Accelerating Cancer Patient Recruitment Through a Mobile Application (Clinical Trial Finder)

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1. Background

Engagement of both of patients and physicians is a central aspect of clinical trial recruitment. Without sufficient engagement and recruitment, clinical trials are frequently terminated early due to poor accrual or are unable to achieve results that are statistically significant. An estimated 19 percent of Phase II and Phase III clinical trials in Canada are terminated due to inadequate enrollment. Significant factors associated with research centers that suffer from poor recruitment include low physician referral rates, lack of awareness of clinical trials in patients, and a lack of available information regarding clinical trials. Cancer clinical trials (CCTs) face a particular challenge in engaging and recruiting patients. Only 55 percent of cancer trials in the United Kingdom were able to reach their originally specified recruitment goals. Among cancer patients CCT participation is as low as 3 to 5 percent. Only 10 percent of cancer survivors reported being aware that CCT participation was a possibility during their treatment. Additionally, among cancer patients made aware of potential CCT participation, 73 percent were made aware by their physician. This suggests that measures to foster physician and patient engagement and raise awareness of ongoing CCTs could provide access to a previous untapped source of participants in CCTs.

2. Goals

The University of Kansas Cancer Center (KUCC) at The University of Kansas Medical Center sought to accomplish this by developing a clinical trial finder application (app) that could be used by both patients and physicians. The design of the app centered on ease of use, a fluid referral process, and quick access to technical support. After researching features in clinical trial navigators that were commonly requested by physicians, the KUMC team landed on three such features to focus on. Firstly, physicians desired for clinical trial information to be easily accessible. This desire was addressed through designing our in-house clinical trial navigator as a mobile app. The second desire was an efficient means for physicians to filter trials by treatment circumstance as well as a simple means to weigh risks and benefits. This was addressed by having clinical trials be filtered in the app design from disease group all the way to treatment modality within cancer types. Lastly, physicians wanted to be able to easily find clinical trials by location. This last point led the KUCC team to restrict displayed trials to our health system. This decision was made because traditional clinical trial navigation systems typically include trials from all over the country and require extensive time or experience to navigate. A clinical trial application limited to trials from a local health system streamlines that process for local and regional physicians. The ability to use the application on a portable device further encourages engagement in physicians by allowed them to browse clinical trials while on the move.

3. Solutions and Methods:

In order to encourage physician engagement in clinical trials, our team focused primarily on addressing physician concerns regarding the process of making a referral. As previously mentioned, physicians desired information on clinical trials that were local, could be easily assessed for risks and benefits, and were internet accessible.

We included several secondary aims in development based on physician feedback. The first of these was to allow physicians to access clinical trial information on the go or at the bedside, as many physicians

expressed that they often did not have time to search for clinical trials at a desk. The second of these was allowing physicians to find trials without manual searching. This aim ties in to the first, where usability without manual searching would allow physicians to search for trials while on the move. The third of these was allowing physicians to differentiate between first line and second line treatment trials. The last of these was building a tool that would promote discussions of clinical trials at the patient bedside.

Very few universities have built a trial searching app, among those applications most of them are web-based and restricted to just a few research personnel. Others are specific to health systems such as Stanford's SCI Cancer Clinical Trials app. However, most of these apps and other trial search functions are designed for both patient and physician use. When designed this way, these systems typically do not provide much benefit to healthcare professionals for their medical expertise and lead to physicians spending similar amounts of time to laymen searching for trials before finding the information they need.

In designing the clinical trial application for physician referral use, The University of Kansas Cancer Center's aim was to capitalize on physician expertise to lead them more quickly to trials and minimize manual text searching.

4. Outcomes:
The figure below demonstrates a sample search process, which narrows available trials by disease working groups, then further by cancer type in that system, and lastly by first-line or second-line treatment.

These options follow a line of logic that is consistent with physician considerations in researching potential clinical trials, while still being accessible to laypeople. These options were also implemented according to the secondary aims of development. To allow physicians to access information on the go, options were laid out in a clear progression with full utility available through single button presses. A filtering system was implemented to allow physicians to find trials without searching by name. The first- and second-line filtering after trial type selection allows physicians to make those differentiations. This filtering process allows users to filter the available trials for display by broad characteristics, such as cancer type, as well as more specific characteristics like whether the treatment is first or second line. Lastly, the broad availability of the app would allow physicians to guide patients and families through the process at the bedside to provide a tailored list of available trials. All trials present on the app are currently open to recruitment at KUCC. With these features a physician will no longer need to find a workstation and manually search through trials to narrow results using national-level web-based trial finders. Instead, they can use the mobile app at the bedside or in a free moment to find trials quickly and easily. Additionally, because the information contained within the app is derived from clinical trial data that is captured daily, the app will consistently be updated with new trials or the removal of trials which have ceased recruitment.

5. Lessons Learned and Future Directions:
The KUCC Clinical Trial Finder app streamlines the physician referral process and can accelerate the process of enrolling eligible patients in the correct study for them. The simplification of this first step in patient enrollment can lead smoothly into the next steps, such as pre-screening tests. The trust that these patients have in their physicians can make a collaborative discussion tool such as this particularly beneficial. Considering that 73 percent of oncology recruitment is done through physician referral, it is crucial to develop clinical trial engagement tools that facilitate this process.
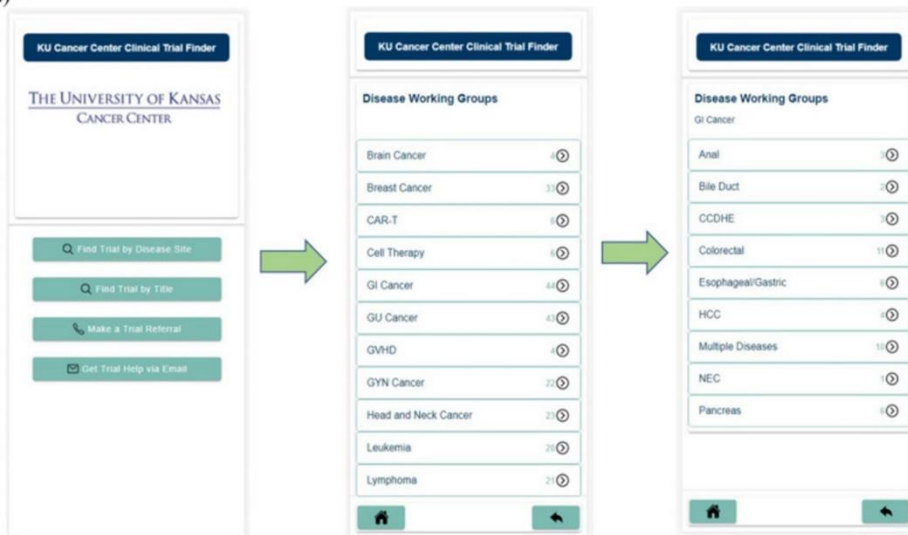
Currently over 600 users have downloaded the CT finder app since its launch in December 2020. The informatics team continues to work closely with physicians and the clinical teams across KUCC to solicit feedback that would help further optimize the application and streamline the data flow. Some of the feedback from the usability survey suggested that we should allow users to search using the study titles, as these contain key words which are familiar to clinicians. The informatics team was able to incorporate this feature in only a few weeks and it is currently available in the version that is deployed in the app store.

Future developments to the app would include the option to prioritize studies within the CT Finder. Through this feature, primary investigators would be able to easily collaborate and refer or recruit patients for prioritized studies. The other feature we anticipate including in the near future is to index studies based on current accrual rates. These indexes could then be displayed for primary investigators to track the progression of their studies through the app.

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