

# Creating Multilingual Forms in Open REDCap

## Best Practices Brief

### Overview

Participants in research studies or clinical trials should reflect the diversity of the populations most affected by the disease.<sup>1</sup> A lack of racial/ethnic representation in research studies and clinical trials has resulted in interventions that have not translated well in the real-world and have not been efficacious in different populations.<sup>1</sup> Research has shown that one of the most effective best practices in community engaged research is to create study materials in multiple languages other than English.<sup>2</sup> Translating study materials into multiple languages improves efforts to reach traditionally underrepresented in research populations, including immigrants and limited English proficient groups.<sup>2</sup> According to National Academies of Sciences, Engineering, and Medicine, one of the key opportunities for clinical or research investigators to diversify research and clinical trial participation among traditionally underrepresented groups is to create in-language study materials and hire translators or multilingual research staff.<sup>3</sup> One of the commonly used survey tool at NYULH is Open REDCap. This guidance document will review how to create in-language surveys using Open REDCap and tips on how to maximize the language features within Open REDCap.

The **Multi-Language Management (MLM)** Application was launched in NYU Langone Health Open REDCap in early 2022. Prior to this, an external Multilingual module was used for language translation, which was not supported by Open REDCap. Open REDCap cannot translate surveys for users, but this application allows Open REDCap surveys and all settings be presented in multiple languages. Note: all changes made to any Open REDCap survey should be saved throughout the creation process.

**Multi-Language Management**

On this page you can create and configure multiple display languages for your project (for surveys, data, and reports) or alternatively export and import translations using a file. Do not forget to **save your changes** (keyboard shortcuts are done editing. NOTE: This page will not auto-translate your text for you, but provides tools so that you can do so manually.)

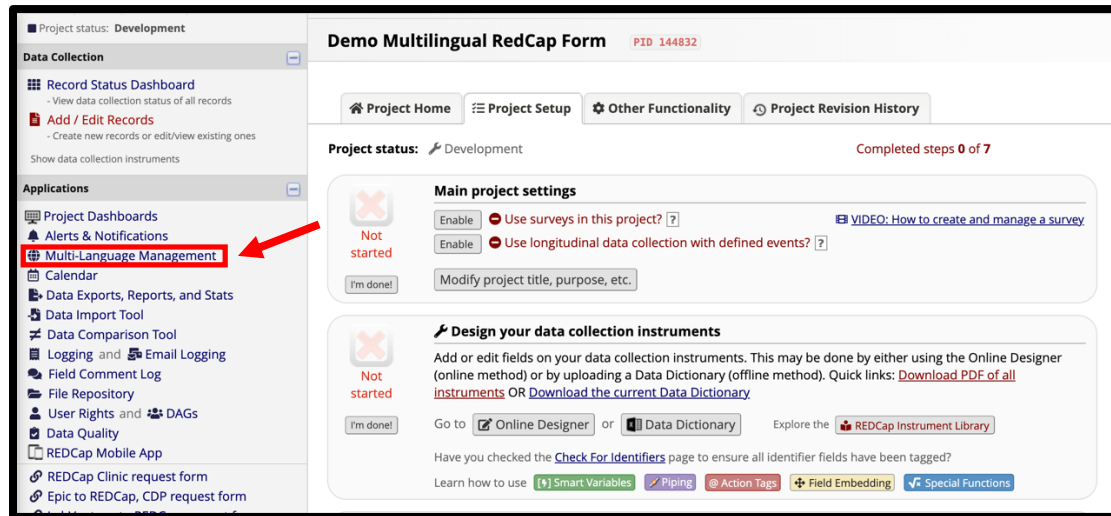
**Languages** **Settings** — **Save Changes**

Manage the available languages in this project using the table and options below by following these steps:

1. Create your default language (i.e., used when creating your fields, instruments, etc.). This will serve as the base language for all other translations.
2. Add other languages that you wish to offer as a translation of the default language.
3. Translate your default text into different languages by clicking the tabs above or the icons to the right of the table.

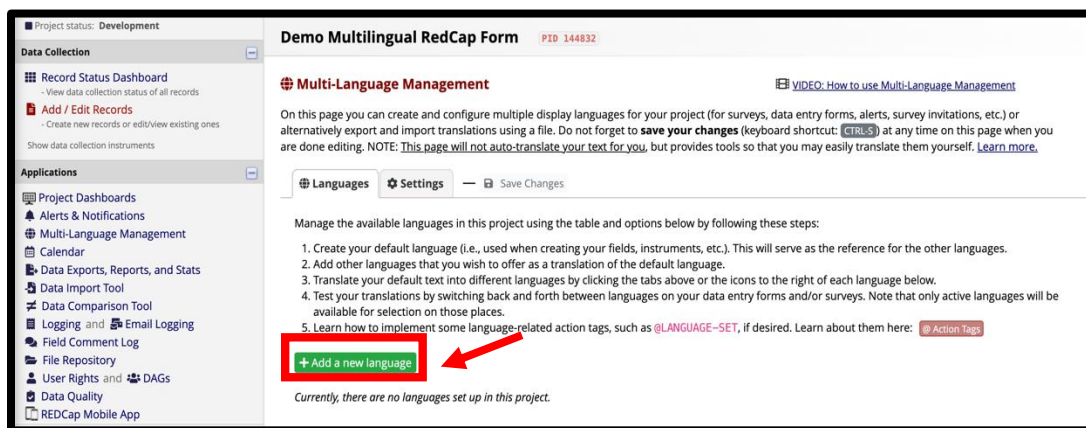
## Creating a Survey using the Open REDCap MLM Application

1. Add your survey and all settings in English, as you would normally add a survey in Open REDCap. Click 'Multi-Language Management' option to the left of the screen (as seen in [Figure 1](#) below).



**Figure 1.** The link to the MLM portal in Open REDCap is listed on the left of screen (see arrow). This image shows the main homepage of Open REDCap.

2. To add languages, a default language must be first be added and enabled. To set a default language, click 'Add a new language' (as seen in [Figure 2](#) below).



**Figure 2.** The 'add a new language' button can be found on the main MLM application homepage at the bottom of the screen (see arrow).

- To add English as a language, type in 'en' for Language ID, 'English' for Language Display Name, set 'English' as sort override (how the language will be ordered), and add (as seen in **Figure 3** below).

**Add New Language**

**Language ID**

en

A unique identifier (case-insensitive) for this language. It is recommended to use the ISO code, such as 'en' or 'en-US' for English, or 'es' for Spanish. **Use only letters and hyphen.** [View list of ISO codes](#)

**Language Display Name**

English

This is the name of the language as shown in the language selectors. This should be entered in its language, such as 'English' or 'Deutsch' (for German).

**Sort Override (optional)**

English

If set, this will be used instead of the display name for determining the sort order of languages in language selectors.

**Figure 3.** The 'add a new language' window is shown here.

- Once your default language is set, save your changes (click the yellow 'Save Changes' button at the top right of the page). Note: All changes must be saved throughout the editing process, if not a yellow warning bar will show on your page (as seen in **Figure 4** below).

**Demo Multilingual RedCap Form** PID 144832

**Multi-Language Management** [VIDEO: How to use Multi-Language Management](#)

On this page you can create and configure multiple display languages for your project (for surveys, data entry forms, alerts, survey invitations, etc.) or alternatively export and import translations using a file. Do not forget to **save your changes** (keyboard shortcut: **CTRL-S**) at any time on this page when you are done editing. NOTE: [This page will not auto-translate your text for you](#), but provides tools so that you may easily translate them yourself. [Learn more.](#)

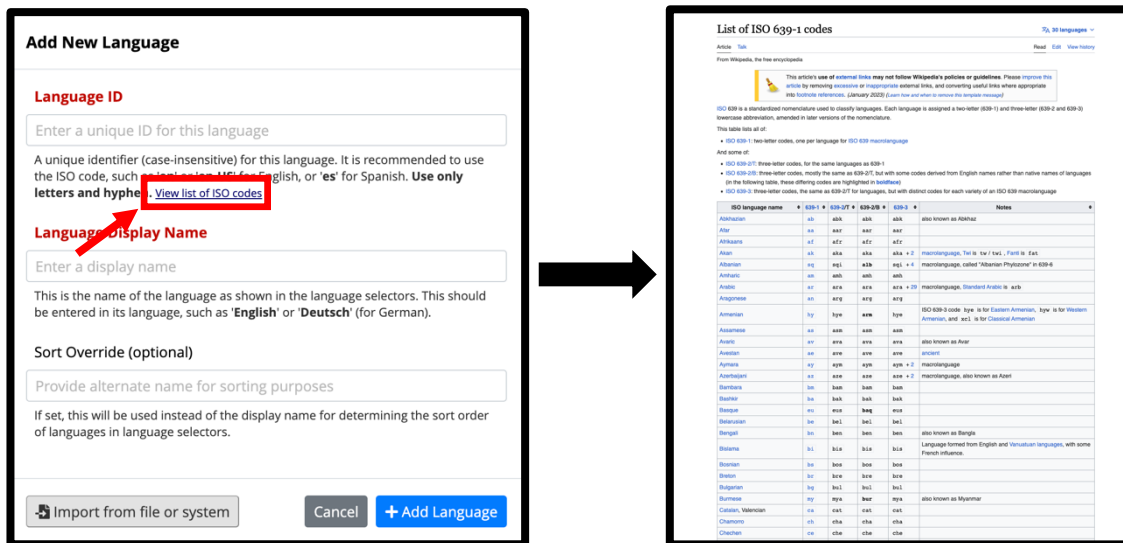
Manage the available languages in this project using the table and options below by following these steps:

- Create your default language (i.e., used when creating your fields, instruments, etc.). This will serve as the reference for the other languages.
- Add other languages that you wish to offer as a translation of the default language.
- Translate your default text into different languages by clicking the tabs above or the icons to the right of each language below.
- Test your translations by switching back and forth between languages on your data entry forms and/or surveys. Note that only active languages will be available for selection on those places.
- Learn how to implement some language-related action tags, such as `@LANGUAGE-SET`, if desired. Learn about them here: [@ Action Tags](#)

ID	Display Name	Active	Default	Fallback	RTL	Actions
en	English	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="button" value="edit"/> <input type="button" value="add"/> <input type="button" value="delete"/>

**Figure 4.** The 'Save Changes' button can be found on the main MLM application homepage at the top of the screen (see arrow). A warning bar will show to the left of the page if changes are not saved.

- To add additional languages to your Open REDCap form, click the green 'add a new language' button, then click the 'View list of ISO codes' hyperlink under the 'Language ID' section of the page. The hyperlink will take you to a webpage of language codes. Find the language you would like to use, input the 'language ID' and 'language display name', then click 'add language' button (as shown in **Figure 5** below).



**Figure 5.** The 'add a new language' form includes a hyperlink to a complete list of language ISO codes (see arrow). The hyperlink will take you to a Wikipedia page shown to the right.

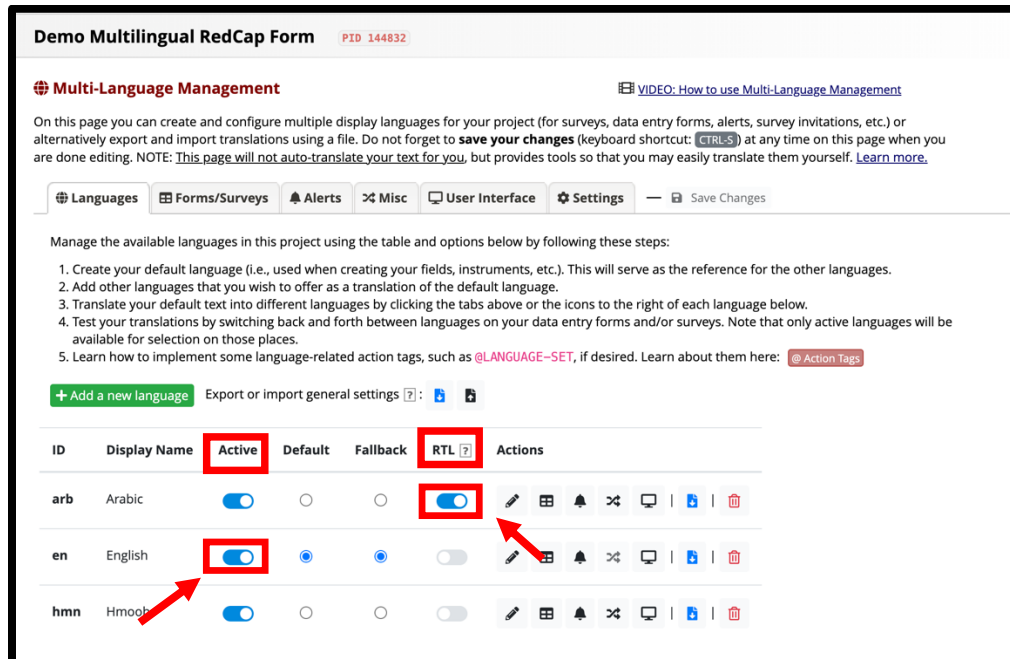
- Once you have selected a language code, insert the 'language ID' and the 'language display name' into the form. For this example, we used Hmong as the language, imputing 'hmn,' 'Hmoob,' and Hmong, respectively (as shown in **Figure 6** below).

The screenshot shows the 'Add New Language' form with the following values entered:

- Language ID:** hmn
- Language Display Name:** Hmoob
- Sort Override (optional):** Hmong

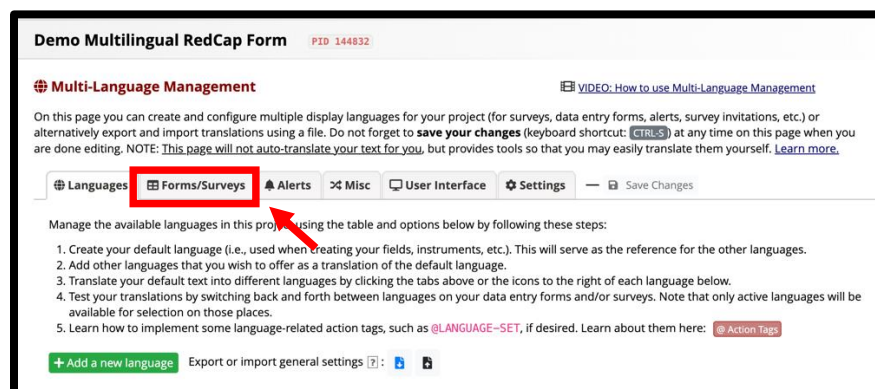
**Figure 6.** The 'add a new language' form shows how new languages should be added to the MLM portal.

- Once all languages have been added to the MLM portal, click the 'active' toggle button to change the color to blue. If a language is read right to left (e.g., Arabic), RTL should be toggled blue (as shown in [Figure 7](#) below).



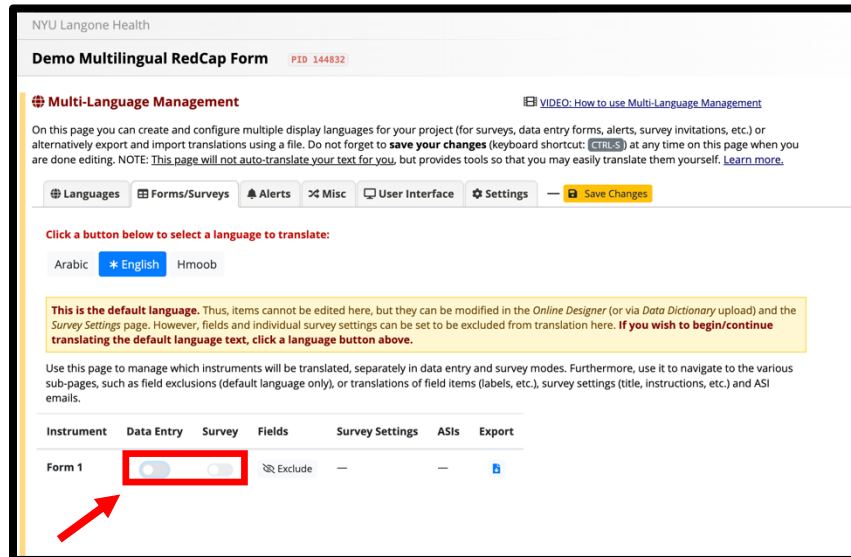
**Figure 7.** The 'active' toggle button will appear grey on the application homepage. Once selected they change to blue which means the function is enabled (see arrow). Both examples of 'RTL' and 'Active' from step 7 are shown here (see arrows).

- Once the languages are set, they must be enabled on the survey. To do so, click the 'Forms/Surveys' tab on the MPM application homepage (as shown in [Figure 8](#) below).



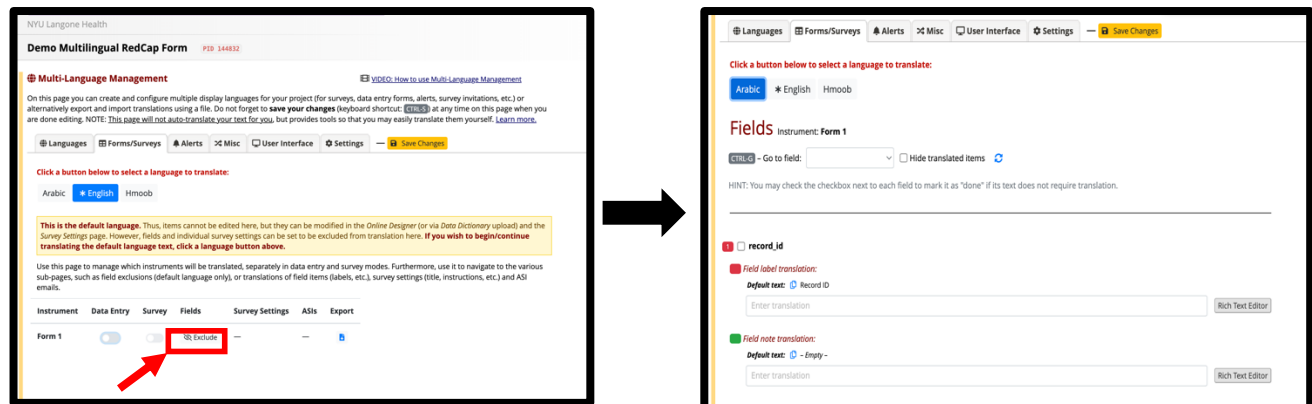
**Figure 8.** The 'Forms/Surveys' tab can be found at the top of the application homepage, to the right of 'Languages' tab (see arrow).

- Click the 'Data Entry' and 'Survey' toggle buttons for each language. Fields and survey settings can be translated for each language (as shown in **Figure 9** below).



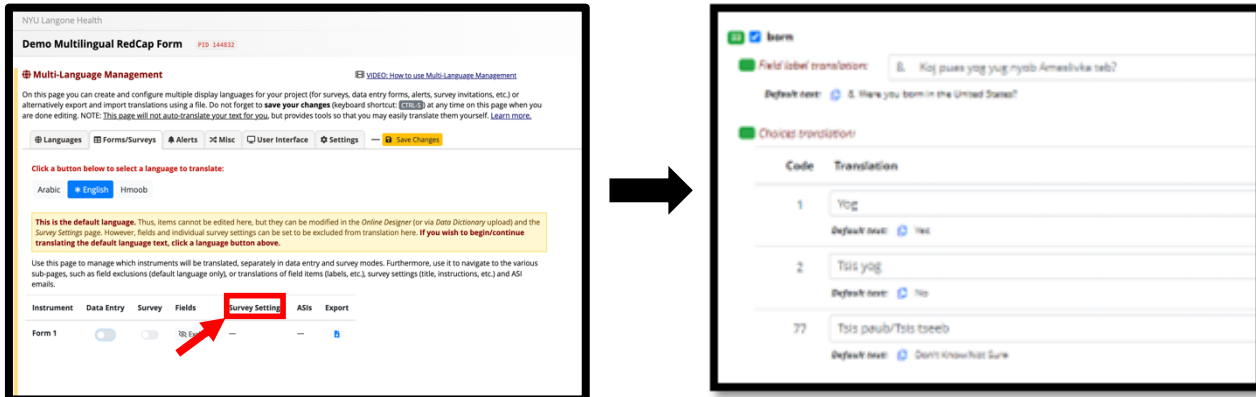
**Figure 9.** To enable the data entry and survey translation functions for each language, click the grey toggle buttons located under the application 'Forms/Surveys' tab (see arrow).

- To enter translations for specific fields of a survey, click the 'exclude' button under the 'Fields' header. You will be redirected to the 'Fields' page where you can input which sections you'd like translated (as shown in **Figure 10** below). Once enabled, the option will read 'include'.



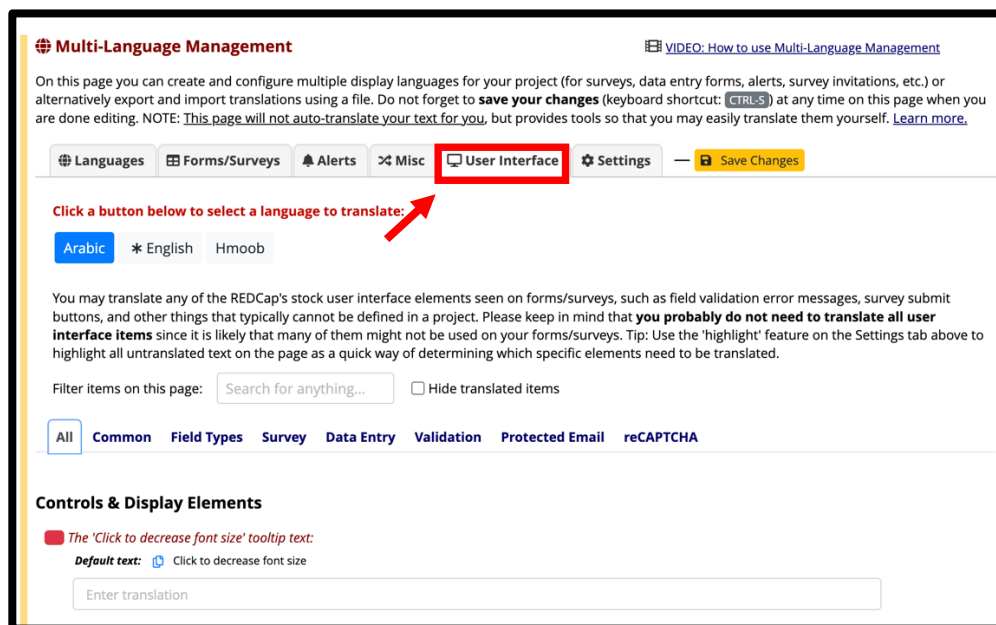
**Figure 10.** To create survey translations for each language, click the 'exclude' button located under the 'Fields' section of application 'Forms/Surveys' tab (see arrow).

11. Clicking 'Survey Settings' will provide an interface to translate the survey instructions and completion text (as shown in **Figure 11** below).



**Figure 11.** The 'Survey Settings' is located to the right of 'Fields' option (see arrow). This example does not have this option because there is no survey created for this file since it is a demo survey. Once selected, you will be taken to a page similar to the example shown on the right.

12. Once the survey settings have been set, click the 'User Interface' tab to translate all survey elements that are not part of the survey tool (e.g., error messages, field types, buttons, reCAPTCHA, save & return later, etc., as shown in **Figure 12** below). Note: this step must be completed for each language in which you want translated prompts.



**Figure 12.** The 'User Interface' is located to the right of 'Misc' tab on the MLM application toolbar (see arrow). Once selected, you will be taken to the 'Controls & Display Elements' page shown here.

13. To capture the survey language used with each individual survey, action tags (@LANGUAGE-CURRENT-FORM/SURVEY and @HIDDEN) must be added to a variable on the survey to associate it with your survey language of choice and to hide it from view. Links for further instructions are shown below (as shown in **Figure 13** below).

Manage the available languages in this project using the table and options below by following these steps:

1. Create your default language (i.e., used when creating your fields, instruments, etc.). This will serve as the reference for the other languages.
2. Add other languages that you wish to offer as a translation of the default language.
3. Translate your default text into different languages by clicking the tabs above or the icons to the right of each language below.
4. Test your translations by switching back and forth between languages on your data entry forms and/or surveys. Note that only active languages will be available for selection on those places.
5. Learn how to implement some language-related action tags, such as @LANGUAGE-SET, if desired. Learn about them here [@ Action Tags](#)

[+ Add a new language](#) Export or import general settings [?](#): [b](#) [b](#)

ID	Display Name	Active	Default	Fallback	RTL <a href="#">?</a>	Actions
arb	Arabic	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<a href="#">edit</a> <a href="#">grid</a> <a href="#">bell</a> <a href="#">cross</a> <a href="#">monitor</a> <a href="#">share</a> <a href="#">trash</a>
en	English	<input checked="" type="checkbox"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input type="checkbox"/>	<a href="#">edit</a> <a href="#">grid</a> <a href="#">bell</a> <a href="#">cross</a> <a href="#">monitor</a> <a href="#">share</a> <a href="#">trash</a>
hmn	Hmoob	<input checked="" type="checkbox"/>	<input type="radio"/>	<input type="radio"/>	<input type="checkbox"/>	<a href="#">edit</a> <a href="#">grid</a> <a href="#">bell</a> <a href="#">cross</a> <a href="#">monitor</a> <a href="#">share</a> <a href="#">trash</a>

**(Optional) For surveys, designate a field for storing a participant's language preference**

Use this feature to set a source for a participant's language preference (their initial language setting). This must be a radio or dropdown field with choices matching the language ID you have defined for each language above, or a text box field with no field validation. The value of this field can be set manually through data entry/data import or with the @LANGUAGE-CURRENT-FORM/SURVEY action tags. The value of this setting will dictate the language used for rendering Automated Survey Invitations, Alerts, and PDFs. Text box fields are denoted with [T] while radio and dropdown fields are denoted with [R] and, in case they include all language keys, are highlighted with a green background.

**Language preference field:**

**Figure 13.** To view instructions on how to set up a survey language variable, click the pink '@ Action Tags' button located on the right-hand side of the page (see arrow) to learn more. Once created, you can create a language preference option associated with the action tag at the bottom of the 'Languages' tab (see arrow).



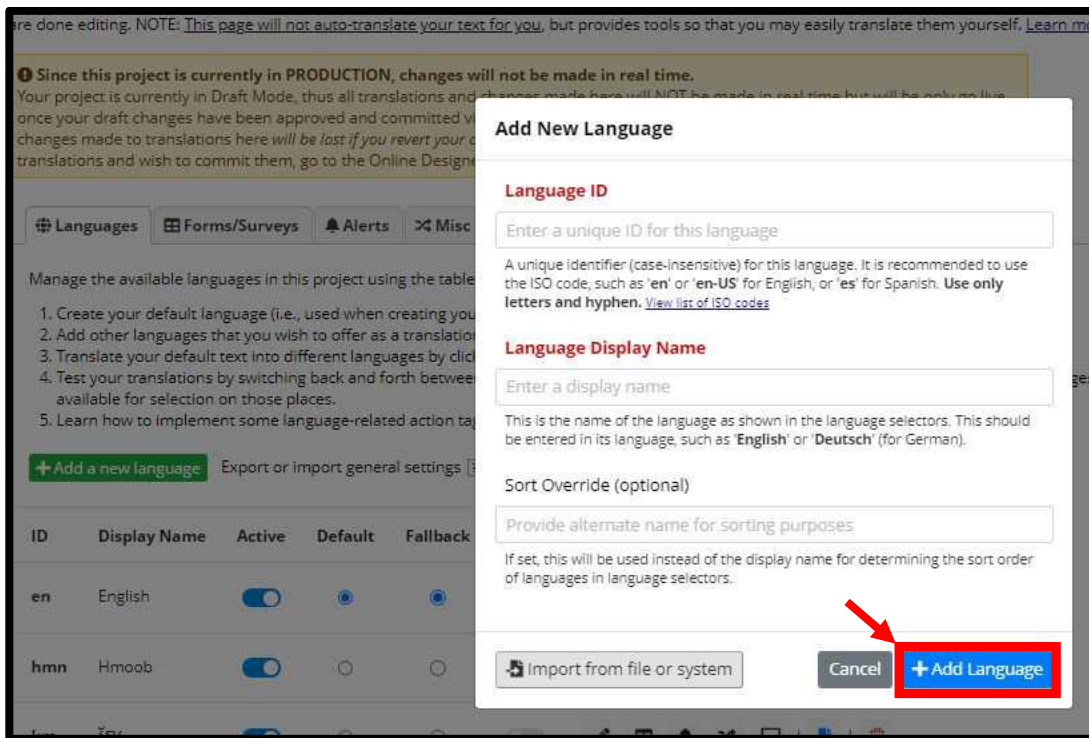
14. If you plan to administer another survey using any previously languages, you can export the data for each language from the completed project and import them into the new project. As shown in **Figure 14** below, click on the download icon (i.e., blue file with the arrow pointing down to the right of the list of languages), and then you choose what you would like to export (it can include just user interface, survey items, etc.) (see **Figure 14** shown below).

The screenshot shows the language management interface. At the top, there are instructions on how to manage languages. Below this is a table with columns: ID, Display Name, Active, Default, Fallback, RTL, and Actions. The table lists several languages: en (English), hmn (Hmoob), km (Khmer), lo (Lao), ium (Iu-Mienh), and vi (Tiếng Việt). A red arrow points to the download icon in the Actions column for the 'hmn' language. Below the table, an 'Export Language' dialog box is open for 'hmn: Hmoob'. The dialog has sections for 'Include the following:' (with several checked options like 'Translations of user interface items') and 'Export Options:' (with 'JSON' selected). A red arrow points to the 'Download' button at the bottom right of the dialog.

ID	Display Name	Active	Default	Fallback	RTL	Actions
en	English	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	[Edit] [Add] [Alert] [Misc] [User Interface] [Download] [Trash]
hmn	Hmoob	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	[Edit] [Add] [Alert] [Misc] [User Interface] [Download] [Trash]
km	Khmer	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	[Edit] [Add] [Alert] [Misc] [User Interface] [Download] [Trash]
lo	Lao	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	[Edit] [Add] [Alert] [Misc] [User Interface] [Download] [Trash]
ium	Iu-Mienh	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	[Edit] [Add] [Alert] [Misc] [User Interface] [Download] [Trash]
vi	Tiếng Việt	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	[Edit] [Add] [Alert] [Misc] [User Interface] [Download] [Trash]

**Figure 14.** Once a survey is created, you can create other surveys using the same by exporting the language then importing the downloaded language file (see arrow).

15. To import a language using a previous survey's you can click on "+ Add a new language," select "Import from file or system," and choose each respective file (see **Figure 15** shown below).



**Figure 15.** Once a survey is created, you can create other surveys using the same language by importing the downloaded language file (see arrow).

## Lessons Learned

- Open REDCap cannot directly translate surveys for users, but surveys can be formatted in different languages using the MLM application in Open REDCap.
- All translations, including reCAPTCHA, error messages, and the user interface, should be ready to enter when creating the online survey database.
- Allow plenty of time for set up and testing of the survey and all translations; test the database extensively before putting it into production.
- Save your changes regularly using 'Control S' or 'save changes' so that changes are not lost.
- While the project must have a default language, this language can be turned off. Because default is generally English and added on the project setup, no translations need to be added.
- Languages can be exported and imported from and to projects.

## Additional Resources

- For more information on managing Multi-Language Open REDCap form, see the following NYU Health Sciences Library training modules:
  1. [Multi-Language Management in Open REDCap, Part 1](#)
  2. [Multi-Language Management in Open REDCap, Part 2](#)
  3. [Multi-Language Management in Open REDCap, Part 3](#)
  4. [Multi-Language Management in Open REDCap, Part 4](#)
  5. [Multi-Language Management in Open REDCap, Part 5](#)
- For Multi-Language Open REDCap coding tips, see master documents [here](#).
- For more support on Multi-Language Open REDCap Surveys, see tip sheet [here](#).
- For more information on Open REDCap, contact the Data Services team of the at the NYULH Health Sciences Library ([hsl.dataservices@nyulangone.org](mailto:hsl.dataservices@nyulangone.org)).

## Works Cited

1. Oh SS, Galanter J, Thakur N, Pino-Yanes M, Barcelo NE, White MJ, et al. (2015). Diversity in clinical and biomedical research: a promise yet to be fulfilled. *PLoS Medicine* 12(12):e1001918.
2. Squires A, Sadarangani T, Jones S. (2020). Strategies for overcoming language barriers in research. *J Adv Nurs.* 76(2):706-714.
3. National Academies of Sciences, Engineering, and Medicine. (2022). *Improving Representation in Clinical Trials and Research: Building Research Equity for Women and Underrepresented Groups*. Washington, DC: The National Academies Press.

**Last updated: 02.14.23**

DC 03282024