Lilly, Evidation Health and Apple Study Shows Personal Digital Devices May Help in the Identification of Mild Cognitive Impairment and Mild Alzheimer's Disease Dementia

August 8, 2019

INDIANAPOLIS, Aug. 8, 2019 /PRNewswire/ -- Initial results from a feasibility study conducted by Eli Lilly and Company (NYSE: LLY), Evidation Health, and Apple Inc. (NASDAQ: AAPL) showed that an iPhone, Apple Watch, iPad and the Beddit sleep monitoring device, in combination with digital apps may be able to differentiate people with mild cognitive impairment (MCI) and mild Alzheimer's disease dementia.[1] The exploratory results were presented today at the Association for Computing Machinery's KDD conference in Anchorage, and are published on the conference website as one of the top papers of the conference.

"Over the past few years, we've seen how data and insights derived from wearables and mobile consumer devices have enabled people living with health conditions, along with their clinicians, to better monitor their health," said Nikki Marinsek, Ph.D., a first author and data scientist at Evidation Health. "We know that insights from smart devices and digital applications can lead to improved health outcomes, but we don't yet know how those resources can be used to identify and accelerate diagnoses. The results of the trial set the groundwork for future research that may be able to help identify people with neurodegenerative conditions earlier than ever before."

"Lilly has been leading the fight against Alzheimer's disease for more than 30 years, and we're broadening the application of digital health to identify tools that may improve the lives of people with chronic conditions and diseases," said Divakar Ramakrishnan, Ph.D., Lilly's chief digital officer. "While further research is needed, the study findings provide important insight into the potential benefits of wearable devices in identifying chronic health conditions such as MCI, Alzheimer's disease, and dementia. These findings could inform subsequent research that may eventually lead to early screening or detection tools for neurodegenerative conditions."

In ways not previously detected through common clinical screening tools, data obtained through the use of Apple devices suggested an ability to differentiate between individuals with mild cognitive impairment and mild Alzheimer's disease dementia, and those without symptoms. The 12-week study evaluated 113 participants, ages 60-75, in real-world settings to determine whether Apple devices in combination with mobile applications, were able to help identify cognitive and behavioral differences among the study participants with and without mild cognitive impairment.

Evidation established a secure study platform to obtain study participants' consent to collect and analyze 16 terabytes of data across a number of sources, including: passively derived sensor data from the smart devices, questionnaires about mood and energy, and simple assessment activities on the Digital Assessment App.

The App included psychomotor tasks, such as dragging one shape onto another or tapping a circle as fast and as regularly as possible, reading tasks and a typing task.

"With further study, we may be able to screen people at high risk or detect dementia and Alzheimer's earlier with the devices we use in our everyday lives," said Christine Lemke, co-founder and president of Evidation Health. "These early findings suggest the potential of novel digital measures that are based on data generated and controlled by individuals."

"We are excited to work alongside Lilly and Evidation in supporting the research community, as they seek to discover digital biomarkers of cognitive impairment," said Myoung Cha, Apple's Head of Health Strategic Partnerships.

The findings of the exploratory study provide feasibility evidence that wearable devices could enable solutions that may help identify and indicate when people are starting to experience cognitive decline. Specifically, these results show that Apple devices and digital applications may have the potential to:

- Monitor symptoms of people diagnosed with MCI or mild Alzheimer's disease dementia;
- Detect cognitive changes that could be indicative of MCI;
- Test the efficacy of treatments and therapies; and
- Accelerate the development of therapies used in conjunction with traditional diagnostic tools to improve accuracy of diagnoses.

About Eli Lilly and Company
Lilly is a global healthcare leader that unites caring with discovery to create medicines that make life better for people around the world. We were founded more than a century ago by a man committed to creating high-quality medicines that meet real needs, and today we remain true to that mission in all our work. Across the globe, Lilly employees work to discover and bring life-changing medicines to those who need them, improve the understanding and management of disease, and give back to communities through philanthropy and volunteerism. To learn more about Lilly, please visit us at www.lilly.com and www.lilly.com/newsroom/social-channels. **C-LLY**

About Evidation
Evidation Health is a new kind of health and measurement company that provides the world's most innovative life sciences and health care companies

the technology and expertise they need to understand how everyday behavior and health interact. The volume of behavior data generated from smartphones and connected sensors — including wearables and medical devices — has opened up new ways to analyze individuals' behavior and health in real time, unlocking insights into what medicines and treatments work best and spotting significant changes in health earlier. The scale and utility of everyday behavior data has the potential to be one of the most transformative forces in medicine, and Evidation Health is leading the way.

Over the years, Evidation has built the largest, most diverse virtual pool of research participants through its proprietary and popular app, Achievement. With a direct and trusted relationship with more than 3 million individuals, its deep research expertise, and its data platform, Evidation Health can undertake real world research for life sciences and health care companies — and, ultimately, transform how health is measured and how diseases are identified, treated, and monitored. Founded in 2012, Evidation Health is headquartered in San Mateo, Calif., with additional offices in San Francisco and Santa Barbara, Calif. To learn more, visit evidation.com, or follow us on Twitter @evidation.

1. Chen R, Jankovic F, et al. Developing Measures of Cognitive Impairment in the Real World from Consumer-Grade Multimodal Sensor Streams. In The 25thACM SIGKDD Conference on Knowledge Discovery and Data Mining (KDD '19), August 4–8, 2019, Anchorage, AK, USA. ACM, New York, NY, USA, 11 pages. https://doi.org/10.1145/3292500.3330690.

Refer to: Mark Taylor; mark.taylor@lilly.com; 317-276-5795 (Lilly)
Rachel Katz; evidation@crosscutstrategies.com; 202-792-7200 (Evidation Health)

C View original content to download multimedia:http://www.prnewswire.com/news-releases/lilly-evidation-health-and-apple-study-shows-personal-digital-devices-may-help-in-the-identification-of-mild-cognitive-impairment-and-mild-alzheimers-disease-dementia-300898719.html

SOURCE Eli Lilly and Company