

Automated Survey Invitations: Frequently Asked Questions

What are Automated Survey Invitations?

For any survey in your REDCap project, you may define your conditions for Automated Survey Invitations that will be sent out for a specified survey. This is done on the Online Designer page. Automated survey invitations may be understood as a way to have invitations sent to your survey participants, but rather than sending or scheduling them manually via the Participant List, the invitations can be scheduled to be sent automatically (i.e. without a person sending the invitation) based upon specific conditions, such as if the participant completes another survey in your project or if certain data values for a record are fulfilled.

Below are some guidelines to keep in mind when creating automated survey invitations:

1. The 'today' variable should be used only in conjunction with datediff. Comparing 'today' to a date is unreliable.
2. It's a good practice to set up a field that can be used to explicitly control whether or not any invitations should be scheduled for a record. This allows for logic like the following:

```
datediff([surgery_arm_2][surgery_date], 'today', 'd', true) >= 6 and [enrollment_arm_1][prevent_surveys] != '1'
```

3. All fields in all forms on all arms are always available to the conditional logic of an ASI rule. If there is no value saved for that field, an empty string is used.

Do automated survey invitations preclude manual survey invitations?

Automated survey invitations do not preclude manual survey invitations or vice versa. An automated survey invitation will not be scheduled if an automated survey invitation has previously been scheduled, but if an automated survey invitation's logic is checked and found to be true, a survey invitation will be scheduled regardless of whether or not a survey invitation has been previously scheduled manually. Likewise, if an automated survey invitation has been scheduled, one can still schedule a survey invitation manually.

When are automated survey invitations sent out?

Automated Survey Invitations are survey invitations that are automatically scheduled for immediate or future sending when certain conditions are true.

Creating an automated survey invitation requires:

1. Composing an email message.
2. Specifying the conditions that will trigger an email to be scheduled.
3. Specifying how to schedule the triggered email (such as: immediately, after a delay, on a specific day).

NOTE: In previous versions, conditions that used the "today" variable would require extra effort to make sure they were checked every day, but REDCap now detects and checks those conditions daily. The conditions are checked every twelve hours. The specific times they are checked during the day varies from one instance of REDCap to the next and changes over time.

Is there any tool that can help me figure out how to set up ASI?

This link [Survey Wizard: Automated Survey Invitations \(ASIs\)](https://redcap.vanderbilt.edu/surveys/?s=LKM4DPEHL4) will take a user to a survey algorithm that was created by the Training Collaboration Committee using REDCap version 8.8.1. It addresses general ASI how to with components and examples of different setups.

(URL:<https://redcap.vanderbilt.edu/surveys/?s=LKM4DPEHL4>)

Can you base ASI on Calendar/Event dates?

No. Dates generated by the calendar application cannot be used in Automated Survey Invitation (ASI) logic.

ASIs can be scheduled using the same "days offset" parameters defined for your events in four ways using the send-time option.

Option 1: X days after: the exact time the automated invitation was triggered

Option 2: X days after: the same day (beginning at midnight) that the automated invitation was triggered

Option 3: X days after: a date field

Option 4: X days after: a date/time field

Example days/times an ASI will be sent for each option

If a baseline survey is completed for the baseline event on January 1 at 12:00 pm, and a follow-up event (offset by two days) has an ASI configured to send 2 days after the baseline survey is completed:

Option 1: January 3 at 12:00 pm

Option 2: January 3 at 12:00 am

Option 3: January 3 at 12:00 am

Option 4: January 3 at the time captured on the date/time field

How can I schedule a survey invitation to go out at a specific time?

You can use a form of scheduling that allows you to specify next day, next Monday, etc. However, that form of scheduling will not allow you to specify a lapse of a certain number of days.

What mathematical operations can be used in the logic for Automated Survey Invitations?

+ Add

- Subtract

* Multiply

/ Divide

How do I use the datediff function with ASI syntax for conditional logic?

You can calculate the difference between two dates or times by using the function:

datediff([date1], [date2], "units", returnSignedValue)

[date1] and [date2] are fields (variables) in your project.

units

"y" years 1 year = 365.2425 days

"M" months 1 month = 30.44 days

"d" days

"h" hours

"m" minutes

"s" seconds

· Both dates **MUST** be in the same format (i.e., M-D-Y, Y-M-D, or D-M-Y) in calculated fields in instruments. The exception to this rule is the use of the **datediff** function in Automated Survey Invitations (ASIs) (*see examples below*).

· For comparing two Time HH:MM fields, the date format is irrelevant.

returnSignedValue

false (default)

true

· The parameter **returnSignedValue** sets the result to be signed or unsigned (absolute value), in which the default value is **false**, which returns the absolute value of the difference. For example, if [date1] is later than [date2], then the result will be negative if returnSignedValue is set to **true**. If returnSignedValue is not set or is set to **false**, then the result will ALWAYS be a positive number. If returnSignedValue is set to **false** or not set, then the order of the dates in the equation does not matter because the resulting value will always be positive.

Examples:

Calculating the Difference Between 2 Date Fields

Calculated Field in an Instrument

datediff([dob],[date_enrolled],"y")

The [dob] and [date_enrolled] fields must be entered in the same format (i.e., M-D-Y, Y-M-D, or D-M-Y). This equation yields the number of years between the date of birth and date enrolled. Since the returnSignedValue has been left blank, it defaults to false, which means the result will be positive only.

Automated Survey Invitations

`datediff([dob],[date_enrolled],"y")>=5`

When the same equation (with added conditional logic “>=5”) is used in an Automated Survey Invitation (ASI), the formats of the two date fields can differ. The equation will work regardless of whether or not the two date fields match in format. It is still best practice to use the same date format for all dates in the project if possible.

If used in an ASI, this equation states the invitation will be sent when the number of years between the date of birth and date of enrollment is greater than or equal to 5.

Calculating the Difference Between a Date Field and a Static Date

`datediff([date_enrolled],"08-31-2020","d",true)`

Calculated Field in an Instrument

When this datediff equation is used in a calculated field in an instrument, it yields the number of days between August 31, 2020, and date enrolled. Setting the static date as “08-31-2020” assumes the [date-enrolled] field is also entered in M-D-Y format. If the format of the [date_enrolled] field is Y-M-D or D-M-Y, the format of the static date (August 31, 2020) must match. Because returnSignedValue is set to true, the value will be negative if the [date_enrolled] field value is more recent than August 31, 2020.

Automated Survey Invitations

When the same equation (with added conditional logic “>=0”) is used in an Automated Survey Invitation (ASI), you have 2 options:

`datediff([date_enrolled],"2020-08-31","d",true)>=0`

(1) Enter the static date (August 31, 2020) in **Y-M-D format**, regardless of the format in which [date_enrolled] is entered. The field [date_enrolled] can be entered in a different format than Y-M-D.

OR

`datediff([date_enrolled],"08-31-2020","d","mdy",true)>=0`

(2) Enter the static date in any format you wish, but then add the matching date format parameter in quotes between the “unit” and true/false. For example, if you format the static date as M-D-Y, you would add the parameter “mdy” between “d” and true. The field [date_enrolled] can be entered in any format. Again, it is still best practice to use the same date format for all dates in the project if possible.

If used in an ASI, this equation states the invitation will be sent to participants whose date of enrollment was on or before August 31, 2020, but not to participants who enroll after August 31, 2020.

If I create a timestamp field, including hours, minutes, and days, can I create an automated survey invitation that will detect how many days it has been since the timestamp?

It's possible, but if you do this be aware that the server-side (PHP) datediff function always treats the 'today' keyword as being the first second of the day. If your timestamp value is at six pm (18:00:00), then an ASI checking the datediff on

the same day as that timestamp will actually return a result of 0.75 days. On the next day it will return 0.25 days, regardless of what time of day it is checked. On succeeding days it will return 1.25, 2.25, 3.25, etc.

How can I use automated survey invitations to send invitations a specific number of days after a date given by a variable?

Suppose you want to send a follow-up survey seven days after a surgery. You could define the condition of an automated survey invitation rule to detect that six days have passed since the surgery date and then schedule the survey invitation to be sent on the next day at noon. By checking for the sixth day instead of the seventh day, you gain the ability to set the specific time to send the invitation and you gain the opportunity to stop the sending of the invitation, if it turns out that you don't really want to send it.

The conditional logic would look like: `datediff([surgery_date], 'today', 'd', true) >= 6`

You could, instead, check that one day has passed and then set the invitation to be sent six days later, but you would lose the ability to set the specific time that the invitation is sent.

Is there any way to send a survey prior to a specific date e.g. if a surgery is scheduled 60 days from now and they would want the survey to be sent 14 days prior to that?

There are two ways to get this done:

Method 1:

One is to use the option, "Send the invitation X days Y hours Z minutes before [date_field]" in the Automated Survey Invitation (ASI) setup. Choose the "date of surgery" field as the reference field. Note that this field needs to be date- or datetime- validated to appear in the field dropdown. Set up the options so it reads "14 days before [surgery_date]" to finish configuring Step 3.

To configure Step 2, you will need to define how the ASI will be triggered / scheduled. The ASI should be set up to trigger *after* your "date of surgery" field is populated:

- To schedule the invite when a particular survey is completed, choose the survey from the dropdown menu.
- To schedule the invite when a non-survey form is marked as complete, use the ASI logic: `[your_form_name_complete] = '2'`
- To schedule the invite once the surgery date is populated and saved, use the ASI logic: `[surgery_date] <> ''`

Method 2:

The "classic" method is to define a *datediff* calculation in Step 2, under "When the following logic becomes true." By computing number of days between 'today' (or 'now') and the surgery date, you could have it so the invitation is scheduled when 'today' is 14 days before the date of the surgery, like so:

```
datediff('today', [baseline_arm_1][surgery_date], 'd', true) <= 14
```

```
datediff('now', [baseline_arm_1][surgery_date_and_time], 'd', true) <= 14
```

Since (1) using *datediff* with 'now' and a datetime field can return days in a decimal format (e.g., 14.123) and (2) to resolve timing issues when "Ensure logic is still true" option is checked off, it is a best practice to use the "less than or equal to" (<=) operator so the ASI triggers as expected.

To configure Step 3 in this method, you can choose "Send Immediately," or select "Send on next at " to customize when you would like the invitation to be sent once the ASI triggers.

Regardless of the method chosen, if you have conditional logic set up in Step 2's "When the following logic comes true," another consideration is WHETHER to check the "**Ensure logic is still true**" box. In general, it is advisable not to check the "Ensure logic is still true" box if the Step 3 delay is short (e.g., if you chose "Send Immediately"). In other cases, you WANT to re-check.

Additionally, an emergency "kill switch" for ASIs is recommended. This would be a radio or a checkbox field that stops ALL ASIs for a person. This is useful if a participant drops out of the study or otherwise is no longer interested in your emails. For example, with a kill switch, your ASI logic may look like the following:

```
datediff('now', [baseline_arm_1][surgery_date_and_time], 'd', true) <= 14 AND [baseline_arm_1][stop_emails(1)] = '0'
```

Another tip is to use a Data Quality rule to "test" your ASI logic. Build a few test records with various surgery dates and run your custom DQ rule to make sure it is triggering when you want. Trying to test with the REAL ASI is problematic as it only fires once per record ID.

How do variables included via piping interact with an automated survey invitation?

Piped variables are included in a survey invitation ONLY at the point that the ASI determines that an invitation should be scheduled. If the invitation is scheduled to be sent in the future, and a piped variable is later changed before the scheduled invitation is sent, that change will NOT be included in the already scheduled invitation.

How often does REDCap check to see if Automated Survey Invitations (ASI) are ready to be scheduled?

Every time a record is created or modified (through the user interface or via data imports), it checks to see if an ASI invitation is ready to be scheduled. But for specific ASIs that have logic using the "datediff" function with either "today" or "now" (which means that the result of the ASI logic can change on its own from day to day), there is a cron job in REDCap that runs every 4 hours which will check these to see if an ASI invitation should be scheduled. Once the invitation is scheduled, a different cron job checks every minute to see if there are any survey invitations ready to send and sends them.

If a survey has already been completed, will the scheduler still send out survey invitations?

There are a variety of reasons why survey invitations might be in the schedule to be sent even though a survey is already completed. The survey invite might have been both manually scheduled and automatically scheduled. The survey invite might have been scheduled but then the URL for the survey sent to the participant directly. Regardless, the scheduler will not send out a survey invitation for an already completed survey.

Do participants with partially completed surveys receive the automated survey invitation reminders?

Yes, participants will continue to receive automated survey reminders if they have not completed the survey, or they have a partially completed survey response.

How do you stop survey reminders?

First, change the ASI so that no more reminders get scheduled. Then delete the reminders from the Survey Invitation Log, either individually or by selecting the batch you want to delete and using the "Delete all selected" button.

Can you designate a phone number for sending text messages or making voice calls to invite participants to complete a survey that overrides the project-level email invitation or text message/voice call settings?

REDCap allows you to set a **survey-specific email invitation field** in **Survey settings** to override a project-level email invitation field. But there is no comparable feature in Survey settings to designate a phone number to override a project-level email invitation or text message/voice call settings.

As an alternative, you can use an Alert to invite a participant to complete a specific survey (or surveys) in your project via SMS text message or voice call. Click on **Alerts & Notifications** on the left margin of the page after opening your REDCap project. Then click on the button labeled **+Add New Alert**. Complete Step 1 (Triggering the Alert) and Step 2 (Set the Alert Schedule). In Step 3 (Message Settings), you can set the Alert Type as an email, SMS text message or voice call.

Can you designate a project-level phone number for sending text messages or making voice calls to invite participants to complete surveys?

IRB Approval Required. REDCap has the capability to make voice calls and send SMS text messages for surveys and for Alerts & Notifications by using a third-party web service named Twilio (www.twilio.com). In this way, you can invite a participant to take a survey by sending them an SMS message or by calling them on their phone, in which the data will be collected in REDCap directly from their phone without having to use a webpage.

To use this feature, you must **1) set up your own Twilio account** at www.twilio.com. Once your Twilio account has been created, you must **2) fund your account with some money** (using the Billing page in Twilio) and then **3) purchase a phone number** to be used for your REDCap project (see the Numbers page in Twilio).

Once a phone number has been purchased for the account, obtain the **Account SID** and **Auth Token** for your account (see the API Credentials section on the main Account Settings page).

Then contact your REDCap administrator and request to enable Twilio services for your project. The administrator will need the Account SID, the Auth Token, and the phone number to enable Twilio for your project. Additional fees by apply. **IRB Approval Required.**

Once your REDCap project is connected to your Twilio account, you can then configure how you want to use Twilio in your project. In general, not much is different between administering a survey normally in REDCap and using Twilio SMS/voice calls, except that you additionally choose how your survey invitations are delivered. The following choices are available: 1) Initiate survey as voice call, 2) Initiate survey as SMS conversation, 3) Send survey invitation with survey link via SMS, 4) Send survey invitation via SMS to take survey as voice call (respondent makes call), and 5) Send survey invitation via SMS to take survey as voice call (respondent receives call when replying via SMS). Any or all of these invitation delivery methods can be utilized within a single project. The choice of delivery method completely depends upon how you want to collect data from your participants. **IRB Approval Required.**