

# MYCAP HELP

This page contains basic information about MyCap features and tips for configuring the MyCap setup on a project. Help text and information icons are also incorporated within the REDCap interface. The table of contents is below and outlines a typical workflow for configuring MyCap for a project.

## Table of Contents

<b>MYCAP HELP</b> .....	1
<b>MYCAP OVERVIEW</b> .....	2
<i>About MyCap</i> .....	2
<i>MyCap Device Compatibility</i> .....	2
<i>The MyCap Participant Experience</i> .....	2
<b>1. SEEKING IRB APPROVAL FOR A PROJECT</b> .....	2
<b>2. CONFIGURING A PROJECT FOR MYCAP</b> .....	3
<i>Project Setup Tips</i> .....	3
<i>Online Designer Tips</i> .....	3
<i>Enable (or Request to Enable) MyCap on a Project</i> .....	6
<i>Configuring Instruments to be “MyCap Tasks”</i> .....	6
<i>Designing the App’s Look and Feel for Participants</i> .....	9
<i>Publishing a Project’s MyCap Configuration</i> .....	10
<b>3. MANAGING PARTICIPANTS AND THEIR MYCAP ACCESS</b> .....	10
<i>Configuring the MyCap Participant List</i> .....	10
<i>Determining How Participants Join the Project</i> .....	11
<b>4. TESTING THE MYCAP CONFIGURATION</b> .....	12
<i>Task Appearance and Behavior</i> .....	12
<i>Tasks Schedules</i> .....	12
<i>Multiple Devices and Operating Systems</i> .....	12
<i>Publishing a Final Version after Testing</i> .....	12
<i>Setting Project User Rights for MyCap</i> .....	12
<i>Moving the Project to Production</i> .....	12
<b>5. Using MyCap with Participants</b> .....	13
<i>MyCap Participant Workflow</i> .....	13
<i>Using MyCap Messaging and Announcements</i> .....	13
<i>Troubleshooting Synchronization Issues</i> .....	14

# MYCAP OVERVIEW

## *About MyCap*

MyCap is a participant-facing mobile application used for data collection and the automated administration of Active Tasks (activities performed by participants using mobile device sensors under semi-controlled conditions). All data collected in the MyCap App are automatically sent back to the REDCap server as soon as internet connection is available (i.e., it can also be used for offline participant data collection). This no-code solution supporting research teams conducting longitudinally designed projects or projects with frequent participant contact. MyCap also facilitates participant engagement and retention by providing quick access to project staff and two-way communications (e.g., messaging and announcements) within the App.

## *MyCap Device Compatibility*

MyCap is available on any iOS device (iOS v11.0+) and any Android device (Android v8.0+).

## *The MyCap Participant Experience*

MyCap is freely and easily installed from the Google Play or Apple Stores, and MyCap provides helpful links to download the MyCap App when participants are joining a project. After installing the App, participants join projects by scanning a unique QR code or clicking on a unique hyperlink to join a project. When joining the project, participants are asked to confirm notifications are allowed and enter a six-digit passcode.

Participants can participate in multiple projects simultaneously or sequentially. However, **the MyCap App can only be used by one participant per project on any given device. MyCap does not yet support multiple participants on the same project using the single device concurrently.** For example, for projects involving multiple participants in a household, each participant will need to install MyCap on a separate device to submit their data.

Additionally, **each participant must use only one device to submit their data via MyCap.** If a participant installs MyCap on a new device and scans their original QR code, the new device will reset the participant's schedule because the task completion data is not part of the MyCap configuration sent to the device when the participant joins a project. The new device will have no knowledge of a task that was completed on a different device.

## 1. SEEKING IRB APPROVAL FOR A PROJECT

Please follow local IRB processes and policies if a project requires approval by the Institutional Review Board (IRB). The use of MyCap to capture participant data should be explained in the IRB application. The language below may be helpful.

MyCap is a freely available participant-facing mobile application that can be installed on iOS and Android devices to capture patient-reported outcomes for any REDCap project. All data completed on a participant's device are automatically and immediately synchronized to REDCap. If data are completed while participants are offline, data are synchronized when internet connect is restored and the App is opened. These are the additional security features of MyCap:

- Participant data is stored locally on the device in an AES-256+SHA2 encrypted database. Data remains on the device if an internet connection is not available. Applies to both iOS and Android devices.
- When an internet connection is available, data is transmitted directly to REDCap using an SSL (TLS v1.2) connection. A hash-based message authentication code (HMAC) is used to verify the integrity of the data and to authenticate the sender.
- Participant entered data (i.e., task responses) are not stored or sent anywhere else. Data exists on the participant's device or on the server.
- Data is wiped from the device after the Mycap App verifies that data has been successfully transmitted. Note that there is an optional MyCap feature that lets a participant see some of the data s/he has entered for an individual task/instrument/survey. By default, data is wiped.
- Participants create a 6-digit PIN that is used to open the App. A participant can disable the PIN feature.

## 2. CONFIGURING A PROJECT FOR MYCAP

### *Project Setup Tips*

**Although MyCap is used to capture longitudinal data, MyCap cannot be enabled on projects using longitudinal data collection with defined events.** Instead, MyCap settings are used to configure participant-specific schedules.

### *Online Designer Tips*

Project instruments can be created prior to enabling MyCap on a project or after MyCap is enabled. Projects may contain forms and surveys, both of which can be designed to be completed in the MyCap App by participants – these instruments are referred to as “MyCap Tasks.”

Use REDCap's Online Designer to specify what data fields should be captured in each instrument. Important considerations for designing project instruments are below:

#### *THE FIRST INSTRUMENT IN A PROJECT*

**The first instrument in a project cannot be enabled for MyCap because it is used to create the participant record**, which must exist to generate participants unique MyCap access information (e.g., QR code or URL).

If participants will be **emailed** their invitation to join the MyCap Project (via a participant-specific QR code or hyperlink), we recommend capturing the participant's email address in the first instrument.

If MyCap Tasks will be triggered based on a participant-specific event, such as a surgery date, clinic visit, or discharge date, a text field with date validation (see REDCAP FIELD COMPATIBILITY) must be included

in the first instrument or another instrument that WILL NOT be enabled for MyCap. If participants will complete their baseline date in MyCap (e.g., for fully remote trials or hybrid trials), the @HIDDEN tag can be used to hide the field when the instrument is being completed. See BASELINE DATE SETTINGS for more information on how to use the baseline date.

### REDCAP FIELD COMPATIBILITY

Not all REDCap fields and features are supported in REDCap:

- **REDCap features NOT supported in MyCap:** Calculated fields, Piping, Descriptive texts, Dynamic query (SQL) fields, and Signatures.
- **Branching logic works WITHIN a single instrument, but not across instruments.** For example, a response in Survey A cannot trigger the display or hiding of a field in Survey B.
- Instruments enabled as REDCap Surveys can also be enabled as MyCap Tasks. However, MyCap does not support the auto-continue to next survey function. Instead, in MyCap participants must select the next task (survey) to complete it.

Additionally, the table below indicates which REDCap field types are supported in MyCap.

Field Type	Validation	Supported	Notes
Text Box	Date (D-M-Y)	Yes	Minimum and maximum date range values not yet supported for all nine date formats
Text Box	Date (M-D-Y)	Yes	
Text Box	Date (Y-M-D)	Yes	
Text Box	Date (D-M-Y H:M)	Yes	
Text Box	Date (M-D-Y H:M)	Yes	
Text Box	Date (Y-M-D H:M)	Yes	
Text Box	Date (D-M-Y H:M:S)	Yes	
Text Box	Date (M-D-Y H:M:S)	Yes	
Text Box	Date (Y-M-D H:M:S)	Yes	
Text Box	Email	Yes	
Text Box	Integer	Yes	
Text Box	Number	Yes	
Text Box	Phone (North America)	Yes	
Text Box	Time (HH:MM)	Yes	Minimum and maximum time values not yet supported
Text Box	Zip code (U.S.)	Yes	
Notes Box (Paragraph Text)		Yes	
Multiple Choice - Drop-down List (Single Answer)		Yes	
Multiple Choice - Radio Buttons (Single Answer)		Yes	
Checkboxes (Multiple Answers)		Yes	
Yes - No		Yes	
True - False		Yes	
File Upload (for users to upload files)		Yes	Requires special MyCap annotation. The file upload field is used to capture images and video. See annotations @MC-FIELD-FILE-IMAGECAPTURE and @MC-FIELD-FILE-VIDEOCAPTURE

Slider / Visual Analog Scale		Yes	Requires special MyCap annotation. See annotations <b>@MC-FIELD-SLIDER-BASIC</b> and <b>@MC-FIELD-SLIDER-CONTINUOUS</b> . You cannot upload ad-hoc file that exist on the device's filesystem.
Add Matrix of Fields		Yes	Matrix fields <i>without ranking</i> are supported in MyCap; however, each question appears on a separate screen rather than in a table due to limited screen sizes.
Calculated Field		No	Also note that piping and smart variables are not supported.
Signature (draw signature with mouse or finger)		No	
Descriptive Text (with optional ...)		No	
Dynamic Query (SQL)		No	

### EXTENDING REDCAP FIELD CAPABILITIES WITH MYCAP ANNOTATIONS

MyCap developers have created special @ Action Tags to align with or extend REDCap field capabilities. The table below lists the field annotation, the field type required, and details on how to use the annotation. This information is also provided in the @ Action Tags page within REDCap when MyCap is enabled on a project.

Annotation	Field Type	Usage
@MC-FIELD-FILE-IMAGECAPTURE	File	See <a href="#">documentation</a> . Note that <a href="#">templatelImage</a> , <a href="#">templatelImageInsets</a> , <a href="#">accessibilityInstructions</a> , <a href="#">accessibilityHint</a> are not implemented.
@MC-FIELD-FILE-VIDEOCAPTURE=[MAX DURATION IN SECONDS]:[AUDIO MUTE(YES/NO)]:[FLASH MODE(AUTO/ON/OFF)]: [DEVICE POSITION(BACK/FRONT/UNSPECIFIED)]	File	Example: <b>@MC-FIELD-FILE-VIDEOCAPTURE=20:YES:OFF:BACK</b> is video capture, 20 seconds max duration, audio is muted, camera flash is OFF, use camera on BACK of the device. Note that REDCap file upload fields have a size limit of 35MB by default and video capture generates large files. See <a href="#">documentation</a> .
@MC-FIELD-HIDDEN	All	<b>@MC-FIELD-HIDDEN</b> hides a field from MyCap only whereas REDCap's <b>@HIDDEN</b> annotation hides a field from both REDCap and MyCap. Example: If you have a calculated field that you want to appear in REDCap but not in MyCap then use the <b>@MC-FIELD-HIDDEN</b> annotation.
@MC-FIELD-SLIDER-BASIC=[MIN]:[MAX]:[STEP]	Slider/VAS	Example: <b>@MC-FIELD-SLIDER-BASIC=0:10:1</b> is scale from 0 to 10 step by increments of 1. See <a href="#">documentation</a> . Note that REDCap slider does not accept values <b>&lt; 0</b> and <b>&gt; 100</b> .
@MC-FIELD-SLIDER-CONTINUOUS=[MIN]:[MAX]:[MAX FRACTIONAL DIGITS]	Slider/VAS	Example <b>@MC-FIELD-SLIDER-CONTINUOUS=0:100:0</b> is scale from 0 to 100 with no fractions. See <a href="#">documentation</a> . A REDCap slider will default to this if no annotation is specified. Note that REDCap slider does not accept values <b>&lt; 0</b> and <b>&gt; 100</b> . REDCap slider does not accept fractions, so always use 0 as the last number.
@MC-FIELD-TEXT-BARCODE	Text or Notes	Use the device's camera to scan a barcode. Contents will be stored in your Text Box or Notes Box field. Barcode symbologies supported: <a href="#">Aztec</a> , <a href="#">CODE39</a> , <a href="#">CODE39MOD43</a> , <a href="#">CODE93</a> , <a href="#">CODE128</a> , <a href="#">DataMatrix</a> , <a href="#">EAN8</a> , <a href="#">EAN13</a> , <a href="#">Interleaved2of5</a> , <a href="#">ITF14</a> , <a href="#">PDF417</a> , <a href="#">QR</a> , <a href="#">UCP-E</a>

## *Enable (or Request to Enable) MyCap on a Project*

MyCap is enabled from the **Project Setup** page under **Main Project Settings**. MyCap is available at the project level, meaning it can be enabled on a project-by-project basis. It can be enabled before or after designing the project's REDCap instruments. Each REDCap Institution decides whether MyCap can be enabled automatically by REDCap Users or whether the REDCap Administrator must enable MyCap for a project.

After MyCap is enabled from the Project Setup page, MyCap configuration occurs in three places:

- 1) **Online Designer** is used to configure REDCap Instruments to be “MyCap Tasks,” task schedules, and the use of a baseline date to trigger task schedules.
- 2) **MyCap App Design** allows users to create custom pages within the App to display project descriptions and valuable information as About pages; add project Contacts; insert Links (hyperlinks) to project-related resources or information; and select a color theme for the project.
- 3) **MyCap Participant Management** is used to manage and invite participants to use MyCap; manage bi-directional communications with participants; and troubleshoot synchronization issues.

## *Configuring Instruments to be “MyCap Tasks”*

Participant's MyCap App shows a list of tasks (REDCap instruments) that a participant needs to complete for any given date. Each task is represented by a card. When a participant taps a card, the task begins. When a task is completed, a result is stored in an encrypted database on the participant's device. If the participant has an active internet connection the result will be synchronized to REDCap. If the participant does not have an active internet connection, then the result is stored in a queue. Every time a participant completes a task all results in the queue will attempt to synchronize.

### *BASELINE DATE SETTINGS*

By default, all MyCap Task schedules are based on the date the participant joins a project on their MyCap App. This is known as the participant's **install date**. If some or all MyCap Tasks need to be triggered based on a participant-specific event, such as a surgery date, clinic visit, or discharge date, enable the **Baseline Date Settings** from the **Online Designer**.

When configuring the baseline date settings, a **text field with date validation** must be selected from an instrument that is not enabled for MyCap. The field cannot be on an instrument that is enabled for MyCap because the baseline date must be completed to generate Task schedules based on the date. When the baseline date is enabled, no MyCap Tasks can be completed before the baseline date is entered.

The baseline date can be entered into REDCap on behalf of participants (e.g., during their intake, consent, discharge, or screening process) so they do not have to complete the Baseline date in MyCap (e.g., if Users worry the participant may not remember or get the date right), or it can be completed by participants in their MyCap. **Please note:**

1. If project Users will enter the baseline date on behalf of participants (so they do not have to complete it in MyCap), the participant’s baseline date must be entered into REDCap BEFORE a participant joins the project via QR code or hyperlink.
2. If participants should complete the baseline date on their MyCap App, do not enter the date directly into REDCap. Consider using the @HIDDEN tag to hide the baseline date field from the data entry form/survey so it is not completed inadvertently.

### ENABLING INSTRUMENTS AS MYCAP TASKS

After creating a project’s instruments from the Online Designer and enabling MyCap for the project, any project instrument – except the first instrument or an instrument capturing the field selected as the baseline date – can be enabled as a MyCap Task from the Online Designer. MyCap Tasks have the following setting options:

Basic Task Info	Optional Settings	Set the Task Schedule
<ul style="list-style-type: none"> <li>• <b>Task Title</b></li> <li>• <b>Format</b> (questionnaire – one question per screen; form – all questions on a single screen)</li> <li>• <b>Card Display</b> – after task completion, display the percentage of the task completed or chart of task results</li> </ul>	<ul style="list-style-type: none"> <li>• Allow retroactive completion</li> <li>• Allow save and complete later</li> <li>• Include instruction step</li> <li>• Include completion step</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Relative date for scheduling</b></li> <li>• <b>Schedule recurrence</b> (infinite, one time, repeating, fixed)</li> <li>• <b>Number of days to delay</b></li> <li>• <b>End repeating tasks</b> (repeating and weekly only)</li> </ul>

More information is provided within the MyCap Task Settings dialog for each of the task settings.

*Note: for initial testing purposes, we recommend initially setting all schedules to infinite so the Task’s display and behavior (e.g., branching logic, slider response options) can be tested and reviewed before inviting participants to join the project. After the Task has been thoroughly evaluated, set the schedule as it should be completed, and publish an updated version.*

### TASK NOTICES

After pressing to enable an instrument to be a MyCap Task, two notices appear at the top of the page alerting the User that (1) the instrument was automatically switched to be a repeatable instrument and (2) new hidden fields were added to the instrument to indicate when tasks were scheduled, started, completed, and provide ‘supplemental data’ about the device used to complete the task. These hidden fields are not visible to participants but can be pulled into REDCap reports and data exports.

Annotation	Type	Default Name	Usage
@MC-TASK-UUID	Text	[foo]_uuid	ID of the task result
@MC-TASK-STARTDATE	Text	[foo]_startdate	Date user started task
@MC-TASK-ENDDATE	Text	[foo]_enddate	Date user completed task
@MC-TASK-SCHEDULEDATE	Text	[foo]_scheduledate	Date task was scheduled, if appropriate. One-

			Time and Infinite tasks will not have a schedule date
@MC-TASK-STATUS	Dropdown	[foo]_status	0=Deleted, 1=Completed, 2=Incomplete
@MC-TASK-SUPPLEMENTALDATA	Text	[foo]_supplementaldata	Any available supplemental data. JSON format.
@MC-TASK-SERIALIZEDRESULTS	File	[foo]_serializedresult	Stores backup/restoration data.

#### *PROJECTS ORIGINATING IN THE MYCAP EXTERNAL MODULE*

Any project migrated from the original MyCap External Module, may also have the annotations below on the first instrument. These annotations no longer have functionality outside of the External Module. The fields can be ignored (as they do not interfere with the MyCap functionality) or deleted, if needed.

Annotation	Type	Default Name	Usage
@MC-PARTICIPANT-ID	Text	record_id	Record ID, uniquely identifies the participant
@MC-PARTICIPANT-FIRSTNAME	Text	par_firstname	First name of participant
@MC-PARTICIPANT-LASTNAME	Text	par_lastname	Last name of participant
@MC-PARTICIPANT-ZERODATE	Date	par_zerodate	Baseline Date. Date of important event.
@MC-PARTICIPANT-CODE	Text	par_code	Code that identifies the participant. Used in QR code. Hidden in instrument.
@MC-PARTICIPANT-JOINDATE	Date	par_joindate	Install Date. Date participant installed the App. Hidden in instrument.
@MC-PARTICIPANT-PUSHNOTIFICATIONIDS	Notes	par_pushids	Stores push notification identifiers. Hidden in instrument.

#### *IMPORTING AND ENABLING ACTIVE TASKS FOR MYCAP*

Active Tasks are designed to utilize mobile device sensors, microphones, and/or speakers to capture data from participants. Third-party programmers and researchers develop most Active Tasks. MyCap developers have added these Active Tasks but do not have expertise in the returned results. It is up to the end user to ensure the returned results can be understood and analyzed.

When enabling an Active Task, please consider the operating system compatibility, as not all tasks are available for iOS and Android. Additionally, each Active Task will show a unique configuration section. Each section may have a link called Reference. Click the link to learn more about the Active Task and how it can be customized. After a task is enabled, it can be given a custom name and some settings can be modified (e.g., length of the task).

### *VIEW TASK DETAILS*

After enabling MyCap Tasks and/or Active Tasks on a project, an overview of the MyCap Tasks and their schedules is available from the **Online Designer > MyCap Options > View Task Details**. The schedule for each Task can also be seen by hovering over the MyCap icon for a task in the Enabled as MyCap Task column.

## *Designing the App's Look and Feel for Participants*

**MyCap App Design** allows users to create custom pages within the App to display project descriptions and valuable information as About pages; add project Contacts; insert Links (hyperlinks) to project-related resources or information; and select a color theme for the project. From the MyCap App Design

### *ABOUT PAGES*

As a quick reference for participants, it may be helpful to add "About" pages that describe the project or study. At least one About page is required, as the landing page when participants join a project.

About pages contain a title, description, and an image. Two system images are available for use, or a custom image can be uploaded. The image should be in PNG format. Ideal size is 1024x1024.

Multiple pages can be created to display to participants and include images or logos. The preview button will approximate how About pages will appear in the MyCap App for participants.

### *CONTACTS*

Specify project contacts and contact information that will appear if participants click "Get Support" from within their MyCap App. Multiple contacts can be listed, as well as descriptions of when to reach out to specific contacts (e.g., IT help, study questions, medication questions, appointments). Clicking the preview button will approximate how contacts will look in the MyCap App. It is recommended that projects have at least one contact.

### *LINKS*

Projects can include custom URLs to be displayed in the MyCap App for all participants. For example, projects can share links to resources, study websites, and/or custom webpages displaying participant results. Participants using Android devices see a Links icon in the MyCap App's navigation menu at the bottom of the screen. Participants using iOS devices can access Links from the App's menu, which is accessible from the top left of the screen.

A link is comprised of an icon, name, and URL. The icon and name are displayed in the menu. Tapping on the link will open the URL. Links can be configured to include the MyCap project code and participant code if a developer is available to build these into a custom webpage to pull data from the REDCap project and display results. The project code can be appended to link to a custom website of results for multiple projects using MyCap. The participant code can be appended to link to a custom website with information specific to a participant.

EXAMPLE USE CASES:

- Display a webpage specific to the project or to a participant in the project (e.g., REDCap Dashboards)
- Display a calendar of events
- A link to view the website for the project

#### THEME

Select the color theme for the project or upload one. We recommend following the [Material Design color system](#). MyCap only updates the theme when the App loads into memory. To see the change, [force close](#) MyCap and then reopen the App. To switch themes:

1. Choose a color scheme and press the save button.
2. Open the project in the MyCap App. The configuration will be saved to the internal database.
3. [Force close](#) the MyCap App.
4. Open the project in the App to see the new theme.

*Note: themes are only currently displayed on iOS devices. Android devices default to the blue scheme.*

#### *Publishing a Project's MyCap Configuration*

MyCap uses a configuration versioning system. When the MyCap App opens it sends a request to the REDCap server to see if a new configuration version has been published. The App updates as needed if an updated version is found.

Once the initial MyCap Tasks settings have been finalized, Users MUST press **Publish new MyCap version** to assess the settings and before participants are able to see Tasks. User must press **Publish new MyCap version** after making any change to instruments enabled as MyCap Tasks (e.g., new questions, deleted questions, new response options, new instruments/tasks) or task schedules. Once an updated version is published, participants automatically see the updated configuration when they open their App.

### 3. MANAGING PARTICIPANTS AND THEIR MYCAP ACCESS

MyCap Participant Management is used to manage and invite participants to use MyCap; manage bi-directional communications with participants; and troubleshoot synchronization issues.

#### *Configuring the MyCap Participant List*

By default, the MyCap Participants List will display all records in a project.

- To Enable a **Custom Participant Label** for the records, select any text field in the project from the drop down (e.g., First Name, Last Name, Medical Record Number, Study ID) or pipe other fields or a combination of fields and click save.
- To set **Participant Display Logic** to only display specific records (e.g., if not all participants are using MyCap), use the logic editor provide to indicate the records that should appear in the MyCap Participant List.

The MyCap Participant List shows each participant's Record ID, Install Date, Baseline Date, and unique participant invitation (QR code & Dynamic Link). It also provides quick "actions" to message a participant

or delete/undelete the participant from the MyCap Participant List. (Deleting a participant from the participant list does not delete their record from the REDCap project.).

## *Determining How Participants Join the Project*

### *PARTICIPANT'S UNIQUE JOINING QR CODE AND HYPERLINK*

Participants can join a project on the MyCap App using a QR code or hyperlink that is unique to them and their record in a REDCap project. A participant's record must already exist in the REDCap project for them to get a QR code or hyperlink. The MyCap QR code and dynamic links (hyperlinks) consists of three elements:

1. Endpoint: The REDCap server URL to communicate with.
2. Project Code: An alias for a REDCap project id. E.g., P-GXNL9A4PQWADW9DQK2 might map to REDCap PID = 1234
3. Participant Code: An alias for a REDCap record id. E.g., U-VFSLCR761K626ZMFEL2E might map to REDCap record = 1

MyCap uses project and participant code aliases for security purposes. We do not want to transmit real REDCap project IDs or record IDs to the MyCap App. Example QR code contents might look like:

```
{ "endpoint": " https://redcap.YOURSITE.edu/api/?content=mycap", "studyCode": "P-GXNL9A4PQWADW9DQK2", "participantCode": "U-VFSLCR761K626ZMFEL2E" }
```

### *INVITING PARTICIPANTS TO JOIN A PROJECT*

When considering what method – scanning a QR code or clicking on a hyperlink to join a project – might be easiest for participants, consider these tips:

- a) Dynamic links, which look like a normal hyperlink, can be sent via email (or text if an SMS messaging service is enabled) to the participant so they can easily join from their mobile device. If a participant does not yet have MyCap installed, the hyperlink will open the participant's app store to the MyCap App so they can install MyCap. After MyCap is installed, when they open the App, they will be prompted to join the project. If the participant already has MyCap installed, they are prompted to join the project when they click the hyperlink.
- b) QR Codes are also easy to use, especially when the participant is joining a project while physically in the presence of someone on the project team. In this scenario, the QR code can be displayed on a project team member's computer or device, and the participant can scan it with their own device. The QR Code may not be feasible for use if participants are not physically present when joining MyCap or participants do not have two devices available – one to display the QR code and another to scan it.

From the **MyCap Participant Manage > Participant List > Invite Participants**, template instructions for participants are provided to help participants install the MyCap App and join a project. This text (or HTML) can be copied and entered as either 1) **Survey Completion Text** that displays after a survey is completed or 2) an **Alerts & Notifications** message that is sent to the participant after their record is created.

To obtain an individual participant's QR code or hyperlink after their record has been created in the project, see the **MyCap Participant Management > Participant List**. From here, a participant's QR code can also be download or print, if needed.

## 4. TESTING THE MYCAP CONFIGURATION

### *Task Appearance and Behavior*

After configuring MyCap Tasks, the App Design, and the Participant List, we recommend thoroughly assessing the project to ensure all information pages (About, Contacts, Links) and the MyCap Tasks display and behave as desired. *Note: for initial testing purposes, we recommend initially setting all schedules to infinite so the Task's display and behavior (e.g., Active Task functionality, branching logic, slider response options) can be tested and reviewed before inviting participants to join the project.*

### *Tasks Schedules*

After each Task has been thoroughly evaluated, set the schedule as it should be completed and publish an updated version. In the MyCap App, a small grey dot appears below the date when a Task is scheduled. Scroll through the dates to ensure the Tasks are triggering based on the install or baseline date, as appropriate, and recurring as expected.

### *Multiple Devices and Operating Systems*

We recommend testing on iOS and Android devices, as the Apps have separate codebases.

### *Publishing a Final Version after Testing*

After finalizing testing, remember to publish an updated version to capture any changes made to the project's MyCap settings. Changes can of course be made at any time and immediately released by publishing an updated version.

### *Setting Project User Rights for MyCap*

Once a project has been configured for MyCap, the project's user rights can be tailored as needed. Any user with Project Design and Setup rights can add or modify MyCap Tasks, Active Tasks, and schedules. Any user with MyCap Participant Management rights can invite participants to join the project, message participants, and view synchronization issues.

By default, anyone with MyCap Participant Management rights can see all records in a project on the Participant List and view message from any participant/record. If a project has data access groups, DAG users will only see the records in their DAG in MyCap Participant Management > Participant List, Messages, and Sync Issues.

### *Moving the Project to Production*

As with all REDCap projects, we recommend moving the project to Production after finalizing the initial database design.

## 5. Using MyCap with Participants

### *MyCap Participant Workflow*

Below is a typical workflow for participant using the MyCap App.

1. Participants enroll/consent for the project, which is documented via a REDCap Form or Survey.
2. Participants join the project, which pulls the MyCap configuration from the REDCap server.
3. The participant's device notifies them when a MyCap Task is due (notification: "You have a MyCap activity due today") or a MyCap Message/Announcement is received (notification: "You have a secure message waiting")
4. Participants complete data, which are immediately synchronized with the REDCap project (if the device is offline, data are synchronized the next time the participant opens the MyCap App)

### *Using MyCap Messaging and Announcements*

MyCap provides in-app messaging between REDCap users and participants. When messages are sent to a participant, they receive a push notification on their device saying, "You have a secure message waiting" (assuming the participant allows MyCap to deliver push notifications). The participant may read the message after opening the Mycap App. If the participant does not allow push notifications, he or she will still be able to read the message but will not see the notice indicating a new message is available.

Only project users with MyCap Participant Management rights can read messages from participants and send individual messages to participants or announcements to all participants (**note: Users in a DAG can only make announcements to records in their DAG**).

**In MyCap Participant Management > Messages**, Users see a tab for the Inbox, Outbox, and Announcement.

#### *MYCAP INBOX*

The inbox shows all messages that participants have sent. Tapping on "View/Respond" opens the participant's full message thread.

All new messages received from participants will default to **action needed** = yes|on. This triggers a badge (count) that appears beside the MyCap Participant Management page link under Data Collection in the REDCap Menu. A badge also appears on the Messages tab of MyCap Participant Management and the Inbox tab. Note: when messages are received, no REDCap alert or email is pushed to project users.

Action needed can be toggled off to no longer flag the message as needing attention/action. **If any user on the project toggles the Action Needed to off, it will be off for all Users.** For example, it might be toggled off after reading the participant's message or when a response is sent to the participant.

## MYCAP OUTBOX

The outbox shows all messages that have been sent to participants, as well as the date and which REDCap User sent the message. Tapping on the message icon under "Action" opens the participant's full message thread.

## MYCAP ANNOUNCEMENTS

Announcements can be used to send a message to all participants in a project. This is like the Message feature. **Note that announcements are always visible to all participants no matter when they joined the project.** If an announcement is sent today and a participant joins a project tomorrow, the participant will see the announcement.

## Troubleshooting Synchronization Issues

### ABOUT SYNCHRONIZATION ISSUES

In **MyCap Participant Management > App Sync Issues**, any data that could not be saved directly to the REDCap project can be viewed. If there are any issues, the number of issues will appear in Red.

A synchronization issue is created when the Android or iOS MyCap App sends a task result to the REDCap server that is incompatible with the REDCap project for some reason. This typically occurs when a participant completes an outdated version of a task/instrument.

The purpose of the synchronization issue mechanism is to always capture data that is sent from the MyCap App, ensuring no loss of data. However, it is not currently possible to automatically 're-sync' data after fixing the error. The data must be manually entered or imported into the REDCap project.

**All Synchronization issues indicate a problem and should be investigated. Here is an example:**

1. A task/instrument is created with a "Multiple Choice - Radio Buttons (Single Answer)" field and response options have values of **0, No | 1, Yes | 2, Sometimes**
2. After the MyCap project configuration is published (version 1).
3. A participant joins the project.
4. The participant completes the task with answer **No (0)** and the result is sent to REDCap to be saved.
5. REDCap **accepts the result** because **No (0)** is a valid choice value.
6. Later, the values of the multiple-choice fields are changed to **No, No; Yes, Yes; Sometimes, Sometimes**
7. An updated version of the MyCap configuration is NOT published.
8. The participant completes the task again with answer of **No (0)** and the result is sent to REDCap to be saved.
9. REDCap **rejects the result** because **No (0)** is no longer a valid choice value. It was changed to **No (No)**.
10. MyCap creates a synchronization issue using the rejected REDCap response.
11. The synchronization issue can be reviewed and see that the result could not be saved due to an invalid choice value.
12. A project user will need to create the appropriate REDCap entry using the data provided in the synchronization issue, and then flag the synchronization issue as resolved.

13. A new MyCap project configuration (version 2) is published so participants receive the updated multiple choice field values.

#### *SYNCHRONIZATION ISSUE OVERVIEW*

The synchronization issue table and Overview provided when viewing the details of the task are described below:

- Date Received - Date the server received task result
- Status - All issues default to unresolved. The status can be changed to resolved in the Resolution Form.
- Participant - The participant that completed the task. This will show a participant code if the participant could not be found in REDCap.
- Instrument - The name of the task/instrument completed by the participant. The intent is to show how MyCap's sync issue data maps to a REDCap instrument record.
  - Field - The REDCap field name or MyCap field annotation.
  - REDCap - The field value in REDCap. Will display N/A if there is no instrument instance matching @MC-TASK-UUID.
  - MyCap - The field value sent by MyCap.
- Result ID - Unique identifier generated by the MyCap App that uniquely identifies the result
- Error Type - Typically Could not save to REDCap or Could not find participant

#### *RESOLUTION*

While it is not currently possible to automatically 're-sync' data after resolving a synchronization error, the issue can be "resolved" so it no longer appears in the count of synchronization issues in the App Sync Issues tab and as "unresolved" in the App Sync Issues tab.

- Status - All issues default to unresolved, but can be manually changed to resolved.
- Comment - Enter a comment to specify whether the issue is resolved or not, if desired. For example, Resolved: this participant was deleted from REDCap. Resolved: the "foo" multiple choice option value was changed in REDCap but the participant completed this task in offline mode so they did not have the most recent version of the MyCap configuration.

#### *SYNCHRONIZATION ISSUE EXAMPLES*

MyCap was unable to parse the error - The following fields were not found in the project as real data fields: MyCap sent a value for a field that no longer exists or sent a value for a field value that no longer exists.

Could not find participant code – the first instrument contains a field having annotation: @MC-PARTICIPANT-CODE. MyCap uses this field to match a participant code to a REDCap Record ID. MyCap searched through all the records to find the participant code but did not find it, so MyCap could not associate the task result with a record. This typically happens in the following scenario:

1. A participant is created
2. Participant joins project using the MyCap App
3. The participant is deleted or someone manually changes the participant code
4. Participant completes a task in the MyCap App

5. MyCap cannot find the participants because they were deleted, or the code was changed