

Enabling Patient Centric Research and Care

Through the Use of Smart Technology

Creating a forum for rapid learning through the study of dementia and early cognitive decline

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Hypothesis

The ability to effectively and efficiently engage patients in different activities and maintain their engagement over long periods of time is a critical capability that companies must have to keep their market-leading positions in the Health and Life Sciences (HLS) industry.

We believe that a direct-to-patient approach is important and that digital capabilities that leverage smart devices and technology will become increasingly central to this strategy. The capability to engage patients can be applied to multiple business functions within the HLS market. These include patient recruitment for clinical trial and into pre-formed, long-term communities that can serve as reservoirs of pre-qualified patients for trials, medication adherence programs (valuable to both pharmaceutical companies as well as risk-bearing health systems), registries and observational research, and over time, be used to enable precision medicine. Finally, we believe that neurodegenerative diseases including dementias are diseases in which early identification of normal, at risk patients represents a great use case for near term application and learnings regarding patient engagement and retention strategies leveraging smart technology.

Background

Smart devices offer a unique opportunity to collect a large amount of data in a “low friction” manner and have the potential to quickly become a disruptive technology in our industry. For example, in the area of cognition, there are many ways that smart devices could be used to detect early cognitive decline and track disease progression. For example, analyzing routine text messages and emails for errors, processing speed and other grammatical errors can detect mild cognitive changes. Additionally, it is well recognized that as a dementia progresses, one’s social ecosystem shrinks. Smart devices can detect indirect measures of social interaction by tracking overall movements as well as how many other devices (i.e., people) the owner interacts with. Also, analyzing speech samples and studying one’s ability to use new apps and perform simple smart device functions are additional ways passive measurements can track cognition. If these “low friction” methods can be studied in parallel with games that measure response time and various aspects of cognition, as well as more traditional assessments (such as the AD8, MMSE, ADAS Cog, RBANS and CDR-SB or future validated cognitive tests), then over time these passive measures can be scientifically validated and eventually become end point for clinical trials and registries. In addition, smart devices have the ability to track tremor, falls and overall mobility in a low friction manner which can be applied to a variety of movement and muscle disorders.

In 2014, Apple developed HealthKit, an open source software framework that makes it easy for researchers and developers to create apps that could revolutionize medical studies. Additionally, the company has worked with leading electronic health record (EHR) vendors including Epic and Cerner to allow information from HealthKit to flow into a

patient's EHR (currently this is unidirectional from the device to the EHR). In March 2015, Apple announced ResearchKit, an application specifically focused on enabling research through the use of Apple smart devices. Within several days, tens of thousands of patients signed up for the five research trials enabled by this application. ResearchKit consists of three modules that can be used by developers to build research studies. The current modules include one that enables consents for study participation, one for developing surveys, and one for linking to devices and sensors. ResearchKit will exist in an open source community model and a software development kit (SDK) was recently released to the public. Although the concept of ResearchKit is exciting and has the potential for being a disruptive force in our industry, the three current modules do not have all the functionality needed to enable complex trials and registries.

Quintiles is actively working to gain real world experience developing applications using smart devices for engaging patients digitally. We are building out components for ResearchKit that will enable a host of functions that will promote patient engagement in clinical trials and registries.



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The opportunity

Quintiles believes that smart devices and direct-to-patient research will be disruptive forces in the health and life sciences industry. We are already investing in this space and will continue to do so. However, we see tremendous value in working together with a group of leading pharmaceutical companies to co-develop applications leveraging smart devices to facilitate new models of patient-centered research. We also believe focusing on real-life applications in one therapeutic area (neurodegenerative diseases, including dementia) where there is a definite need for new models of finding patients at risk and then engaging them in long-term follow-up is a great way to learn how to apply these new approaches, as well as to help solve real world challenges.

We welcome the opportunity to discuss how we could work together to make healthcare better. For more information, please contact Quintiles at researchapps@quintilesims.com.

About the Authors



Brian Kelly, MD

President, Payer & Provider Solutions

Dr. Brian Kelly joined Quintiles in 2012 to lead the company's Payer and Provider Solutions businesses. In this global role, Dr. Kelly is responsible for leading the development and execution of Quintiles' business strategy for these market segments.

Prior to joining Quintiles, Dr. Kelly was the Head of Informatics and Strategic Alignment at Aetna, leading its efforts to measure the quality and affordability of healthcare. Dr. Kelly joined Aetna in 2008 as the National Medical Director for Aetna's large commercial clients. Prior to Aetna, Dr. Kelly worked at Accenture where he led its global electronic health record practice and consulted for numerous health plans, hospitals and governments, with a primary focus on using information technology to improve health care. Dr. Kelly is a former Navy neurologist and intensive care medicine specialist. He retired from the Navy in 2003 with the rank of Captain.

During his 20-year military career, he served as Head of the Critical Care Medicine department and a staff neurologist at the Navy's flagship hospital in Bethesda, Maryland. While at Bethesda, Brian developed significant expertise in the emerging field of neuro-critical care and served as chairperson of the Neurocritical Care section of the American Academy of Neurology. Dr. Kelly holds a medical degree from New York Medical College; a master of business administration from George Washington University; a master of science in Bioengineering from Clemson University; and a Bachelor of Arts in Russian, Premed from the College of Holy Cross.