

NANOWEAR WORKING WITH HOSPITALS ON WEARABLE TECHNOLOGY



Pic: Nanowear

Nanowear, the nanotechnology-based connected-care and remote diagnostic platform, is collaborating with Hackensack Meridian Health Systems, the largest hospital system in New Jersey and Maimonides Medical Centre in Brooklyn, NY. The expanded COVID-19 remote diagnostic research alliance uses precision medicine clinical-grade, cloth-based wearable technology.

The clinical trial collaboration focuses on utilising remote diagnostic monitoring through the use of precision medicine clinical-grade, cloth-based wearable technology. The goal is to monitor patients with confirmed or suspected COVID-19 with Nanowear's proprietary and patented cloth-based nanosensors which detect physiological and biomarker changes indicative of clinical deterioration that may require further intervention from the hospital systems.

Nanowear's digital platform enables a radical leap forward in telemedicine and remote patient diagnostics. When a patient wears SimpleSENSE, Nanowear's one-size-fits-all adjustable undergarment, physicians can remotely capture and assess multiple physiological signals – including real-time ECG, systolic and diastolic blood pressure, blood flow hemodynamics, respiration, lung volume and fluid, and temperature trends – without the need for an in-person visit or physical touch.

"When we talk about telemedicine, we often talk about video conferencing," said Venk Varadan, co-founder and CEO. "But to truly enable remote diagnostics we must incorporate clinical-grade remote monitoring that is affordable, comfortable, and simple for patients to use. Nanowear's SimpleSENSE replaces a stethoscope, blood pressure cuff, multi-channel Holter monitor, and Capnogram (End-tidal CO₂), providing a diagnostic quality monitoring system in a form factor that is easy to ship, easy to wear, and easy for the patient to use. Nanowear's garment captures 120 million data points per patient per day across cardiac, pulmonary, and circulatory biomarker data, which is transmitted to clinical

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staff, so that they may make informed and quicker decisions remotely."

The COVID-19 pandemic has transformed healthcare delivery and diagnosis; the traditional experience of a physician physically examining or touching a patient in-person has been altered, perhaps forever, and could have a lasting impact on the future of patient-physician physical interactions expansively from primary care to chronic disease cases.

As New York City, the epicentre of the global coronavirus pandemic, emerges from coronavirus lockdown, health systems are looking for novel technologies like Nanowear to better understand and combat the unprecedented severity of COVID-19. Nanowear is being used to aid in COVID-19 diagnosis to ensure the health and safety of patients and medical professionals.

"What we need to understand about COVID-19 is why certain patients develop a cytokine mediated immune response from the virus," said national principal investigator of the collaboration, Sameer Jamal, of Hackensack Meridian Health, the largest health system in New Jersey. "This resulting inflammation within the circulatory system often leads to severe complications or death, which we have seen first-hand in New York City and the surrounding area. Diagnosis and co-morbidities alone are not enough to determine risk to admitted patients

before they need to be transferred to ICU. Nanowear's SimpleSENSE is giving us an exponential amount of relevant data metrics about the heart and lungs from an all-in-one product that should ultimately enable us to triage lower risk patients and stratify high risk patients."

While the immediate need for hospitals across the US is to remotely diagnose and assess worsening COVID-19 instances from home-to-hospital and hospital-to-home, the virus itself has changed the paradigm for healthcare delivery in general.

"The COVID-19 paradigm shift has accelerated healthcare systems' need to implement staff-contactless monitoring involving acute and chronic disease-related hospitalisations," said John Marshall, MD, head of Emergency Department at Maimonides Medical Centre in Brooklyn, New York. "The continuity of in-patient monitoring, patient-to-home monitoring, and at-home monitoring across 8-10 biomarkers with a very easy-to-use product is what makes Nanowear's solution compelling and unique."

Unlike consumer-grade wearable garments, smartwatches, smartrings or limited-metric adhesive patches, Nanowear's textile-embedded multi-parameter nanosensors are clinical-grade,

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analysing multiple cardiac, pulmonary, and circulatory biomarkers, creating a holistic personalised digital signature for each patient. The garment transmits these diagnostic health signals to a mobile application and physician portal, enabling healthcare professionals to assess a wide range of medical conditions, from diabetes, high blood pressure and congestive heart failure (CHF), to acute illness, discomfort, and stress.

Nanowear has submitted its SimpleSENSE device and mobile platform to FDA for Class II 510(k) clearance. SimpleSENSE is not yet FDA-cleared and currently not intended to mitigate, prevent, treat, cure or diagnose any disease or condition.

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