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Pharma's Digital Transformation: How To Best Incorporate Wearables Amid An Evolving Landscape

The COVID-19 pandemic has accelerated pharma's digital transformation and spurred a restructuring of the clinical trials landscape. While some clinical trials had harnessed decentralized trials and digital health technologies – such as wearables, sensors and apps – before the emergence of the pandemic, disruptions have forced sponsors, clinicians and regulators to embrace digital's full potential to keep clinical trials moving forward.

Since the onset of the pandemic, social distancing measures and restricted travel have decreased patient mobility and investigator and site availability – disrupting clinical trials and drug programs. Approximately 1,000 organizations have reported trial disruption, consistent with a reported nearly 80% decrease per site in new patients entering trials in April 2020 compared with April 2019. Further, of all active trials in ClinicalTrials.gov, 13% reported increases in trial duration in March through May 2020, compared with 9% over the same period in 2019.[1]

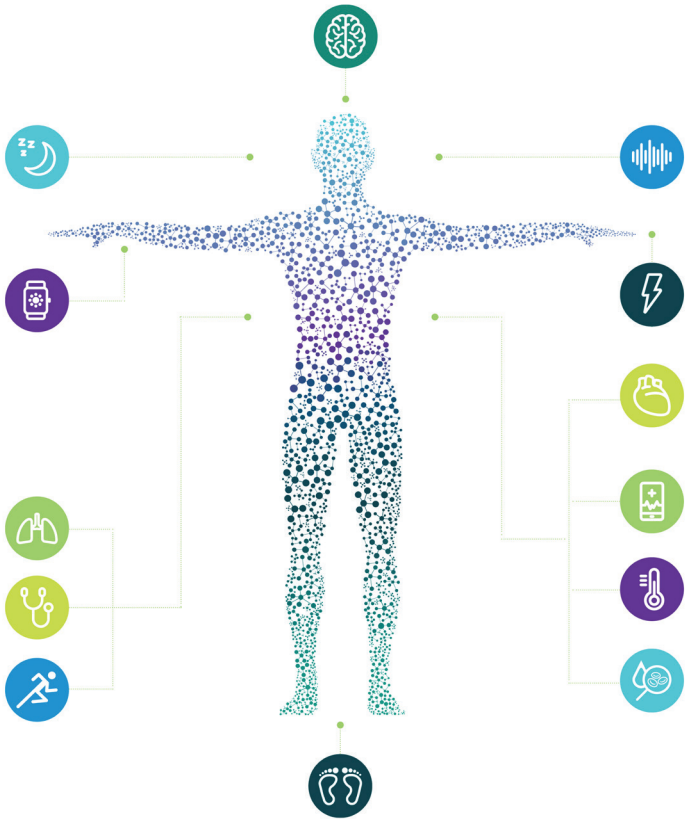
As clinical trials proceed, sponsors will need to determine the best way to quickly move forward with delayed trials. Further, pharmaceutical and biotech companies will have to plan for the next wave of challenges, such as deciding how to address those trials for which data may already be compromised.

The challenges that the coronavirus poses to clinical trials may persevere until vaccines or more effective treatments become widely available. As such, global trials may continue to see disruptions amid regional virus resurgences, as some countries recover and others remain on lockdown. So, how can clinical trials be reimagined to better prepare for future disruption?

Over the coming months, and possibly years, sponsors will need to consider agile trial designs that integrate virtual elements and wearables. To maximize the value of incorporating wearables into a clinical trial, they will need to understand how to implement an end-to-end approach. At ICON, our framework maps the transition from device selection to digital endpoint validation, leading to a better understanding of the operational excellence needed for managing data and mitigating risk.

KEEPING TRIALS ON TRACK WITH WEARABLES AND VIRTUAL TRIALS

The spread of COVID-19 challenged traditional clinical trial models, requiring a shift to more patient-centered, decentralized clinical trial designs. Sponsors had to rewrite protocols to allow



for remote patient monitoring and in-home delivery, in addition to other digital capabilities, such as telemedicine, to keep clinical research viable. Among major pharma companies, 60% are already using telemedicine for trial visits in response to the COVID-19 crisis.[2] In fact, investigators reported 57% of patient interactions and 79% of interactions between sponsors and contract research organizations (CROs) are taking place remotely, according to a recent report in *Nature Reviews Drug Discovery*.[1]

During this time when patients may be unable to visit sites for assessments, due to compromised immune systems or travel restrictions, digital health technologies can provide remote patient monitoring to collect vital data. Wearables and sensors can gather data on patients' biometrics and functionality, including

gait, heart rate variability, sleep, glucose monitoring and sweat analysis, effectively capturing how a treatment or disease affects them every day.

In addition, sponsors can apply digital health technologies to preventive monitoring. Wearables can detect changes in heart rate, sleep patterns and other variables, potentially detecting whether an individual may be infected with the COVID-19 virus. By providing an early warning, wearables could help prevent or halt transmission.

As patients are able to access the options of home care and remote monitoring, visits to sites and clinics will be reduced, further accelerating the adoption of the virtual trial model. At the same time, virtual trials will free up hospitals and clinics so they can better allocate resources to improve management of patients infected with COVID-19 or who have other essential medical issues.

A FRAMEWORK FOR IMPLEMENTING WEARABLES

The integration of wearables into trial design starts with choosing the necessary digital endpoints. Digital endpoints harness the data from sensors and other digital health technologies that are collected during an individual's everyday life, allowing for the capture of existing measures in a new way. Using digital endpoints places the patient at the center of a clinical trial, as endpoints need to be clinically significant and meaningful to individuals.

To maximize the value of wearables in a clinical trial, sponsors will need to understand how to implement an end-to-end approach. Combining the experience of a dedicated digital health technology team and patient-centered scientists can help sponsors create a framework to map the process from device selection to digital endpoint validation. Adopting a framework, such as the one outlined below, can set trials up for success – especially during times of crisis when managing data and mitigating risk are of the utmost importance.

Step 1: Adopt a patient-centered approach

Using a patient-centered framework that has evolved from proven clinical outcome assessment (COA) principles and techniques can help build the evidence required for submission to regulatory bodies. Previously, the industry focused on the selection of devices for use in clinical trials, and not the endpoints. Today, however, sponsors must shift their attention to endpoints, particularly those that are meaningful to patients. In some instances, endpoints may be focused on assessing improvement in everyday functioning, while in others, it will be about measuring stability or deterioration in a condition – how quickly, and by how much. Once sponsors understand which outcomes are meaningful to patients, they then can begin to identify and select the optimal measures to assess these endpoints.

Step 2: Select the device, along with evidentiary requirements

After identifying relevant, patient-centered endpoints, sponsors can next consider device selection, which includes device identification, patient acceptance testing, and technical usability and feasibility testing.

Sponsors will need to select the evidentiary requirements necessary to support device selection, including any gaps that need addressing. Collecting evidence could include using existing literature, developing a validation plan or using an industry-led endpoint qualification. COA instruments may be applied to help fill gaps and evidentiary needs. Further, sponsors will have to consider how to collect and interpret data from the device and establish meaningful change thresholds for each novel digital endpoint.

Step 3: Adhere to operational excellence in digital endpoints

Operations are essential to ensure robust, accurate and compliant data collection. Overlooking operational excellence can jeopardize endpoints. Here, sponsors need to consider the end-to-end process holistically and implement risk contingencies, including data management and compliance. For example, sponsors will need to decide how to manage missing data, whether random (e.g., patient takes device off in the shower) or not (e.g., patient takes device off because it is itchy), to ensure the data collected throughout the study remain usable.

Moreover, sponsors should provide plans to capture and address non-compliance with regards to when, where and how often a device is worn and the loss or malfunction of a device. As such, patients will need device training, as well as an understanding of how data will be shared. Sponsors should set up patient support, including direct outreach, reminder apps and dedicated help desks, to keep patients compliant and engaged. Lastly, site and study staff should be device trained, and equipped and prepared with firewalls, ample storage and technology support.

THE POST-PANDEMIC CLINICAL TRIAL LANDSCAPE

Drug and device developers will need to embrace innovation and plan for a future with evolving regulations, new digital technologies and transformed clinical trial designs. We will witness the industry pushing the boundaries on digital, data and analytics strategies, as sponsors continue to deploy remote assessment of vitals and use digital endpoints, increasing virtualization of trials.

Sponsors will need to consider the digital patient journey, as the demand for virtual trials continues to rise. Equally important, as future crises emerge, including possibly the next pandemic, succeeding clinical trials will have to build in more flexibility for virtual and digital elements to mitigate risk and to prepare for uncertainty.

However, implementation brings new challenges, including patient acceptance, device suitability, data management complexity, and privacy and security issues. Having a strategic partner with wearables and COA expertise can help to mitigate risk and lead to the successful use of digital endpoints.

www.iconplc.com/wearables

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