

Workshop REDCap

EM Regional COVID-19 Vaccine Effectiveness Studies Cohort Study in Health Care Workers (HCWs)

Presented by:
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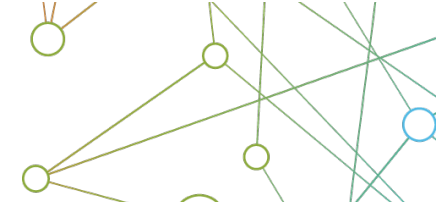
Agenda

- ▶ Introduction and getting started to REDCap
 - ▶ Getting started
 - ▶ Overall navigation
 - ▶ Project Navbar
 - ▶ Project Setup
 - ▶ Project Home
 - ▶ Creating an Instrument
- ▶ Overview of codebooks for the HCW study
- ▶ Data entry
- ▶ Data Management
- ▶ Data export
- ▶ Data analysis and reporting

Terms

- **Instrument:-** Forms or survey for data capturing
- **Record ID:-** Unique identifier for each record in your REDCap database
- **Record Status Dashboard:-** Page listing all existing records and their status for all instrument
- **Data Dictionary:-** Spreadsheet containing variables and metadata definitions for the project
- **Variable:-** Name of the field and the data types of instruments that is stored in the database
- **Online Designer:-** Online tool use to create/modify/delete data collection instruments and fields
- **Validation:** Specifying the specific type of information, data validation allows you to enforce a validation standard on the field.
- **Survey:-** Online tool use to create/modify/delete data collection instruments and fields
- **Longitudinal model:** Study events/instruments may repeat multiple times for any give record/participant with those events.
- **Classic:** Study events do not repeat multiple times for any give record/participant with any events.

Getting started to REDCap



Log In

Medical Research Council Gambia Unit

Leading health research in West Africa to save lives and improve health across the world

Please log in with your user name and password. If you are having trouble logging in, please contact [Pa Modou Cham \(1921\)](#).

Username: aworwui

Password:

Log In

[Forgot your password?](#)

Login to
REDCap

Welcome to REDCap!

REDCap is a secure web platform for building and managing online databases and surveys. REDCap's streamlined process for rapidly creating and designing projects offers a vast array of tools that can be tailored to virtually any data collection strategy.

REDCap provides automated export procedures for seamless data downloads to Excel and common statistical packages (SPSS, SAS, Stata, R), as well as a built-in project calendar, a scheduling module, ad hoc reporting tools, and advanced features, such as branching logic, file uploading, and calculated fields.

Learn more about REDCap by watching a [brief summary video \(4 min\)](#). If you would like to view other quick video tutorials of REDCap in action and an overview of its features, please see the [Training Resources](#) page.

NOTICE: If you are collecting data for the purposes of human subjects research, review and approval of the project is required by your Institutional Review Board.

REDCap Features

Build online surveys and databases quickly and securely - Create and design your project rapidly using secure web authentication from your browser. No extra software is required.

Fast and flexible - Conception to production-level survey/database in less than one day.

Export data to common data analysis packages - Export your data to Microsoft Excel, PDF, SAS, Stata, R, or SPSS for analysis.

Ad Hoc Reporting - Create custom queries for generating reports to view or download.

Facilitate management of your data

Demontsration

<https://extranet.who.int/edcrc/>

Overall Navigation

Home

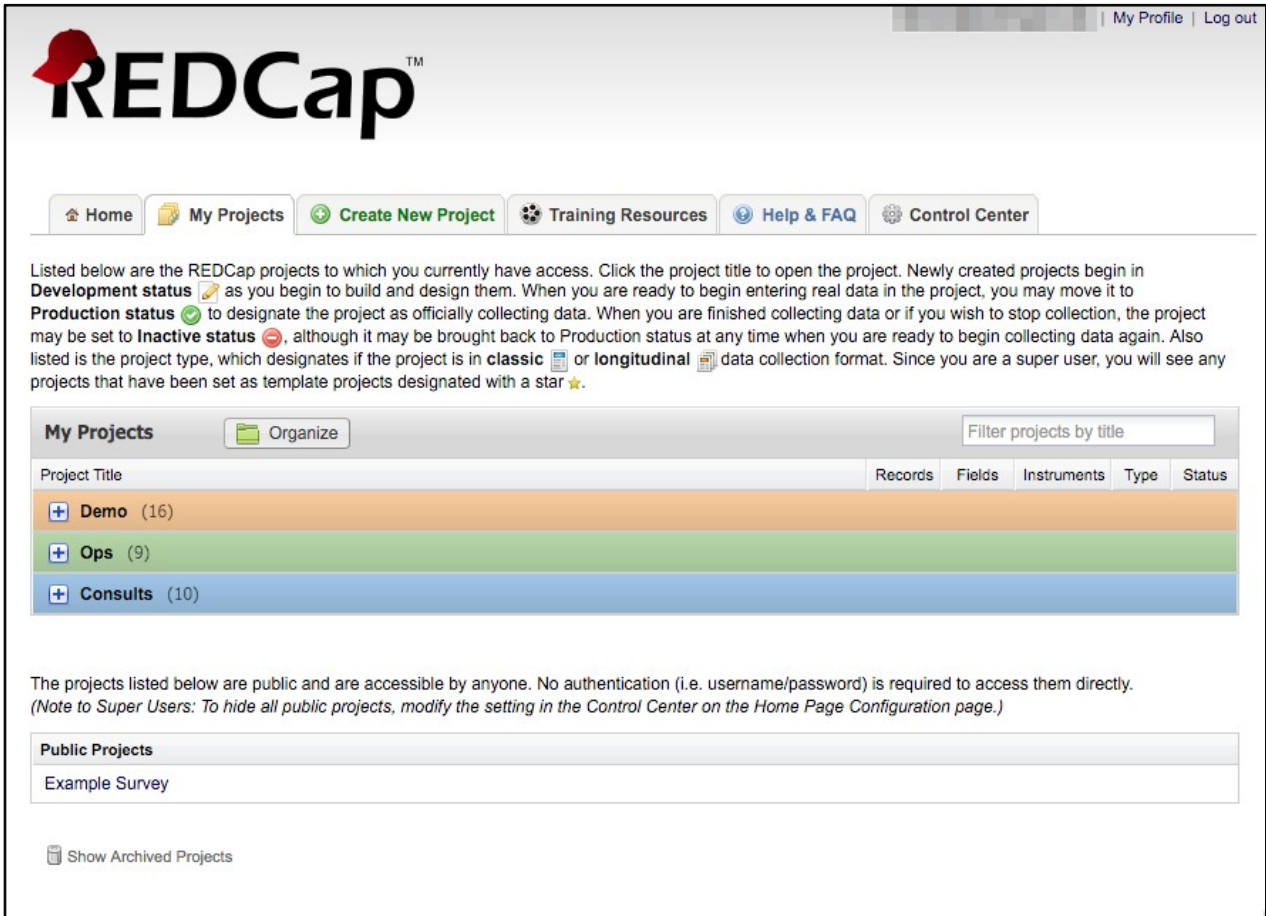
My Projects

Request New Project

Training Resources

Help & FAQ

My Profile



The screenshot displays the REDCap user interface. At the top right, there are links for "My Profile" and "Log out". The main navigation bar includes buttons for "Home", "My Projects", "Create New Project", "Training Resources", "Help & FAQ", and "Control Center". Below this, a paragraph explains project statuses: "Development status" (pencil icon), "Production status" (checkmark icon), and "Inactive status" (stop sign icon). It also mentions project types: "classic" (table icon) and "longitudinal" (calendar icon). A "My Projects" section features an "Organize" button and a search box labeled "Filter projects by title". A table lists three projects: "Demo" (16 records), "Ops" (9 records), and "Consults" (10 records). Below the table, a note states that listed projects are public and accessible by anyone. A "Public Projects" section shows "Example Survey". At the bottom, there is a "Show Archived Projects" button.

My Profile | Log out

REDCap™

Home My Projects Create New Project Training Resources Help & FAQ Control Center

Listed below are the REDCap projects to which you currently have access. Click the project title to open the project. Newly created projects begin in **Development status** ✎ as you begin to build and design them. When you are ready to begin entering real data in the project, you may move it to **Production status** ✔ to designate the project as officially collecting data. When you are finished collecting data or if you wish to stop collection, the project may be set to **Inactive status** ⛔, although it may be brought back to Production status at any time when you are ready to begin collecting data again. Also listed is the project type, which designates if the project is in **classic** 📄 or **longitudinal** 📅 data collection format. Since you are a super user, you will see any projects that have been set as template projects designated with a star ★.

My Projects

 Organize Filter projects by title| Project Title | Records | Fields | Instruments | Type | Status |
| --- | --- | --- | --- | --- | --- |
| + Demo (16) | | | | | |
| + Ops (9) | | | | | |
| + Consults (10) | | | | | |

The projects listed below are public and are accessible by anyone. No authentication (i.e. username/password) is required to access them directly. (Note to Super Users: To hide all public projects, modify the setting in the Control Center on the Home Page Configuration page.)

Public Projects

Example Survey

Show Archived Projects

Project Setup

[Project Home](#) [Project Setup](#) [Other Functionality](#) [Project Revision History](#)

Project status: Development Completed steps **0** of **8**

Main project settings

Use surveys in this project? [?](#) [VIDEO: How to create and manage a survey](#)

Use longitudinal data collection with defined events? [?](#)

Design your data collection instruments

Add or edit fields on your data collection instruments. This may be done by either using the Online Designer (online method) or by uploading a Data Dictionary (offline method). Quick links: [Download PDF of all instruments](#) OR [Download the current Data Dictionary](#)

Go to or Explore the

Have you checked the [Check For Identifiers](#) page to ensure all identifier fields have been tagged?

Learn how to use

Define your events and designate instruments for them

Create events for re-using data collection instruments and/or set up scheduling.

Go to or

Access to online designer and Upload utilities (Events, Instruments , Data Dictionary)

Longitudinal Setup

Enable Longitudinal mode

Setup Arms

Setup Events

Link Instruments

Setup Dependent Features

Test Your Model



Enable Longitudinal Mode

- ▶ Hit the “Enable” button to turn on longitudinal mode
 - ▶ Found in the project setup page
 - ▶ Disable longitudinal mode hides features

Main project settings

Complete! [VIDEO: How to create and manage a survey](#)

Not complete! [VIDEO: How to create and manage a survey](#)

Disable Use surveys in this project? [?](#)

Enable Use longitudinal data collection with defined events? [?](#)

Modify project title, purpose, etc.

A green arrow points from the 'Complete!' status to the 'Enable' button.

Main project settings

Complete! [VIDEO: How to create and manage a survey](#)

Not complete! [VIDEO: How to create and manage a survey](#)

Disable Use surveys in this project? [?](#)

Disable Use longitudinal data collection with defined events? [?](#)

Modify project title, purpose, etc.

A green arrow points from the 'Not complete!' status to the 'Disable' button for longitudinal data collection.

Longitudinal Setup

Enable Longitudinal mode

Setup Arms

Setup Events

Link Instruments

Setup Dependent Features

Test Your Model



Setup Events

- ▶ Also found in “Define My Events”
- ▶ Basic setup:
 - ▶ Each arm needs to have at least 1 event
 - ▶ To add extra events use the “Add new event” button after define the event name
- ▶ ”Quick” setup:
 - ▶ Use the “Upload events (CSV)” option
 - ▶ Download a template with the “Download events (CSV)” option
 - ▶ Pro tip: only the event name and arm number are mandatory for the “Upload events (CSV)” option
- ▶ The event name and arm number automatically combine into the “unique event name”.
 - ▶ Keep event names short

Demontsration

https://extranet.who.int/edcrc/redcap_v12.1.1/index.php?pid=103

Project-Level Navigation

Navigation

Data collection

Applications

Help & Information

Project Home

Project Setup

Other Functionality

The screenshot displays the REDCap project-level navigation interface for a project named 'AE Demo'. The interface is divided into a left sidebar and a main content area.

Left Sidebar:

- REDCap logo
- Logged in as [bdeveer@washington.edu](#) | Log out
- My Projects
 - Project Home
 - Project Setup
- Project status: **Development**
- Data Collection** | [Edit instruments](#)
 - Record Status Dashboard - View data collection status of all records
 - Add / Edit Records - Create new records or edit/view existing ones
- Applications**
 - Calendar
 - Data Exports, Reports, and Stats
 - Data Import Tool
 - Data Comparison Tool
 - Logging
 - Field Comment Log
 - File Repository
 - User Rights and DAGs
 - Record Locking Customization
 - E-signature and Locking Mgmt
 - Data Quality
 - API and API Playground
 - REDCap Mobile App
 - ITHS REDCap User Mailing List
 - Free REDCap Classes
 - ITHS REDCap (User) FAQ
- Help & Information**
 - Help & FAQ
 - Video Tutorials
 - Suggest a New Feature
- If you are experiencing problems, please

Main Content Area:

AE Demo

Project Home | Project Setup | Other Functionality | Project Revision History | Edit project settings in Control Center

Project status: **Development** | Completed steps **0 of 8**

Main project settings (In progress)

- Disable Use longitudinal data collection with repeating forms? [?]
- Enable Use surveys in this project? [?] | VIDEO: How to create and manage a survey
- I'm done!
- Modify project title, purpose, etc.

Design your data collection instruments (In progress)

Add or edit fields on your data collection instruments. This may be done by either using the Online Designer (online method) or by uploading a Data Dictionary (offline method), in which you may use either method or both. Quick links: [Download PDF of all data collection instruments](#) OR [Download the current Data Dictionary](#)

Go to or

You may also browse for pre-built data collection instruments in the [REDCap Shared Library](#)

Have you checked the [Check For Identifiers](#) page to ensure all identifier fields have been tagged?

Define your events and designate instruments for them (In progress)

Create events for re-using data collection instruments and/or set up scheduling.

Go to or

I'm done!

Enable optional modules and customizations (Optional)

- Disable Auto-numbering for records [?]
- Enable Scheduling module (longitudinal only) [?]
- Enable Randomization module [?]
- Enable Designate an email field to use for invitations to survey participants [?]
- I'm done!
- Additional customizations

Settings displayed to super users only:

- Enable Twilio SMS and Voice Call services for surveys [?]

Project Home

- Project Home**
- Project Setup
- Other Functionality
- Project Revision History

The tables below provide general dashboard information, such as a list of all users with access to this project, general project statistics, and upcoming calendar events (if any).

👤 Current Users (14)	
User	Expires
archibald.worwui@ (Archibald Worwui)	never
bonitagamses@gm (Bonita Gamses)	never
frankbr08@gmail.c (Frank Rossouw)	never
isaaknewtonamukc (Amukoto Isaak)	never
katsander@who.int (Reggis Katsande)	never
knghitukwa@gmail (Natasha Nghitukwa)	never
manganetha2023@	never
mariapricella@gma	never
markhangula93@gi (Mark Hangula)	never
mmwaetako@gmai (Martin T Mwaetako)	never
nanubjevon@gmail	never
petersylvanus.ndov (Peter Svlvanus Ndo)	never

📊 Project Statistics	
Records in project	0
Most recent activity	10-02-2022 21:08
Space usage for docs	0.06 MB

📅 Upcoming Calendar Events (next 7 days)			
	Time	Date	Description
			No upcoming events

Specific project overview and usage summary statistic

Project Dashboard

Project Dashboards

 [VIDEO: How to use Project Dashboards \(23 min\)](#)

+ Create New Dashboard

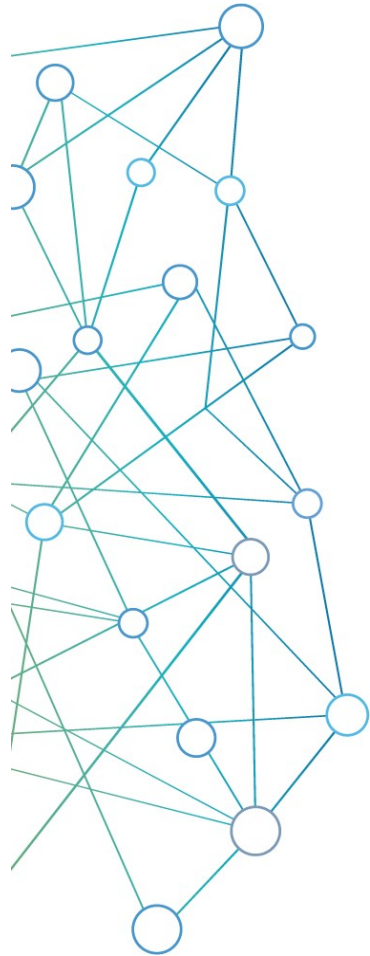
 My Project Dashboards

Project Dashboards are pages with dynamic content that can be added to a project. They can utilize special Smart Variables called **Smart Functions, Smart Tables, and Smart Charts** that can perform aggregate mathematical functions, display tables of descriptive statistics, and render various types of charts, respectively. Project dashboards have two basic attributes: a title and a body. User access privileges are customizable for each dashboard, and anyone with Project Design privileges can create and edit them. A wizard is provided on the Project Dashboard creation page to help you easily construct the syntax to add Smart Functions, Smart Tables, or Smart Charts to your dashboards, and a list of helpful examples is also included. [Learn more](#)

	Dashboard name	Dashboard options
	<p>+ Create New Dashboard</p>	

Overall project summary and selected statistics

Instrument Design



Online designer

- *Wizard type instrument design*
 - *Very forgiving*
 - *Great way to learn*
-

REDCap shared library

- *Quickest way to load an instrument*
 - *Curated by Vanderbilt University*
-

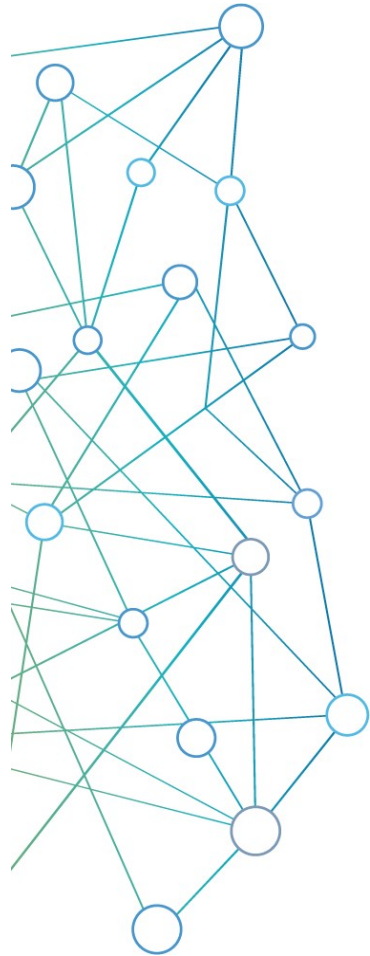
Zip files

- *Import individual instruments from other projects*
 - *Great for sharing commonly used instruments*
-

Data dictionary

- *Advanced feature that defines an entire project*
- *Excel file that you customize outside of REDCap*

Online Designer General



Instruments

- *Create, Import, Upload*
 - *Rename, Copy, Delete, Download instrument ZIP*
 - *No limit on the number of forms in a project*
-

Variables

- *Each instrument has to have at least one variable*
 - *Variables can be deleted, edited, and moved within a project*
-

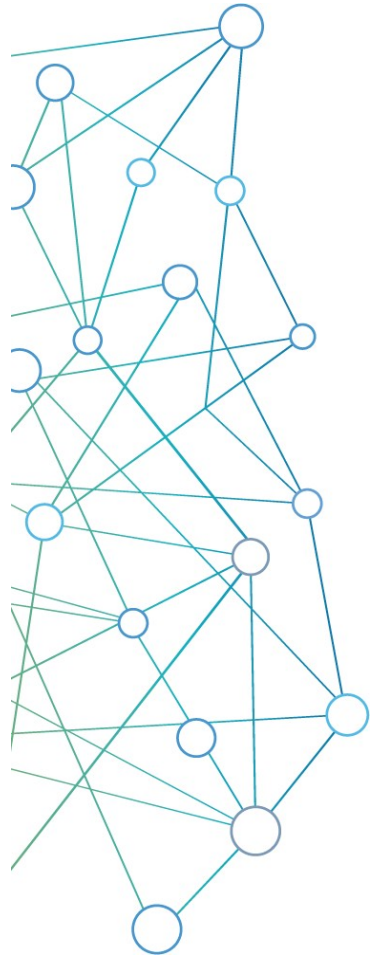
Variable limits

- *No real “technical” limit*
 - *Best practices: No more than 1000 variables per form*
-

Surveys versus Instruments

- *Each instrument can be turned into a survey*
- *Any survey can still be filled out as a form*

Variable Creation



Necessary attributes

- *Field type*
 - *Field label*
 - *Variable name*
-

Optional attributes

Required, Identifier, Custom Alignment, Field note, Field Annotation, Action tags

Conditional attributes

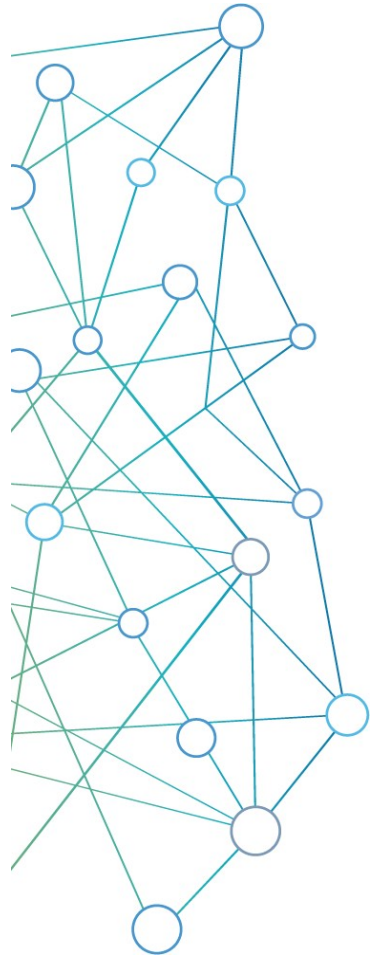
Validation, Minimum, Maximum, Ontology lookup, Choices

Matrix fields

Collection of variables

Branching Logic

Drag and Drop Method



The art of hiding fields

*Set up a logic statement to be either true or false based on entered variables
A true outcome shows a field, a false one hides the field*

Project limited

References values in other forms or events, but not other projects

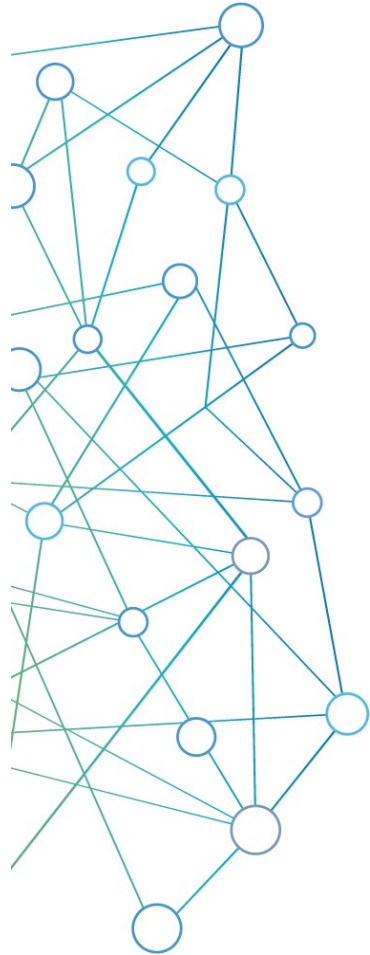
Drag and drop method

Allows you to craft logic without knowing the syntax or having any kind of programming experience

Syntax method

Allows for much more complex logic, but is difficult to set up correctly

Basic User Rights



Adding users to your project

Anybody, that has a user account on the ITHS REDCap server can be added to your project as a user with a custom set of rights

Form rights

Hide forms completely, View-only mode or full access

Application rights

Give users only access to application they actually need

User roles

Useful for when you need to add a lot of users with the same rights quickly



Demontsration

Codebooks



Logged in as **j.benfarhat@epiconcept.fr**

[Log out](#)

[My Projects](#)

[REDCap Messenger](#)

Project Home and Design

[Project Home](#) · [Project Setup](#)

[Designer](#) · [Dictionary](#) · [Codebook](#)

Project status: **Development**

Data Collection

[Record Status Dashboard](#)

- View data collection status of all records

[Add / Edit Records](#)

- Create new records or edit/view existing ones

Show data collection instruments

Applications

[Project Dashboards](#)

[Alerts & Notifications](#)

[Multi-Language Management](#)

[Calendar](#)

[Data Exports, Reports, and Stats](#)

[Field Comment Log](#)

[File Repository](#)

External Modules

[Manage](#) [View Logs](#)

EM Regional COVID-19 Vaccine Effectiveness Study: Cohort Study in HCWs

PID 103

[Project Home](#)

[Project Setup](#)

[Online Designer](#)

[Data Dictionary](#)

[Codebook](#)

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

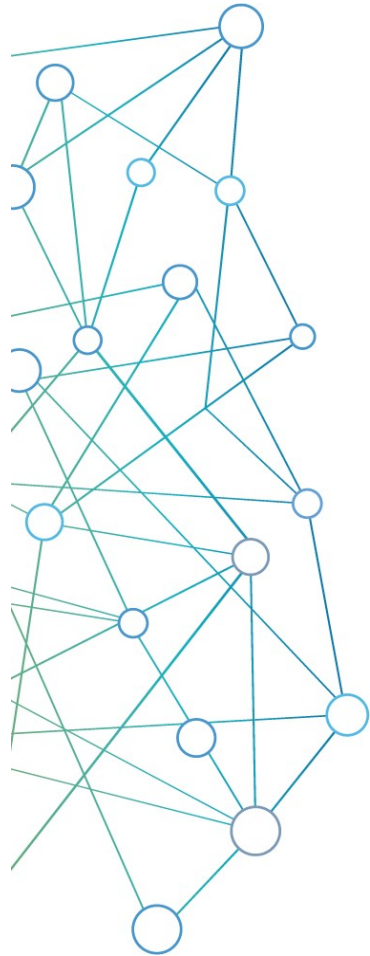
[^ Collapse all instruments](#)

	#	Variable / Field Name	Field Label <i>Field Note</i>	Field Attributes (Field Type, Validation, Choices, Calculations, etc.)
Instrument: Preenrolment Questionnaire (preenrolment_questionnaire) ^ Collapse				
	1	[record_id]	Record ID	text
	2	[auth_id]	Study ID	text
	3	[hospital_site]	Name/Code of health care facility	text, Required Custom alignment: RH
	4	[staff]	Name of the staff member	text, Required, Identifier Custom alignment: RH



Demontsration

Basic Data Entry



Add / Edit Records

Located in the data collection menu. Entering a new record ID will create a new record. Entering an existing record ID will allow you to edit the record.

Data Search

Allows the user to search based on one of the capture variables, provided that they are unique enough to identify records.

Unique record ID's

Each REDCap record will have a unique ID. The ID is always stored in the very first variable of your very first instrument.

Deleting test records

Done by moving to production, erasing all data, or deleting individual records

Longitudinal Data Entry

Adding new records

- *Navigate to the “Add / Edit Records” menu*
 - *Create a new record*
 - *In case of multiple arms, you’ll have to select the appropriate arm before creating a record*
-

Record home page

- *Page provides an overview for the data entry progress for a single record*
 - *Clicking on any dot will take you directly to that particular form in the corresponding event*
 - *General & event specific actions are located on this page*
-

Record Status Dashboard

- *Dashboard provides an overview for the data entry progress of all records*
- *Organised by event*
- *Use the “Create custom dashboard” option to craft your own custom overviews*

Demontsration

Please refer to the dummy questionnaires you received

Record Status Dashboard

Study ID	Baseline Baseline (Arm 1: Intervention Drug A)	Field Type Demo Baseline (Arm 1: Intervention Drug A)	Follow up Month 1 (Arm 1: Intervention Drug A)	Medications Month 1 (Arm 1: Intervention Drug A)	Follow up Month 2 (Arm 1: Intervention Drug A)	Medications Month 2 (Arm 1: Intervention Drug A)	Follow up Month 3 (Arm 1: Intervention Drug A)
1 Obama, Barry							
2 Putin, Vladimir							
3 Merkel, Angela							
4 Lagarde, Christine							
10 Rubio, Marco							
12 Biden, Joe							
14 Trump, Donald							

Legend for status icons:

- Incomplete Incomplete (no data saved) ?
- Unverified Partial Survey Response
- Complete Completed Survey Response

Data Management

- Create new records or edit/view existing ones

Applications

- Project Dashboards
- Alerts & Notifications
- Multi-Language Management
- Calendar
- Data Exports, Reports, and Stats
- Data Import Tool
- Data Comparison Tool
- Logging and Email Logging
- Field Comment Log
- File Repository
- User Rights and DAGs
- Data Quality
- REDCap Mobile App

External Modules

Manage View Logs

Help & Information

- Help & FAQ
- Video Tutorials
- Suggest a New Feature

Contact REDCap administrator

Data Quality Rules

Execute rules: All All except A&B Clear

Apply to: -- All records --

	Rule #	Rule Name	Rule Logic (Show discrepancy only if...)	Real-time execution <input type="checkbox"/>	Total Discrepancies	Delete rule?
	A	Blank values*	-		<input type="button" value="Execute"/>	
	B	Blank values* (required fields only)	-		<input type="button" value="Execute"/>	
	C	Field validation errors (incorrect data type)	-		<input type="button" value="Execute"/>	
	D	Field validation errors (out of range)	-		<input type="button" value="Execute"/>	
	E	Outliers for numerical fields (numbers, integers, sliders, calc fields)**	-		<input type="button" value="Execute"/>	
	F	Hidden fields that contain values***	-		<input type="button" value="Execute"/>	
	G	Multiple choice fields with invalid values	-		<input type="button" value="Execute"/>	
	H	Incorrect values for calculated fields	-		<input type="button" value="Execute"/>	
	I	Fields containing "missing data codes"	-		<input type="button" value="Execute"/>	
	<input type="button" value="Add"/>	<input type="text"/>	<input type="text"/>	<input type="checkbox"/>		
		Enter descriptive name for new rule (e.g., Participants below age 18)	Enter logic for new rule (e.g., [age] < 18) How do I use special functions?	Execute in real time on data entry forms <input type="checkbox"/>		






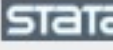
Basic Data Export

You can export your entire data set in a few seconds in a couple of different formats.

You can also create and save custom reports that create subsets of your data. These subsets are exportable in the same way as the entire data set.

For multiple events, one row per event

Choose export format

-  CSV / Microsoft Excel (raw data)
-  CSV / Microsoft Excel (labels)
-  SPSS Statistical Software
-  SAS Statistical Software
-  R Statistical Software
-  Stata Statistical Software

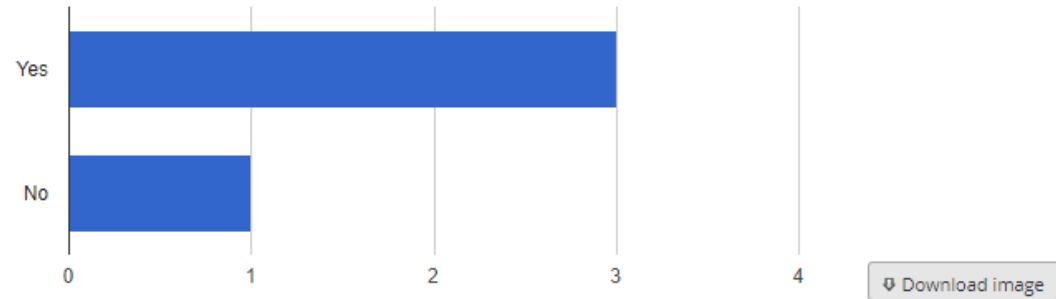
Statistics

RedCap can provide basic descriptive statistics

Accepts to participate in the VE study *(accept)* [Refresh Plot](#) | [View as Bar Chart](#) ▼

Total Count (N)	Missing*	Unique
4	0 (0.0%)	2

Counts/frequency: Yes (3, 75.0%), No (1, 25.0%)



Has consent been provided by patient or their representative? *(consent)* [Refresh Plot](#) |

[View as Bar Chart](#) ▼

Total Count (N)	Missing*	Unique
4	0 (0.0%)	2

Counts/frequency: Yes (3, 75.0%), No (1, 25.0%)



Reporting

Project Home and Design

- Project Home · Project Setup
- Designer · Dictionary · Codebook
- Project status: **Development**

Data Collection

- Record Status Dashboard
- View data collection status of all records
- Add / Edit Records
- Create new records or edit/view existing ones

Applications

- Project Dashboards
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- Data Quality
- REDCap Mobile App

External Modules Manage View Logs

Data Exports, Reports, and Stats

VIDEO: [How to use Data Exports, Reports, and Stats](#)

+ Create New Report

My Reports & Exports

Other Export Options

This module allows you to easily view reports of your data, inspect plots and descriptive statistics of your data, as well as export your data to Microsoft Excel, SAS, Stata, R, or SPSS for analysis (if you have such privileges). If you wish to export your *entire* data set or view it as a report, then Report A is the best and quickest way. However, if you want to view or export data from only specific instruments (or events) on the fly, then Report B is the best choice. You may also create your own custom reports below (if you have such privileges) in which you can filter the report to specific fields, records, or events using a vast array of filtering tools to make sure you get the exact data you want. Once you have created a report, you may view it as a webpage, export it out of REDCap in a specified format (Excel, SAS, Stata, SPSS, R), or view the plots and descriptive statistics for that report.

My Reports & Exports			
	Report name	View/Export Options	Management Options
A	All data (all records and fields)	View Report Export Data Stats & Charts	
B	Selected instruments and/or events (all records)	Make custom selections	
		+ Create New Report	



Demontsration



Questions?

References

- <https://www.project-redcap.org>
- <https://www.iths.org/wp-content/uploads/About-REDCap-Vanderbilt.pdf>
- <https://research.fredhutch.org/cds/en/redcap/redcap-training.html>
- <https://redcapinfo.ucdenver.edu/best-practices.html>
- https://github.com/ctsit/form_render_skip_logic
- <http://kpcu-ihp.org/redcap/images/IHR%20REDCap%20Advanced%20201%20Training%202019.pdf>
- <https://cri.uchicago.edu/redcap-training/#manuals>
- <https://www.jhsph.edu/research/centers-and-institutes/health-services-outcomes-research/images/Materials/Introduction%20and%20Review%20of%20RedCAP.pdf>
- <https://cris.utoronto.ca/event/redcap-training-series-redcap-basic-training>
- https://ctsit.github.io/redcap_external_module_development_guide
- <https://cb2.uahs.arizona.edu/services-tools/surveys-clinical-databases-redcap/redcap-external-modules>

Login into WHO EDCRC and UAT

- <https://extranet.who.int/edcrc>
- <https://extranet-uat.who.int/edcrc/>
- Note: Accessible through request from [WHO HQ EDCRC team](#)