

CLINICAL & TRANSLATIONAL SCIENCE INSTITUTE

Research & Academic IT

REDCap new features



UNIVERSITY of
ROCHESTER
MEDICAL CENTER

MEDICINE *of* THE HIGHEST ORDER

Agenda

Agenda

- REDCap New Features – Overview
- REDCap Twilio integration
- REDCap Mobile
- Survey Features
- REDCap Project Templates
- Action Tags
- Search Biomedical Ontologies
- Embedded Videos
- Codebook
- Auto-scoring and CATs
- Function for unstructured data
- Future features (upgrade end of January)

URMC REDCap Installation

- Active installation since January 2011
- Currently have 2399 users
- Total of 2248 projects

REDCap- New Features

- **Twilio** - SMS surveys and phone Surveys
- **REDCap Mobile App** (iOS and Android)
- Enable searching within a **biomedical ontology** for text fields (ICD-9, ICD-10, Snomed CT, LOINC 400 ontologies)
- Embedded videos and audio for descriptive fields (audio not supported in Mobile App)
- Auto-scoring Instruments – Static, downloaded from Shared Library
- Field annotation
- **Action Tags** – must begin with ‘@’ placed in fields annotation.
- **Auto-complete** for dropdown fields

REDCap- Improvements

- Delete – By participant: single form or entire battery of forms
- Reports – building a report in “Data Exports, Reports and Stats” Quick Add allows you to select the fields for reporting. Similar to old export
- Checkboxes and radio buttons – select the label as well as the box or button
- Codebook
- Surveys more compatible on mobile devices
- Copy Instrument
- Instrument ZIP Upload and External Libraries
- Project Notes

REDCap- New Features

New Survey Features/Improvements

- Auto-continue to next Survey
- **Text-to-speech functionality.** Can be enabled on the Survey settings page for a given survey
- Improvement: Automated Survey Invitations

REDCap-Twilio

Integrate with Twilio (www.twilio.com) a 3rd party webservice to make voice calls and send SMS Text Message as surveys.

- Must have a user account and paid subscription
- Similar to a setting up regular survey but connect your account to Twilio.

Survey Options:

1. Initiate survey as voice call
2. Initiate SMS conversion
3. Send survey with survey link via SMS or Voice call
4. Voice Call Surveys CAN ONLY USE NUMERIC RESPONSES
5. SMS Surveys – 1 question at a time


PRIVACY & SECURITY INFO: It is important to understand that this feature utilizes the third-party service Twilio.com, which means that all **voice calls and SMS messages will be routed through Twilio's servers**. However, REDCap goes to great length to ensure that voice call records and SMS transcriptions do not stay in Twilio's **logs** but are **removed shortly after being completed**. This is done for security and privacy concerns (e.g., HIPAA), in which your survey participants' phone numbers and their survey responses do not get permanently logged on Twilio's servers but instead remain securely in REDCap.

REDCap-Mobile App

REDCap Mobile App can be installed on a tablet or mobile device so data can be collected offline then synced back to the REDCap server.

Steps:

1. Create/Design project in a browser
2. Select REDCap Mobile App left nav bar
3. Request API Token
4. Download app from the app store
5. Setup project on mobile device, give permissions
6. On mobile device scan the QR code to setup

 **REDCap Mobile App**



[Set Up Project in Mobile App](#) [Mobile App Dashboard](#) [Mobile App File Archive](#)

What is the REDCap mobile app?

The REDCap mobile app is an app that can be installed on a tablet or mobile device so that data may then be collected in an offline fashion on that device, after which it may then be synced back to this project on the REDCap server. The app is most useful when data collection will be performed where there is no internet service (e.g., no WiFi or cellular service) or where there is unreliable internet service. Once a user in this project is given 'REDCap Mobile App' privileges, they can navigate to the mobile app page on the left-hand menu and set up this project inside the mobile app on their device. Once the mobile project is set up on the device, the user can collect data (which is stored locally on the device), and then at some point sync that data back to this project on the REDCap server.


STEP 1: Download the app on your device

You must first download the REDCap mobile app on your iOS or Android device by clicking the appropriate icon below, or alternatively, if you are not currently on a mobile device, you can search the App Store or Google Play Store for 'REDCap' on your mobile device to find the app there to download. The app is available for the following platforms: iOS 6.0 or later (iPhone 4 and up, iPad 2 and up) and Android 4.3 or later (phones and tablets).

  [Email me links to download the app](#)

STEP 2: Set up the mobile project on your device

It is assumed that you have already downloaded the REDCap mobile app on your mobile device or tablet. To set up this project in the REDCap app, open the app on your device, click the 'Set Up Mobile Project' button, then click the 'Scan QR Code' button, and then scan the QR code that you see displayed below.



[Can't get the QR code to work?](#)

Delete API Token & Unlink Mobile App

If for security reasons or otherwise you wish to disconnect the REDCap mobile app from this project, you must delete your API token for this project. **WARNING:** Please be aware that if you are using this API token for the REDCap mobile app and you delete or regenerate the API token, then any data collected for this project on the REDCap mobile app that has not been synced back to the server yet will be **PERMANENTLY LOST**.

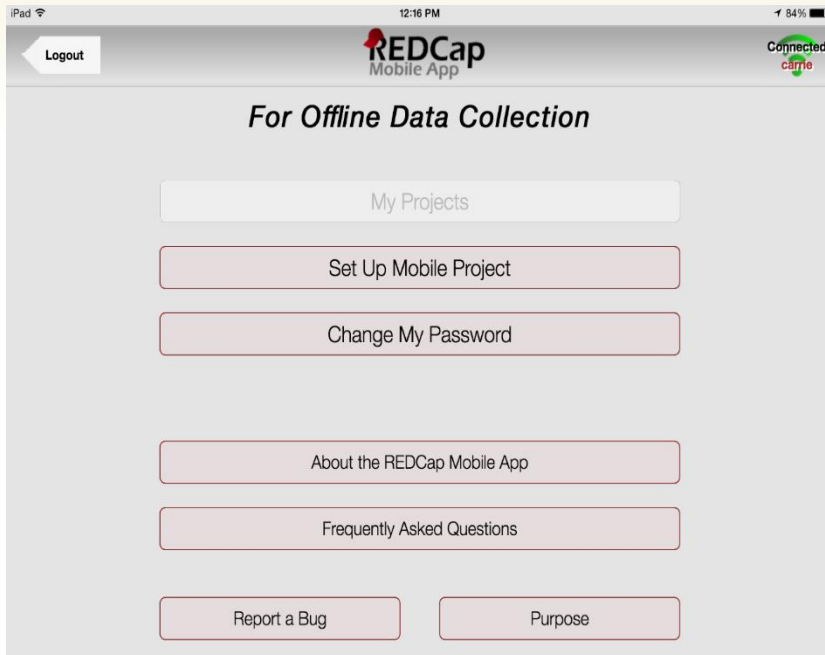
[Delete API Token & Unlink Mobile App](#)

REDCap- Mobile App


Steps on Mobile Device: Download Mobile App from App Store

1. Setup Mobile App

2. Create New App User (2 users)



The screenshot shows the main menu of the REDCap Mobile App. At the top, there is a status bar with 'iPad', signal strength, '12:16 PM', and '84%' battery. Below the status bar, there is a header with a 'Logout' button on the left, the 'REDCap Mobile App' logo in the center, and a 'Connected' status indicator on the right. The main content area is titled 'For Offline Data Collection' and contains several buttons: 'My Projects', 'Set Up Mobile Project', 'Change My Password', 'About the REDCap Mobile App', 'Frequently Asked Questions', 'Report a Bug', and 'Purpose'.

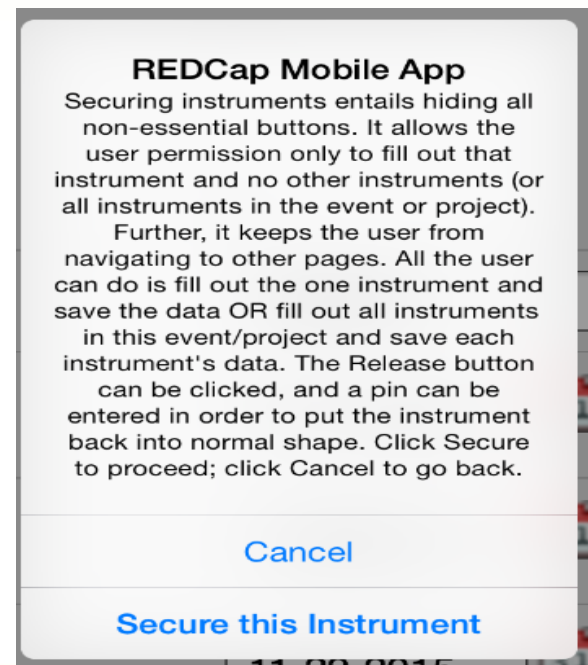
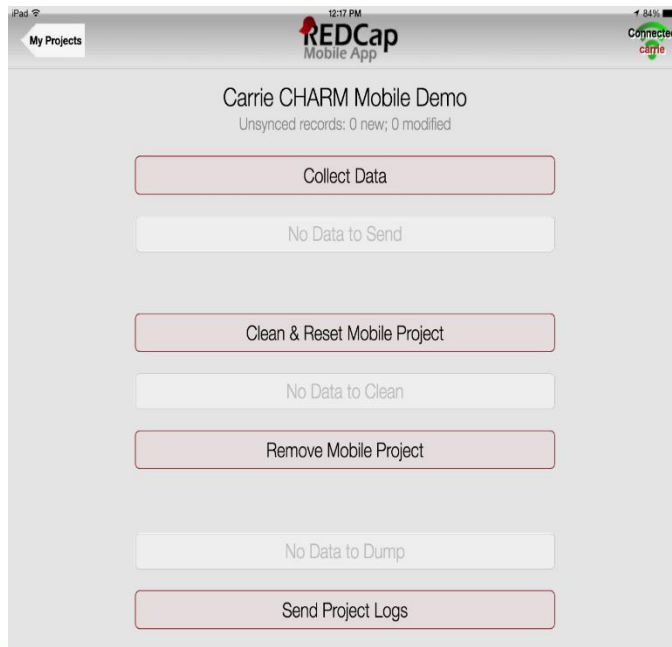


The screenshot shows the 'Create New App User' screen. At the top, there is a status bar with 'iPad', signal strength, '12:15 PM', and '84%' battery. Below the status bar, there is a header with the title 'Create New App User' and the subtitle 'Why create two users?'. A 'View' button is located below the subtitle. The main content area is divided into two columns: 'Create Admin' and 'Create Data Collector'. The 'Create Admin' column contains fields for 'Admin Username:' (with the value 'admin'), '6-digit Admin PIN:', and 'Re-enter 6-digit Admin PIN:'. The 'Create Data Collector' column contains fields for 'First Username:', '6-digit PIN:', and 'Re-enter 6-digit PIN:'. At the bottom, there is a large button labeled 'Add Admin and User'.

***Make sure to save your Username and 6 digit pin

REDCap-Mobile Dashboard

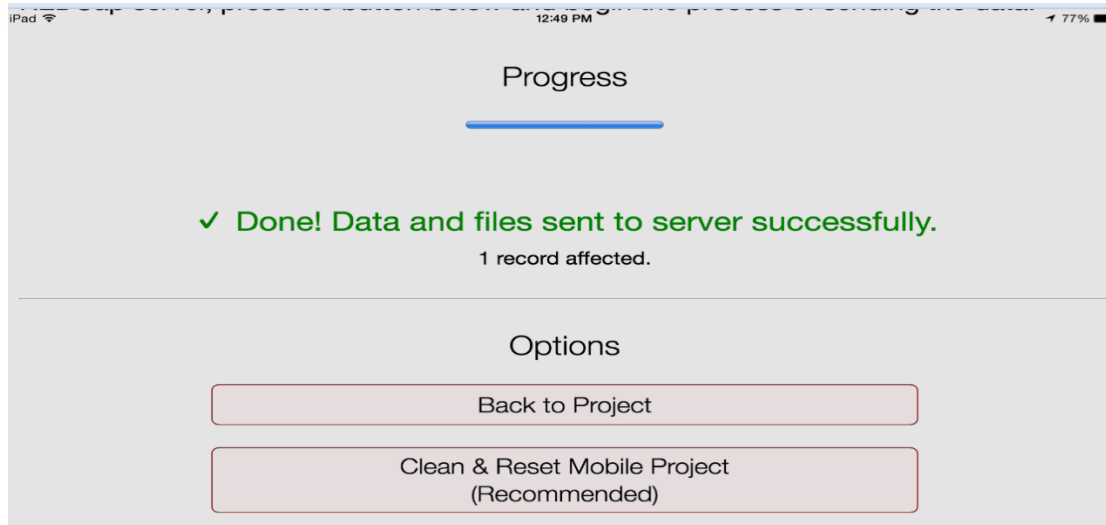
- * If changes are made to a project you must select **Clean and Reset Mobile Project** from the device to reflect the changes.
- * Make sure to send Project logs, backup mechanism to track activity.
 - Secure this instrument
 - Set permission to NOT allow user to download data to the device



REDCap – Syncing Data

Syncing data back to REDCap Server. If there are any possible issues that might arise when sending data, the app will prompt user to make a decision before sending data.

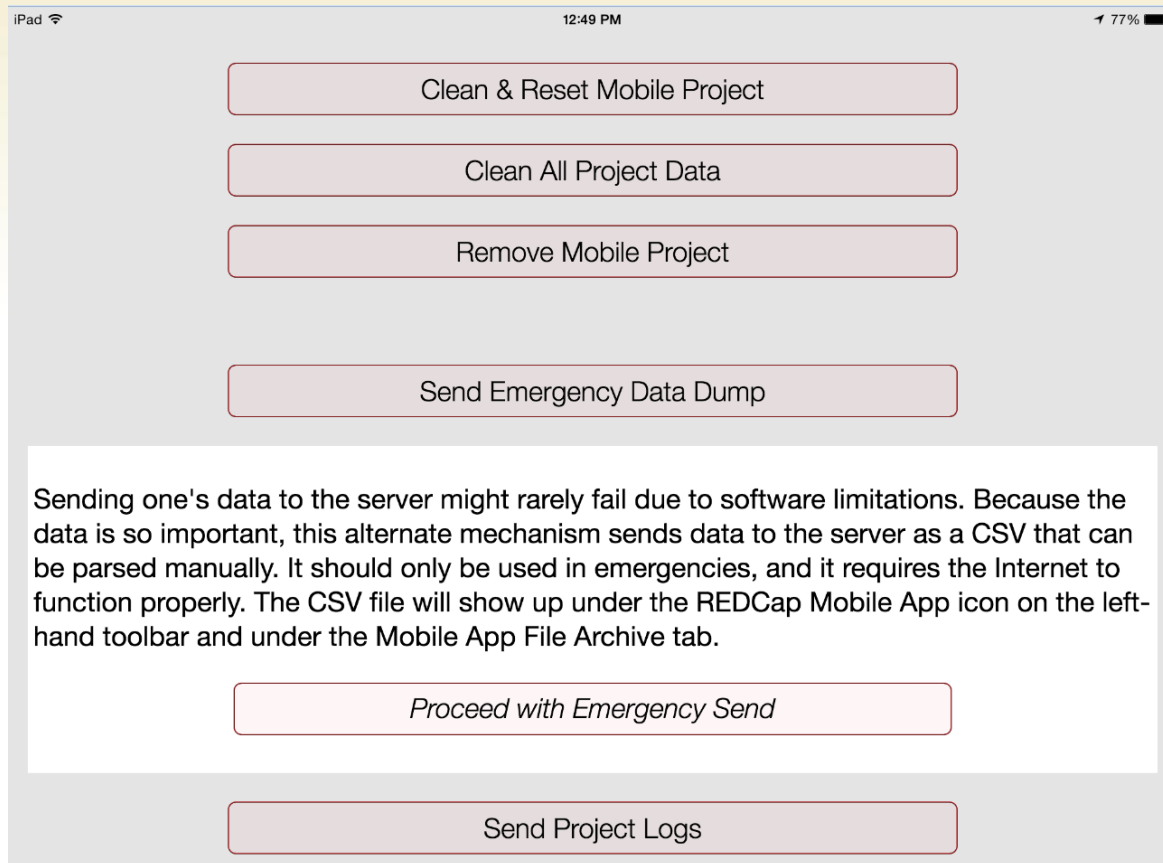
ex: auto-numbering and a record already exists, user will be prompted to rename the record during the sync process.



Remote Lockout: If a user revokes your Mobile App rights you will not be able to access the App.

REDCap – Mobile Options

Other Mobile Dashboard Options – Send Emergency Data Dump



The screenshot shows the REDCap Mobile App interface on an iPad. At the top, the status bar displays 'iPad', signal strength, '12:49 PM', and '77%' battery. The main menu consists of four buttons: 'Clean & Reset Mobile Project', 'Clean All Project Data', 'Remove Mobile Project', and 'Send Emergency Data Dump'. Below these is a text box explaining the emergency data dump process, followed by a button labeled 'Proceed with Emergency Send'. At the bottom is a button labeled 'Send Project Logs'.

Clean & Reset Mobile Project

Clean All Project Data

Remove Mobile Project

Send Emergency Data Dump

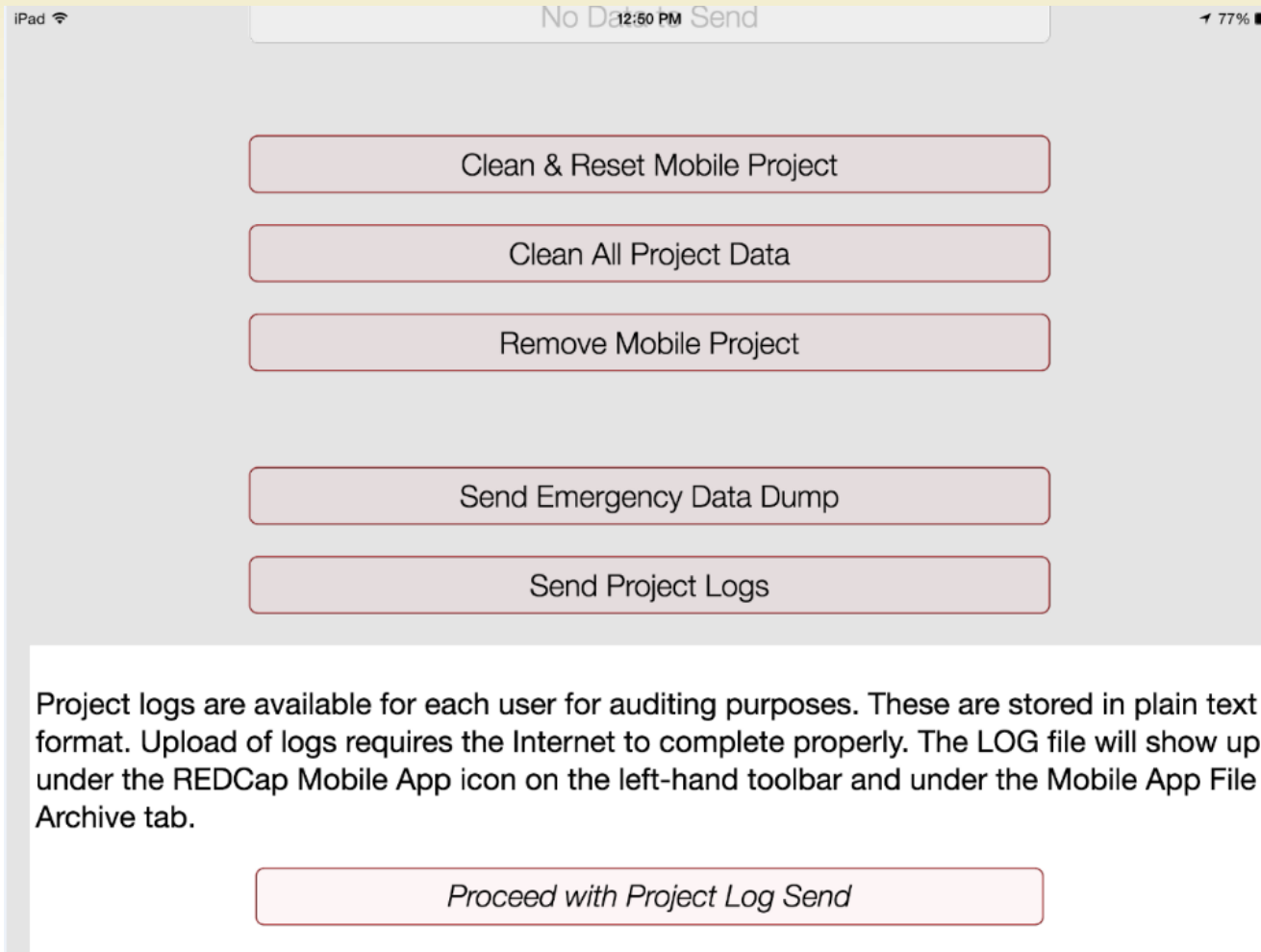
Sending one's data to the server might rarely fail due to software limitations. Because the data is so important, this alternate mechanism sends data to the server as a CSV that can be parsed manually. It should only be used in emergencies, and it requires the Internet to function properly. The CSV file will show up under the REDCap Mobile App icon on the left-hand toolbar and under the Mobile App File Archive tab.

Proceed with Emergency Send

Send Project Logs

REDCap – Mobile Options

Other Mobile Dashboard Options – Send Project Logs



The screenshot shows the REDCap Mobile App interface on an iPad. At the top, the status bar displays 'iPad', signal strength, 'No Data', '12:50 PM', and 'Send'. The main content area contains five buttons: 'Clean & Reset Mobile Project', 'Clean All Project Data', 'Remove Mobile Project', 'Send Emergency Data Dump', and 'Send Project Logs'. Below these buttons is a text block explaining that project logs are available for auditing, stored in plain text, and require an internet connection for upload. The text also mentions that logs will appear under the REDCap Mobile App icon and the Mobile App File Archive tab. At the bottom, there is a button labeled 'Proceed with Project Log Send'.

Project logs are available for each user for auditing purposes. These are stored in plain text format. Upload of logs requires the Internet to complete properly. The LOG file will show up under the REDCap Mobile App icon on the left-hand toolbar and under the Mobile App File Archive tab.


Proceed with Project Log Send

REDCap – Mobile App Admin

Within the REDCap Project Home Page – Select REDCap Mobile App

- Important to upload project logs for each user

REDCap Mobile App

 Set Up Project in Mobile App

 Mobile App Dashboard

 Mobile App File Archive

Displayed below is a log of all mobile app related activity with regard to setting up a project in the mobile app, downloading data from REDCap to the app, and so forth.

Mobile App Dashboard of User Activity

Time / Date	Username	Event
11/29/2015 12:49pm	irvine	Import data from app (1 new record created)
11/29/2015 12:45pm	irvine	Reset project in app
11/29/2015 12:17pm	irvine	Set up project in app

REDCap – Mobile App Admin



Mobile App File Archive

REDCap Mobile App

[Set Up Project in Mobile App](#)[Mobile App Dashboard](#)[Mobile App File Archive](#)

Listed below are all the files sent from the mobile app for this project. These might include logging files of all activity and data changes made on the app for a given user, as well as data exports from the app when something prevented the app from sending data back to the server normally (i.e., escape hatch). You may click the file icon on the right to download it.























Files Sent from Mobile App

File Info	File Type	Download
1448819406655.log.csv Date uploaded: 11/29/2015 12:50pm Uploaded by: irvine (Carrie Irvine) File size: 3.68 KB	App Logging	
1448819393509.data.csv Date uploaded: 11/29/2015 12:49pm Uploaded by: irvine (Carrie Irvine) File size: 2.7 KB	App Data Export (Escape Hatch)	 Raw

REDCap – Project Templates

★ Project Templates

Any given project in REDCap may be designated by a super user as a project template. Once designated as a template, that project will become available as an option when creating a new project, in which a user may choose that project as a template from which to start when creating their new project. When creating a new project using a template, all of the template's data collection instruments, fields, surveys, and general project settings will be added to the new project at the point of creation. Below are some options for managing all the templates available, including adding, editing, or removing a project as a template.

List of project templates				+ Add new template
	Enabled?	Template title (sorted by title)	Template description	
 	★	Basic Demography	Contains a single data collection instrument to capture basic demographic information.	
 	☆	Classic Database	Contains six data entry forms, including forms for demography and baseline data, three monthly data forms, and concludes with a completion data form.	
 	★	Human Cancer Tissue Biobank	Contains five data entry forms for collecting and tracking information for cancer tissue.	
 	☆	Longitudinal Database (1 arm)	Contains nine data entry forms (beginning with a demography form) for collecting data longitudinally over eight different events.	
 	☆	Longitudinal Database (2 arms)	Contains nine data entry forms (beginning with a demography form) for collecting data on two different arms (Drug A and Drug B) with each arm containing eight different events.	
 	★	Multiple Surveys (classic)	Contains three surveys and a data entry form. Includes a pre-screening survey followed by two follow-up surveys to capture information from the participant, and then a data entry form for final data to be entered by the study... Show more	
 	★	Multiple Surveys (longitudinal)	Contains three surveys and a data entry form. Includes a pre-screening survey followed by two follow-up surveys, one of which is a questionnaire taken weekly to capture participant information longitudinally over a period of... Show more	
 	★	Piping Example Project	Contains a single data collection instrument enabled as a survey, which contains questions to demonstrate the Piping feature.	
 	★	Project Tracking Database	Contains fifteen data entry forms dedicated to recording the attributes of and tracking and progress of projects/studies.	
 	★	Randomized Clinical Trial	Contains seven data entry forms for collecting data for a randomized clinical trial. Includes a short demographics form followed by a form where randomization is performed. An example randomization model has already been set up,... Show more	
 	☆	Single Survey	Contains a single data collection instrument enabled as a survey, which contains questions to demonstrate all the different field types.	

REDCap – Action Tags

Action Tags –

Must begin with ‘@’ sign and placed in Field annotation

List of Action Tags:

- @HIDDEN – hides field even if branching tries to make it visible
- @HIDDEN-FORM – hides field only on data entry form not in a survey
- @HIDDEN-SURVEY – hides field only on survey
- @READONLY
- @READONLY-FORM
- @READONLY-SURVEY

REDCap – Ontology

Enable searching within a biomedical ontology for text fields (survey or form)

**400 ontologies available, email REDCapAdmin@urmc.Rochester.edu if we do not have the ontology loaded.

<https://bioportal.bioontology.org/>

Currently have RxNORM, CTCAE, ICD9CM, ICD10, SNOWMEDCT

The screenshot shows the BioPortal homepage. At the top is a navigation bar with links: BioPortal, Browse, Search, Mappings, Recommender, and Annotator. Below the navigation bar is a welcome message: "Welcome to BioPortal, the world's most comprehensive repository of biomedical ontologies, vocabularies and terminology." followed by a help link. A search bar is present with the text "Search all ontologies" and a "Search" button. Below the search bar is a table titled "Ontology Visits (November 2015)" listing various ontologies and their visit counts. At the bottom of the screenshot is a statistics table showing the total number of ontologies, classes, resources indexed, indexed records, direct annotations, and direct plus expanded annotations.

Ontology Visits (November 2015)	
Current Procedural Terminology (CPT)	17749
RxNORM (RXNORM)	12451
Systematized Nomenclature of Medicine – Clinical Terms (SNOMEDCT)	9481
Medical Dictionary for Regulatory Activities (MEDDRA)	7536
National Drug Data File (NDDF)	4229
More	

Statistics	
Ontologies	474
Classes	6,471,001
Resources Indexed	48
Indexed Records	39,359,542
Direct Annotations	95,468,433,792
Direct Plus Expanded Annotations	144,789,582,932

The National Center for Biomedical Ontology

REDCap – Embedded Videos

Add field of type Descriptive Text.

a) Embed an external video to display inline or inside a popup

b) Attach an image, file or embedded audio.

Edit Field [X]

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: Descriptive Text (with optional Image/Video/Audio/File Attachment) [v]

Field Label [How to use Piping](#)
Example embedded inline video

Variable Name (utilized during data export)
ex_inlinevideo ☐ Enable auto naming of variable based upon its Field Label?
ONLY letters, numbers, and underscores

Optional file attachment, image, audio, or video:

☒ **Embed an external video** (provide video URL) [?]

e.g. https://youtube.com/watch?v=E1cCuWMupz0, https://vimeo.com/62730281, http://example.com/movie.mp4

Display format of video: ☒ Inline ☐ Inside popup

– or –

☒ **Attach an image, file, or embedded audio**
☒ Upload document

Display format of attachment on page:
☒ Link
☐ Inline image
☐ Audio file (play in embedded player on page)
(Images wider than 600 pixels will be downsized to fit page.)

Field Annotation [Learn about Action Tags](#)

Explanatory notes - not displayed on any page [?]

Save **Cancel**

REDCap – Codebook










User friendly – read only version of the data dictionary but has editing capabilities. Click pencil to edit the field on the form

[Project Home](#) [Project Setup](#) [Codebook](#) [Edit project settings in Control Center](#)

The Codebook is a human-readable, read-only version of the project's Data Dictionary and serves as a quick reference for viewing the attributes of any given field in the project without having to download and interpret the Data Dictionary. Note: Checkbox fields have their coded values displayed both in the format defined by users in the Online Designer/Data Dictionary as well as in the extended format seen in data imports and exports (i.e., field__code).

[Print page](#)

Data Dictionary Codebook

	#	Variable / Field Name	Field Label <i>Field Note</i>	Field Attributes (Field Type, Validation, Choices, Calculations, etc.)
Instrument: Demographics - Pediatric ICU mobilization project				
	1	record_id	Record ID	text
	2	mrn	MRN	text (number), Identifier
	3	dob	Date of birth	text (date_mdy), Identifier
	4	date_of_admission	Date of admission	text (date_mdy), Identifier
	5	date_of_discharge	Date of Discharge	text (date_mdy), Identifier
	6	pim_prism	PIM	text (number, Min: -12, Max: 12)
	7	rxnorm_ontology	Using RxNORM Ontology	text BIOPORTAL:RXNORM BIOPORTAL:RXNORM
	8	ex_inlinevideo	Example embeded inline video	descriptive
	9	ex_popupvideo	Example popup embedded video	descriptive

REDCap Functions

There are a number of helpful functions that allow you to sort through unstructured data. For example, you can now search through all the email fields in your records for emails that end with “@gmail.com.”

Function syntax	Type of Function	Effects	Example
contains (haystack, needle)	Does text CONTAIN another text string?	Returns a boolean (true or false) for if "needle" exists inside (is a substring of) the text string "haystack." Is case insensitive.	E.g. <i>contains("Rob Taylor", "TAYLOR")</i> will return as TRUE and <i>contains("Rob Taylor", "paul")</i> returns FALSE .
not_contain (haystack, needle)	Does text NOT CONTAIN another text string?	The opposite of contains(). Returns a boolean (true or false) for if "needle" DOES NOT exist inside (is a substring of) the text string "haystack." Is case insensitive.	E.g. <i>not_contain("Rob Taylor", "TAYLOR")</i> will return as FALSE and <i>not_contain("Rob Taylor", "paul")</i> returns TRUE .
starts_with (haystack, needle)	Does text START WITH another text string?	Returns a boolean (true or false) if the text string "haystack" begins with the text string "needle." Is case insensitive.	E.g. <i>starts_with("Rob Taylor", "rob")</i> will return as TRUE and <i>starts_with("Rob Taylor", "Tay")</i> returns FALSE .
ends_with (haystack, needle)	Does text END WITH another text string?	Returns a boolean (true or false) if the text string "haystack" ends with the text string "needle." Is case insensitive.	E.g. <i>ends_with("Rob Taylor", "Lor")</i> will return as TRUE and <i>ends_with("Rob Taylor", "Tay")</i> returns FALSE .

REDCap upcoming features

Projected Software Development timeline for early 2016

Upcoming Features:

1. Survey Themes
2. Ability to pre-populate data in fields (default values)
3. Infinitely repeating forms and events
4. Calculations from calculated fields resulting in text or dates

Contact Us

For a list of Services provided and fees

<https://www.urmc.rochester.edu/MediaLibraries/URMCMedia/academic-it/documents/AIT-Service-Catalog-July-23-2015-v4.pdf>

REDCap Assistance

REDCapAdmin@URMC.Rochester.edu

Research & Academic IT

<https://www.urmc.rochester.edu/smd/it.aspx>