

# Introduction to REDCap

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Icahn  
School of  
Medicine at  
**Mount  
Sinai**

## Introduction – Team Members



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Introduction to

# REDCap at Mount Sinai

- ▶ **Research Eelectronic Data Capture** – a platform developed by Vanderbilt University as a tool for researchers to collect data
- ▶ 21 CFR Part 11 compliant – joint effort by Scientific Computing, IT, IRB and Privacy Offices
- ▶ **Data resources and integration between many existing system with more to come**
  - Import clinical data into REDCap from Epic (over 1800 mapped fields)
    - Basic Demographics
    - Conditions/Problems list
    - Medications
    - Vital signs
    - Laboratory Results (lab results where LOINC code is stored in Epic)
  - Submit requests to <https://bit.ly/3guXoag>
- ▶ **We host more than 10,000 databases, with over 18,000 users**

# Overview

## ▶ **Creating your REDCap account**

## ▶ **Project Setup**

- Templates
- Project page
- Longitudinal Studies
- Online Designer
  - Surveys
  - Variables
- Obtaining Data

## ▶ **Data Management**

## ▶ **Managing Users**

## ▶ **Project Life Cycle**

# Creating A REDCapAccount

## Mount Sinai Users:

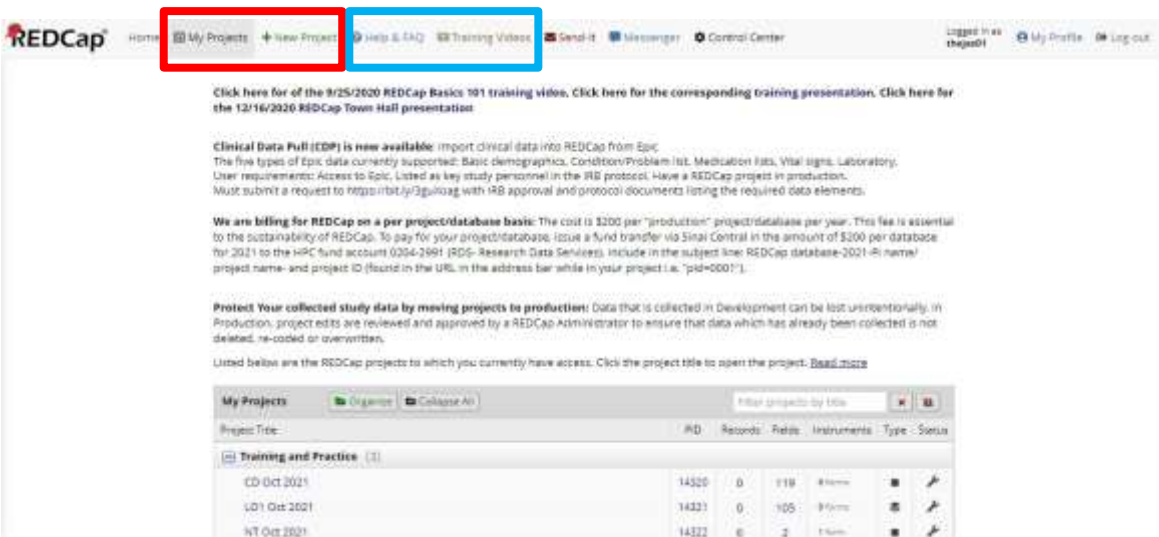
- ▶ Mount Sinai faculty, students and staff can log into REDCap using their regular Mount Sinai username and password here: <https://redcap.mountsinai.org>

## External Users:

- ▶ For external collaborators without Mount Sinai credentials, the PI or their delegate must request Mount Sinai credentials via SailPoint: <https://sailpoint.mountsinai.org/>

# Creating a New Project

- ▶ Users can find the projects they have access to under **My Projects** at the top of the page. These are projects they've been added to or have created.
- ▶ To create a project, click on the adjacent **New Project** button.
- ▶ Along the top bar, users will also find great resources under **Help & FAQ** as well as **Training Videos** for learning to use REDCap.



# Creating a New Project Cont'd

- ▶ When creating a new project, users can fill out **project details** and the type of research that will be conducted
- ▶ On the same page are **templates** for getting started on a new project

**+ Create a new REDCap Project**

You may begin the creation of a new REDCap project on your own by completing the form below and clicking the Create Project button at the bottom.

**Project title:**   
Title to be displayed on project webpage

**Purpose of this project:**   
How will it be used?

**Name of P.I. (if applicable):**    
First name MI Last name

**Email of P.I. (if applicable):**

**Name of P.I. as cited in publications (if applicable):**  (e.g., Harris PA)

**IRB number (if applicable):**

**Please specify:**

- ☐ Basic or bench research
- ☒ Clinical research study or trial
- ☐ Translational research 1 (applying discoveries to the development of trials and studies in humans)
- ☐ Translational research 2 (enhancing adoption of research findings and best practices into the community)
- ☐ Behavioral or psychosocial research study
- ☐ Epidemiology
- ☐ Repository (developing a data or specimen repository for future use by investigators)
- ☐ Other

**Assign project to a Project Folder?** ☐

**Project notes (optional):**   
Comments describing the project's use or purpose that are displayed on the My Projects page

**Start project from scratch or begin with a template?**

☐ Create an empty project (blank slate)

☐ Upload a REDCap project XML file (CDISC ODM format) ?

☒ Use a project template (recommended)

**★ Choose a project template** (some are pre-filled with fields, forms/surveys, and other settings) [+ Add templates \(administrators only\)](#)

<small>select template</small>	Template title <small>(sorted by title)</small>	Template description
<input type="radio"/>	Basic Demography	Concerns a single data collection instrument to capture basic demographic information.
<input type="radio"/>	Classic Database	Concerns six data entry forms, including forms for demography and baseline data, three monthly data forms, and concludes with a completion data form.
<input type="radio"/>	Longitudinal Database (1 arm)	Concerns nine data entry forms (beginning with a demography form) for collecting data longitudinally over eight different events.
<input type="radio"/>	Longitudinal Database (2 arms)	Concerns 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.

**Create Project** **Cancel**

# Getting Familiar with the Project Page

The screenshot shows the REDCap Project Page for a project named 'CD Oct 2021' (ID: 11330). The page is divided into several sections:

- Project Home and Design:** Includes links for Project Home, Project Setup, Designer, Dictionary, and Codebook. The project status is 'Development'.
- Data Collection:** Includes links for Survey Distribution Tools, Record Status Dashboard, and Add/Edit Records.
- Applications:** Includes links for Alerts & Notifications, Calendar, Data Exports, Reports, and Stats, Data Import Tool, Data Comparison Tool, Logging, Field Comment Log, File Repository, User Rights and DAGs, Customize & Manage Locking/Signatures, Data Quality, API and API Playground, REDCap Mobile App, and External Modules.
- Help & Information:** Includes links for Help & FAQ, Video Tutorials, Suggest a New Feature, and Contact REDCap administrator.
- Main project settings:** Includes options to 'Disable' or 'Enable' 'Use surveys in this project?' and 'Use longitudinal data collection with defined events?'. There is a link to 'Modify project title, purpose, etc.'.
- Design your data collection instruments & enable your surveys:** Includes a link to 'Online Designer' or 'Data Dictionary'. It also mentions 'REDCap Shared Library' and a 'Check for identifiers' link.
- Define your events and designate instruments for them:** Includes a link to 'Define My Events' or 'Designate instruments for My Events'.
- Enable optional modules and customizations:** Includes options to 'Enable' or 'Disable' various modules like 'Repeatable instruments', 'Auto-numbering for records', 'Scheduling module (longitudinal only)', 'Randomization module', and 'Designate an email field for sending survey invitations'. There is also a link to 'Additional customizations'.

- Manage a project

- Check and edit participants' records, share survey invitation links and QR code

- Import, Export, and run Reports on collected data
- Modify User Access
- Configure External Modules

- Modify project title, PI, and descriptions
- Enable Longitudinal data collection

- Access the Online Designer
- Access/download the data dictionary
- Find information on unique REDCap functions

- Define how a longitudinal study is structured

- Extended customizations and modules options












# Longitudinal Studies

- ▢ Define each of the study **Arms** and **Events** for those Arms
- ▢ Designate Instruments for each Arm and Event

Arm 1: Arm 1 [+Add New Arm](#)

Arm name: **Arm 1** [Rename Arm 1](#)

	Event #	Event Name	Custom Event Label (optional)	Unique event name (auto-generated)
  	1	Event 1		event_1_arm_1
  	2	Event 2		event_2_arm_1
  	3	Event 3		event_3_arm_1
<div><div>Add new event</div><div><input type="text"/></div><div>Descriptive name for this event:</div></div> <div><div><input type="text"/></div><div>Custom Event Label (optional) Example: [visit_date], [weight] kg</div></div>				

[Project Setup](#) [Define My Events](#) [Designate Instruments for My Events](#)

Since you have defined multiple events on the [Define My Events](#) page, you may now select which data collection instruments that you wish to utilize for each event by using the table below. This allows you to enter data on any data collection form multiple times for any given project record. Any and all data collection instruments can thus be used for any event defined.

Click the [Begin Editing](#) button to change the relationships below by designating which forms you wish to utilize for which events. When you are finished making changes, click the [Save](#) button to finalize your changes.

[Upload or download instrument mappings](#)

[Begin Editing](#) [Save](#)

Data Collection Instrument	Event 1 (1)	Event 2 (2)	Event 3 (3)
Demographics (Survey)	✓		
Baseline Data (Survey)	✓		
Month 1 Data		✓	
Completion Data			✓

# Online Designer – Instruments/Surveys

- ▶ Create, import, and manage data collection forms
- ▶ Enable instruments as surveys
- ▶ Edit data collection instruments and variables
- ▶ Define how participants can get automated invitations by email

**Data Collection Instruments**

**Survey options:**

- Survey Queue
- Survey Login
- Survey Notifications
- Upload or download Auto Invitations

**Add new instrument:**

- Create: a new instrument from scratch
- Import: a new instrument from the official [REDCap Shared Library](#)
- Upload: instrument ZIP file from another project/user or [external libraries](#)

Instrument name	Fields	View PDF	Enabled as survey	Instrument actions	Survey-related options
Demographics	25			Choose action	Survey settings + Automated Invitations
Baseline Data	18			Choose action	Survey settings + Automated Invitations
Month 1 Data	19		Enable	Choose action	
Completion Data	5		Enable	Choose action	

# Online Designer – Variables

- ▶ Variables allow users to define discrete data points for collection
- ▶ Short, simple, and identifiable names for variables are preferred
- ▶ Choose the field type that best fits the data point
- ▶ Note: Collection and maintenance of PHI in a protected and confidential manner is the responsibility of the investigators

The screenshot displays the 'Add New Field' dialog in the ODK Form Builder. The 'Field Type' dropdown is open, showing various options. The 'Text Box (Short Text, Number, DateTime...)' option is highlighted. The right panel shows configuration settings for the selected field type, including 'Variable Name', 'Validation', 'Required?', 'Identified?', 'Custom Alignment', and 'Field Note'. A red arrow points from the 'Add Field' button in the top right of the 'Add New Field' dialog to the 'Add Field' button in the top right of the 'Form Builder' interface.

# Obtaining Data

- ▶ Invite participants to take a survey by sharing Public Survey URLs or QR codes
- ▶ Monitor follow-up surveys and previously sent invitations, manage the survey's participants list

## Survey Distribution Tools


 Public Survey Link

 Participant List

 Survey Invitation Log

Using a public survey link is the simplest and fastest way to collect responses for your survey. You may obtain the survey link below to email it to your participants. Responses will be collected anonymously (unless the survey contains questions asking for identifying data from the participant). **NOTE:** Since this method uses a single survey link for all participants, it allows for the possibility of participants taking the survey multiple times, which may be necessary in some cases.



To obtain the survey link, copy the URL below and paste it into the body of an email message in your own email client. Your email recipient(s) can then click the link to begin taking your survey.

Public Survey URL:  

OR Short Public Survey URL:  

### Link Actions

 Open public survey


 Open public survey +  Log out

 Send me URL via email

 Survey Access Code or  QR Code

### Link Customizations

 Get Short Survey Link

 Create Custom Survey Link

 Get Embed Code

# Obtaining Data – Data Entry Form

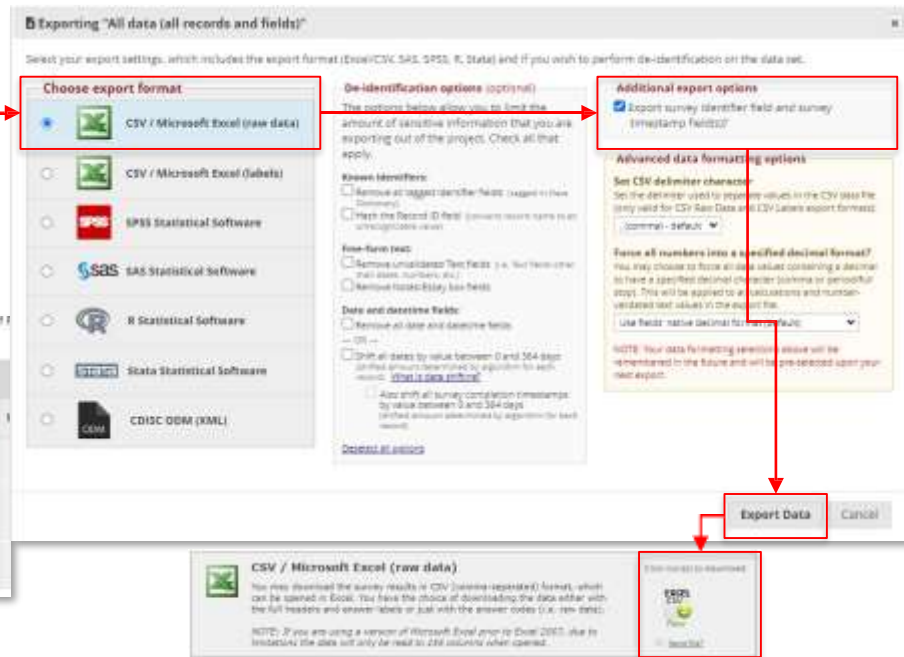
- ▶ For data points that are not collected during the surveys, they can be entered in the **Record Home Page**
- ▶ Can enter new data, overwrite data, or make notes on data for the record

The screenshot shows the REDCap interface for Study ID 1. The left sidebar contains navigation options: My Projects, Control Center, REDCap Messenger, View project as user, Project Home and Design, Project Home, Project Setup, Designer, Dictionary, Codebook, Project status, Development, Data Collection, Survey Distribution Tools, Record Status Dashboard, Add / Edit Records, Study ID 1, Demographics, Alerts & Notifications, Calendar, Data Exports, Reports, and Stats, and Data Import Tool. The main content area is titled 'Demographics' and includes fields for Study ID, Date subject signed consent, Contact Information (First Name, Last Name, Street, City, State, ZIP, Phone number, E-mail, Date of birth, Age (years)), and an Upload the patient's consent form button.

Study ID 1				
Data Collection Instrument	Event 1	Event 2	Event 3	
Demographics (survey)	✓			
Baseline Data (survey)	✓			
Month 1 Data		✓		
Completion Data				Ⓢ
Deletes all data for events	✗	✗		

# Data Management- Export data

- ▶ **Data Exports, Reports, and Stats** contain methods to export collected data in various formats
- ▶ Custom selections can be made to isolate data of interest from larger project databases



# Data Management – Editing Data

- ▶ Data edits can be made on csv files in Excel
- ▶ Records show all data collected for a specific **Event** and **Arm**
- ▶ Some data will appear as entered by survey participants with free text entry, while other data is coded as discrete selections as in the case of multiple-choice selections

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q
1	study_id	redcap_event_name	redcap_s	demograp	date_enrc	patient_d	first_name	last_name	address	telephone_1	email	dob	age	ethnicity	race	sex	given_birt
2	1	event_1_arm_1		#####	#####		test1	test1	Some place	(444) 444-4444		#####	0	1	1	1	
3	1	event_2_arm_1															
4	2	event_1_arm_1			#####		test2	test2	Somewhere	(555) 555-5555		#####	0	2		0	0
5	3	event_1_arm_1		#####	#####		test1	test1	Some place	(444) 444-4444		#####	0	1	1	1	
6	3	event_2_arm_1															
7	4	event_1_arm_1			#####		test2	test2	Somewhere	(555) 555-5555		#####	0	2		0	0
8	5	event_1_arm_1		#####	#####		test1	test1	Some place	(444) 444-4444		#####	0	1	1	1	
9	5	event_2_arm_1															
10	6	event_1_arm_1			#####		test2	test2	Somewhere	(555) 555-5555		#####	0	2		0	0
11																	

# Data Management – Importing

- ▶ **Data Import Tool** allows for users to import new data or edited data by each record
- ▶ An effective tool for importing larger blocks of data
- ▶ Don't be intimidated by errors since they are a common occurrence in data imports
- ▶ Each error will need to be resolved before a set of data can be successfully uploaded

The screenshot shows the REDCap Data Import Tool interface. It includes several configuration options: 'Record format' set to 'Rows', 'Format for date and datetime values' set to 'MM/DD/YYYY or YYYY-MM-DD', 'Allow blank values to overwrite existing saved values?' set to 'No, ignore blank values in the file (default)', and 'Name the imported records automatically (force record auto-numbering)' set to 'No, use the record name provided'. Below these options is a section for uploading a CSV file, with a 'Choose File' button and a file named 'CDOct2021\_18\_1325.csv' selected. An 'Upload File' button is also present.

Errors were detected in the import file that prevented it from being loaded.

There are 24 errors shown in red in the error table below in this dataset. Please correct any errors and upload the file again.

ERROR DISPLAY TABLE			
Record	Field Name	Value	Error Message
1	demographics_timestamp	10/18/2021 12:44	This field name does not exist in the project.
3	baseline_data_timestamp		This field name does not exist in the project.
1	month_1_data_complete	1	This field ('month_1_data_complete') exists on an instrument that is not designated for the event named 'Event 1'. You are not allowed to import data for this field into this event.
1	completion_data_complete	0	This field ('completion_data_complete') exists on an instrument that is not designated for the event named 'Event 1'. You are not allowed to import data for this field into this event.
1	demographics_timestamp		This field name does not exist in the project.
1	baseline_data_timestamp		This field name does not exist in the project.
2	demographics_timestamp		This field name does not exist in the project.



# Managing Project Users

- ▶ Users with accounts can be added to a project in the **User Rights** section of your project
- ▶ When adding or modifying existing users, a long checkbox section will appear to manage their access
- ▶ It is important to properly manage user rights to protect data and PHI, control project design and life cycle, and maintain accountability

The screenshot displays the 'User Rights' configuration page in REDCap. It is divided into two main sections: 'Basic Rights' and 'Data Entry Rights'.

**Basic Rights:** This section includes an 'Expiration Date' field (set to 'never'), a 'Highest level privileges' section with checkboxes for 'Project Design and Setup', 'User Rights', and 'Data Access Groups' (all checked), and a 'Privileges for data exports' section. The 'Data Exports' section has radio buttons for 'No Access', 'Deidentified\*', 'Remove all tagged identifier fields', and 'Full Data Set' (selected). Other options include 'Add/Edit/Organize Reports' (checked), 'Stats & Charts' (checked), and 'Other privileges' such as 'Survey Distribution Tools', 'Calendar', 'Data Import Tool', 'Data Comparison Tool', 'Logging', 'File Repository', 'Data Quality', 'API', and 'Settings pertaining to the REDCap mobile app'.

**Data Entry Rights:** This section includes a warning about data entry rights and a table for configuring permissions for various data fields.

	No Access	Read Only	View & Edit	Full Access
Demographics (survey)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Baseline Date (survey)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Month 1 Date	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Completion Date	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

# Project Life Cycle

- ▶ **Development** phase of the project is best for creating and testing a project
- ▶ **Production** phase protects collected data by flagging project changes for data loss review
- ▶ **Analysis/Cleanup** phase for finalizing analysis and ending a study (no changes can be made to the project in this phase, only access to view data)



Questions?