



## Session 4: Cross-sectional and longitudinal studies

---

Biostatistics Support & Research Unit (BRU)  
IGTP

November, 2025

# Contents

## Cross-sectional project

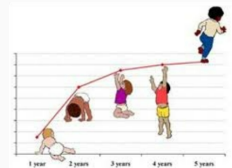
1. Cross-sectional project
2. Cross-sectional project in REDCap



---

## Longitudinal project

1. Longitudinal project
2. Longitudinal mode configuration
3. Events
4. Implications in the data
5. Implications in the design



---

## Repetition of instruments or events

1. Repetition of instruments or events
2. Repeated instrument
3. Repeated event



# Cross-sectional project

## 1. Cross-sectional project



Definition

## 2. Cross-sectional project in REDCap



Definition



Activity



## Definition

A **cross-sectional study** is characterised by:

1. Being observational (no intervention).
2. Being retrospective or prospective.
3. Collecting a single measurement (the variables of interest are collected at a single point in time).

With this design, it is possible to estimate prevalences at a specific point in time (for example, the prevalence of a disease).

# Cross-sectional project in REDCap



## Definition

REDCap refers to cross-sectional or prevalence studies as a **classic project**.

- **Properties:**

- Default project.
- Longitudinal mode disabled.
- Each instrument can be filled once per record.

# Cross-sectional project in REDCap



## Activity: Cross-sectional project

- **Goal of the study:** Calculate the prevalence of diabetes mellitus.

Study scheme	
Instruments	Point of interest
Demographic	<input checked="" type="checkbox"/>
Comorbidities <i>Fields:</i> - Comorbidities (Yes/No) - Comorbidities matrix (previously created)* *show it only if comorbidities = Yes (keep the filter for the COPD field)	<input checked="" type="checkbox"/>



Enter a few records and calculate the prevalence of diabetes in your project.

# Cross-sectional project in REDCap



## Solution

### Steps:

1. Create the instrument *Comorbidities*.
2. Add the field *Comorbidities* (Yes/No).
3. Move the matrix of *Comorbidities* to the new instrument
4. Only display the matrix fields if *comorbidities=Yes*.
5. Enter comorbidity data for some patients in order to calculate prevalence.
6. Calculate the prevalence of diabetes mellitus recorded in our project using the *Stat & Charts* functionality.

# Cross-sectional project in REDCap



## Solution

### 1. Create the instrument *Comorbidities*.

Online Designer » Add new instrument » Comorbidities

**Data Collection Instruments**

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

**Form options:**  
[Form Display Logic](#)  
[PDF Snapshots](#)

Instrument name	Fields	View PDF	Instrument actions
Demographic	0		<a href="#">Choose action</a>
Comorbidities	1		<a href="#">Choose action</a>

### 2. Add the field *Comorbidities* (No/Yes).

Online Designer » Comorbidities » Add Field » Multiple Choice - Radio Buttons (Single Answer) » Choices: 0,No / 1,Yes

Current instrument: **Comorbidities** [Preview instrument](#)

[Add Field](#) [Add Matrix of Fields](#) [Import from Field Bank](#)

Field Name:  ☐

**Comorbidities** ☐ No ☐ Yes [reset](#)


[Add Field](#) [Add Matrix of Fields](#) [Import from Field Bank](#)

## Cross-sectional project in REDCap



## Solution

3. Move the matrix of *Comorbidities* to the new instrument.

Online Designer » Demographic »  Move matrix of fields to another location » Move the matrix of fields above so that it will be located immediately **\*AFTER\*** the following field: » Comorbidities

**Move matrix of fields to another location?**

You may move the matrix of fields listed below to any location on the current or another data collection instrument. Choose from the drop-down below the location to which you wish to move this matrix of fields. Note if the matrix contains a section header, the section header will be moved with the matrix.

**Matrix group to be moved:** **Ita**

Move the matrix of fields so that it will be located immediately **after** the following field:

comorbidity1 "Comorbidity1"

location1 "Location1"

menopause "Menopause"

**Comorbidity1**

...insert at the top of this form ...

**comorbidity1, comorbidity2**

**CREATE NEW INSTRUMENT AND ...**

# Cross-sectional project in REDCap



## Solution

- Only display the matrix if *comorbidities=Yes*

Branching Logic » Drag-N-Drop Logic Builder/Advanced Branching Logic  
Syntax » [comorbidities]='1'

The screenshot shows the REDCap Branching Logic interface. At the top, there is a header bar with a pencil icon, a plus icon, and a minus icon, followed by the text "Matrix Group: comorbidities". Below this is a yellow header row labeled "Comorbidities". The main area contains three rows, each representing a field with a branching logic rule. Each row has a "Field Name" and a "Branching logic" rule. The first row is for "Hypertension" with the rule "[comorbidities]='1'", the second row is for "EPOC" with the rule "[age]>65 and [comorbidities]='1'", and the third row is for "Diabetes Mellitus" with the rule "[comorbidities]='1'". Each row has a "reset" button at the bottom right. The interface also includes a "Add Field" button, an "Add Matrix of Fields" button, and an "Import from Field Bank" button at the bottom.

Field Name	Branching logic	reset
Hypertension	[comorbidities]='1'	<input type="radio"/> No <input type="radio"/> Yes
EPOC	[age]>65 and [comorbidities]='1'	<input type="radio"/> No <input type="radio"/> Yes
Diabetes Mellitus	[comorbidities]='1'	<input type="radio"/> No <input type="radio"/> Yes

Buttons: Add Field, Add Matrix of Fields, Import from Field Bank



## Solution

- 5 Calculate the prevalence of diabetes mellitus recorded in our project using the *Stat & Charts* functionality.

*Data Exports, Reports, and Stats » All data » Stat & Charts*

# Cross-sectional project in REDCap



## Activity Overview







### Proposed scheme

Study scheme	
Instruments	Point of interest
Demographic	<input checked="" type="checkbox"/>
Comorbidities	<input checked="" type="checkbox"/>

### REDCap scheme

Record ID 1	
 Data Collection Instrument	Status
Demographic	
Comorbidities	

*Individual dashboard*

Record ID	Demographic	Comorbidities
1		
2		
3		

*Global dashboard*

# Longitudinal project

## 1. Longitudinal project



Definition



Longitudinal project in REDCap

---

## 2. Longitudinal mode configuration



Definition



Enable

---

## 3. Events



Definition



Configuration



Activity



## Definition

A **longitudinal study** is characterized by:

1. Collecting data from the same subjects repeatedly over time to assess changes.
2. Being observational or interventional in nature.
3. Being prospective, retrospective, or ambispective.



## Definition

- **Properties:**
  - Longitudinal mode enabled.
  - Multiple events (visits).
  - Instruments can be linked to multiple events.

# Longitudinal mode configuration



## Longitudinal mode

In order to create **longitudinal projects**, REDCap offers a **longitudinal mode**.

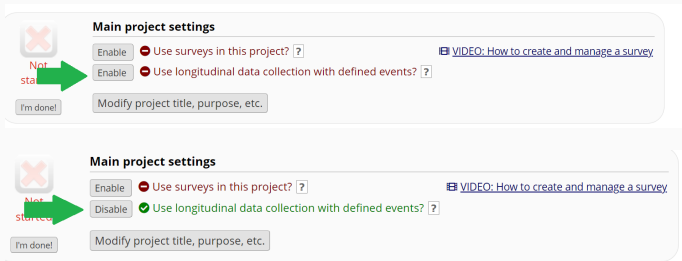
The **longitudinal mode** allows any form or survey to be used multiple times: the form is created once and then assigned to different events/visits throughout the project.

# Longitudinal mode configuration

## Enable longitudinal mode


1. Access to Project setup.
2. Enable longitudinal mode.

Use longitudinal data collection with defined events? » Enable



The image shows two screenshots of the 'Main project settings' dialog box. In the top screenshot, the 'Use longitudinal data collection with defined events?' option is set to 'Enable' with a red circle icon. A green arrow points to the 'Enable' button. In the bottom screenshot, the same option is set to 'Disable' with a green checkmark icon. A green arrow points to the 'Disable' button. Both screenshots show the 'Use surveys in this project?' option set to 'Enable' with a red circle icon. The 'I'm done!' button is visible at the bottom left of each dialog.


**Main project settings**

 Not started

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

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

**Main project settings**

 Not started

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

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



## Definition

**Events** allow instruments to be used a *finite* number of times for any project record.

It is normally used to collect the same instrument during different events/visits.





## Definition



The events allow the creation of a **longitudinal project**.

- **Properties:**

- Longitudinal mode enabled.
- Instruments can be linked to multiple events.

## Configuration

To configure events, follow these two steps:

- STEP 1:  Define events
- STEP 2:  Link instruments to events


# Events

## Configuration


### STEP 1: Define event

1. Access to Project setup.
2. Define events

Define your events and designate instruments for them » Define My Events.




  
In progress

**Define your events and designate instruments for them**  
Create events for re-using data collection instruments and/or set up scheduling.

  or



By default, REDCap creates a single event.

		Event #	Event Name	Custom Event Label  (optional)	Unique event name  (auto-generated)
		1	Event 1		event_1_arm_1

## Configuration

### STEP 1: Define events

#### 3 Functionalities

Download events in CSV

Edit


Rename and label.

Create a new event

Upload or download arms/events

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
Add new event		<input type="text"/>	<input type="text"/>	



## Configuration

### STEP 2: Link instruments to events

1. Access to Project setup.
2. Link instruments to events.

*Define your events and designate instruments for them » Designate Instruments for My Events.*

  
In progress

** Define your events and designate instruments for them**  
Create events for re-using data collection instruments and/or set up scheduling.  
Go to  or  



Instruments can only be linked if two or more events have been defined.

**NOTE:**

This page may ONLY be used if multiple events have been defined. To be able to utilize this page, you will need to [define more 'events'](#) for this project.

## Configuration

### STEP 2: Link instruments to events

#### 3 Functionalities

##### Begin editing

Relate  
events-instruments

Begin Editing			
Data Collection Instrument	Baseline visit (1)	Second visit (2)	Final visit (3)
Form 1			



## Activity: Events configuration

Study scheme			
Instruments <i>Label:</i>	Baseline visit	Second visit <i>sample date</i>	Final visit <i>sample date</i>
Demographic	<input checked="" type="checkbox"/>		
Comorbidities	<input checked="" type="checkbox"/>		
Laboratory results <i>Fields:</i> - <i>Sample date (D-M-Y)</i>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>



## Solution

1. Add a new instrument: *Laboratory results* with the variable *Sample date*, format D-M-Y.
2. Create the events *Baseline visit* (previous name: Event 1), *Second visit* and *Final visit*.
3. Use the field *Sample date* as the event label for *Second visit* and *Final visit*.
4. Link instruments *Demographic* and *Comorbidities* to the *Baseline visit* event.
5. Link the new *Laboratory results* instrument to all three events: *Baseline visit*, *Second visit* and *Final visit*.



## Solution





1. Add a new instrument: *Laboratory results* with the variable *Sample date*, format D-M-Y:

Online Designer » Add new instrument » Create » *Laboratory results*  
Add Field » Text Box » Validation: Date (D-M-Y) » *Sample date*


Current instrument: **Laboratory Results**

[Preview Instrument](#)

[Add Field](#) [Add Matrix of Fields](#) [Import from Field Bank](#)

    Field Name: *date\_sample*


Sample date

 Today D-M-Y

[Add Field](#) [Add Matrix of Fields](#) [Import from Field Bank](#)



## Solution


2. Create the events *Baseline visit*, *Second visit* and *Final visit*.
- 2.1 Project setup » Define your events and designate instruments for them » Define My Events
- 2.2  Edit » Event Name: "*Baseline visit*"
- 2.3 Add new event » Event Name: "*Second visit*"
- 2.4 Add new event » Event Name: "*Final visit*"







		Event # [event-number]	Event Label [event-label]	Custom Event Label ⓘ (optional)	Unique event name (auto-generated) [event-name]	Event ID (auto-generated, unchangeable) [event-id]
	 	1	Baseline visit		baseline_visit_arm_1	1807
	 	2	Second visit	[date_sample]	second_visit_arm_1	1808
	 	3	Final visit	[date_sample]	final_visit_arm_1	1809









## Solution

- Use the field *Sample date* as the event label for *Second visit* and *Final visit*.

Project setup » Define your events and designate instruments for them » Define My Events »  Edit » Custom Event Label: "[date\_sample]"

	Event # [event-number]	Event Label [event-label]	Custom Event Label [optional]	Unique event name (auto-generated) [event-name]	Event ID (auto-generated, unchangeable) [event-id]
 	1	Baseline visit		baseline_visit_arm_1	1807
 	2	Second visit	[date_sample]	second_visit_arm_1	1808
 	3	Final visit	[date_sample]	final_visit_arm_1	1809

 Data Collection Instrument	Baseline visit	Second visit 12-02-2025	Final visit 08-10-2025
Demographic			
Comorbidities			
Laboratory Results			



## Solution

- 4 Link instruments *Demographic* and *Comorbidities* to the *Baseline visit* event.
- 5 Link the new *Laboratory results* instrument to all three events: *Baseline visit*, *Second visit* and *Final visit*.

Project setup » Define your events and designate instruments for them » Designate Instruments for My Events » Begin Editing

<div>Begin Editing</div> <div>Save</div>			
Data Collection Instrument	Baseline visit (1)	Second visit (2)	Final visit (3)
Demographic	✓		
Comorbidities	✓		
Laboratory Results	✓	✓	✓



## Activity Overview

### Proposed scheme

Study scheme			
Instruments <i>Label:</i>	Baseline visit	Second visit <i>sample date</i>	Final visit <i>sample date</i>
Demographic	<input checked="" type="checkbox"/>		
Comorbidities	<input checked="" type="checkbox"/>		
Laboratory results	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

### REDCap scheme

Record ID 1

Data Collection Instrument	Baseline visit 12-02-2025	Second visit 08-10-2025	Final visit 08-10-2025
Demographic	<input checked="" type="checkbox"/>		
Comorbidities	<input checked="" type="checkbox"/>		
Laboratory Results	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

*Individual dashboard*

Record ID	Baseline visit			Second visit	Final visit
	Demographic	Comorbidities	Laboratory Results	Laboratory Results	Laboratory Results
1	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
2	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
3	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

*Global dashboard*

# Implication in the data



Visualisation /



Download data

**Cross-sectional projects:** A single record is created for each individual.

**Longitudinal projects:** Projects involving repeated instruments or repeated events

For each individual, a row is created for:

- Each event

Record ID redcap_id	Event Name redcap_event_name	Repeat Instrument redcap_repeat_instrument	Repeat Instance redcap_repeat_instance	Date of creation of the record data_record	Weight weight	Height height	Date of birth date_birth	Sex sex	Menopause menopause	Medication		
										Statins medication__ _0	Anticoagulants medication__ _1	Antidiabetics medication__ _2
1	Baseline visit									Unchecked (0)	Unchecked (0)	Unchecked (0)
2	Baseline visit									Unchecked (0)	Unchecked (0)	Unchecked (0)
2	Second visit											
2	Final visit											
2	Baseline visit									Unchecked (0)	Unchecked (0)	Unchecked (0)

Identification of the record → 2  
Final visit

\*Variable that identifies the register: `redcap_event_name`

# Implications in the design

## Smart variables

There are **smart variables** specific to **Events** and they only work if we have longitudinal mode enabled.

Smart variable	Action	Result example*
[event-number]	Number ordinal event	2
[event-name]	Name event	baseline_visit_arm_1
[event-label]	Label event	Baseline visit
[previous-event-name]**	Name previous event	Does not exist
[previous-event-label]	Label previous event	Does not exist
[next-event-name]**	Name next event	second_visit_arm_1
[next-event-label]	Label next event	Second visit

\*Example: Event (Baseline visit)

\*\* Smart variables can be linked to fields, for example:

[previous-event-label][date\_sample]

# Implications in the design

## Smart variables

Smart variable	Action	Result example*
[first-event-name]**	Name first event	baseline_visit_arm_1
[first-event-label]	Label first event	Baseline visit
[last-event-name]**	Name last event	final_visit_arm_1
[last-event-label]	Label last event	Final visit

\*Example: Event (Baseline visit)

\*\*Smart variables can be linked to fields, for example: [last-event-name][date\_sample]

# Implications in the design

## Piping

### Cross-sectional projects

1. Define the **field**
2. —

[date\_sample]

» *dates of laboratory results at a single point in time.*

### Longitudinal projects

1. Define the **event**
2. Define the **field**

[baseline\_visit\_arm\_1][date\_sample]

» *date of laboratory results at baseline visit*

# Implications in the design

## Branching logic

### Cross-sectional projects

Logic context: If of legal age.

1. Define the **field**
2. Define the **operator**
3. Define the **value of comparison**
4. —

```
[age]>18
```

### Longitudinal projects

Logic context: If of legal age.

1. Define the **event**
2. Define the **field**
3. Define the **operator**
4. Define the **value of comparison**

```
[baseline_visit_arm_1][age]>18
```



## Activity: Implications in the design

1. Ensure that the sample date (laboratory results) is not visible at the final visit.
2. Add a variable called 'Previous sample date' (laboratory results) and set it to the date of the previous visit.

# Implications in the design



## Solution

1. Ensure that the sample date (laboratory results) is not visible at the final visit.

Online Designer » "Laboratory results" » "Sample date" » Branching Logic » Advanced Branching Logic Syntax »  
[event-name] <> 'final\_visit\_arm\_1'

Choose method below for the following field: **date\_sample** - Sample date

Ⓐ **Advanced Branching Logic Syntax**

How to use

▶ Branching Logic

🔗 Smart Variables

✓ Special Functions

Show the field ONLY if...

[event-name] <> "final\_visit\_arm\_1"

Test logic with a record: -- select a record --

[Clear logic](#)

# Implications in the design



## Solution

- 2 Add a variable called 'Previous sample date' (laboratory results) and set it to the date of the previous visit.

2.1. Online Designer » "Laboratory results" » Add Field » Text Box » Validation: Date (M-D-Y)

2.2. Online Designer » "Laboratory results" » "Previous sample date" » Action Tags: [previous-event-name][date\_sample]

The screenshot shows the 'Add Field' configuration window in REDCap. The 'Field Type' is set to 'Text Box (Short Text, Number, Date/Time, ...)'. The 'Field Label' is 'Previous sample date'. The 'Variable Name' is 'date\_sample\_prev'. The 'Validation' is set to 'Date (D-M-Y)'. The 'Action Tags / Field Annotation' section shows the tag '@DEFAULT = [previous-event-name][date\_sample]'. The 'Required\*' checkbox is checked.



### Remarks

- REDCap internally stores dates as M-D-Y
- Does it make sense to include this action tag in the baseline visit?  
How can we deal with this?

# Repetition of instruments or events

## 1. Repetition of instruments or events



Definition



Configuration

---

## 2. Repeating instrument



Activity



Use

---

## 3. Repeating event



Activity



Use

---

## 4. Implications in the data



Visualisation /



Data download

---

## 5. Implications in the design



Smart variables

# Repetition of instruments or events



## Definition

### Repetition of instruments

- Allows you to repeat an instrument as many times as necessary.
- Works on cross-sectional and longitudinal projects.
- Example of use: entry of multiple concomitant medication.

### Repetition of events

- Allows you to repeat an event as many times as necessary.
- Only works on longitudinal projects (longitudinal mode enabled).
- Example of use: longitudinal study without a defined number of visits.

### Limitations

- You cannot add a repeat instrument to a repeat event.
- Repeating instruments or events will make the data more complex.

# Repetition of instruments or events

## Configuration

1. Access to Project setup.
2. Enable repeatable instruments and events setting.

Enable optional modules and customisations » Repeatable instruments and events



Optional

### Enable optional modules and customizations

Enable



Repeatable instruments and events ?



Disable



Auto-numbering for records ?

# Repetition of instruments or events

## Configuration

3. Select the action for each of the events:

3.1 Do not repeat.

3.2 Repeat the entire event (only for longitudinal projects).

3.3 Repeat instruments at the event.


	Event Name	Repeat entire event or selected instruments?	Instrument name (select instruments to repeat) Exa	Cus rep
✓	Baseline visit	Repeat Instruments (repeat ▾)	<input type="checkbox"/> Demographic <input type="checkbox"/> Comorbidities <input checked="" type="checkbox"/> Regular medication	
	Second visit	-- not repeating -- Repeat Entire Event (repeat all instruments together) Repeat Instruments (repeat independently of each other) -- not repeating -- ▾		
	Final visit		<input type="checkbox"/> Laboratory results	



# Repeated instrument



## Activity: Longitudinal project with a repeated instrument.

Study scheme			
Instruments <i>Etiqueta:</i>	Baseline visit	Second visit <i>data mostra</i>	Final visit <i>data mostra</i>
Demographic	<input checked="" type="checkbox"/>		
Comorbidities	<input checked="" type="checkbox"/>		
Regular medication  <i>Fields:</i> - Start date - Medicine [text field] <i>Label: start date - medicine</i>	<input checked="" type="checkbox"/>		
Laboratory results	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>



Repeated instrument

# Repeated instrument



## Solution

Steps:

1. Create a new instrument called *Regular medication*.
2. Create the fields: Start date and Medication.
3. Assign the instrument *Regular medication* to the first visit.
4. Label the instrument with the start date and the medication.

# Repeated instrument



## Solution

1. Create a new instrument called *Regular medication*.

Online Designer » Add new instrument » Create

2. Create the fields: Start date and medication.





1.1. Add Field » Text Box » Validation: Date (D-M-Y)


1.2. Add Field » Text Box

[Return to list of instruments](#) [« Previous instrument](#) [Next instrument »](#)





Current instrument: **Regular medication** [Preview instrument](#)

[Add Field](#) [Add Matrix of Fields](#) [Import from Field Bank](#)

    Field Name: *date\_start* ☐

**Start date**   Today D-M-Y

[Add Field](#) [Add Matrix of Fields](#) [Import from Field Bank](#)

    Field Name: *medicine* ☐

**Medicine**

[Add Field](#) [Add Matrix of Fields](#) [Import from Field Bank](#)

46

# Repeated instrument



## Solution

3. Assign the instrument *Regular medication* at the first visit.

Project setup » Define your events and designate instruments for them »  
Designate Instruments for My Events

<div>Begin Editing</div> <div>Save</div>			
Data Collection Instrument	Baseline visit (1)	Second visit (2)	Final visit (3)
Demographic	✓		
Comorbidities	✓		
Regular medication	✓		
Laboratory results	✓	✓	✓

# Repeated instrument



## Solution

4. Label the instrument with the start date and medication.

4.1. Project setup » Enable optional modules and customisations »  
Repeatable instruments and events

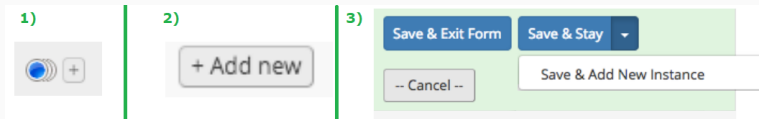
4.2. Baseline visit » Repeat instruments » "Regular medication" » Label:  
"[date\_start] - [medicine]"

	Event Name	Repeat entire event or selected instruments?	Instrument name (select instruments to repeat) Example: [visit_date], [weight] kg	Custom label for repeating instruments (optional) ⓘ
✓	Baseline visit	Repeat Instruments (repeat ▼)	<input type="checkbox"/> Demographic <input type="checkbox"/> Comorbidities <input checked="" type="checkbox"/> Regular medication <input type="checkbox"/> Laboratory results	<input type="text"/> <input type="text"/> <input type="text" value="[date_start] - [medicine]"/> <input type="text"/>

# Repeated instrument

## Use

- Users can add recurring instruments in three ways:
  1. Symbol «+» to the initial page of the register.
  2. Button «Add New» to the main page of the register.
  3. Option «Save & Add New Instance» to button «Save & Stay» in an instrument.












# Repeated instrument








## Solution

- Add three regular medications to a record

 Data Collection Instrument	Baseline visit	Second visit	Final visit
Demographic			
Comorbidities			
Regular medication	 		
Laboratory results			
Delete all data on event:			

### Repeating Instruments

Regular medication 		
Baseline visit (3)		
1		10-10-2007 - Ibuprofen
2		30-07-2012 - Sintrom
3		23-10-2018 - Insuline
		

# Repeated instrument



## Activity Overview

### Proposed scheme

Study scheme			
Instruments	Baseline visit	Second visit	Final visit
Demographic	<input checked="" type="checkbox"/>		
Comorbidities	<input checked="" type="checkbox"/>		
Regular medications	<input checked="" type="checkbox"/>		
Results laboratory	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>



Repeated instrument

### REDCap Scheme

Data Collection Instrument	Baseline visit	Second visit	Final visit
Demographic	<input checked="" type="checkbox"/>		
Comorbidities	<input checked="" type="checkbox"/>		
Regular medication	<input checked="" type="checkbox"/>		
Laboratory results	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

Delete all data on event.

Repeating Instruments

**Regular medication**

Baseline visit

(3)

1	<input checked="" type="checkbox"/>	10-10-2007 - ibuprofen
2	<input checked="" type="checkbox"/>	30-07-2012 - Sintrom
3	<input checked="" type="checkbox"/>	23-10-2018 - Insuline

[+ Add new](#)

*Dashboard individual*

Record ID	Baseline visit				Second visit	Final visit
	Demographic	Comorbidities	Regular medication	Laboratory results	Laboratory results	Laboratory results
1	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
2	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
3	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
4	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

*Dashboard global*

# Repeated event



## Activity: Longitudinal project with one instrument and one repeated event

Study scheme				
Instruments	Baseline visit	Second visit	Final visit	Control visit
<i>Label:</i>		<i>sample date</i>	<i>sample date</i>	<i>visit date</i> ∞
Demographic	<input checked="" type="checkbox"/>			
Comorbidities	<input checked="" type="checkbox"/>			
Regular medication ∞	<input checked="" type="checkbox"/>			
Laboratory results	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
Control of symptoms				<input checked="" type="checkbox"/>
<i>Fields:</i>				
- Date visit				
- Visual Analogue Scale (VAS)(0-10)				



Repeated instrument/event

# Repeated event



## Solution

Steps:

1. Create a new instrument called *Control of symptoms*.
2. Create the fields: *Date of visit* and *VAS scale*.
3. Create an event named *Control visit*.
4. Label the event *Control visit* with the visit date.
5. Assign the instrument *Control of symptoms* to the *Control visit*.
6. Ensure that the event *Control visit* can be repeated multiple times.

# Repeated event



## Solution

1. Create a new instrument called *Control of symptoms*.

Online Designer » Add new instrument » Create » "Control of symptoms"

2. Create the fields: *Date of visit* and *VAS scale*.

2.1. Add Field » Text Box » Validation: Date (D-M-Y)

2.2. Add Field » Slider/Visual Analog Scale

Current instrument: **Control of symptoms**

[Preview instrument](#)

The screenshot displays the 'Control of symptoms' instrument in the Online Designer. At the top, there are three buttons: 'Add Field', 'Add Matrix of Fields', and 'Import from Field Bank'. Below these, the first field is 'Date of visit', which is a text box with a date picker icon and a 'Today' button. The field name is 'date\_visit'. The second field is 'Visual Analogue Scale (VAS)', which is a slider with a range from 0 to 10. The field name is 'scale\_vas'. Below the slider, there is a red text prompt: 'Change the slider above to set a response' and a 'reset' button. At the bottom, there are again three buttons: 'Add Field', 'Add Matrix of Fields', and 'Import from Field Bank'.








# Repeated event



## Solution

3. Create a new event *Control visit*.
4. Label the event *Control visit* with the date of visit.

Project setup » Define your events and designate instruments for them »  
Designate Instruments for My Events » Add new event »  
Label: "[date\_visit]"

		Event # [event-number]	Event Label [event-label]	Custom Event Label [optional]	Unique event name (auto-generated) [event-name]	Event ID (auto-generated, unchangeable) [event-id]
	 	1	Baseline visit		baseline_visit_arm_1	1840
	 	2	Second visit	[date_sample]	second_visit_arm_1	1841
	 	3	Final visit	[date_sample]	final_visit_arm_1	1842
	<div>Save</div>	4	<input type="text" value="Control visit"/>	<input type="text" value="[date_visit]"/>		
<div>Add new event</div>		<input type="text"/>		<input type="text"/>		
		Descriptive name for this event		Custom Event Label (optional) Example: [visit_date], [weight] kg		

# Repeated event



## Solution

5. Assign the instrument *Control of symptoms* to the *Control visit*.

5.1. Project setup » Enable optional modules and customisations »  
Repeatable instruments and events

5.2. Project setup » Define your events and designate instruments for  
them » Designate Instruments for My Events

<div>Begin Editing</div> <div>Save</div>				
Data Collection Instrument	Baseline visit (1)	Second visit (2)	Final visit (3)	Control visit (4)
Demographic	✓			
Comorbidities	✓			
Regular medication	✓			
Laboratory results	✓	✓	✓	
Control of symptoms				✓

# Repeated event




## Solution

6. Ensure that the event *Control visit* can be repeated multiple times.

Project setup » Enable optional modules and customisations » Repeatable instruments and events

Control visit » Repeat Entire Event

	Event Name	Repeat entire event or selected instruments?	Instrument name (select instruments to repeat) Example: [visit_date], [weight] kg	Custom label for repeating instruments (optional) 
✓	Baseline visit	Repeat Instruments (repeat ▼)	<input type="checkbox"/> Demographic <input type="checkbox"/> Comorbidities <input checked="" type="checkbox"/> Regular medication <input type="checkbox"/> Laboratory results	<input type="text"/> <input type="text"/> [date_start] - [medicine] <input type="text"/>
	Second visit	-- not repeating -- ▼	<input type="checkbox"/> Laboratory results	<input type="text"/>
	Final visit	-- not repeating -- ▼	<input type="checkbox"/> Laboratory results	<input type="text"/>
✓	Control visit	Repeat Entire Event (repeat ▼)	<input checked="" type="checkbox"/> Control of symptoms	<input type="text"/>

# Repeated event

## Use

- Users can add recurring events as follows:
  1. Symbol «+ Add new» to the initial page of the register.

				
<b>Data Collection Instrument</b>	<b>Baseline visit</b>	<b>Second visit</b>	<b>Final visit</b>	<b>Control visit</b> 02-10-2025

## Repeated event



## Activity Overview

### Proposed scheme

Study scheme				
Instruments	Visit baseline	Second visit	Visit final	Visit control ∞∞
Demographic	<input checked="" type="checkbox"/>			
Comorbidities	<input checked="" type="checkbox"/>			
Regular medication ∞∞	<input checked="" type="checkbox"/>			
Laboratory results	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
Control of symptoms				<input checked="" type="checkbox"/>

## REDCap scheme



Repeated instrument/event

Data Collection Instrument	Baseline visit	Second visit	Final visit	Control visit
				15-10-2016 (a1) 06-02-2023 (a2)
Demographic				
Comorbidities				
Regular medication				
Laboratory results				
Control of symptoms				
Deplete all data on events:	X			X X

### Repeating Instruments

Regular medication	
Baseline visit	
(3)	
1	10-10-2007 - Ibuprofen
2	30-07-2012 - Sintrom
3	23-10-2018 - Insuline
Add new	

Record ID	Baseline visit				Second visit	Final visit	Control visit
	Demographic	Comorbidities	Regular medication	Laboratory results	Laboratory results	Laboratory results	Control of symptoms
1							
2							
3							
4							

Global dashboard

### Individual dashboard

# Implications in the data



Visualization /



Download the data

**Cross-sectional projects:** It creates a record for each individual.

## Projects with repeated instruments or events

A row is created for each individual for:

- Every one of the events
- Every one of the repeated instruments.
- Every one of the repeated events.

Record ID record_id	Event Name redcap_event_name	Repeat Instrument redcap_repeat_instrument	Repeat Instance redcap_repeat_instance	Date of creation of the record date_record	Weight weight	Height height	Date of birth date_birth
1	Baseline visit						
2	Baseline visit	Identifier = 2 Baseline visit		09-10-2025			
2	Second visit						
2	Final visit						
2	Baseline visit	Regular medication	1	Identifier = 2 Baseline visit First regular medication			
2	Baseline visit	Regular medication	2				
2	Control visit		1	Identifier = 2 First control visit			
2	Control visit		2				

\*Identifying variables in the register: *redcap\_event\_name* (event name), *redcap\_repeat\_instrument* (instrument name) and *redcap\_repeat\_instance* (number of repetitions).

# Implications in the design

## Smart variables

There are **smart variables** specific to **event and instrument repetition** that only work if we have the option of repeating instruments or events enabled.

Smart variable	Action	Result example*
[previous-instance]**	Previous instance number	1
[current-instance]**	Actual instance number	2
[first-instance]**	First instance number	1
[last-instance]**	Last instance number	2

\*Example: Second instance

\*\* Smart variables can be used with fields, for example: [date\_visit][previous-instance]



## Activity: Smart variables with repeated events.

1. Create a descriptive variable to report the value of the *Visual Analogue Scale* from the previous control visit.

# Implications in the design



## Solution

1. Create a descriptive variable to report the value of the *Visual Analogue Scale* from the previous control visit.

Add Field » Descriptive text » *previous VAS Scale*:

`[scale_vas][previous-instance]`

Field Type: Descriptive Text (with optional Image/Video/Audio/File Attachment) ▼

Codebook

Field Label

☐ Use the Rich Text Editor ?

Previous VAS Scale: [scale\_vas][previous-instance]

Variable Name (utilized in logic, calcs, and exports)

scale\_vas\_prev

☐ Enable auto naming of variable based upon its Field Label?

ONLY letters, numbers, and underscores

How to use

Smart Variables

Piping

Field Embedding

# Thank you!

---

