REDCap at Johns Hopkins

Scott Carey
REDCap Administrator
Senior Software Engineer
ICTR Informatics Core
Folks generally fall into 1 of 4 categories when it comes to understanding REDCap and its features...

<table>
<thead>
<tr>
<th>I know REDCap can do this and I know how to do it</th>
<th>I know I can do this in REDCap, but I’m not sure how to do it</th>
</tr>
</thead>
<tbody>
<tr>
<td>I had no idea REDCap could do that!</td>
<td>What’s REDCap?</td>
</tr>
</tbody>
</table>
REDCap Lightning Round

Goals for today:

- Understand what REDCap “is” and “is not”
- Understand what REDCap can do (not necessarily how to do it)
- Understand where to find more information
IRB Expectations for Your Research Data

➢ Stored on a managed JH system
➢ Restricted/controlled access
➢ Appropriate permissions within the project

➢ Audit trail of data and user activity

➢ Well structured interface that facilitates adherence to the project design
➢ Built-in data quality features (data type adherence, valid range checking...)
What is REDCap and how can it help?

- REDCap: **Research Electronic Data Capture**
- Developed at Vanderbilt University for use by universities and non-profit institutions
- A secure web application for building and managing research data environments
- Allows for direct data entry (study staff) as well as online surveys (study participants)
- Accommodates multi-site collaborative studies via Data Access Groups (DAG’s)
- Worldwide:
  - ~6000 institutions
  - 145 countries
  - 1.5m projects
  - 2.1m users
- JH:
  - 5700 projects
  - 14k+ users (~6k active)
- **JH IRB Approved**
**REDCap: Key Features**

**Web-based**
- Direct entry by staff
- Survey-style entry by study participants
- Extensive data quality features

**Secure**
- JHED Integration
- MS Azure (for non-JH study team members)
- Extensive user-level permissions mgmt
- Role-based permissions

**Integrative**
- Single/Multi-Site Studies
- EPIC Notes Interface
- Direct EPIC-to-REDCap
- OnBase Connector
- Multi-Language Features
# REDCap: Key Features (cont’d)

## Project Types
- Simple Surveys
- One-and-Done
- Structured Longitudinal
- Unstructured Longitudinal

## Tools
- Automated Survey Invitations
- Alerts / Notifications
- Workflow Management
- Calendar Integration
- Mobile App / MyCAP
- Randomization
- eConsent Framework

## Exports
- CSV
- SAS
- Stata
- SPSS
- R
- RC2SQL (translates a REDCap project into an SQL database where data for each RC instrument is in a separate table)
REDCap at JH

Co-Sponsored (actually tri-sponsored!)

- **SPH/SOE** (Andre Hackman, Danny Scerpella, Brian Dyer, Gwendolyn Climens...)
- **SOM/SON/JHH/Bayview/KKI** (Scott Carey, Mike Sherman, Terrence Turner)
- **ACH** (Nuredin Joehar, Karly Anderson)
  - *ACH will soon be providing a 21 CFR Part 11 compliant instance of REDCap (some restrictions will likely apply)*

3-Tiers

- **Bronze:**
  - No cost... no support
  - Intended for smaller, unfunded projects
  - Some advanced features not available

- **Silver:**
  - Includes support
  - Includes all REDCap features

- **Gold:**
  - Includes additional support
  - Very large studies
REDCap Resources

➢ Training Videos
➢ Help Files
➢ Zoom Clinics (all project tiers)
➢ 1-on-1 Support (Silver / Gold tiers)
➢ Online Support (REDCap Training Central)
➢ www.redcap.jhu.edu
Let’s Look at a Few Screenshots
Project Setup (guided development)
Project Setup (data collection instruments)

The Online Designer will allow you to make project modifications to fields and data collection instruments very easily using only your web browser. NOTE: While in development status, all field changes will take effect immediately in real time.
Project Setup (instrument development)
Project Setup (adding fields)
Project Setup (configuring fields)

You may add a new project field to this data collection instrument by completing the fields below and clicking the Save button at the bottom. When you add a new field, it will be added to the form on this page. For an overview of the different field types available, you may view the [Field Types video (4 min)].

**Field Type:** Multiple Choice - Drop-down List (Single Ans)

**Field Label:** Race

**Choices (one choice per line):**
1. White
2. Black (including African American)
3. American Indian, Aleutian, or Eskimo (includes all indigenous populations of the Western hemispheres)

**Variable Name:** race

**Required:** No Yes

**Identifier:** No Yes

**Custom Alignment:** Right / Vertical (RV)

**Field Note (optional):** Small reminder text displayed underneath field

Learn about [Action Tags] or using [Field Annotation]

[Save] [Cancel]
Project Setup (field validation)
Project Setup (exporting data)

**Choose export format**
- CSV / Microsoft Excel (raw data)
- CSV / Microsoft Excel (labels)
- SPSS Statistical Software
- SAS Statistical Software
- R Statistical Software
- Stata Statistical Software
- CDISC ODM (XML)

**De-identification options (optional)**
- Remove all tagged identifier fields (tagged in Data Dictionary)
- Hash the Record ID Field (converts record name to an unrecognizable value)
- Free-form text:
  - Remove unvalidated Text fields (i.e. Text fields other than dates, numbers, etc.)
  - Remove Notes/Essay box fields
- Date and datetime fields:
  - Remove all date and datetime fields
  - OR — Shift all dates by value between 0 and 364 days (shifted amount determined by algorithm for each record). What is case shifting?

**Advanced data formatting options**
- Set CSV delimiter character
  - Set the delimiter used to separate values in the CSV data file (only valid for CSV Raw Data and CSV Labels export formats):
    - (comma): default

- Force all numbers into a specified decimal format?
  - You may choose to force all data values containing a decimal to have a specified decimal character (comma or period/full stop). This will be applied to all calculations and number-validated text values in the export file.

- Use fields' native decimal format (default)

**NOTE:** Your data formatting selections above will be remembered in the future and will be pre-selected upon your next export.
What’s New in REDCap?
It depends on the day!

WHAT'S NEW
SCOOBY-DOO?
### Interviewer information

- **Last Name:** Carey
- **First Name:** Scott
- **Affiliation/Organization:** JHU
- **Telephone:** (410) 550-7198
- **Email:** scarey@jhu.edu

### Symptoms, clinical course, past medical history and social history

<table>
<thead>
<tr>
<th>Symptom</th>
<th>Yes</th>
<th>No</th>
<th>Unknown</th>
<th>Onset Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fever &gt; 100.4°F (38°C)</td>
<td></td>
<td></td>
<td></td>
<td>01-11-2021 reset</td>
</tr>
<tr>
<td>Subjective fever (felt feverish)</td>
<td></td>
<td></td>
<td></td>
<td>01-12-2021 reset</td>
</tr>
<tr>
<td>Chills</td>
<td></td>
<td></td>
<td></td>
<td>01-13-2021 reset</td>
</tr>
<tr>
<td>Muscle aches (myalgia)</td>
<td></td>
<td></td>
<td></td>
<td>01-14-2021 reset</td>
</tr>
<tr>
<td><strong>Other symptom 1</strong></td>
<td></td>
<td></td>
<td></td>
<td>01-15-2021 reset</td>
</tr>
<tr>
<td><strong>Other symptom 2</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Project Dashboards (new)
Multi-Language Management (new)
EPIC Notes DEMO Project - (a work in progress)

Actions: Modify instrument  Download PDF of instrument(s)  VIDEO: Basic data entry

Annotation

Notes Containing Search Terms: 7 of 55 notes.
Date Ranges Searched: 2015-04-20 thru 2017-01-01
Note Selection:
- Documentation (2016-10-27)
- Tinnitus, wound, seizure lorazepam

Note Number 1 of 7

Next

Save EPIC Note ID

Documentation (2016-10-27)

EPIC Note ID: HXID-537956729-57313

Date: 10/27/2016
Re: Surgical clearance
To whom it may concern
Miss. Fifteen Zzz. Eelee is a patient I have seen for epilepsy.
1. There is no contraindication to general anesthesia or surgery in patients with epilepsy. However, there is no way
to guarantee that the patient will not have a seizure. It should be understood that the occurrence of the patients
seizure is not a contraindication to surgery nor a medical emergency.
2. Seizure should be avoided as it may lower the seizure threshold.
3. The patient should take her seizure medications on the morning of surgery, and continue the medications as
scheduled.
4. If the patient cannot take medicines by mouth, then she should be given the seizure medications via nasogastric
tube or IV formulation.
5. If the patient has a breakthrough seizure, they can be treated with intravenous lorazepam.

Please do not hesitate to contact my office with any questions.

Sincerely,
Emily L. Johnson, MD
Johns Hopkins Epilepsy Center / Johns Hopkins Bayview Department of Neurology
Office 410-550-8703
Fax 410-550-0539
301 Mason Lord Drive
Neurology
Baltimore, MD 21224
EPIC-to-REDCap Field Mapping (new)

Select Fields From EPIC

Specify Mappings to Associated Fields In REDCap

MAP SOURCE FIELDS TO REDCAP FIELDS

<table>
<thead>
<tr>
<th>External Source Field</th>
<th>Map to REDCap Field</th>
<th>Map to REDCap date/time field</th>
</tr>
</thead>
<tbody>
<tr>
<td>mrn &quot;Medical Record Number&quot;</td>
<td>mrn &quot;Medical record number&quot;</td>
<td>Date/time value is used with day offset to construct window of time when searching for source data</td>
</tr>
<tr>
<td>dob &quot;Date of Birth&quot;</td>
<td>dob &quot;Date of birth&quot;</td>
<td></td>
</tr>
<tr>
<td>ethnicity &quot;Ethnicity&quot;</td>
<td>ethnicity &quot;Ethnicity&quot;</td>
<td></td>
</tr>
<tr>
<td>firstName &quot;First Name&quot;</td>
<td>first_name &quot;First Name&quot;</td>
<td></td>
</tr>
<tr>
<td>gender &quot;Gender&quot;</td>
<td>sex &quot;Gender&quot;</td>
<td></td>
</tr>
<tr>
<td>lastName &quot;Last Name&quot;</td>
<td>last_name &quot;Last Name&quot;</td>
<td></td>
</tr>
<tr>
<td>race &quot;Race&quot;</td>
<td>race &quot;Race&quot;</td>
<td></td>
</tr>
<tr>
<td>AN-GAP &quot;ANION GAP&quot;</td>
<td>angap &quot;Anion gap (AN-GAP)&quot;</td>
<td></td>
</tr>
<tr>
<td>BUN &quot;UREA NITROGEN BLOOD&quot;</td>
<td>bun &quot;Urea nitrogen blood (BUN)&quot;</td>
<td></td>
</tr>
<tr>
<td>CO2 &quot;CARBON DIOXIDE BLOOD&quot;</td>
<td>co2 &quot;Carbon dioxide blood (CO2)&quot;</td>
<td></td>
</tr>
</tbody>
</table>
EPIC-to-REDCap Field Mapping (new)

Review & Approve REDCap Updates From EPIC

![Adjudicate data from EHR](image)

**Adjudicate data from EHR**

View DDP adjudication instructions:

Fetching data for **Study ID "3" using ± 365 days**

**New items: 13**

**Time of last data fetch: 2 days ago**

<table>
<thead>
<tr>
<th>REDCap Field</th>
<th>REDCap Date/Time</th>
<th>EHR Source Date/Time</th>
<th>REDCap Current Value</th>
<th>EHR Source Value</th>
<th>Import?</th>
</tr>
</thead>
<tbody>
<tr>
<td>first_name</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>Micci</td>
<td>reset</td>
</tr>
<tr>
<td>last_name</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>Research</td>
<td>reset</td>
</tr>
<tr>
<td>sex</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>Female (F)</td>
<td>reset</td>
</tr>
<tr>
<td>dob</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>1980-12-15</td>
<td>reset</td>
</tr>
<tr>
<td>address_street</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>1234 Wippy Way</td>
<td>reset</td>
</tr>
<tr>
<td>address_city</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>Nashville</td>
<td>reset</td>
</tr>
<tr>
<td>address_state</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>TN</td>
<td>reset</td>
</tr>
<tr>
<td>address_postal_code</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>37212</td>
<td>reset</td>
</tr>
<tr>
<td>address_country</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>US</td>
<td>reset</td>
</tr>
<tr>
<td>phone_number</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>414-555-5555</td>
<td>reset</td>
</tr>
</tbody>
</table>

![Image of Adjudicate data from EHR](image)
## EPIC-to-REDCap Field Mapping (new)

### Example: Adjudicating Labs

- **Sodium blood (Na)**
  - REDCap Field: 2008-08-14 (00:00)
  - REDCap Current Value: 140
  - StarPanel Source Value: 140

- **Potassium blood (K)**
  - REDCap Field: 2008-08-14 (00:00)
  - REDCap Current Value: 4.0
  - StarPanel Source Value: 4.0

- **Chloride blood (Cl)**
  - REDCap Field: 2008-08-14 (00:00)
  - REDCap Current Value: 104
  - StarPanel Source Value: 104

- **Carbon dioxide blood (CO2)**
  - REDCap Field: 2008-08-14 (00:00)
  - REDCap Current Value: 24
  - StarPanel Source Value: 24

---

**Fetching data for Study ID "50" using ±30 days**

- **Time of last data fetch:** just now
- **Display options:**
  - Display all items (all forms)
  - Display only this form's items

[Save | Cancel]
How do I get started?

Easy!
➢ Visit www.redcap.jhu.edu
➢ Click on Getting Started w/ REDCap
Questions?

scarey@jhmi.edu