2388

eResearch suite: A comprehensive platform for electronic consent and data collection

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OBJECTIVES/SPECIFIC AIMS: The goal of the eResearch platform is to make consenting for clinical trials more convenient, accessible, and faster while retaining an ethical and informed consenting process. eResearch e-consent also allows for enhanced standardization and efficiency for research collaborations across academic research institutions, which, ultimately, helps drive discovery of better health care for our patients and communities. METHODS/STUDY POPULATION: The UMN's CTSI and AHC Information Systems developed software, called eResearch Suite, for electronic consenting. The eResearch Suite includes viewing a consent, a "Check Your Understanding" quiz to assess comprehension of critical study details, and a signature block that captures the participant signature electronically and with an automatic date and time stamp. The eResearch Suite also has the capability to randomize participants, track participants via a master list, collect participant data, collect internal study data, and generate emails to participants. The eResearch Suite platform is written in Ruby on Rails. RESULTS/ANTICIPATED RESULTS: We have pilot tested the eResearch platform with one study thus far. Preliminary results of the study show that all participants consented via eResearch, with 64% of participants consenting remotely via eResearch before their first study visit. Participants e-consented using various devices including desktop computers, tablets, and smart phones. Participants also filled out surveys and questionnaires before their study visits, which saved the study team time and money. DISCUSSION/SIGNIFICANCE OF IMPACT: eResearch electronic consenting (e-consenting) changes the way potential participants consent for studies. e-Consenting is important because it allows individuals, or their Legally Authorized Representatives, to consent remotely. This may be faster, more convenient for people, reduce coercion, increase comprehension, and allow for consenting information or process to be shared with an individual's family/friends. In acute and emergent settings we anticipate eResearch e-consenting will result in significant reduction of consent time by replacing faxed and paper consent with e-consent available via email and mobile devices. This allows legally authorized representatives to sign consent remotely, reduces the time physicians spend faxing consents, and allow them to avert more focus back on their patients. Time savings, whether for consent or study visits, may also result in a cost savings for studies.

2433

Real-time health activity reporting of citizens in Lagos, Nigeria using mHealth app node

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OBJECTIVES/SPECIFIC AIMS: This study sought to develop a mHealth application which was capable of predicting the spread of infectious diseases during the height of the Ebola outbreak in Lagos, Nigeria. Following the success of this primary task, the research then sought to understand behavioral health issues which are indicative of chronic diseases, such as sedentary behaviors and where they occur at a geospatial level in real-time. The results of this study are now being used to develop a larger scale 500 person study in Rochester, NY, USA. METHODS/STUDY POPULATION: During a 3-month period individuals were asked to install a mobile health application known as Node onto the their android device. Consent was done remotely, individuals were recruited through the Lagos University Teaching Hospital, Nigeria Institute of Medical Research, and the University of Lagos. Participants were paid 50 USD/month for each month of study completion, while continuous location data was collected in addition to survey information about participants. RESULTS/ANTICIPATED RESULTS: During the study period 70 individuals enrolled, using this data we were able to create network based models which indicated that diseases were more likely to spread at the beginning of the week, and also indicated who would be most susceptible to being patient zero. In phase 2 we have started to look at behavioral patterns to determine the risk of chronic disease among our study population, by examining their human mobility patterns, since we can determine average sleep patterns, activity patterns using machine learning classifiers, and time spent in traffic—all of which we can visualize in a real-time geospatial manner with higher objectivity than traditional mechanisms for data collection. DISCUSSION/SIGNIFICANCE OF IMPACT: In developing countries, using Nigeria as our example most chronic disease and household studies only enroll a few thousand participants for a country numbering 150 million plus. Using our rapidly available application we were able within 1 week to enroll 70 participants on 1 year of funding, this creates a framework for larger scale public health studies which can be done in developing countries and also demonstrates the value in mHealth which can both answer questions of infectious disease and chronic diseases at the same time. Our results indicate that at an infectious disease level in city environments diseases may be prevented by targeting events early in the week. While at a chronic disease level the lack of reliable power results in less sedentary behavior as individuals seek locations to charge phones, while those with more stable western-like lifestyles have started to exhibit the conditions which cause such outcomes as obesity, which has begun to rise in developing countries. Ultimately, these results serve as a staging point to launch a more wide scale study both in the United States and Nigeria within the year, now that feasibility has been established.

2502

mZAP (Zonas, Accion y Proteccion): Empowering communities with mobile strategies for mosquito-borne disease control in tropical environments

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OBJECTIVES/SPECIFIC AIMS: Our objectives with this project are to engage communities through technology creating a communication channel with affected communities and stakeholders about mosquito-borne illness, vector control and environmental health risk. Furthermore, engaging communities to electronically map ecological risks that impact mosquito-borne illness with the goal of creating a mobile application that will work as an ecological surveillance against mosquito proliferation and potential mosquito population reduction, and finally pilot test and evaluate potential benefits in communities where the application was used. METHODS/STUDY POPULATION: We propose a methodology to perform formative community work that will underscore a distributed, democratized ecological surveillance through an integration of multidimensional health behavior theories that address the challenges of ZIKV in Culebra, a marginalized island community off the coast of the main island of Puerto Rico. Using participatory design, we will develop, test, and evaluate users' experiences towards mobile applications using qualitative (interviews) and quantitative (survey) methodologies. A mobile application with the capacity of mapping, use of social-media, crowdsourcing, and photo-voice in a dynamic and simple way will allow community members to alert "hot-zone" locations to the stakeholders interested in creating ecological action in their community. This multidimensional concept integrates explanatory and prospective approaches and will generate systematic short-term solutions for mosquito control and long-term solutions providing the necessary tools for community empowerment. RESULTS/ANTICIPATED RESULTS: Our proposed design will facilitate better understanding of the interactions between community members and socio-environmental determinants of mosquito-borne diseases. Furthermore, our proposed project will not only facilitate communication among members of a community, but also it will provide a platform for engagement and empowerment, establishing a change in the preventive paradigm of how communities face the negative impacts of micro-ecologies that surround them. DISCUSSION/SIGNIFICANCE OF IMPACT: Our proposed community collaboratory mHealth tool mZAP! (Zonas, Accion y Proteccion) will address the lack of community participation efforts against mosquito-borne diseases contributed simultaneously by the disengagement and disempowerment of community members. mZAP! will serve as an innovative tool to engage marginalized and communities made vulnerable in Puerto Rico. This approach should be successful as Puerto Rico is one of the most digitally connected countries in Latin America, with high mobile phone usage rates and social media use. Using mZAP!, communities will report and map breeding sites, use social media and crowd sensing, targeting against powerful tools against mosquito ecologies in their own environments. This application could result in an effective way to change the paradigms for public health approaches to use Information Communications Technologies (ICTs) to empower communities.

2537

Usability and adoption of the first enterprise-wide app prescribing platform, RxUniverse, in an academic tertiary care hospital

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OBJECTIVES/SPECIFIC AIMS: To assess the usability and adoption of RxUniverse, a novel platform that enables health care providers to directly disseminate proven, evidence-based mobile health apps to patients.

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METHODS/STUDY POPULATION: Among 5 pilot clinical sites, 40 physicians and front-line providers consisting of medical assistants and receptionists were trained on the RxUniverse platform. They were instructed on the platform's purpose, were shown a demonstration of the functionality, and were observed in a trial process of prescribing an app. Specific implementation plans were designed with the help of the clinic staff in order to best fit in with their present workflows. The well-validated System Usability Score (SUS) was used to assess the usability of the platform. Prescriptions of 100 relevant app prescriptions within a 8-week pilot period was set as the adoption goal. RESULTS/ANTICIPATED RESULTS: Within the pilot period, greater than 2000 apps were prescribed across all users. Of the 40 providers trained on the RxUniverse platform, 26 prescribed >5 apps during the trial period. Of these 26 individuals, 18 prescribed >20 apps, 14 prescribed >50 apps, and 5 prescribed >80 apps; 58% of users reported frequent use (weekly or daily) of the platform. In total, 19 responses were received for the SUS survey. The RxUniverse platform received a usability score of 82%. DISCUSSION/SIGNIFICANCE OF IMPACT: As the pace of innovation continues to accelerate, health care providers will need to quickly integrate new digital-based tools into their workflows, and patients will need to be able to easily and readily access these tools. RxUniverse provides the necessary mechanisms, user-friendly interface, and EHR integration functionality to accomplish this. The total number of apps prescribed surpassed 2000, which far exceeded the initial target of 100 apps. The platform also scored an 82% on the SUS, which is considered an "A" by industry standards. By comparison, other health apps considered to have to be in the highest-rating groups have reported scores of 77.5% and an overall average of 68% among all systems. These outcomes demonstrate the high adoption and usability of the RxUniverse platform, an important platform that can be used to prescribe the latest technologies directly to patients.

2546

Mobile use patterns among low-income parents and teens enrolled in outpatient substance abuse treatment

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OBJECTIVES/SPECIFIC AIMS: This study sought to determine the accessibility, utilization, and preference for mobile phone use among a marginalized population of teens enrolled in an adolescent substance abuse treatment program and their parents. Specific study aims were to: (1) characterize mobile phone use, (2) assess the accessibility and reliability of mobile phone usage, (3) determine specific barriers to mobile phone use, and (4) examine parent and teen perceptions of the utility of integrating communication technology in substance use treatment. METHODS/STUDY POPULATION: In total, 103 (78.6% female; 75.7% Hispanic) parents of teens participating in an outpatient substance abuse treatment program with an average age of 42.60 (SD = 9.28) participated in our study. Upon enrollment in a substance abuse treatment program between October 2014 and July 2016, parents completed a technology use survey as part of program development and a chart review of clinic outbound calls to parent mobile phones was completed to evaluate reliability of parent mobile phone access throughout treatment. Survey collection among teens is ongoing. Study population information for teens will be presented at the conference. RESULTS/ANTICIPATED RESULTS: The vast majority of parents owned a cell phone and used it as their primary phone (97.1%); 83% of parents owned smart phones in particular, with the majority being Android phones (68.7%). Parents were more likely to have pay-as-you-go (41.4%) and yearly (32.3%) contracts, and only 15% of the sample endorsed changing their phone number more than once in the past year (64% = never; 21% = once). Parents reported using several of the phone features: text (97%), email (76%), pictures (93%), and accessing the internet (92%); 92% reported they did not have a texting limit; and the most popular use of the mobile phone was to send and receive text messages (58.6%), followed by accessing the internet (19.2%). During the course of a 10-week treatment program, the clinic made 2776 confirmation phone calls to parents who completed surveys. Report of accessibility matched the clinic's ability to reach parents. Of the 2776 calls, 97.2% were made to the original number provided, which was in service. Only 2.7% were determined to be disconnected, with the median number of days for disconnected service being 2 days with no voice and no texting capabilities (range = 14) and 2 days with no voice, but with texting capabilities (range = 28). In terms of parent perceptions of the utility of integrating communication technology in substance use treatment, 91% of parents reported they would be receptive to receiving text messages with parenting tips as aftercare support. Preferred content areas included: strategies for monitoring teen substance use (56%), strategies for using consequences (62%), suggestions for encouraging positive activities (62%), and ways to improve parent-child communication (63%). Accessibility, utilization, and preference for mobile phone use in a treatment program among teen respondents will be presented at the conference. DISCUSSION/SIGNIFICANCE OF IMPACT: This study characterized both subjective and objective mobile phone accessibility and usability among teens participating in an adolescent substance abuse treatment program and their parents. This study also provides information on teen and parent perceptions of using mobile phones during the aftercare period and ratings of acceptable messages following treatment. This data will help researchers design mobile-based interventions both during and after treatment, which is the future direction of our research group.

EDUCATION/MENTORING/PROFESSIONAL DEVELOPMENT

2018

The translational integrator: Facilitating collaboration and bridging the "Valley of Death"

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OBJECTIVES/SPECIFIC AIMS: Translating conventional and regenerative medicine strategies from the research laboratory into the clinic is a complex process that can delay bringing novel therapies to the patient. Navigating the increasingly complex regulation surrounding cell-based and combination product technologies is a major challenge for the translational biomedical scientist. To this end, Mayo Clinic created a new position, the "Translational Integrator," as part of the cGMP Biomaterials Facility in the Center for Regenerative Medicine. METHODS/STUDY POPULATION: The Translational Integrator educates investigators about FDA standards and regulatory pathways; determines where the product is on the translational spectrum; works to understand the science behind the product; determines what additional studies may be needed; supports investigators in preparing for FDA communications and submissions; and educates researchers about institutional resources and funding mechanisms needed to move their product into manufacturing and trials. A primary objective is to meet investigators at an early stage in product development to avoid conducting potentially redundant work to meet regulatory requirements. RESULTS/ANTICIPATED RESULTS: Robust training in clinical and translational research methodology enables the integrator to facilitate the collaboration necessary between investigators, clinicians, institutional resources, regulators and funders to move products towards FDA IND/IDE approval and first-in-human trials. It is an iterative process using technology/translational readiness criteria, project management and review by subject matter experts that is highly interactive and customized to each project. Current projects include topics in orthopedic surgery and ENT. In creating and refining this position, several key lessons have been learned. DISCUSSION/SIGNIFICANCE OF IMPACT: First, the Translational Integrator must undergo constant reflection and assessment of investigator needs, which requires flexibility and understanding that their role may change in the context of each product. Second, the support that the Translational Integrator provides can shift the mindset of the investigator from being averse to engaging in the translational process to eager to move their product forward. Finally, for the investigator who does not personally want to move their work into first-in-human trials, establishing connections to intellectual property generation and licensing may support movement of their findings into patients.

2050

Improving evidence synthesis: Partnering with the Center for Clinical & Translational Science to build a Systematic Review Core

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OBJECTIVES/SPECIFIC AIMS: To improve the quality of evidence synthesis projects, including systematic reviews and other comparative effectiveness reviews, at the University of Utah. METHODS/STUDY POPULATION: Systematic reviews

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