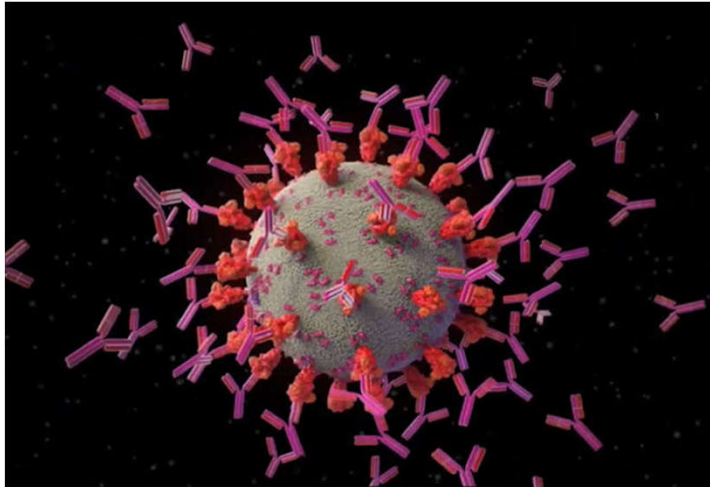


INTRENET NEWS

BS TRƯỞNG NGỌC LỄ

10 Medical Innovations for 2022 Unveiled



generation mRNA vaccines. A new approach for treating prostate cancer. Novel therapy for reducing LDL. These are three of the breakthrough technologies that will change healthcare in 2022, according to a panel of Cleveland Clinic physicians and researchers led by [D. Geoffrey Vince, PhD](#), Executive Director of Innovation and Chair of Biomedical Engineering.

Cleveland Clinic, a shared passion for the delivery of superior care and an embedded culture of innovation foster continuous healthcare improvement driving our clinicians and researchers,” says Dr. Vince. “As such, our experts always have their finger on the pulse of new technologies slated to change the landscape of healthcare. The Top 10 Medical Innovations program was launched to share their insight with the broader healthcare community, and year after year, our professionals continue to successfully predict device, technology and therapy advances.”

The following, in order of anticipated importance, are the Top 10 Medical Innovations for 2022:

generation of mRNA vaccinology. Advancements in the generation, purification and cellular delivery of RNA have enabled the development of RNA therapies across a broad array of applications, such as cancer and Zika virus. The technology is effective and relatively simple to manufacture. Furthermore, the COVID-19 pandemic demonstrated the world's need for the development of a vaccine that was easily deployable around the globe. Because of previous research that laid the groundwork for this technology, an effective COVID-19 vaccine was developed, produced, approved and deployed in less than a year. This landscape-changing technology has the potential to quickly and efficiently eliminate some of healthcare's most devastating diseases.

PSMA-targeted therapy. Each year, more than 200,000 Americans are diagnosed with prostate cancer — the most commonly diagnosed cancer among U.S. men. Early detection and successful imaging are critical for tumor localization, staging and detecting recurrences. Prostate-specific membrane antigen (PSMA), found in high levels on the surface of prostate cancer cells, is a potential biomarker of the disease. PSMA PET uses a radioactive tracer to locate and attach to PSMA, making them visible by PET imaging. This approach can be used in conjunction with CT or MRI scans to visualize where prostate cancer cells reside. In 2020, this technology received FDA approval based on phase 3 trials that showed a statistically increased accuracy for detecting prostate cancer metastases compared to conventional imaging with bone scans.

Novel treatment for the reduction of LDL. High levels of blood cholesterol, particularly low-density lipoproteins (LDL), are a significant contributor to cardiovascular disease. In 2019, the FDA reviewed the application for inclisiran in treating primary hyperlipidemia (including hereditary hypercholesterolemia) in adults who have elevated LDL-C while on a maximally tolerated dose of statin therapy. Inclisiran is an injectable, chemically synthesized small interfering RNA that targets the PCSK9 protein. In contrast to statins, it requires infrequent dosing (twice per year) and provides effective and sustained LDL-C reduction in conjunction with statins. Its prolonged effect may help alleviate medication noncompliance, one of the leading causes of failure to lower LDL-C levels. Inclisiran was approved by the FDA in December 2021 and is widely considered a game-changer for heart disease patients.

Novel drug for treatment of type 2 diabetes. In the U.S., 1 in 10 individuals has diabetes. One potential therapy is a weekly injectable dual glucose-dependent insulinotropic polypeptide (GIP) and glucagon-like peptide receptor agonist (GLP-1) that aims to control blood sugar. Injected under the skin, GLP-1 and GIP receptors cause the pancreas to release insulin and block the hormone glucagon, limiting blood sugar spikes after a meal. Additionally, it slows digestion, helping individuals remain full longer and eat less. Late phase 3 trials reveal that the treatment significantly reduces hemoglobin A1c in type 2 diabetes and supports weight loss, potentially making it the most effective therapy for diabetes and obesity yet developed.

[Breakthrough treatment for postpartum depression](#). Experts believe the prevalence of postpartum depression could be as high as what current statistics reveal because many cases go undiagnosed. Counseling and antidepressants are primary treatments, but some women do not respond to these therapies. In 2019, the FDA approved a continuous infusion treatment to treat postpartum depression specifically. This novel therapy, administered around the clock, uses a neurosteroid to control the brain's response to stress. This treatment design is groundbreaking as it targets the signaling thought to be deficient in hormone-sensitive postpartum depression. Additionally, this treatment appears to show benefits very quickly, while traditional antidepressants typically take two to four weeks to have a significant effect. This treatment option would be a breakthrough for women with this often overlooked condition.

[Targeted medication for hypertrophic cardiomyopathy](#). For decades, clinicians have treated patients' hypertrophic cardiomyopathy (HCM) symptoms with only limited effectiveness. Nonspecific medications are prescribed to treat some symptoms that HCM shares with other cardiovascular diseases. These therapies include beta blockers, antiarrhythmics, calcium channel blockers and anticoagulants. A new treatment, however, works to reduce the root cause of HCM in many patients. A first-in-class medication specifically targets heart muscle to reduce abnormal contractions caused by genetic mutations that put the heart into overdrive. By acting specifically on this mechanism in HCM patients, this novel treatment improves symptoms and quality of life, but potentially could slow progression of the disease. The FDA has assigned a priority review date of April 28, 2022, for this therapy. If approved, it would be the first medication dedicated to treating HCM, bringing new hope for patients and physicians.

Nonhormonal alternatives for treating menopausal hot flashes. More than 50% of menopausal women experience hot flashes, which can persist for an average of seven years. Hormone therapy is effective and safe when used appropriately, but it does involve some risk. Also, all patients are not candidates for hormone therapy. Fortunately, a new group of nonhormonal drugs called NK3R antagonists, has emerged as a viable alternative to hormone therapy. These drugs disrupt a signaling pathway in the brain implicated in the development of hot flashes. They have shown promise in clinical trials for relieving moderate to severe menopausal hot flashes as effectively as hormones. While additional studies are needed to fully understand the effectiveness and safety profile of these new drugs, it is clear that the next generation of nonhormonal treatments for menopausal hot flashes is on the horizon.

Implantable for severe paralysis. Approximately 1 in 50 Americans, or 5.4 million people, have some form of paralysis. While the cost of treatment is high, the value does not compare to the detrimental effects on patients. Most patients with paralysis experience a significant decline in their overall health. Recently, a team has offered new hope for these patients by using implanted brain-computer interface technology to recover lost motor control and enable patients to control digital devices. The technology uses implanted electrodes to collect movement signals from the brain and decode them into digital commands. It has been shown to restore voluntary motor impulses in patients with severe paralysis due to brain injury, spinal cord, peripheral nerve or muscle dysfunction. While the interface technology is in its infancy, the FDA has designated it as a “breakthrough device,” reinforcing the need to move this novel technology to the bedside of patients who need it.

AI intelligence for early detection of sepsis. Sepsis is a leading cause of hospitalization and death worldwide. Septic shock has a very high mortality rate, early diagnosis of sepsis is critical. Diagnosis can be complicated because symptoms are nonspecific. Artificial intelligence (AI) has surfaced as a new tool to help rapidly detect sepsis. Using AI, the tool detects several key sepsis risk factors in real time by monitoring patients' electronic medical records as input information. Flagging high-risk patients can help facilitate early intervention, which can improve outcomes, reduce healthcare costs and save lives.

Predictive analytics & hypertension. Often called the "silent killer," hypertension usually shows no symptoms while posing a high risk for serious health problems, including heart disease, heart failure and stroke. Effective treatment options exist, but many adults are unaware that they have hypertension until they experience a significant health crisis. Using machine learning, a type of AI, physicians are able to better select more effective medications, medication combinations and dosage for the control of hypertension. AI also will allow physicians to predict cardiovascular morbidities and intervene before they occur. Predictive analytics may be the key to preventing hypertension and many other diseases.

6 Useful Healthcare Gadgets You Should Know for 2022

Mobile EKG

Personal EKG device by AliveCor is portable in nature.

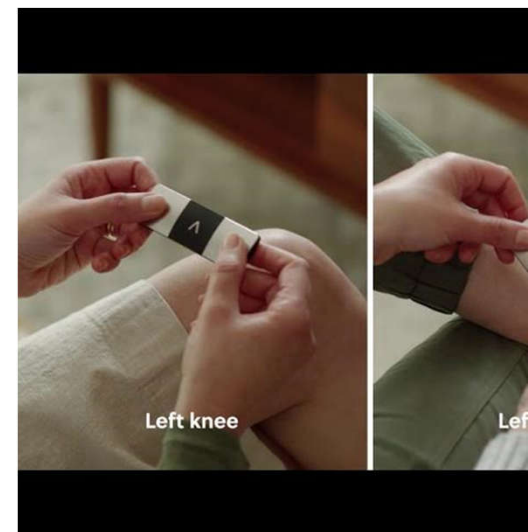
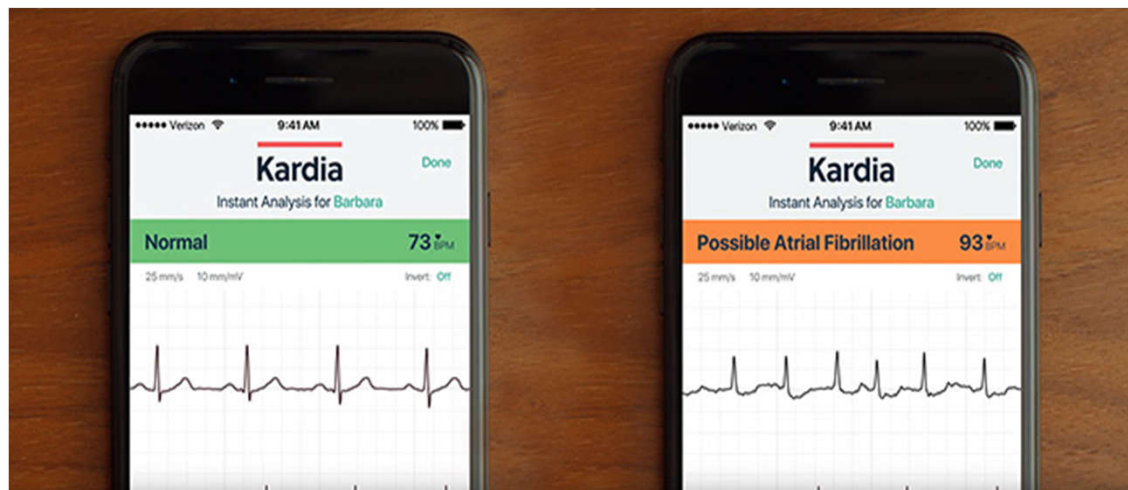
Users can use KardiaMobile EKG to save lives simply by keeping it in their pockets.

The device is capable to record EKG in just 30 seconds and pass it on to the smartphone.

It is FDA approved and can be used to detect normal heart rate, Tachycardia, Atrial Fibrillation, or Bradycardia.

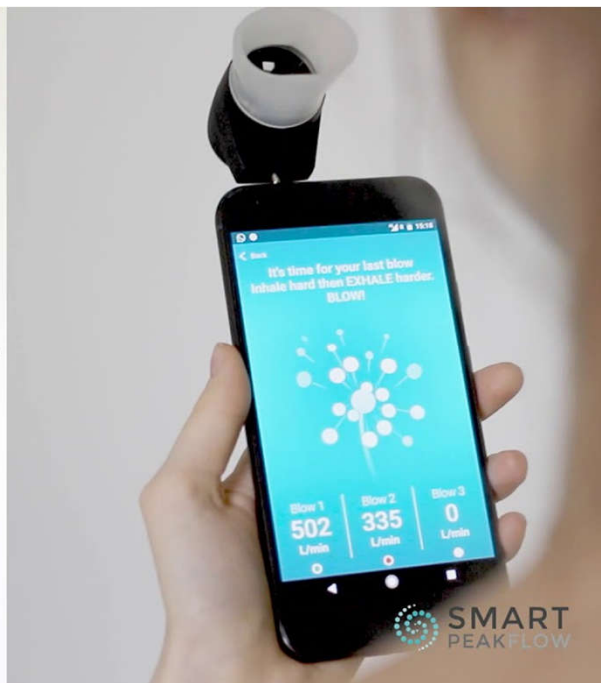
Moreover, the data can be shared with medical professionals directly to get opinions and even tracked over time.

Users need to place the finger on the sensor and information will be collected in a few seconds.



Remote Monitoring Console for Asthma

Adherence is a big problem in respiratory care. Less than 10% of patients actually follow the guidelines set out by their doctors. Introducing the Smart Asthma Console. Adherence at your fingertips. We built an adherence platform so doctors like you can streamline your workflow and have smarter patients. 1) All patient readings are automatically recorded on the platform. Includes peak flow, inhaler use and more. 2) The app guides patients to take readings daily and understand trends in their peak flow. 3) View your patients progress in real-time on a single platform. Reduce time spent on ACQs. 4) AI and CompEx events help you predict your patients exacerbations with 90% accuracy. Only when you have to.



Asthma Monitor by AirSonea

is a gadget that [monitors asthmatic symptoms](#). This technology captures your breathing pattern as well as the amount of air as you breathe deeply. AirSonea examines your breathing patterns to determine whether you have asthma. It is beneficial for managing therapy depending on the patient's current circumstances.

The patient puts the device near their nose and breathes normally. The device records the data and transmits it to the mobile phone, which processes it according to its parameters and requirements.



Dario Glucose Checker

[Dario](#) is an intelligent gadget that [operates on a smartphone app](#). Wireless technology links the widget to a mobile app. You must insert a blood test tape into the device and use the lancet to extract a tiny blood sample. The information is transmitted to a mobile app already set up with the nutrition and insulin doses in milligrams. The mobile app processes the data, which demonstrates the overall sugar level and the insulin dosage provision.



[VIDEO](#)

Tinke Respiratory Monitor

[Tinke](#) is a solid physical fitness tester that can measure your pulse rate, respiration rate, oxygen absorption ratio, heart rate variability, and more. This gadget is designed specifically for iOS smartphones. The patient places their fingers on the gadget, which detects the heartbeat and other biometrics. This data is then analyzed and presented on the mobile device's screen.



Smart Socks Help Prevent Falls Among At-Risk Patients



Researchers at the Ohio State University Wexner Medical Center have tested the PUP (Push Up) Smart Socks, developed by a medtech company called [Palarum](#), in their efforts to reduce falls among at-risk patients. The socks contain pressure sensors that alert caregivers when a patient is attempting to stand up. This can include situations such as a patient getting out of bed to go to the toilet. The socks can wirelessly communicate with a mobile app, which then alerts the caregivers that are closest to the patient, so that they can respond and provide assistance as soon as possible. The recent study showed that the socks significantly reduced fall rates in patients at high risk of such incidents.

Falls can spell serious consequences for frail and vulnerable patients, and can often be the start of a downward health spiral. It is not typically possible to monitor high-risk patients every minute of the day, but wireless technologies are well-suited to fulfill an important role in this context.

"With the rapidly aging population, the number of patients at higher risk of falling in hospitals is expected to increase substantially," said Tina Bodine, a researcher involved in the study. "About 30% of in-hospital falls are thought to be preventable, so it's imperative to explore better ways to keep our patients safe from falling while hospitalized."

Falls often happen when a high-risk patient attempts to get out of bed to use the bathroom, and this is the time that having a caregiver present to assist can dramatically reduce the risk of such incidents. Current approaches sometimes involve pressure sensors on beds or seating, but these frequently give false alarms, leading to alarm fatigue and reduced effectiveness of such systems.



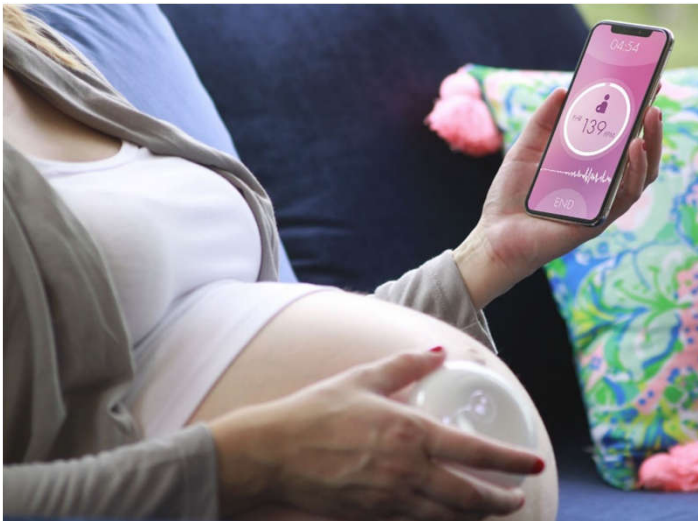
[VIDEO](#)

The HeraBEAT Medical Device Makes Monitoring Your Maternal Health Far Easier

COVID-19 has brought about some great advances in telehealth for most people but for pregnant women, access to quality healthcare can still be challenging. Home visits and office visits can be stressful and healthcare options can be limited. But the new HeraBEAT device from Australian-listed medtech company, HeraMED, is changing that because it gives pregnant women the ability to monitor the heartbeat of their baby from home, making telehealth possible.

For low-risk pregnancy, expectant mothers require over 14 visits to the hospital — which starts to add up when each visit lasts on average between 10-15 minutes. HeraMED has addressed this gap with its HeraCARE platform and the HeraBEAT device. This device enables expectant mothers to reduce their hospital visits to only 6-8 visits and to reduce the visit length to around 10-15 minutes.

The HeraBEAT device which allows you to do fetal heart rate monitoring at home. This way you can check on your baby's heart rate and also detect any abnormalities much earlier than traditional methods.



[VIDEO](#)

Best IoT Wearables and Medical Devices for Healthcare

Following are the finest IoT wearables and medical devices for healthcare to use in

[KardiaMobile EKG](#)

[SmartSleep](#)

[Smart Hearing Aids](#)

[TempTraq](#)

[Smart Stop](#)

[Mojo Lens](#)

[BioPatch](#)

[Bling Smart Ring](#)

[iTBra](#)

[Patient Identity Management](#)

[Digital Pill](#)

Best IoT Wearables & Medical Devices for Healthcare

- KardiaMobile EKG
- SmartSleep
- AVA
- Smart Hearing Aids
- TempTraq
- Smart Stop
- Mojo Lens
- BioPatch
- Blinq Smart Ring
- iTBra
- Patient Identity Management
- Digital Pill

techliance
Technology for tomorrow's success

The infographic features a central title and a list of 12 IoT wearables and medical devices. To the right, there is an isometric illustration of a modern healthcare facility with people at workstations, a large screen, and various medical equipment, all connected by a network of lines, symbolizing IoT integration in healthcare.

q

al thermometers are no more in the league.

have TempTraq to measure the temperature of the babies.

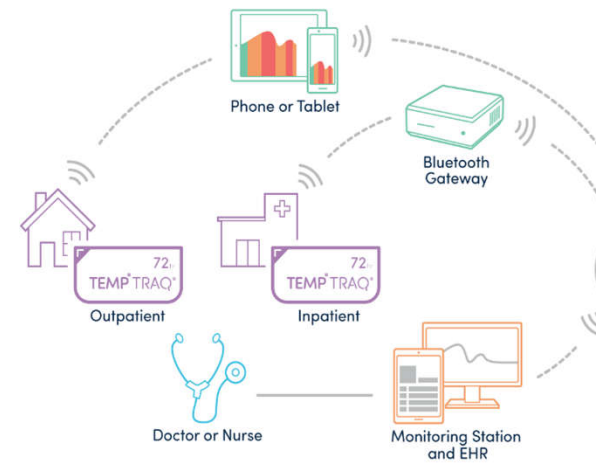
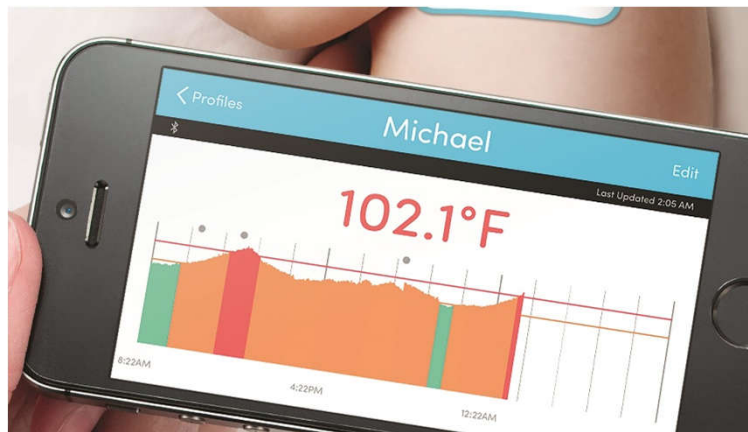
do so in times of an illness, without any kind of interruptions, throughout the 24-hr cycle.

perature reader comes as a soft patch, and even Bluetooth sensors are embedded in it.

you can easily place this patch under the arm of the child.

ep on monitoring the fever of child without any hassle.

ou will not have to check the temperature regularly at different intervals.



VIDEO

leep

A headband wearable SmartSleep from Philips has sensors and can be worn on the head.

The wearable lets to know more about the sleep needs of an individual and offer solutions accordingly.

People who are looking for ways to improve their sleep, can use this wearable as a sleep analyzer.

It can help them in a great manner in terms of improving their sleep.

The sleep wearable can be used to monitor the sleep cycles.



[VIDEO](#)

CÁM ƠN QUÝ THẦY CÔ VÀ CÁC ANH CHỊ
ĐỒNG NGHIỆP ĐÃ LẮNG NGHE.