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Humanwide program uses data-driven, integrated team approach to predict, prevent disease

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Proactive, personalized care detected overlooked health conditions and risks

A Stanford Medicine pilot program combining cutting-edge tools of biomedicine with a collaborative, team-based method, offers a new approach to personalized health care that captures the promise of Precision Health: to predict, prevent and treat disease based on the individual patient.

Through the Humanwide project, primary care teams at Stanford Medicine's Primary Care 2.0 clinic in Santa Clara, California, merged high-tech and high-touch interventions to provide a diverse group of 50 patients with care that treated the whole person based on his or her unique factors, from genetics to lifestyle. Over the course of a year, the program succeeded in identifying previously undiagnosed conditions and future health risks, setting patients on a path to avert serious medical problems, such as cancer and heart disease.

"Our vision of Precision Health is to predict, prevent and cure—precisely," said Lloyd Minor, MD, dean of the Stanford University School of Medicine. "With Humanwide, we have begun to realize that vision in a clinical setting. The information gathered in this pilot suggests approaches to primary care that may ultimately benefit thousands of people."

A paper published today in *Annals of Family Medicine* outlines initial learnings from Humanwide. The authors are Megan Mahoney, MD, Stanford Medicine's chief of general primary care, and Steven Asch, MD, vice-chief of primary care and population health.

Mahoney, the lead investigator, said the Humanwide design shifts the focus of primary care to detecting disease earlier, strengthening the relationship between the patient and care team and deploying the latest health technology.

"With Humanwide, we're able to focus on the whole human: who they are when they're working, who they are when they're playing, who they are when they're at home," she said. "This program demonstrates how we can zero in on what matters to a patient, to craft the entire care plan around their goals."

Redesigning primary care

Humanwide was built on the foundation of Primary Care 2.0, the health care practice redesign effort at Stanford Medicine, where patients communicate regularly, in-person and virtually with members of a care team consisting of a primary care physician, nutritionist, behavioral health specialist and clinical pharmacist, depending on their health needs.

Patients in the Humanwide pilot represented a diverse mix of ages, races/ethnicities, genders and medical complexities.

As part of the pilot, Humanwide patients:

- Underwent genetic assessments and a pharmacogenomic screening, which evaluated their individual physiologic response to medications based on their genetic profile.

- Used mobile monitoring devices, including a glucometer, pedometer, scale and blood pressure cuff, to regularly measure key health metrics. The data automatically uploaded to their electronic health records for remote monitoring by their health care team.
- Worked with a certified health coach to identify wellness goals and create a plan for achieving them.

Through these initial assessments, regular interactions and continuous monitoring, health care teams gathered data on each patient on a variety of factors known to influence health: activity, behaviors, biometric measurement, genetic factors, biological markers, care-utilization data and environmental exposures.

Team members met regularly to review the multiple streams of data for each patient, and this continuous access to information and engagement with patients enabled them to pinpoint health risks and take preventive action.

"We saw this as an opportunity to bring in more data that was previously not available, so that we now have an unprecedented understanding of our patients' risks," Mahoney said. "Now we have the ability to proactively take care of them in a way we've never had before."

Improvements in patient health

Through Humanwide's comprehensive approach, Mahoney and her team detected and treated a range of health concerns previously overlooked. For example, among 33 women who were screened for breast cancer risk, five were identified as having a very high risk and in need of ongoing, enhanced surveillance.

Pharmacogenomics screening resulted in more than a dozen changes in

medication prescriptions or dosages, including an adjustment that relieved pain for a patient experiencing persistent leg cramps from statins. Additionally, continuous readings from home-based devices helped providers identify early diabetes or hypertension in several patients and work with them to manage their risk. More extensive testing revealed masked hypertension in one patient who was at high risk of cardiovascular disease, and his team helped control his condition through medication and lifestyle changes.

Patients said they liked the strong connection with their care team and the opportunity to apply their personal data to their health.

"I loved the fact that you could get all of this precision health information to help your doctor and your caregiving team better pinpoint how to manage your health specific to you," said participant Debbie Spaizman. "I got everything out of it that I had hoped for, and more."

Another important finding involved provider satisfaction: Clinicians reported that they felt more engaged in their work when sharing the goal of caring for a patient with a like-minded team.

"Nearly half of all practicing physicians report at least one symptom of burnout, and that's a huge concern for me," Minor said. "That's why it's so important for programs like Humanwide to consider the experiences of both patients and physicians."

David Entwistle, president and CEO of Stanford Health Care, said the pilot also paves the way for a new mindset about patient wellness.

"Looking at genomic data and other factors that actually predict patient health allows us to be proactive instead of waiting for something to happen and having to react to that," he said. "Humanwide is an opportunity to build a deep understanding of each patient in a unique

way."

In their paper, Mahoney and Asch noted that the Humanwide pilot demonstrates the feasibility of creating a comprehensive, patient-centered, data-driven environment, and that both patients and health care providers are receptive to using new tools and data streams to transform primary care. Mahoney added that the project offers insights for the future use of detailed population health data to benefit individual patients.

Asch, who led evaluation of the pilot, said, "Humanwide is the future of primary care. It's a future that looks at the patient as a whole person. It's a future that collects data very broadly. And most importantly, it's a future that helps patients achieve their goals, rather than treating them like a collection of diseases."

More information: Megan R. Mahoney et al, Humanwide: A Comprehensive Data Base for Precision Health in Primary Care, *The Annals of Family Medicine* (2019). DOI: 10.1370/afm.2342

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