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## **General Assessment Center**

### ***What is Assessment Center?***

Assessment Center<sup>SM</sup> is an online research management tool. It enables researchers to create study-specific websites for capturing participant data securely. Studies can include measures within the Assessment Center library as well as custom instruments created or entered by users. PROMIS and NeuroQoL instruments (short forms, CATs, profiles) are a central feature of the instrument library within Assessment Center. PROMIS and NeuroQoL measures can be downloaded for administration on paper (<http://www.healthmeasures.net>) or be included in an online study (<http://assessmentcenter.net/>). Detailed statistical information about PROMIS and NeuroQoL items and instruments is available for review.

Assessment Center enables real-time scoring of CATs and short forms, storage of protected health information (PHI) in a separate, secure database, real-time data export, and ability to capture endorsement of online consent forms among many other features.

### ***Why should I use Assessment Center?***

Assessment Center is unique in online survey administration tool as it enables the administration of IRT-scored computerized adaptive tests (CATs) and short forms. It also enables easy access to PROMIS and NeuroQoL instruments including CATs, short forms, and profiles and allows for secure collection of PHI.

### ***What is the cost of using Assessment Center?***

As of January 2017, use of Assessment Center will carry fees associated with maintaining and updating the software. New studies (data collection starting on or after January 1, 2017) will be charged an annual fee of \$5,000 per study. Continuing studies (data collection initiated prior to January 1, 2017) will be charged an annual fee of \$2500 per study. This fee will be waived for studies that complete data collection prior to April 1, 2017 and for students or K-awardees that are scheduled to complete data collection prior to July 1, 2017. All fees are assessed under a cost-recovery business model with no profit motivation. The [Assessment Center Pricing Information](#) document provides more cost details.

Payment is required prior to launching a study into data collection. Users may access other features of Assessment Center, such as search or create instruments, submitting payment. However, once a study is ready for data collection users are required to contact administrators to request an invoice. Once the invoice is paid access is opened to the data collection features in Assessment Center and users may begin collecting data. Access to data collection is open for one year per payment. If a user has more than one data collection study in Assessment Center an annual fee will be incurred for each.

### ***Is it possible to obtain a licensing fee waiver?***

Licensing fee waivers may be available if a justifiable reason may be proven. There will be limited justifications for a payment waiver. While it is not possible to detail all circumstances in which a waiver may be granted, below are some circumstances in which one may be considered.

1. Studies of students or K-awardees that are scheduled to complete data collection prior to April 1, 2017
2. Studies which must create multiple data collection sites in Assessment Center would be required to pay licensing fees for the initial study but fees for additional studies created due to confidentiality requirements or software functionality would be waived. For more information about circumstances which would require multiple studies within Assessment Center, see page 9 of the [Assessment Center User Manual](#).

Waiver requests or questions may be submitted to [help@healthmeasures.net](mailto:help@healthmeasures.net).

### ***How is the payment process initiated?***

The first step in making an annual Assessment Center licensing fee is to send an email to [help@healthmeasures.net](mailto:help@healthmeasures.net) including the following text in the subject line “Activate study in Assessment Center”. It is also important to include the name of the study you created in Assessment Center (where applicable), along with your full name, email, institution name, and billing address. Assessment Center administrators will then send along more detailed instructions and create an account in Northwestern’s billing system (NUcore) so that payment may be submitted.

### ***What security measures are in place for online data capture?***

Assessment Center takes security very seriously. The last section of the [Assessment Center User Manual](#) details security information such system architecture, SSL encryption, and server security.

Additionally, Assessment Center utilizes role-based permissions within each study. Only team members are able to obtain access to a given study. Their access is limited based on their assigned role within that study. For example, only individuals with the appropriate role are able to edit or export participants’ data.

Finally, individual items can be flagged to indicate if they include protected health information making de-identification of datasets easier. Also, registration fields are stored in a separate database from other survey data. This allows collection of protected health information to be stored separately from patient-reported outcome data.

### ***Who has access and who owns data collected in Assessment Center?***

Only study team members that have been given access by you can view or export study data. All data collected in Assessment Center is owned by you. The Assessment Center team and PROMIS network make no claims on your data.

### ***How do I register in Assessment Center?***

- 1.) Go to <http://assessmentcenter.net/>
- 2.) Click on Register New User
- 3.) Fill in all the required fields for registration
- 4.) An email will be sent to you for validation. Click on the link you received on your email
- 5.) Log in to Assessment Center using the credentials you created

### ***What will you do with the email address I provide when I register in Assessment Center?***

Your email address is used by the Assessment Center team to periodically provide you with updates about new measures, training opportunities, and scheduled maintenance time. We also may contact you about research opportunities. Your email is not sold or utilized for non-Assessment Center purposes.

### ***How do I retrieve a lost password?***

To retrieve a lost password go to <http://assessmentcenter.net/>, enter your user ID, and click “Forgot Password” in the upper right corner. This will email you your password. If your email address has changed or you do not remember your user ID, please contact [help@assessmentcenter.net](mailto:help@assessmentcenter.net).

### ***What are the minimum hardware/operating system/browser/software needs for conducting a study in Assessment Center?***

	Supported	Recommended
Operating System	Windows XP or Higher	Windows Vista or Higher
Screen resolution	RA 1024 X 768	1024 X 768 or higher

	Participant 800 X 600	
<b>Internet Browser</b>	Internet Explorer 7 & 8	Internet Explorer 8
	Mozilla Firefox 4.0	Mozilla Firefox 4.0
<b>Mobile Devices</b>	Apple iPad*	Apple iPad*
<b>Connection Speed</b>	DSL/Broadband @ 750 Kbps/down and 128Kbps/up or higher	Broadband @ 3 Mbps/down and 384Kbps/up or higher
<b>Misc. Software</b>	N/A	Adobe Reader 9 Microsoft Excel 2003 or Higher

*\*iPad is only supported for participant administration only. A researcher cannot currently set up and preview a study on an iPad.*

***My colleague has registered in Assessment Center and I want to add her to my study team but I do not see her on the User List. Why?***

To complete registration, a user must log into Assessment Center at least once. If this step is not completed, they will not appear in the User List on the Study Team page.

***Do I have to use a PROMIS instrument if I want to use Assessment Center?***

No. You may use Assessment Center to create and administer your own instruments exclusively.

***Do I have to use Assessment Center if I want to use a PROMIS instrument?***

No. You are welcome to use a PROMIS measure in other administration platforms.

***Can I combine PROMIS with other instruments?***

Yes. Within Assessment Center, you can opt to include a PROMIS measure as well as another existing measure or draft your own items.

***My colleague is using Assessment Center. Where can I find his/her instruments?***

If your colleague would like to share an instrument with you, ask to be added to his/her study team. Then, on the Add Instruments page, select your colleague's study name to view all instruments that were created in that study. You can add those instruments to your own study.

***I want to add an instrument I created in Assessment Center to another study I have created but I cannot find it when I do a search.***

An instrument must have the status of Administered in order to be added to another study. Status is automatically updated to Administered once a study is launched. Alternatively, an instrument status can manually be changed on the Instrument Properties page.

***Can I review how an item looks for participants?***

Templates indicate how an item will appear on the participant's screen. You can view images of these templates in the Assessment Center User Manual. You can also select a template for a given instrument and utilize the Preview hyperlink to see how it will look to a participant.

***What item formatting options are available in Assessment Center?***

When you create an item, you have the ability to underline or italicize text. By default, all item text uses bold font. To add underlining, use the code <U> before the text you would like underlined and </U> at the end. Similarly, to italicize use the code <I> before and </I> after the desired text. For

example an item entered like this on the Item Detail screen, To what degree did you have trouble <U>starting</U> things because of your fatigue?, would appear like this on the data collection screen as:

**To what degree did you have trouble starting things because of your fatigue?**

You may also add a line break to appear on data collection screens or add a hyperlink to an item. If you want to force a line break, you can include the code <BR> to force text to start on a new line. For example, Context: In the past 7 days, Stem: I have been bothered by <BR> a lack of energy. This would appear on the data collection screen as:

**In the past 7 days**  
**I have been bothered by**  
**a lack of energy**

To add a hyperlink, first enter the code <a href= followed by the website's URL in single quotation marks. Please note you will need to include the entire URL including the hypertext transfer protocol (http or https, where applicable), the colon and the forward slashes. Next, enter a left angle bracket then retype the URL without the single quotation marks. Finally, enter the code </A>. As the syntax of this code is more complex than others presented, it is important to preview the item to ensure it appears as expected. For example: Stem: For more information, please access the PROMIS website at <A href='http://nihpromis.org' >http://nihpromis.org </A>. This would appear on the participant's screen as:

**For more information, please access the PROMIS website at <http://nihpromis.org>.**

#### ***Why do I see response scores when I preview my study?***

Under Preview tab/Preview Study, item response scores is enabled only on Preview but not after a study has been launched. You can select No if you do not want to view the scores on Preview. This is meant to help you check accurate response scores for custom instruments.

#### ***How do I remove participant PINs that I use in Preview Study so that they are not included on my data export?***

Go to Administration tab of your study, enter the login/PIN, click on find/create login button, and then change the Consent to Test. The Consent field in export will show Consent=4. You should select only Consent=1 participants prior to analyzing data. Codes are shown in the Data Dictionary.

#### ***A participant just told me that they changed their mind and wants me to update their response. How do I do that?***

Team members with the role of Data Entry Administrator can enter or change participant data. From the Administration tab's default page, Study Overview, enter the participant's login and click Find/Create Login. Navigate to the Participant Data page. Click on the appropriate instrument name on the left navigation pane. Complete data entry. Note that if you write over data, the original data will not be stored anywhere.

#### ***I have several studies in Assessment Center and I enrolled a participant into a wrong study. Can participant responses be transferred from one study to another?***

No, we cannot transfer a participant's responses from one study to another study. We would suggest exporting the data from Study 1 and manually entering it in Study 2. Then, in Study 1, change

the participant's status to Consent=Test. When it is time for data analysis, select only those participants whose consent status equals 1 (Yes).

***Can I change items after I have launched my study?***

To maintain consistency among items and instruments, you may not edit items after launching.

***I launched my study but forgot the URL, can I retrieve it?***

On the Launch page of your study there will be a hyperlink to your study URL. Additionally, you can view the URL on the Basic Set-up page.

***Can participants use a touchscreen to complete an assessment?***

Assessment Center is compatible with touchscreen computers. The mouse adapts to your finger instead of the mouse hardware input device. However, touchscreen computers are not ideal for items that require a participant to type in text due to their lack of keyboard. Additionally, if the registration fields are being utilized, be sure to pilot test how those screens appear and function on a touchscreen as they utilize a different template (multiple items per screen).

***How long does it take to complete an instrument?***

The length of time it takes a participant to complete an instrument during data collection depends of factors such as number of items, functional ability of the participant, type of administration mode, etc. For example individuals with motor impairments or low literacy will most likely require more time to complete an assessment.

In general, when a self- or proxy reported instrument is administered on a computer with one item appearing per screen, it is estimated that it will take approximately 10 second to complete each item. More complex items (e.g., two items on a screen, longer text, Toolbox item involving card sorting) will usually require more time per item. Assessment Center includes an item template, "Auto Advance", which enables the system to navigate to the next item immediately after a response is given for the previous item. Utilizing this template will reduce the amount of time required to complete an assessment.

***I was previously able to see my accrual numbers on the Overview page within the Administration tab but now I cannot. Why?***

At this time, the "accrual dashboard" is able to handle calculations for a finite amount of data. If you have a large study, the accrual dashboard may be overwhelmed. You can export your data using the export functions on the Administration tab. Contact [help@assessmentcenter.net](mailto:help@assessmentcenter.net) for assistance.

***I did not collect participants' names and I don't know a user's login. How can I find his or her registration?***

The Registration Data Export will include all participants with their logins. Without collecting name, it may be difficult to identify who is who in your study. All data is saved with the time and date it was created. That may help you identify a given participant.

***The download buttons are grayed out under Administration tab. How can I request/download data?***

Grant yourself the Data+Statistics Administrator role on the team hyperlink of your study under Studies tab.

***I requested for data export but when I tried to open the file, I received a message "Request timed out".***

Add and grant appropriate roles to the user "Desk, Help-NU" to your Study and email the name of your study to [help@assessmentcenter.net](mailto:help@assessmentcenter.net). This is most likely due to file size so we will download the data from our end.

## **Psychometric Issues & Computerized Adaptive Testing (CAT)**

### ***What is item response theory (IRT)?***

In [psychometrics](#), item response theory (IRT) also known as latent trait theory, or modern test theory, is a paradigm for the design, analysis, and scoring of [tests](#), [questionnaires](#), and similar instruments [measuring](#) abilities, attitudes, or other variables. IRT is an array of mathematical models that describe how an examinee responds to an item probabilistically as a function of the trait level of the examinee and the characteristics of the item (e.g., difficulty and discriminating power). In IRT, the examinee's score is defined on the latent (unobservable) trait rather than on the test, as is the case in classical test theory. Therefore, the IRT trait score is considered independent of the particular set of items, whereas the true score in classical test theory is bound to the particular set of items.

### ***What is a computerized adaptive test (CAT)?***

Computerized adaptive testing (CAT) is a form of computer-based testing that adapts to the examinee's trait level. For this reason, it has also been called *tailored testing*. Questions are selected based on a respondent's previous answers. For example, if an examinee indicates having difficulty climbing a flight a stairs, the next selected question will be appropriate for someone at that level of functioning. The next question may be about climbing up a single step or curb. If someone can climb a flight of stairs with ease, the next question may be about climbing several flights of stairs.

### ***Can I add CAT parameters for Partial Credit model?***

Right now, Assessment Center only supports a Graded Response Model. Future releases of Assessment Center will enable other IRT models.

### ***What statistical information is required to administer a custom CAT?***

To administer a custom CAT, items must have calibrations (i.e., slope, thresholds) on the Item Statistics page and the instrument must have CAT parameters (to access, click on Customize hyperlink, then click on IRT parameters button).

### ***How do CATs compare to fixed instruments (e.g. short forms)?***

CAT would be expected to produce a more precise measurement with fewer items. This is the main justification for using CAT instead of short forms. Another advantage is that CAT produces better measurement at the "ends of the continuum", i.e. the extremes (very high or very low) of your continuum. Typically, short forms do best measuring the middle of the continuum (e.g., those with medium levels of fatigue rather than extreme fatigue or extreme lack of fatigue).

### ***Should I use a CAT instrument or a short form?***

As the research has shown thus far, CAT is usually better and never worse, than the same length short form. However, if the groups to be compared are large (e.g., more than 75 or so participants in a group), short forms (especially the longer, 8-item ones) will almost always be as good as CAT.



### ***What are the disadvantages of CAT and reasons not to adopt it?***

There may be some resistance to the idea that different participants are taking different items. There is even more resistance to the fact that individual participants will take different items across time points. Most of the resistance comes from a lack of understanding of how responses to different items could be on the same metric. However, there is a legitimate concern if a short form includes items that have differential item function (DIF) or some other psychometric issue. When the same short form is used at two different time points, the error introduced is consistent. In other words, in repeated measure designs, the error is accounted for because participants are their own controls. When completing CAT instruments, a participant may get 5 items with DIF at the first time point and no items with DIF at the second time point. This results in the introduction of an incorrect error. This issue is introduced because some item banks vary in how they work with different subpopulations. Without the creation of “perfect item bank” this problem cannot be completely eliminated.

### ***How does CAT handle “trial” items which need examination?***

These items, often called “seeding” items, are administered but do not count towards persons’ scores. The data collected is used later to calibrate the new items.

### ***What types of instant CAT score reports exist in Assessment Center?***

CAT scores are reported in two data exports, Assessment Data Export and Assessment Score Export. When administering a public, PROMIS v1.0 CAT instrument of the following domains, Anxiety, Depression, Fatigue, Pain Impact, Physical Function, Sleep Disturbance and Satisfaction with Social Roles, scores are also available in an individual report. The PROMIS CAT (Questionnaire Summary) Report is a single time point report which includes a participant’s standard score along with information on how that score compares with other people in the general population. If age and gender were collected during registration, the participant’s score is compared to other individuals in his/her age group and of his/her gender. The second portion of the report contains a graph displaying scores with standard error bars. You may complete a demonstration of CAT and receive a sample report by accessing the PROMIS [CAT Demo](#) application.

### ***How should one determine whether to administer a long vs. short CAT?***

It is known that longer tests produce more precise estimates. However, there are diminishing returns after 10 or so items. In other words, adding more items will only produce small benefits. The decision of how many items to include in a CAT instrument depends on the goals of the assessment and concerns regarding response burden. There are no “rules” for what is best in all situations.

### ***What are robust approaches for CAT item selection?***

Most algorithms select an item based on participant’s “provisional” theta (trait level). Every time an item is responded to, the CAT algorithm updates its estimate of theta. Each time the estimate is updated the algorithm goes into the bank and selects the item that provides the most IRT information at the estimated trait level.

### ***Are there any organizations which provide CAT item analysis training?***

See the links below for information on selected online measurement courses.

<http://www.statistics.com/dr.-everett-smith>

<http://education.uic.edu/programs/27-masters-degree-program/101-med-in-measurement-evaluation-statistics-and-assessment-mesa>

## **Additional User Support**

### ***I got an error message in Assessment Center. What should I do?***

Some error messages will provide information on how to correct a problem. For example, if you enter an instrument name that already exists in the system you will be asked to amend the name. Other times an error message appears more technical and does not give you a clear indication of what to do. In these rare cases, copy the error message, note where you are in the system (what screen, what you were trying to do) and the date/time you received the error. Then, contact [help@assessmentcenter.net](mailto:help@assessmentcenter.net) with this information and we will try and resolve the problem.

### ***Where can I find detailed instructions on how to use each Assessment Center feature?***

You can find instructions in the Help feature (hyperlink in upper right corner of Assessment Center or <https://www.assessmentcenter.net/ac1/Help/index.html>) and the Assessment Center User Manual (link in left column of home page or [www.assessmentcenter.net/UserManuals.aspx](http://www.assessmentcenter.net/UserManuals.aspx)).

### ***Can you set up my study for me?***

We hope that you will be able to set up your own study by using the available help resources. We are not able to set up a study for you. However, we are happy to answer questions at [help@assessmentcenter.net](mailto:help@assessmentcenter.net).

### ***Can you review my study before I finalize it?***

We would love to review your study before it is finalized. Contact Assessment Center Help a team member by sending an email to [help@assessmentcenter.net](mailto:help@assessmentcenter.net) with your study name.

### ***Can I still use Assessment Center if I do not have internet access?***

There are options available for collecting data via Assessment Center when connecting to the internet is not feasible. To learn more about offline data collection requirements, please contact us at [help@assessmentcenter.net](mailto:help@assessmentcenter.net).

### ***Is it possible to integrate Assessment Center with an EMR (Electronic Medical Record)?***

It is currently possible to integrate Assessment Center with the Epic EMR system. Once integrated, Assessment Center is able to send PRO data back to Epic in the form of an HL7 coded message. Epic is then able to display instrument scores as lab results. Additionally, the alert system in Epic may be used to send alerts to various supportive staff, e.g. clinicians and nursing pools, when a patient responds to an instrument in a pre-defined way. Patients access assessments from the Epic patient portal, MyChart. There are two options for integrating PROMIS instruments into Epic.

1. Epic 2012 includes a library of PROs including a number of PROMIS short forms for adults, pediatric patients, and parent proxies. Prior to use of these instruments, a clinician would work with his/her local EPIC team to identify what triggers an assessment (e.g., appointment happening within a specific clinic) and the content of the assessment. Patients would receive emails to complete assessments via MyChart.
  - a. Advantages: cost effective if organization is using Epic 2012.
  - b. Disadvantages: limited to current content of Epic library.

- c. If interested in utilizing PROMIS instruments in this manner, reach out to local Epic staff for further information, guidance and/or training.
2. Assessment Center's IT group has worked with Epic to integrate the two systems. This allows a clinician to create an assessment in Assessment Center that can include instruments not in the Epic library (e.g., PROMIS CATs, other legacy instruments). Assessment Center sends over each survey item along with scores via calls from MyChart. Again, a clinician would work with his/her local Epic team to identify what triggers an assessment and patients would receive emails to complete assessments via MyChart. A clinician would need to work with his/her local Epic team and Assessment Center's IT team on where to place scored data within Epic.
  - a. Advantages: custom assessments
  - b. Disadvantages: requires more effort from local Epic team; requires subcontract to cover Assessment Center IT effort
  - c. If interested in integrating Assessment Center and Epic in this manner, you will need to contact Assessment Center's IT Director, Maria Varela, at [mvarela@northwestern.edu](mailto:mvarela@northwestern.edu).