



RESEARCH BRIEF

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Penn Researchers Awarded R01 Grant to Further Evaluate Remote Fetal Non-Stress Test to Reduce Racial Disparities in High Risk Pregnancies

PHILADELPHIA – April 4, 2022 – After three years of trials at Penn which validated a remote, novel fetal heart monitoring platform designed for in-home use, Penn researchers will continue research of the technology to understand how it can be best implemented in patient care and whether or not this strategy can reduce racial disparities in accessing high risk pregnancy monitoring. The platform, named INVU by Nuvo™, allows clinical providers to assess fetal heart rate and conduct fetal non-stress tests (NSTs) while a patient is outside of a clinical setting. The research, led by [Nadav Schwartz, MD](#), an associate professor of Obstetrics and Gynecology at the Perelman School of Medicine at the University of Pennsylvania, is supported by an R01 grant from the National Institutes of Health.

Pregnant patients regularly are required to attend appointments in person, and if they're especially high risk, may require more frequent appointments to allow clinicians to evaluate them and their future baby. But attending appointments in person does burden patients juggling professional and personal responsibilities, which can serve as a barrier to accessing the recommended care. That was especially the case at the height of the COVID-19 pandemic, when revised care protocols to reduce potential exposures also reduced in-person appointment attendance. These factors contribute to some patients being unable to attend some important



appointments, thereby missing an opportunity for clinicians to intervene if necessary. Moreover, Black women were more likely to miss their recommended NST appointments, pointing to potential social determinants of health playing a role. This is especially concerning as Black women are over twice as likely to suffer from a stillbirth during pregnancy, and many could likely benefit from thorough, remote health monitoring.

Pregnant patients are able to fasten the INVU™ sensor band to their belly and let the platform report back the maternal and fetal heartrate, and any uterine contractions, to the patients' care teams. These results can indicate the need for other tests or even signal complications that necessitate emergency medical intervention.

“The ability to safely and effectively monitor patients' health from anywhere, especially pregnant patients, is incredibly valuable to both patients and their providers,” said Schwartz.

“My colleagues and I are eager to understand how to best use this tool to ease pressures on patients, tackle health inequity, and ensure no patient is without the proper medical support while at home. We also are committed to doing whatever we can do to reduce maternal morbidity and mortality, preterm births, and stillbirths. This is one avenue that we can take to help.”

The Penn team is currently working with both Nuvo and the Penn Center for Healthcare Innovation to incorporate patient and provider feedback in devising a clinical workflow that is both feasible and acceptable to the relevant stakeholders, with a randomized clinical trial planned for 2023 that will study the potential for remote monitoring to reduce the racial disparities in healthcare access and improve pregnancy outcomes.