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How AI Can Improve Understanding of Patient's Behavior and Symptoms

Running and managing clinical trials, at the most basic level, is about creating a foundation to get the best possible data. While a great deal of thought goes into recruiting the right patients and developing the most effective protocols, initiatives designed to improve the experience for the patients while at the same time gathering cleaner, more accurate data are relatively new. There are many exciting potential applications of AI in clinical trials. In terms of understanding patients' behavior and symptoms, there are a couple of very impactful opportunities. The first is the opportunity to use tools like computer vision to objectively assess symptoms that have traditionally been very subjective, especially in areas such as depression and other CNS disease. The other is that it can be used to extend a site's ability to support, monitor, and assess patients outside of the clinic, in a way that is simpler and less intrusive for patients but that can lead to better compliance and better data, which is exceptionally important especially during COVID-19.

What Makes Patient Engagement Difficult?

How engaged a patient is in a clinical trial will be dependent on many factors, and is likely to change over time depending on their experience within the trial. The main way of ensuring that a patient stays connected and motivated is through the interaction with their site, when this interaction is restricted to just the small amount of time the patient spends at a site visit, the likelihood of patients dropping out, or losing motivation increases. While more and more interaction with consumers is going mobile, the clinical trial industry is still struggling to provide sites and patients with the tools to stay suitably connected between site visits. The lack of visibility into how a patient is doing with things as simple as taking the medication each day makes it hard for sites to provide the right support to the right patient and the right time.

> Technology can be extremely useful in helping patients to manage their study participation along with the litany of other life responsibilities. At the same time, it can ease the burden for study teams, allowing them to have more meaningful interactions with patients.

A Better Way

The world is getting more and more connected, which means that there is a high probability that patients have a smartphone with them at all times. This provides a unique opportunity to not only collect new and better data but also to assist the patient at every step in their clinical trial journey, not just when they are physically on-site. Patients can receive regular reminders and guidance on taking their medications, completing an assessment, or attending clinic visits. Applications can utilize a phone, and the in-built cameras to use AI and computer vision to confirm activities such as taking their medication or to record more frequent, less intrusive, interactions for longitudinal assessment of disease symptoms. This always-on link between the patient and site allows the site to know who needs help and when. Patients are able to receive support when they need it, often eliminating the need for additional clinic visits. This can be a breath of fresh air for patients who no longer need to worry about remembering each assessment or dose, whether they took it correctly or if it was recorded correctly. Sites and sponsors get the benefit of complete and accurate data, all in one place.

The Power of Remote Engagement and Assessment

Patient retention is a top priority in every clinical trial. Patients who drop out, do so for predictable reasons: They lack a fundamental understanding of what is required of them during a trial, or they struggle to stay organized and fit the requirements of the study into their already busy lives. Leveraging AI and predictive analytics enable study teams to predict how a patient will behave during a clinical trial with high accuracy within the first few days. They can use this data to recruit patients who are more likely to comply with the study protocol or can proactively provide support to ensure patients stay on track.

Furthermore, patients can be assessed remotely between clinic visits using digital biomarkers. Using facial and voice recognition and the front-facing camera of a smartphone, patient symptoms can be assessed, measured, and recorded. For example, speech patterns and facial expressivity can indicate if a patient is experiencing depression, or the smartphone camera can measure and record a facial or hand tremor. A computer-vision and AI platform can enable study teams to collect, curate, and annotate these patient insights extracted with cutting-edge analytical tools.

A Focus on the Patient Helps Us All

A positive patient experience can go a long way to improve data through better retention and dosing support. A patient who feels supported is more likely to remain engaged through the course of the trial.

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AiCure *is an AI and advanced data analytics company that monitors patient behavior and enables remote patient engagement in clinical trials.*
For more information, aicure.com.