Using REDCap for Systematic Reviews

<table>
<thead>
<tr>
<th>Purpose</th>
<th>This tool provides tips for using REDCap to manage data for a systematic review.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Format</td>
<td>The tool contains examples of how MSKTC uses REDCap to manage a systematic review, complete with screenshots from REDCap and a sample coding form.</td>
</tr>
<tr>
<td>Audience</td>
<td>This tool is designed primarily for researchers from the Model Systems that are funded by the National Institute on Disability, Independent Living, and Rehabilitation Research (NIDILRR). The tool can be adapted by other NIDILRR-funded grantees and the general public.</td>
</tr>
</tbody>
</table>

The contents of this tool were developed under a grant (number 90DP0082) from the National Institute on Disability, Independent Living, and Rehabilitation Research (NIDILRR). NIDILRR is a part of the Administration for Community Living within the U.S. Department of Health and Human Services. However, those contents do not necessarily represent the policy of the U.S. Department of Health and Human Services, and you should not assume endorsement by the federal government.
Using REDCap for a Systematic Review

What Is REDCap?

REDCap (Research Electronic Data Capture) is an online tool built by Vanderbilt University that was designed to collect and manage data. MSKTC uses REDCap to manage systematic review data. The REDCap database creates questions based on the needs researchers outline in the protocol. The protocol helps define what researchers need to answer for their systematic review and how the information will be gathered in the REDCap database. The protocol influences the design and programming of questions, such as which questions are multiple choice, single choice, or open-ended, and which questions or responses need a “follow-up”. A sample protocol is included (see Appendix A). REDCap can be used for a longitudinal study, clinical studies, or for an online survey. A consortium of research institutions uses REDCap.

For more information about REDCap, please review this video: https://redcap.vanderbilt.edu/consortium/videoplayer.php?video=redcap_overview_brief01&title=Brief%20Overview%20of%20REDCap&referer=redcap.airprojects.org

What Are the Benefits of Using REDCap?

REDCap

- Protects data with secure web authentication, data logging, and Secure Sockets Layer (SSL) encryption
- Enables users to customize the data collection tool for their systematic reviews
- Offers advanced programming of questions like auto-validation, branching logic, and stop actions
- Offers key features to analyze double data entry/blinded data entry data
- Exports data into formats for analysis with Excel, SPSS, R, SAS, or STATA

What Are Tips for Using REDCap?

We have included visuals with tips and best practices for using REDCap for a systematic review. To use REDCap to manage your systematic review, it is important to

- Create a clear protocol to make the REDCap coding as easy as possible.
- Create conditional questions based on the protocol.
- Manage project progress with the Record Status Dashboard.
- Make assignments to communicate with researchers about the articles that they must review.
- Export data and selected questions in a readable format.
Create a Clear Protocol

A protocol outlines the questions that the systematic review should answer. A protocol is important for building a REDCap database because it reflects the reviewers’ process. This is important in determining which articles meet the inclusion criteria. The following is a sample of inclusion criteria used by reviewers for a systematic review in a Word document. The full protocol can be found in Appendix A.

- This protocol seeks to include articles that meet either of the first two criteria (i.e., that the article contains information about the consequences of TBI, or that the article contains information about self-management training) and also only wants to include articles that are intended for a specific audience (people with TBI or caregivers/family).

---

**INCLUSION:** Article includes information about:

- education on consequences of TBI OR self-management training on how to manage consequences of TBI AND
- education (or training) is intended for people with TBI or caregivers/family

*Both of the above must be checked for article to be reviewed*

**EXCLUSION (if any checked, STOP REVIEW):**

- education or training concerns a specific deficit or problem associated with TBI (physical, cognitive or emotional function; substance abuse) (note: comprehensive “packages” or education programs with modules on various specific topics are OK) OR
- education is intended for disability/disease other than TBI/ABI OR
- training concerns goal management, problem-solving, executive function, managing schedules, etc. OR
- education or training is focused on prevention of TBI/ABI OR
- target audience is professionals (medical professionals, teachers, coaches, athletic trainers, etc.) OR
- target audience is general public (e.g., public awareness campaigns) OR
- there is no education or training discussed in the article OR
- other reason (specify):
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Create Conditional Questions Based on Protocol

REDCap’s Online Designer allows systematic review managers to create conditional questions with the branching tool.

- Step one is to create a question in REDCap. This question will contain the message that you want to pop up when the inclusion criterion is not met (the screenshot below shows an example of the backend to create a question in REDCap). You will notice that the question text in both the Field Label and Choices boxes was formatted using basic HTML.
• Once the question is created, then the logic can be developed. First you must select the branching logic button (green arrows, circled) to indicate that you want this question to show up only under certain conditions (shown below).

• In this case, MSKTC used the Advanced Branching Logic Syntax. The protocol is clear in what is to be included or excluded, so it is easy to code all possible scenarios into the syntax box. REDCap provides tips within the tool for programming the logic into the survey (circled).
• If the branching logic is not complicated, the Drag-N-Drop Logic Builder is a helpful point and click tool to use. An example, using the same question, is shown below. This has the termination question display if any of the inclusion criteria questions were coded as “No.” Simply highlight the response on the left and drag it to the box on the left. To delete a response on the right, click the red X.
Here are examples of how this branching logic appears to reviewers.

- If the article does meet the inclusion criteria, then the question for termination does not appear and reviewers can continue to the next section.
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- If the article does not meet the inclusion criteria, then the question for termination pops up at the end.

<table>
<thead>
<tr>
<th>Inclusion Criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Education or information or training given to patients or family about consequences of brain injury</td>
</tr>
<tr>
<td>a. Include self-management training. This is a specific training model that has been applied to chronic health conditions such as diabetes, asthma, arthritis, heart disease, and stroke. SMT typically includes teaching patients how to set goals and solve problems related to chronic symptom management, how to fit disease management into one's lifestyle and preferences, and how to interface effectively with the healthcare system. In its focus on patients taking active control over symptom management, it may be contrasted with more traditional passive patient education programs that consist mostly of provision of information and recommendations for lifestyle change.</td>
</tr>
<tr>
<td>b. Include comprehensive education programs made up of separate topics</td>
</tr>
<tr>
<td>c. Include even if contents of education are not detailed</td>
</tr>
<tr>
<td>d. Include information on general cognitive and/or behavioral issues or consequences</td>
</tr>
<tr>
<td>Exclude training for specific deficit (e.g. walking, memory, anger, executive functioning, goal management training, advocacy skills training, problem solving training for depression) unless different topics are combined into comprehensive package OR multiple cognitive/behavioral issues are addressed (as in inclusion 1d) OR training or education focused on prevention (e.g., shaken baby prevention programs)</td>
</tr>
<tr>
<td>* must provide value</td>
</tr>
<tr>
<td>2. Target population: People with TBI, family, caregivers (including hired caregivers or anyone providing fee-based caregiving service) for traumatic brain injury</td>
</tr>
<tr>
<td>a. Include ABI, if mixed population includes TBI</td>
</tr>
<tr>
<td>b. Include if general trauma, as long as TBI included</td>
</tr>
<tr>
<td>Exclude public (e.g., public awareness campaigns), personnel not involved in direct long-term caregiving (teachers, coaches, medical personnel), ABI if no TBI included in sample</td>
</tr>
<tr>
<td>* must provide value</td>
</tr>
<tr>
<td>3. Type of article: Any, except as excluded below</td>
</tr>
<tr>
<td>a. Include education presented as control for an active intervention, as long as it meets other criteria</td>
</tr>
<tr>
<td>b. Include surveys on education practices/materials given out by professionals (even if education not detailed)</td>
</tr>
<tr>
<td>c. Include program descriptions that mention education component, even if not detailed (unless it only says education was included without any further information)</td>
</tr>
<tr>
<td>Exclude letters, editorials, conference abstracts, fact sheets, pamphlets, or books geared to persons with TBI</td>
</tr>
<tr>
<td>* must provide value</td>
</tr>
</tbody>
</table>

**Article contains information about a needs assessment?**

* must provide value

**Uncertain if the article should be included (please explain)**

* must provide value

**Article is not relevant for review**

If the article is not relevant for the review, please check here and provide the reason that you do not feel that this article is not appropriate to include in the review.
Use the Record Status Dashboard to Manage Progress

The **Record Status Dashboard** allows MKSTC to manage the response rate for reviewers in the systematic review. The Dashboard key indicates if reviewers completed their assignments, started their assignments, or did not start their assignments. Below is the Record Status Dashboard from an MSKTC systematic review.

**Record Status Dashboard (all records)**

Displayed below is a table listing all existing records/responses and their status for every data collection instrument (and if longitudinal, for every event). You may click any of the colored buttons in the table to open a new tab/window in your browser to view that record on that particular data collection instrument. Please note that if your form-level user privileges are restricted for certain data collection instruments, you will only be able to view those instruments, and if you belong to a Data Access Group, you will only be able to view records that belong to your group.

- **Displaying record** 1020 through 2274 of 248 records

**Displaying:** Instrument status only | **Lock status only** | **All status types**

<table>
<thead>
<tr>
<th>Record ID</th>
<th>TBI and Education T (Arm 1: T)</th>
<th>TBI and Education K (Arm 2: K)</th>
<th>TBI and Education M (Arm 3: M)</th>
<th>TBI and Education S (Arm 4: S)</th>
<th>TBI and Education E (Arm 5: E)</th>
<th>TBI and Education A (Arm 6: A)</th>
<th>TBI and Education Mo (Arm 7: Mo)</th>
<th>TBI and Education Cl (Arm 9: Cl)</th>
<th>TBI and Education Cl (Arm 10: Cl)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1020</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
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<tr>
<td>1021</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
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<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>1033</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>1034</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
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</tr>
<tr>
<td>1038</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
</tbody>
</table>

- Going into each record allows the REDCap manager to share the survey with reviewers (click here to jump to Communicating with Researchers).
• Clicking on records marked as completed (i.e., by clicking on the green check mark next to the study ID) lets the REDCap manager access the reviewer’s responses (example below, next page).

**TBI and Education**

*Survey response is read-only*

Response is only partial and is not complete. Response was added on 01/21/2016 7:51pm. You have not been given permission to edit survey responses. However, your permissions may be changed on the User Rights page in order to allow editing of survey responses. 1 person (the survey respondent) has contributed to this partial survey response.

Return Code for participant to edit the completed response: TDFMWFRT

Record ID: 9999 – CI (Arm 9: C)

Record ID: 9999
The purpose of this scoping review is to address the following questions:

1. What types of general education have been provided to patients and family members about the consequences of TBI?

2. What are the gaps in the literature specific to:
   a. Education regarding the consequences of TBI along the continuum of severity from mild to severe?
   b. The comprehensiveness of education about TBI in terms of amount and scope provided?
   c. The degree of active learning (e.g., self-management or general symptom management training) vs. passive learning (e.g., traditional didactic patient education)?

3. What is known about the outcomes and outcome measures for educational interventions for people with TBI or their family members?

Article ID: 9999
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Setting up the Record Status Dashboard

MSKTC set up the Record Status Dashboard with the Events feature in REDCap. This allows MSKTC to collect multiple data entry points for the same form. For example, if we wanted researchers to review the same article at a different time, we would not have to overwrite the previously entered data. To do this, MSKTC gives each time we want to review the data a different event name. The arms feature allows MSKTC to group the events into distinct categories. We named our arms after the reviewers to track all the data that specific reviewers entered. This gave us the separate columns labeled for each reviewer.

- To do this, click on the “Define My Events” button (circled) in the Project Setup tab.
• Next, add an arm for each reviewer and give that arm an event name (in our case, we
gave the arm and the event the same name). See the example on the next page.

STEP #1:
To add new events below, provide an Event Name and the Days Offset for that event, and then click the Add new event button. If your events are temporal (e.g., visits, tasks), you may use the Days Offset to provide a timeframe of all your events relative to the
time of the first event defined. If your events are not temporal but are ordered, you may still use the Days Offset simply as a means
of ordering your events.

STEP #2:
If you will be performing formal data collection in this project, then once you have defined your events on this page, you may
navigate to the Designate Instruments for My Events page, where you may select which data collection instruments that you wish to
utilize for each event you defined.

• Then, go to the next tab, “Designate Instruments for My Events,” to add the data entry
form that you want to be associated with each arm. Click “Begin Editing” to add the
form.
Communicating with Researchers

Data imported into the REDCap database can be shared with reviewers in two ways: by e-mail or by access codes. Both methods are secure and send an individual link to each reviewer.

To send a survey to a reviewer, go into the survey that you want to share (from the Record Status Dashboard) and select Survey Options. Clicking “Survey Options” brings up a drop-down menu with two ways to send the survey.
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- MSKTC uses Survey Invitations, or individual e-mails, to assign articles to each reviewer for review. An example is shown below. Invitations can be sent immediately or at a specified date and time.
• Reviewers can also be sent **Survey Access Codes** or a **QR code** to access surveys. Below is an example.

![Survey Access Code or QR Code](image)

**Enter the Survey Access Code**

To allow a respondent to begin this survey, have them navigate to the URL below and enter the survey access code. The code is permanent and will never change. (Note: The web address is the same for all projects and surveys, so you may bookmark the address on a computer or device to quickly return to it multiple times.)

1.) Go to this web address:

   https://redcap.airprojects.org/surveys/

2.) Then enter this code:

   7JCPPDHTTR

   OR

**Generate Short Code**

Alternatively, you may generate a shorter, temporary code that will expire after only one use or after one hour has passed.

[Generate Short Code]
Export Data for Review

Exporting reviewer responses from REDCap for analysis is simple. REDCap can format data so that it can be read by multiple programs.

- To export data, go to the Applications tab on the left and select “Data Exports, Reports, and Stats” (shown below, circled)
From there, all data can be exported or you can build a report to only select certain questions.

An example report is shown below.
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After you select which data you want to export, you can choose the export format you wish to use (shown below). REDCap can export data for use in Excel, SPSS, SAS, R, or STATA.
Appendix A: Sample Protocol From a Systematic Review

Scoping Review on Education Post-TBI Charting Form

The purpose of this scoping review is to address the following questions:

1. What types of general education have been provided to patients and family members about the consequences of TBI?
2. What are the gaps in the literature specific to:
   a. Education regarding the consequences of TBI along the continuum of severity from mild to severe?
   b. The comprehensiveness of education about TBI in terms of amount and scope provided?
   c. The degree of active learning (e.g., self-management or general symptom management training) versus passive learning (e.g., traditional didactic patient education)?
3. What is known about the outcomes and outcome measures for educational interventions for people with TBI or their family members?
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Article ID: _______________
Reviewer Initials: __________
Date of Review: ____________
Article Authors /Year: 

INCLUSION: Article includes information about:
___ education on consequences of TBI OR ___ self-management training on how to manage consequences of TBI AND
___ education (or training) intended for people with TBI or caregivers, family, or other support system
Both of the above must be checked for article to be reviewed.

EXCLUSION (if any checked, STOP REVIEW):
___ education or training concerns a specific deficit or problem associated with TBI (physical, cognitive, or emotional function; substance abuse) (note: comprehensive “packages” or education programs with modules on various specific topics are OK) OR
___ education is intended for disability or disease other than TBI/ABI OR
___ training concerns goal management, problem solving, executive function, managing schedules, etc. OR
___ education or training is focused on prevention of TBI/ABI OR
___ target audience is professionals (medical professionals, teachers, coaches, athletic trainers, etc.) OR
___ target audience is general public (e.g., public awareness campaigns) OR
___ there is no education or training discussed in the article OR
___ other reason (specify):

____UNCERTAIN AS TO WHETHER ARTICLE SHOULD BE INCLUDED. Explain the uncertainty here and stop the review:
___Article includes information on NEEDS ASSESSMENT in people/family/support system affected by TBI. If article also meets inclusion criteria for education, continue review on education portion. If not, stop review.

(1) Is the education described in the article targeted to (check all that apply):
___ People with TBI?
___ Family members/caregivers of people with TBI?
___ Other? Describe: ____________________________________________________________
(2) Is the education on:
___ TBI specifically; if so, what severity or age group? Check all that apply:
   ___ mild TBI/concussion  ___ adults
   ___ moderate/severe TBI  ___ children/adolescents
   ___ Other type/population; describe: ________________________________
___ ABI including TBI:
   ___ adults
   ___ children/adolescents
   ___ % of sample with TBI (if relevant):
Describe ABI sample or population: ________________________________

(3) Chronicity of population for whom education is intended (check all that apply):
___ Emergency care
___ Acute care
___ Inpatient rehab
___ Outpatient, community, or residential (e.g., post-acute)
___ Other; describe: ____________________________________________

(4) What type of article is this?
___ Editorial or letter to the editor; describe: ________________________________
___ Program description/program evaluation, no experimental design; describe: ____________
___ Survey of education practices; describe: ________________________________
___ Experimental design
   ___ Case study or case series (uncontrolled)
   ___ Single case/multiple single case design (controlled)
   ___ Pre-post without control
   ___ Pre-post with control: ___ RCT ___ other controlled design; describe:
      ___ Education was the main independent variable in the experiment.
      ___ Education was used as control condition for an active intervention.
   ___ Other experimental design; describe: ________________________________
___ Secondary analysis; describe: ________________________________
___ Other type of article; describe: ________________________________
(5) Sample information
___ No sample included in article
___ Sample was included:
   ___ Sample size:
   ___ Acuity of TBI/ABI (e.g., mean/range for time post):
   ___ Notable inclusion/exclusions:

(6) Is the education described in the article:
___ The main topic/intervention described in the article?
___ One component of a broader topic or intervention? Briefly list the other components:

(7) Briefly list the topics covered in the education described in the article:
______________________________________________________________________________
______________________________________________________________________________

(8) How is the education delivered (check all that apply)?
___ Article does not specify
___ Written information (e.g., pamphlet, book)
___ In person: ___ 1:1 ___ Dyad ___ Group or class
___ Telephone delivery ___ Web delivery
Dose/duration (e.g., six 30-minute sessions over 4 weeks): ______________________________
______________________________________________________________________________
______________________________________________________________________________
Other comments on delivery: _____________________________________________________
______________________________________________________________________________
______________________________________________________________________________

(9) Outcome measures and results:
___ Article did not use any outcome measures for the education described in the article (skip to next item).
___ Article used outcome measures but results of education alone cannot be discerned because it was part of a larger program of treatment.
___ Article used outcome measures specifically to evaluate effects of education.
Outcome measures and results were as follows:

<table>
<thead>
<tr>
<th>Measure</th>
<th>Results of Education OR Broader Program</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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</tr>
</tbody>
</table>

Other comments on results: ______________________________________________________

______________________________________________________________________________

______________________________________________________________________________

(10) What are the authors’ main conclusions, if any, about the education described in the article?

______________________________________________________________________________

______________________________________________________________________________