

## Benefiting eCOA Through the Right App Strategy

Electronic clinical outcomes assessment (eCOA) providers are facing heightened demand for user-friendly, accessible solutions that facilitate hassle-free participation in clinical trials. This has sparked debate on how to deliver apps across the different operating platforms of iOS, Android and Windows in order to provide the best user experience. In particular – and for good reason – the use of native apps is becoming an increasingly popular choice.

The way providers capture data, be it through native apps or web-based diaries, will be determined by the way mobile technology is accessed – something which can vary markedly across patient populations.

Apps can be presented in three ways, all of which come with an icon on a mobile device's home screen. However, native apps, web apps and mobile websites all have fundamentally different architecture and therefore features. When evaluating which option would best suit a particular study, sponsors should weigh up the benefits and limitations of each option:

Native apps are a form of downloadable software which is coded to run directly on a mobile device's operating system. The key advantage of using this type of app is that they can be used without a mobile or internet connection, making them significantly more versatile than other options. They also have the ability to interface directly with the inbuilt functionality of mobile devices, including cameras and Bluetooth®. This allows medical devices such as spirometers and glucometers, as well as wearable technology such as activity trackers, to be easily connected to collect objective data.

Another important benefit is their ability to provide a consistent look and feel across all screens and device types. These capabilities, along with their suitability for use in transcribing patient diaries, make native apps a very comprehensive solution for the market, helping to deliver clinical programmes in a timely, cost-effective manner across all platforms.

Native apps allow displays to be optimised to suit the specific user population, which is great for older patients or patients with disabilities, and they are automatically adapted to the controlled accessibility settings of their personal device. They are similarly ideal for use in geographies with unreliable connectivity, as data can be stored locally in an encrypted form, protecting patient data until connectivity is restored.

Until recently, the most common approach to data capture has been via web apps using HTML5. This type of solution facilitates speed to market – there is one fundamental build which is embedded into a code base

that enables them to run on different mobile operating systems. However, unlike native apps, this does not enable the layout to be optimised for the device in use, meaning natural button configurations cannot be incorporated. This may create a barrier to use for some patients who would need to become familiar with the new user interface.

Although web apps may look and feel like native apps, and while they boast a degree of interactive functionality as opposed to merely capturing information, they are incapable of readily accessing the inbuilt functions of mobile devices.

The third option, mobile websites, meanwhile, can be optimised for use on a mobile phone or tablet, and by their very nature include web-based functions that allow users to exercise a degree of control. Users can also store clinical trial companies' website URLs as icons on the home screens of their mobile devices. However, much like web apps, their functionality is limited compared to native apps in that patients may find themselves unable to tailor the website interface according to their individual requirements. Other drawbacks include connectivity issues and lack of data storage. For example, if a patient begins completing a diary entry but then loses connectivity during the process, data which had already been inputted would be lost and need re-entering once connectivity is re-established. Similarly, if there is no connectivity at the time a patient wishes to start completing a diary entry, data cannot be collected. This would result in a delay in recording the data and potentially invoking follow-up activities –creating another barrier to patient engagement.

In evaluating these options, sponsors should carefully consider their patient population, what kind of access patients have to mobile devices and, critically, how best to engage each individual patient within the clinical trial process. Although web apps have, to date, been a popular choice, their limitations are clear. It is through the use of native apps that mobile technology can extend the functionality offered by electronic patient-reported outcomes (ePRO), improving patient experience and expanding the opportunity for quality data capture in clinical trials.



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