

# PRIME TIME LIVING

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**55+**  
LIFESTYLE

Alone and Lonely  
**Social isolation can  
be detrimental**

**Long-term Care**  
Lots of options abound

**AI's Impact**  
Innovating health care

**Early Detection**  
Regular mammograms are still the key

**Guardian Angels**  
One bank goes above and beyond

Medicare  
**Finding the right plan**

**Prostate Cancer 101**  
Prostate cancer uncovered



# PRIME TIME **55+** LIVING LIFESTYLE

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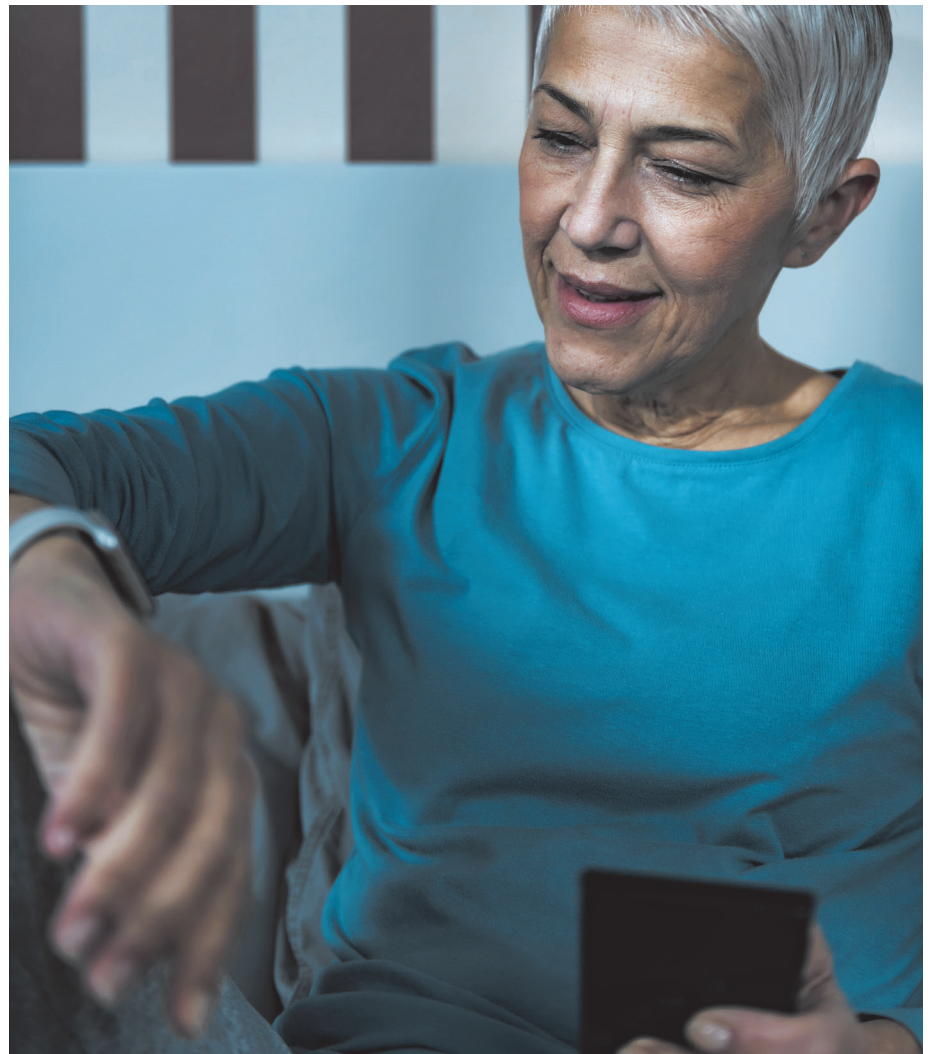
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## TECHNOLOGY

# AI's impact on health care

## Innovative applications for improved health outcomes

By Margit B. Weisgal, Contributing Writer



I often tell my students not to be misled by the name 'artificial intelligence' – there is nothing artificial about it. AI is made by humans, intended to behave by humans, and, ultimately, to impact humans' lives and human society.

– Fei-Fei Li, American computer scientist and co-director of the Stanford Institute for Human-Centered Artificial Intelligence

Artificial intelligence has made inroads into just about every industry, but its impact on health care and medicine is impressive. Yes, it includes apps that are helping clinicians make accurate diagnoses more quickly. But wait...there's more.

### Machine Learning and Data Assessment

Dr. Emile Sami Moukheiber, assistant professor of neurology at Johns Hopkins Medicine, specializing in movement disorders, says, "AI is an increasingly important and broadening field in which machine learning makes use of wearables, smartphones and other data gathering technology to help with more accurate diagnostics, disease management, progression

monitoring, and outcome prediction."

One of the technologies that's proving to be useful in two ways is a watch Parkinson's patients wear. It reports back to the clinician every two weeks on how the medications are or are not working, allowing them to make adjustments in real time. "At the same time," Moukheiber describes, "data collected from the machine is used to further fine-tune our real time understanding of the disease."

Moukheiber's specialty is neurodegeneration; he explains how his patients benefit from AI. "In medicine, AI's strength is that it creates algorithms that assess data and develop filters – via algorithms – to enhance doctors' diagnostic abilities.

Apps are only a small part of the advantages we're gaining using AI."

Reliable diagnostics and early-stage detection are top priorities in neurodegeneration. Accumulation of data and machine learning provide algorithms that aid doctors in figuring out a specific diagnosis more quickly.

In layman's terms, here's how it works. You arrive at work in something that has a door, an engine, windows, wheels, etc. By continuing to narrow down what "it" is, maybe you know it's a car, but what kind of car? There are lots of possible answers. AI helps narrow the options.

"So, instead of car parts, what if we could more easily detect different aspects of a disease, like dementia," Moukheiber asks. "Dementia is a symptom in many diseases. It doesn't matter what the names are because the machines don't

care. We tell the machine what's important or what to look at and how to put the data into different categories, like buckets, and the buckets help refine the data so there are new, narrower categories. So, we lump stuff together until we can split it into more precise, granular categories. From a clinical standpoint, a lot of the technology can be used in real time. And then, if we can diagnose a disease earlier, we all win."

### Identifying Stroke Part 1

Researchers at Penn State University have created a new tool to diagnose a stroke within minutes using a smartphone. Working with medical researchers including a physician at Houston Methodist Hospital, James Wang, Ph.D.,

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M.S., professor of information sciences and technology, and his team have developed an application that uses abnormalities in a patient's speech ability and facial muscular movements within minutes with the same accuracy – 79% – of a trained and experienced emergency department physician.

“Computer learning leads to better accuracy,” says Wang. “The more data we have, which in our case are comprised of actual stroke patients’ facial motions, muscle movements, and speech patterns, the more accurate we can be. When someone suffers a stroke, time is critical because parts of the brain are dying. Once at an ED, tests have to be performed for an accurate diagnosis. That takes time a victim can ill-afford. Eventually, our app can be employed by first responders, identifying a stroke in a few minutes. It saves time by taking the patient to a hospital with a comprehensive stroke center or one that is thrombectomy-capable (able to remove the clot causing the stroke) and the stroke team has been alerted, ready to

start treatment.”

In collecting data, one requirement Wang and his team needs is a variety of faces of all ethnic groups – Hispanics, African Americans and other non-whites – for across-the-board precision. So far, they have 150 scans and are enlisting additional hospitals to expand their dataset. “Since we’re in EDs, we’re dependent on actual patients willing to be scanned. Our immediate goal is to have a couple thousand faces before we deploy the app.

As it stands today, clinicians can’t always figure out the bottom line. “If we can identify ways for earlier interventions, figure out what therapies will work best,” Moukheiber adds, “it means we can treat someone more quickly. And this is just from a diagnostic standpoint. That’s what machine learning does.”

#### Identifying Stroke Part 2

As mentioned above, time is critical for treating stroke victims. RapidAI ([www.rapidai.com](http://www.rapidai.com)), advanced imaging software first launched 10 years ago,

allowed doctors to see a stroke happening in real time. Since each person’s stroke progresses differently, it changed the information physicians had to make patient treatment decisions resulting in a huge advancement for both doctors and patients. For those having an ischemic stroke, the most common type, RapidAI identified regions of the brain with reduced blood flow and volume, indicated parts of the brain with irreversible injury, and parts that could be saved. It led to a major reduction in stroke disability and mortality.

Rachel Witalec, vice president of product and strategy at RapidAI, talks about the company’s next steps. “The time issue we addressed with stroke, along with all we’ve learned from emergency and specialist teams of doctors, nurses and clinicians, can now be applied to other similar life-threatening emergencies, such as a pulmonary embolism (a blood clot in the lung that can lead to heart failure), aneurysm, STEMI and trauma. We also want to address optimizing the care team workflow so that they

know what needs to be done even before a patient’s arrival.”

Witalec sees future problems being solved by multidisciplinary teams, incorporating technology and Artificial Intelligence (AI). “These are tools that can be used to better share information in real-time while improving efficiency of care teams. We’re always looking forward, asking ‘How many more people can we save?’ And for how many health systems can we help reduce costs? Our products have approval in markets globally and are now in use at over 2,000 hospitals worldwide.”

#### The Future

“Soon,” Moukheiber prognosticates, “doctors and technology will be working more closely together. Human ability is finite, while machines can enhance our accuracy, reducing medical errors, a huge advance in patient care. Then we’ll have the best of both worlds.”

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of national experts in prevention and evidence-based medicine, “determined that the potential benefits and harms of prostate-specific antigen (PSA)-based screening are closely balanced in men ages 55 to 69 years, and that the decision about whether to be screened should be an individual one. For men age 70 years and older, the potential benefits do not outweigh the harms, and these men should not be screened for prostate cancer. Harms of prostate cancer treatment include erectile dysfunction, urinary incontinence and both-ersome bowel symptoms.”

The USPSTF also found too high an incidence of overdiagnosis: “PSA-based screening for prostate cancer leads to the diagnosis of prostate cancer in some men whose cancer would never have become symptomatic during their lifetime. Treatment of these men results in harms and provides them with no benefit. This is known as overdiagnosis, and follow-up in large randomized trials suggests that 20% to 50% of men diagnosed with prostate cancer through screening may be overdiagnosed.”

Today, before you do anything, there should be an indication that there is cancer. Next comes a two-step diagnosis using DRE and PSA exams. Only then should a tissue biopsy be done. By the time a man reaches 80 years of age, almost all of them have some indication of prostate cancer, usually not

life-threatening.

What if early cancer is detected? Dr. Kim describes the next steps. “At the University of Maryland Medical Center, a team of board-certified urologists and interventional radiologists (Drs. Siddiqui, Naslund, Richard, Fang and Nezami) uses MR-fusion or real-time MR-guided precision biopsies, patients get a fast, accurate diagnosis so they can begin treatment. Once it requires focal treatment, we use focal laser ablation, Nanoknife ablation, Cryoablation or ultrasound ablation, which is highly accurate and precise at the local level. Recovery is quick, doesn’t harm adjacent organs, and can better preserve sexual and urinary functions. Eventually, we’ll be able to use robotics to be even more accurate.”

#### What Are Your Next Steps?

Talk with your primary care physician. Assess your risk factors and then decide together what to do next.

For the majority of men, prostate cancer will not adversely affect your health. That doesn’t mean you should bury your head in the sand, just that the odds are in your favor. Newer diagnostics and technology will ensure you have the best possible outcome, no matter what form, if any, your prostate cancer takes. You are in good hands.

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## Remote Patient Monitoring

*The global health care industry is undergoing a paradigm shift, providing significant opportunities to deliver more integrated solutions across the continuum of care - from prevention, diagnosis, and treatment to monitoring and aftercare.*

– Frans van Houten,  
CEO of the Dutch company  
Royal Philips Electronics

With all the digital tools available today, especially those that measure various symptoms, records relevant daily behaviors, and biometrics to ensure proper identification of the individuals, health care is taking a huge leap forward.

Prevounce ([www.prevounce.com](http://www.prevounce.com)), a company that provides software for Remote Patient Monitoring, describes an RPM program as the “use of digital technologies to monitor and capture medical and other health data from patients and electronically transmit this information to healthcare providers for assessment and, when necessary, recommendations and instructions.” Another benefit for using RPM is reduced travel costs and, since many patients are immunocompromised, less contact with others, so they are far safer.

Johns Hopkins Home Care Group is working with community organizations, using these tools to help patients monitor their own care, recognize actions or behaviors that may make them worse, and what to do when that happens. Working with multidisciplinary teams, they improve the patients’ health by also providing education on what they need to do. The best part is that both patients and clinicians work from the same data.

This innovative program is being tested with a group that includes patients from all demographics: Medicare/older adults, Medicaid, Dual eligibles (Medicare-Medicaid enrollees), Privately insured, Individuals with multiple chronic conditions, Frail/disabled, Younger adults.

Another goal is to limit and/or decrease emergent care visits and readmissions, the use of telehealth instead of in-person visits, and reducing costs associated with chronic illnesses.

Maryland’s Department of Health is also offering various groups the option of using Remote Patient Monitoring (RPM) for those with chronic conditions to those with chronic and/or acute conditions. Management of home health agencies, hospitals, clinics, federally qualified health centers, managed care organizations and other health professionals, can apply to the State of Maryland for preauthorization.

It’s easy to see why RPM is so attractive for patient/clinician interactions. Because of the pandemic, according to Prevounce, “The federal government recognized this as well, which is why it expanded Medicare coverage of RPM services from just those with chronic conditions to those with chronic and/or acute conditions, among other changes that supported the increased use of RPM.

Prevounce touted another benefit for all of us whether or not we have chronic conditions. It says if we can reduce costs, health care practitioners can pay better attention to prevention of disease and well-being. “With remote physiologic monitoring, access to care is greatly expanded and changes in health status can be addressed quickly to avoid crisis. This could translate to substantial annual savings thanks to reduced emergency room visits and hospital admissions and readmissions.

Programs such as RPM are the wave of the future. Yes, there are times when a face-to-face meeting with your physician is preferred. But, for the most part, many of these interactions can occur remotely, saving costs related to travel and wait times. It also means that when we do meet, the conversations are more focused and productive on both sides. If our doctors have more time when we need it, we all win.