


## For COVID-19 Screening, Measuring Temperature Alone is Not Enough, Especially if Based on Unreliable Thermal Guns

Governments, sports leagues, corporate offices, commercial stores, movie theaters, schools and far more entities are diligently seeking to determine the best way to screen employees, customers, visitors, fans, students and others seeking access to their facilities. Getting the answer right as to the best form of screening is critical. Why? To enhance the safety and security of the work force, customer base, students, and other stakeholders and to instill much needed confidence in such users as to the safety of the facilities which in turn will help restore operations equal to or better than pre-pandemic conditions.

- A recent study by more than 175 Northwell scientists, clinicians and other subject matter experts concluded that simply screening for fever is not sufficient.<sup>1</sup> “We need to be looking more broadly” than just at fever in determining whether someone may have COVID-19, said Karina W. Davidson, the lead author of the study and Senior Vice President at the Feinstein Institutes for Medical Research. Indeed, as an ideal, the CDC recommends that initial diagnostic testing for SARS-CoV-2 be performed by collecting and testing an upper respiratory specimen in accordance with CDC’s testing protocol<sup>2</sup>. Unfortunately, such testing is currently too costly, requires hours, and is not readily available for massive scaling in public spaces around the globe.
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- For those who develop symptoms, COVID-19 is often a flu-like illness with over 75% having fever, over 50% having cough, and a smaller proportion having symptoms like muscle aches, fatigue, sore throat, and where a small percentage of people have experienced GI symptoms<sup>3</sup>. Therefore,

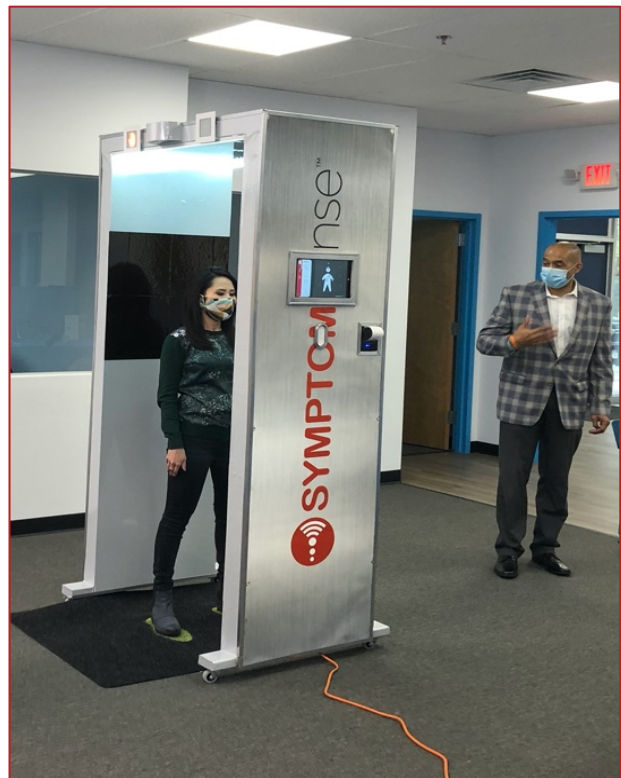
<sup>1</sup> <https://www.newsday.com/news/health/coronavirus/northwell-research-1.44044655>

<sup>2</sup> <https://www.cdc.gov/coronavirus/2019-ncov/lab/guidelines-clinical-specimens.html#:~:text=For%20initial%20diagnostic%20testing%20for,an%20upper%20respiratory%20specimen.>

<sup>3</sup> [https://emergency.cdc.gov/coca/wmv/captions/transcript\\_03-17-20.pdf](https://emergency.cdc.gov/coca/wmv/captions/transcript_03-17-20.pdf)

doctors and scientists around the world have confirmed the that following vital signs must be accurately measured to assure effective screening<sup>4</sup>:

- Blood Oxygen Level (measured in SpO2 %)
  - External Body Temperature (measured in °F or °C)
  - Respiration Rate (measured in breaths per minute)
  - Heart Rate (measured in beats per minute)
  - Blood Pressure (measured in units of millimeters of mercury (mmHg))<sup>5</sup>
  - Ask all patients upon entry to the facility if they have a fever or known symptoms of COVID-19
- Compounding the screening problems of the methods relied on to date, some facilities have begun to implement or made plans to implement temperature screening through reliance on thermal guns and other forms of infrared thermal detection. A recent CDC study concluded that infrared thermal detection “can result in many false positives, which could have adverse consequences to the population being screened and increase the workload of staff who are conducting the screening.”<sup>6</sup>
  - Whether or not a thermal gun is used by trained or un-trained personnel, the measurement average error rate using infrared thermometry methods can be upwards of 30%. As well, the “thermometer gun” tends to be unreliable outside carefully controlled healthcare settings.<sup>7</sup> The CDC has concluded that even if the operator is a healthcare professional who has been properly trained in using thermometer guns, the operator requires human surfaces that are dry and free of hair, such as forehead, and requires a draft-free room at a constant temperature between 60.8°F (16°C) and 104°F (40°C), and at humidity below 85%<sup>8</sup>. Therefore, accuracy of readings can be off by +/- 2 degrees (up to 30%) depending on testing conditions.



<sup>4</sup> <https://www.nytimes.com/2020/04/20/opinion/sunday/coronavirus-testing-pneumonia.html>

<sup>5</sup> <https://tropmedhealth.biomedcentral.com/articles/10.1186/s41182-020-00201-2>

<sup>6</sup> [https://wwwnc.cdc.gov/eid/article/16/11/10-0703\\_article](https://wwwnc.cdc.gov/eid/article/16/11/10-0703_article)

<sup>7</sup> <https://www.nytimes.com/2020/02/14/business/coronavirus-temperature-sensor-guns.html>

<sup>8</sup> [https://stacks.cdc.gov/view/cdc/24857/cdc\\_24857\\_DS1.pdf?](https://stacks.cdc.gov/view/cdc/24857/cdc_24857_DS1.pdf?)

- The SymptomSense™ Medical Evaluation Gateway is the world's first and only known device capable of simultaneously and accurately measuring external body temperature, respiration rate, heart rate, and blood oxygen level (and the gateways will soon add blood pressure measurement) with zero body contact. The test cycle time is roughly 5 seconds. It provides both the most accurate and efficient walk-through screening available to governments, airports, schools, hospitals, sports leagues, office buildings, retail stores, embassies and more. The system allows for the rapid movement of people, and is capable of screening 650-1000 people/hour (equivalent to ~5 seconds/screen plus normal queing before and after each screen). SymptomSense™ responds fully to the “new normal” to combine speed and efficiency with increased safety and confidence.
- The SymptomSense™ measurements can readily be varied to respond to the needs of the facility. It can be set for:
  - Totally anonymous screening, with no captured data.
  - Instant print, with a time and venue stamp.
  - Capturing results on a secure, encrypted Microsoft cloud for use by that site in real-time.

SymptomSense™ makes it possible to monitor, report, and use analytics to predict trends in data for various facility settings.