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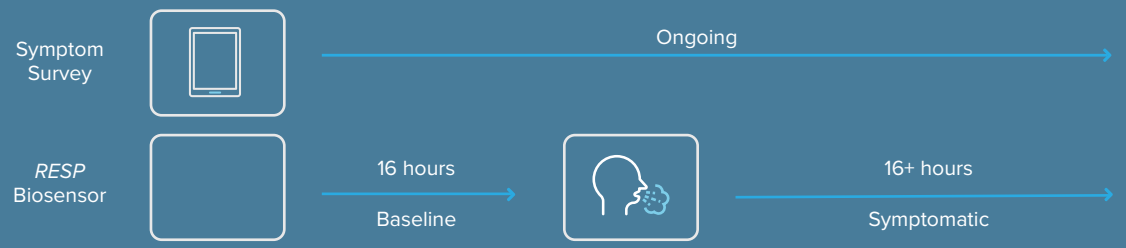
## Scripps' Challenge

The DETECT Health Study,[1,2] led by Scripps Research Translational Institute, was a multivariable, population-based study that took place from 2020-2022 in the United States. The study objective was to investigate if the addition of sensor data could more quickly detect the emergence of an infectious disease such as influenza or COVID-19 compared to patient self-reporting. While many of the available sensors, such as Garmin watches and Fitbit devices, were useful in collecting certain measures like activity, they were not able to capture cough which is an extremely common, burdensome symptom in infectious diseases.

## Our Solution

To solve this challenge, Scripps enlisted the help of Strados Labs and their RESP® Biosensor to measure cough as part of the DETECT-AHEAD sub-study.

Strados Labs sent the wearable devices directly to sub-study patients at their homes. Patients were instructed to continue self-reporting symptoms via the mobile app, and concurrently, wear the *RESP* Biosensor for 16 hours to collect baseline measurements. Patients were then instructed to apply the *RESP* Biosensor as they became symptomatic in the following days. All biosensor readings were analyzed and validated by Strados Labs' team of respiratory therapists and trained annotators.



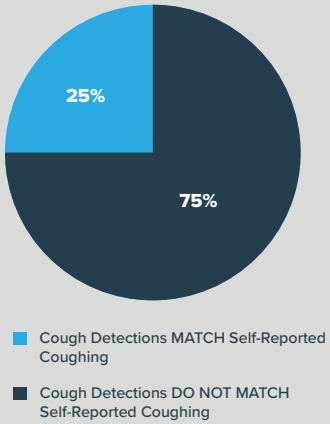

## The Results

Sixteen patients from the sub-study self-reported their symptoms (or lack thereof) and wore the *RESP* Biosensor for the instructed baseline cough monitoring recording.

Of the *16* that self-reported, only *6* reported cough, but the *RESP* Biosensor captured cough in *11* patients. Of the 2,252 coughs that were captured by the *RESP* Biosensor, 1,035 of them were associated with patients that had reported no coughing.

Overall, 75% of self-reported data did not match validated results from objective biosensor monitoring.

**A Comparison of Self-Reported Cough Symptoms vs. Validated *RESP* Biosensor Cough Detections**




## Patient Experience and Decentralized Trial Success

Out of the 16 patients who provided baseline recordings with the *RESP* Biosensor, all correctly followed Strados Labs' provided directions for applying the device, initiating recordings and returning devices post-study. Six patients voluntarily continued to wear the device after the baseline recording because they were symptomatic, with one patient wearing the device on and off for a total of 15 days within a 22-day period, and another patient wearing it for 10 days over a 13-day period. The *RESP* Biosensor was well tolerated by patients, with no reports of discomfort or adverse events.

## Conclusion

The sub-study highlights the value that objective cough monitoring can bring in better understanding patients' health status remotely. While patients' perspectives on their symptoms and quality of life are extremely important to capture, objective data can help fill the gaps caused by inconsistent reporting or recall error. The sub-study also demonstrates the effectiveness of the *RESP* Biosensor as a validated, patient-friendly tool for monitoring cough in patients remotely and in studies that are decentralized. The willingness of 6 patients to voluntarily wear the device for extended periods demonstrates patient acceptance and low burden associated with the device.

**1.** Radin JM, et al. Lancet Digit Health. 2022;4(11):e777-e786. doi:10.1016/S2589-7500(22)00156-X **2.** Quer G et al. Nat Med. 2021;27(1):73-77. doi:10.1038/s41591-020-1123-x **3.** Da Silva CG, et al. Poster presented at: American Cough Conference; June 2023; Reston, VA

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