Learning objectives

• How to manage bigger more complex projects?
  • User right management
  • Data quality
  • Data manipulation
  • Improving overview / workflow
ITHS Focus

• Spreading science to clinical practice for the benefit of patients and communities.

• Promotes translation of scientific discovery by:
  - Fostering innovative research
  - Cultivating multi-disciplinary partnerships
  - Training the next generation of researchers

• More information: www.iths.org
User right management
User right management

Uses / Reasons why?

Roles

Suspending users

Data Access Groups

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Uses / Reasons why?

- Compliance
  - HIPAA
- Data Quality
  - Blinding groups of users
- Control your own dataset
  - Exports
  - Ownership
- Prevent "Too many cooks in the kitchen"
- Relieving your training burden
User right management

**User roles**

► Allows for quick assignment of previously established rights
  ► E.g. Temporary users like medical students

► Forces you to think about who does what

► Examples of common roles:
  ► Data entry
  ► Project manager/PI
  ► User manager
  ► Design manager
  ► Statistician
  ► Research Coordinator
User right management

Suspending users

Two options:

- Global suspension
  - Done by an admin
  - Great for suspending for a ton of projects at the same time
  - Usually done for people leaving an organization

- Project specific suspension
  - Predetermined date
  - Good for temporary users
  - Done by user rights enabled user
User right management

Data Access Groups (DAG)

- Separate records by group
  - Users in a DAG can only see records assigned to their group
  - Records created by a user in a DAG automatically get assigned to that DAG
  - Records can be re-assigned
    - Via the record home page
    - Via data import
  - Users not in any DAG can see all records.
  - DAG's are independent of user rights
    - Set both for new users

Uses / Reasons why?

Roles

Suspending users

Data Access Groups
Data Quality
Garbage In, Garbage Out!!
Data Quality

Before the start of data collection

- Design
  - Pre-emptive strike
  - More options than paper forms
  - Talk to your statistician

- Validation
  - Collect the "right" kind of data
  - Required fields
    - Prevents missing data
  - Structured fields vs unstructured fields
  - Double data entry
Data Quality

Pre-Capture

Design

Double Data Entry

During Capture

Post Capture

Design - Validation

▶ Think about analysis
  ➤ e.g. "Two" vs "2"

▶ Validation options
  ➤ Date/time
  ➤ Numeric
  ➤ Special (MRN's, email, phone, zip code)

▶ Minimum & Maximum
  ➤ Optional
  ➤ Think about outliers

▶ Action tags
  ➤ @CHARLIMIT, @WORDLIMIT
Data Quality

Design – Required fields

- Soft requirement
  - Only for users
  - Good reminder
- Hard requirement
  - Survey mode
  - Unskippable
- Best practices
  - Checkboxes
  - Give people an "out"
    - e.g. Prefer not to answer, Unknown
Data Quality

Pre-Capture

Design

Double Data Entry

During Capture

Post Capture

Design – Structured vs Unstructured

► Structured fields
  ► E.g. dropdowns, radio buttons, checkboxes, lookup tables, calculated fields
  ► Quantifiable
  ► Finite predictable answers
  ► Easy analysis

► Unstructured fields
  ► E.g. text boxes, note boxes
  ► More flexibility
  ► Higher risk for "unforeseen" answers
  ► Might require some cleaning later
Data Quality

Double Data Entry

- Main purpose is to prevent:
  - Transcription bias
  - From paper to electronic
  - Interpretation bias
  - Interpreting clinical notes, paper comments

- Useless when doing:
  - Direct data entry
  - Surveys
  - Extractions from other clinical systems

- Requires twice the effort, time and resources
## Data Quality

### During data capture

- Deal with the unexpected
  - Easier to do "during" than "after the fact"
- Course correct midstream
  - Change process in REDCap
  - Move to production
- Track issues
  - Field comment log (default)
  - Data Resolution Workflow
- Dealing with issues
  - Data validator role
  - Make 1 person responsible
Data Quality

Data Resolution Workflow

- **Field Comment Log**
  - Basic default option
  - Comment on any variable in any record

- **Data Resolution Workflow**
  - Turn on in the project setup page
  - Setup the appropriate user rights
  - Allows for the opening of Queries/Issues
  - Manage the issues over time
  - Asynchronous
  - HIPAA compliant (opposed to email)
  - Ideal for larger dispersed teams
Data Quality

Post data capture

► Adhere to compliance rules
  ► Logging
  ► Data Resolution Workflows
► Clean your datasets
  ► Eases analysis
  ► Good indicator of your data quality
► Do a post-mortem
  ► For future studies
Data Quality

Post data capture - Logging

- REDCap tracks everything
  - Page views
  - Design edits
  - Data entry
  - Modifications
- Exportable in a CSV
- Filterable
  - Ton of data
- Accessible through "Logging" application
- Talk to the REDCap Administrator for more technical logging like IP addresses
## Post data capture – Data Quality

- Run checks on the entire dataset
- 8 predefined rules
  - Execute to check a rule
  - Rule H lets you update calculations in bulk
- Allows for custom rules
  - Based on branching logic
  - Look for "impossible" scenarios
    - "Pregnant males"
    - "Negative number of births"
  - Birth date after visit dates
Data manipulation
Data manipulation

Data Manager

- Deleting records
- Wiping forms/surveys
- Locking
- Data Pre-population

Data Manager

- Responsible for:
  - Design
  - Data Quality
  - Data loading
  - Other data responsibilities

- Needs to know:
  - The dataset itself
  - REDCap capabilities
  - Data manipulation
    - Importing & Exporting class recommended
  - Manage this role through the user rights
Data manipulation

**Deleting records**
- Governed by a specific user rights
  - Is turned off by default
- Delete individual record
  - Done in the record home page
  - Removes entire record
- Delete in bulk
  - "Erase all data" in "Other functionality" tab
  - API
- Irreversible unless you have a backup
Data manipulation

Wiping forms and surveys
► Also governed by the "delete records" user rights
► Does not delete the entire record
► Individual forms
  ► Done on the form itself
  ► Button at the bottom of the form
  ► Enter "Edit survey" mode at the top of the form before you delete a survey
    ► Requires "edit survey" rights
► Events
  ► Done in the record home page
  ► Click the little red "X" underneath an event
Data manipulation

Data Manager
- Deleting records
- Wiping forms/surveys

Locking
- Governed by the "Lock/Unlock records" user right
- Individual forms
  - Done on the form itself
  - Checkbox at the bottom of the form
  - Enter "Edit survey" mode at the top of the form before you lock a survey
    - Requires "edit survey" rights
- Entire record
  - Done in the record home page
  - Select option in the "Choose Action" dropdown
- Locking can be undone by users with locking rights

Data Pre-population
Data manipulation

Data Manager

Deleting records

Wiping forms/surveys

Locking

Data pre-population

Three main methods

@DEFAULT tag
  ▶ Hard coded value
  ▶ Piped in value from elsewhere in the record
  ▶ Variable must not be hidden with logic

@PLACEHOLDER tag
  ▶ Shows a suggestion
  ▶ Does not save when untouched

Importing
  ▶ Preload most kinds of data
  ▶ Great for demographics or EMR data dumps
Improving overview / workflow
Custom labels

- Pipe in entered values
- Use piping syntax
- Record label
  - E.g. Last name, first name *(Doe, John)*
  - Setup in "Additional customizations"
- Event label
  - E.g. Visit date *(06-06-2018)*
  - Setup in "Define my events"
- Repeated instrument label
  - E.g. Medication name *(Tramadol)*
  - Setup in "Repeated instruments and events"
Custom dashboards

► Need "project design/setup" rights to setup
► Found in the "Record Status Dashboard"
► Viewable by every user
  ► But limited by individual user rights
► Filter based on:
  ► Branching logic
  ► Completion status
  ► Events
  ► Forms
► Assorted display options available

Custom labels

Creative report uses

"To do" lists

"Dynamic" reports
Improving overview / workflow

Creative report uses

► You can build as many reports as you want
► Take advantage of the fact that REDCap runs the report every time you access it
► Useful options
  ► Filter logic
  ► Live filters
  ► Sorting
  ► Event limits
► Main purpose is to export data
► Other uses:
  ► To do lists
  ► Data quality
Improving overview / workflow

"To do" lists

- Create a status variable
  - E.g. processing status
- Build logic to show all records where that status variable is empty or has a specific value
  - Run the report
  - Select a record
  - Process the record
  - Update status variable
  - Rinse and repeat until empty
Improving overview / workflow

"Dynamic" reports

► Create a date variable
   ► E.g. Time stamp
► Have the date variable automatically filled in
► Build logic that compares that date variable (or smart variable) against today's date
► Specify a range
   ► E.g. Last week would be 0 and -7 *
► Run the report
► The report will change based on:
   ► Data entry (new records)
   ► Time (older records drop off)

*Check notes for example code
Thank You
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