Connecting Patients, Clinicians, and Cancer Clinical Trials: The Markey Cancer Center App for Clinical Trials

Eric B. Durbin, DrPH, MS
Director, Cancer Research Informatics Shared Resource Facility, Markey Cancer Center

Assistant Professor
Division of Biomedical Informatics, UK College of Medicine

CCTS Lunch and Learn
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  - [http://crisrf.uky.edu](http://crisrf.uky.edu)
- Isaac Hands, MPH
  - Lead Software Architect
- Chaney Blu
  - Software Developer
- Mark Stevens
  - Lead Oncore Administrator
Lucille Parker Markey Cancer Center
History and Background

• 1975 McDowell Cancer Network established
• 1986 Markey Cancer Center opened
• 2009 B Mark Evers, MD recruited as director
• 2013 achieved National Cancer Institute (NCI) designation
Importance of Clinical Trials

• Clinical trials are a tenet of translational cancer research
• Clinical trial enrollments is a key measure of cancer center performance by the NCI
  ▫ Also one of the greatest challenges
  ▫ Nationally, fewer than 5% of cancer patients enrolled in trials

Specific Aims

• Develop and/or leverage technologies to increase the potential to connect patients, clinicians, and clinical trials at the Markey Cancer Center
  ▫ Increase trial enrollments

• App primarily focused on clinicians, but also available to patients
Oncore Enterprise Research Management System (ERMS)

• Commercial ERMS licensed from Forte Research Systems
  ▫ [http://forteresearch.com](http://forteresearch.com)
  ▫ Adopted by Markey in 2006

• All Markey trials registered in Oncore
  ▫ Industry sponsored trials
  ▫ Institutional investigator initiated trials (IITs)
  ▫ National group trials
  ▫ Externally peer reviewed trials
Oncore Features

- Clinical Trials Management System
- Electronic data capture (EDC) and data management
- Subject safety management
- Protocol & subject life cycle management
- Protocol & subject calendar management
- Paperless committee management ePRMS
- Custom reporting technology
- Study financial management
- Biospecimen management (Oncore BSM)
## Mobile Apps for Patient Recruitment

<table>
<thead>
<tr>
<th>Feature</th>
<th>Advertisement (TV, Radio, Paper)</th>
<th>Billboards</th>
<th>Digital Marketing (email campaigns, social media, SEO etc.)</th>
<th>Website</th>
<th>Mobile App</th>
</tr>
</thead>
<tbody>
<tr>
<td>Provide up to date study information automatically</td>
<td>✓</td>
<td>✓</td>
<td>§</td>
<td>§</td>
<td>✓</td>
</tr>
<tr>
<td>Target participants with relevant studies based on participant specified criteria</td>
<td>✓</td>
<td>✓</td>
<td>§</td>
<td>§</td>
<td>✓</td>
</tr>
<tr>
<td>Target participants with relevant studies based on study site specified criteria</td>
<td>✓</td>
<td>✓</td>
<td>§</td>
<td>§</td>
<td>✓</td>
</tr>
<tr>
<td>Follow up with participants who have not responded or shown interest with more specific messaging</td>
<td>✓</td>
<td>✓</td>
<td>§</td>
<td></td>
<td>§</td>
</tr>
<tr>
<td>Take the participant through a funnel process that ultimately results in recruitment</td>
<td>✓</td>
<td>✓</td>
<td>§</td>
<td>§</td>
<td>✓</td>
</tr>
<tr>
<td>Provide all relevant information to the participant to access at their convenience</td>
<td>✓</td>
<td>✓</td>
<td>§</td>
<td>§</td>
<td>✓</td>
</tr>
<tr>
<td>Provide visually engaging, interactive content</td>
<td>✓</td>
<td>✓</td>
<td>§</td>
<td>§</td>
<td>✓</td>
</tr>
<tr>
<td>Provide means to contact the study site right within the channel</td>
<td>✓</td>
<td>✓</td>
<td>§</td>
<td>§</td>
<td>✓</td>
</tr>
<tr>
<td>Reach out to targeted list of participants proactively</td>
<td>✓</td>
<td>✓</td>
<td>§</td>
<td>§</td>
<td>✓</td>
</tr>
<tr>
<td>Set up appointments and local notifications for study visits, medications</td>
<td>✓</td>
<td>✓</td>
<td>§</td>
<td>§</td>
<td>✓</td>
</tr>
<tr>
<td>Measure effectiveness of channel (at the more detailed level such as number of studies shown interest in, number of studies enrolled for, number of studies completed)</td>
<td>✓</td>
<td>✓</td>
<td>§</td>
<td>§</td>
<td>✓</td>
</tr>
</tbody>
</table>

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Online Trial Information at Markey

- **Oncore Study Information Portal (SIP)**
  - Began as a frame based interface to display trial information on public web sites
  - Integrated into Markey web site since ~2007
- **Non-frame based SIP interface**
  - Available since ~2013
  - Includes java servlet that permits customized requests for trial information returned in XML
  - Enabled mobile app development
Markey Web App Development History

• Markey approached by Virginia Commonwealth University to purchase source code for an Oncore app from Karmanos Cancer Center
  ▫ April 2014
• Markey Cancer Research Informatics software development team reviewed Karmonos’ technical implementation
• Markey clinical trial app prototype released on Apple TestFlight
  ▫ May 2014
• Continued development approved by Markey leadership
  ▫ June 2014
• Prototype reviewed by Markey clinicians, leadership, and research communications office
• Public app available on Apple Store
  ▫ December 2, 2014
Additional Enhancements

• Internal feedback from Markey clinicians used to improve app
  ▫ Key inclusion criteria entered into Oncore

• Markey website enhanced by UK Healthcare to mimic app search features
Architecture and Technologies

• Native iOS application developed in XCode
• Retrieves live data from Markey OnCore server over secure connection
• Takes advantage of iPhone features such as:
  ▫ Email integration for sharing clinical trials
  ▫ Phone integration for contacting Markey clinical trials office
  ▫ Map integration for directions to Markey Cancer Center
  ▫ 3D Touch for quick review of saved clinical trials
Key Features

- Real time access to all open trials in Oncore
- Trial search
  - Disease site
  - Drug
  - Protocol number
  - Phase
    - Pilot, I, II, III
  - Principal investigator
- Trail details
- Save and forward specific trials
- Contact information
Marketing

• Primarily internal marketing among UK/Markey clinicians
Director's Message

Kentucky is first in the nation in overall cancer mortality rate. Here at Markey, our five-year goal is to decrease Kentucky's cancer deaths by 50%. Toward that goal, Markey is treating over 3,000 new cancer cases each year. And each patient we treat is a celebration of survivorship.

Survivorship, during or after treatment, is a badge of honor. It can also be a heavy burden adjusting to physical and emotional changes that come with treatments, side effects and
Markey Launches App for Cancer Clinical Trials

LEXINGTON, Ky. (April 27, 2015) – The University of Kentucky Markey Cancer Center recently launched a new iPhone app featuring a searchable database of the open clinical trials at Markey. The app gives Markey patients and their treatment teams an easier way of identifying the clinical trials currently offered that might be beneficial for the patient’s treatment plans.

At any given time, Markey has more than 100 active cancer clinical trials open to accrual. Each trial represents an opportunity for cancer patients to participate in research designed to improve cancer care or measure the effectiveness of different types of treatments and drugs.

The app is also an effective way for referring physicians to quickly find out if there is an
Future External Marketing Plans

- State-wide flyer to providers under consideration
  - Placed on hold
- Improved infrastructure needed
  - Dedicated referral support staff for clinicians and patients
  - Call intake
  - Vetting
  - Appropriate referral to PI
  - Tracking
- Improper call handling could discourage community providers
Future Development Plans

- Android version
- Flow charts
  - Decision tree specific to trial inclusion criteria
- PI login and tracking of accruals
- Additional staff funding will be needed
Questions/Discussion

• Contact Info
  ▫ ericd@kcr.uky.edu
  ▫ isaac@kcr.uky.edu
  ▫ chaney@kcr.uky.edu
  ▫ mestevo@kcr.uky.edu
  ▫ http://crisrf.uky.edu

Thank You!