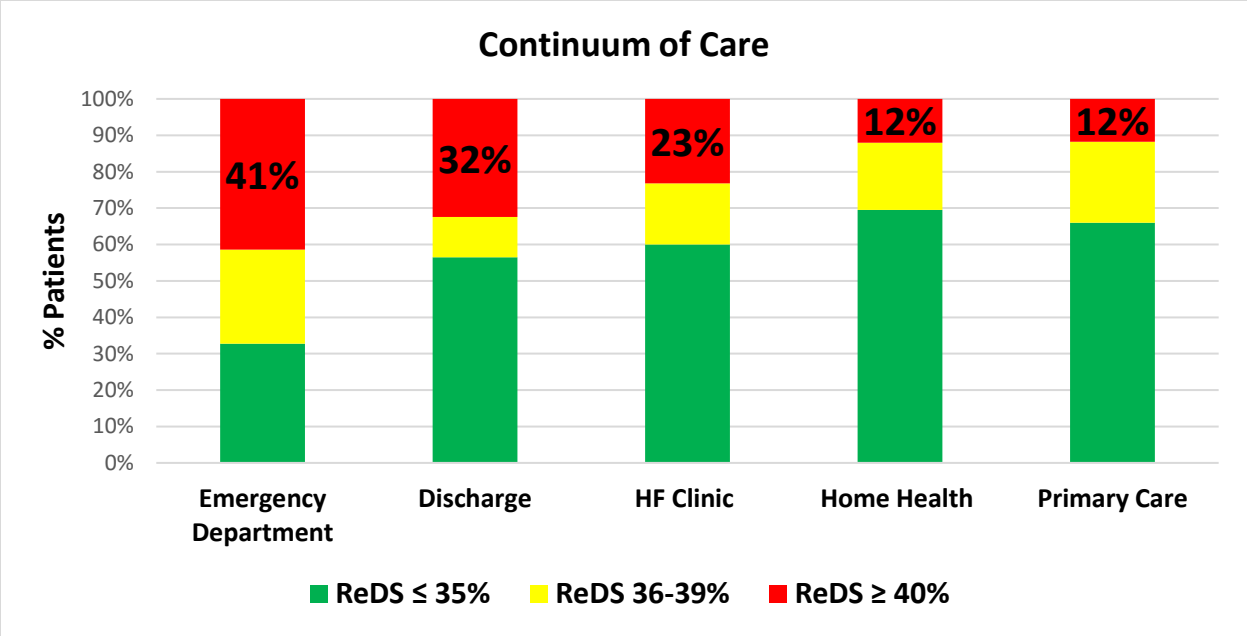
The Advanced Heart Failure Program at Moses Cone Hospital in Greensboro, NC is a multidisciplinary program that provides care for nearly 2,000 HF patients both on an inpatient and outpatient basis. We also partner with the Triad Health Network (a large next-gen ACO) and local home health agencies to provide HF care in our surrounding communities. With these partners, we developed an initiative to measure pulmonary congestion at multiple points of care across the continuum. Using the ReDS technology, lung fluid was measured on 108 patients at HF hospital discharge, 190 patients at return office visits to the HF clinic, 105 patients in the home health setting, 58 HF patients presenting to the Emergency Department for increased dyspnea/swelling SOB and 144 HF patients at a community PCP office.

Results

A ReDS reading of 20-35% represents normal lung fluid. Readings of 35-39% represent mild volume overload while readings of 40% or greater correlate with moderate to severe volume overload, that is considered clinically significant. Table 1 shows the readings for each point-of-care setting. As can be seen in the Table, residual, clinically-significant, volume overload is common in patients at all points of care, including at the time of hospital discharge and on routine presentation to outpatient clinics. Conversely, a significant amount of HF patients who present to the ER complaining of HF symptoms do not have significant lung congestion.

Discussion

Using the noninvasive ReDS technology to directly measure lung congestion, we found that clinically-significant lung congestion (ReDS >= 40%) is common among HF patients at all points-of-care. Further study is ongoing to assess the utility of employing the ReDS technology across the HF continuum to help providers more accurately assess volume status, titrate diuretics and neurohormonal therapies and improve outcomes.


Continuum of Care
% Patients
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
41%
32%
23%
12%
12%
Emergency Department
Discharge
HF Clinic
Home Health
Primary Care
ReDS ≤ 35%
ReDS 36-39%
ReDS ≥ 40%