NDA GUID Tool

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Acronyms

GUID	Global Unique Identifier

HTTP	Hypertext Transfer Protocol
NDA	NIMH Data Archive
NIH	National Institute of Health
NIMH	National Institutes of Mental Health
OS	Operating System
PII	Personally Identifiable Information

NDA GUID Tool User Guide

The NDA GUID Tool provides functions for researchers to generate unique subject identifiers to submit and share data to the NIMH Data Archive (NDA). The NDA Global Unique Identifier (GUID) is a universal subject ID allowing researchers to share data specific to an individual study participant without exposing personally identifiable information (PII), and to match unique participants across labs and research data repositories.

How Does It Work?

The NDA GUID Tool is a piece of software that accepts the personal information of research participants and helps map that data from arbitrary values to fixed values which are called hash codes. These codes are sent to our system and checked against the GUID database. If these codes have been seen before, that means the information matches an existing GUID, and this GUID is sent back. If no match is found, a new GUID is created and sent back. If someone else enters the same information later, the tool will detect this match and send back the same GUID. The GUID itself is a series of alpha-numeric characters. This system has the following advantages:

- PII never leaves your computer.
- There is nothing about a GUID that would allow someone to infer the identity of the individual.
- The same individual's information will result in the return of the same GUID across time, location, and research study. This allows researchers to match shared data from that participant, regardless of source, without ever sharing or viewing PII.

Access

To use this tool, you must have:

- Internet access.
- An active NDA user account.
- Requested and been granted access to use the NDA GUID Tool by NDA staff.
- Submission permissions to an NDA Collection or approval by NIMH.

If you have questions about NDA accounts or the NDA GUID Tool please contact the NDA Help Desk.

Installation and Updating

How to install on Windows

The Windows installer will have an ".exe" extension, and the default download location is the user's "Downloads" directory.

Double-clicking on the installation file or selecting the file and pressing the 'Enter' key will launch the installer. After starting the installation program, you may receive a security warning:

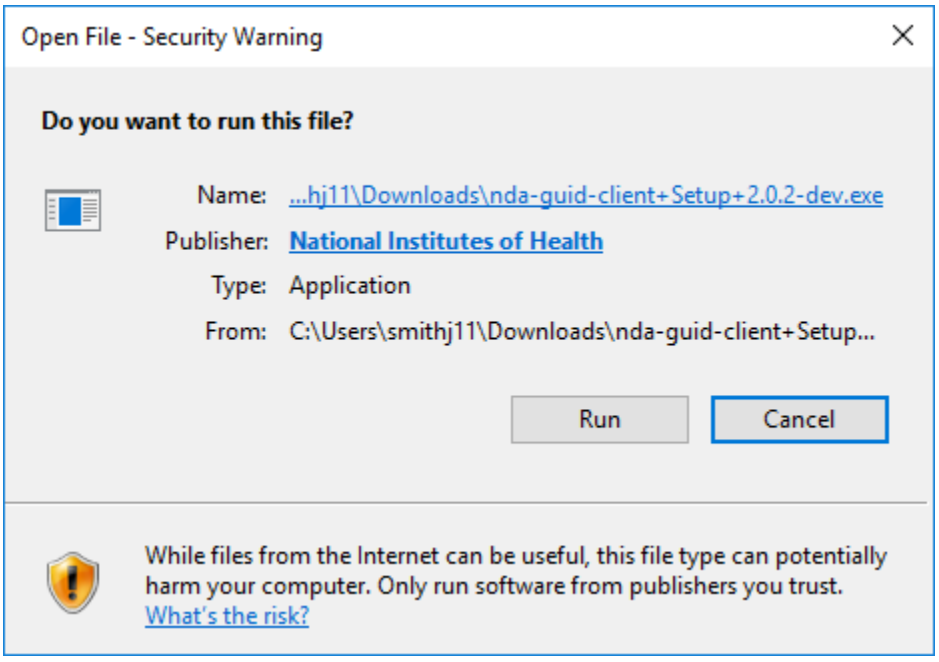


Figure 1 Security Warning

After clicking run, you will see an installation progress dialog:

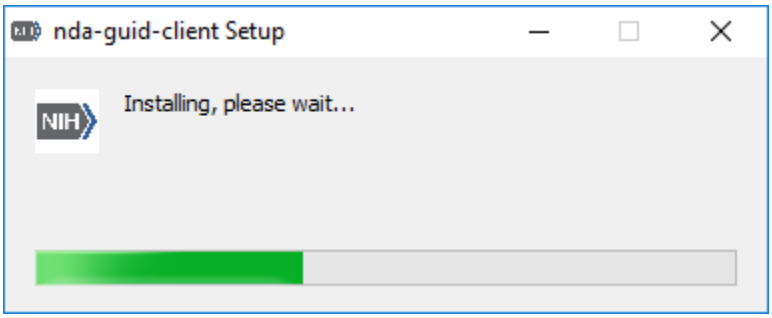


Figure 2 Installation Progress Dialog

After installation completes, the GUID Tool will open to the login screen, and a shortcut will be added to your desktop.

How to install on Mac OS X

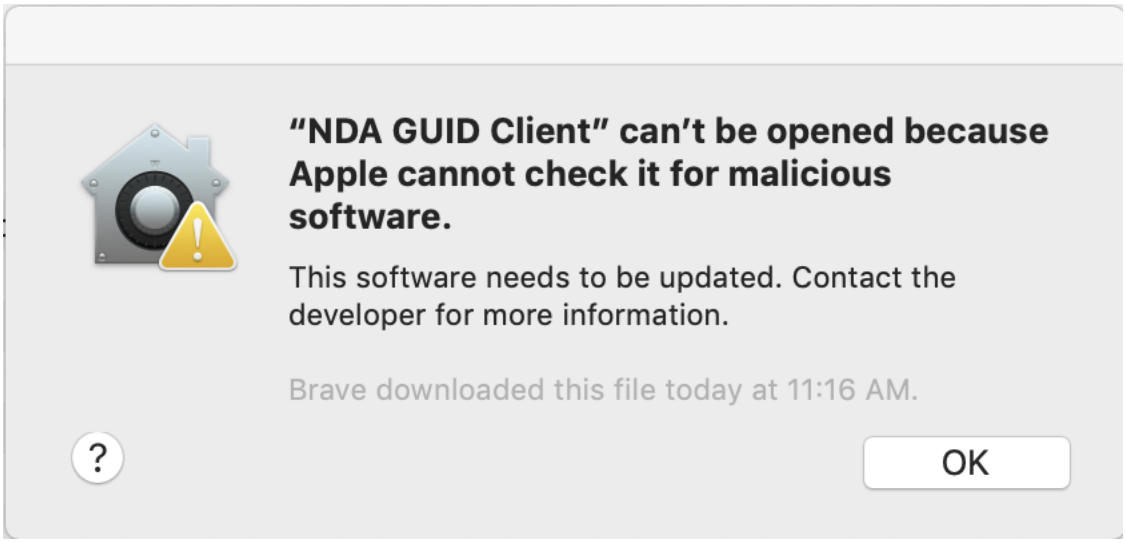
The Mac OS X Installer will have a ".dmg" file extension, and the default download location is the user's "Downloads" folder.

By default, the file will be opened using the Mac DiskImageMounter. To install the application, drag the GUID Tool file to the applications folder. Depending on your level of system access and how the Applications directory is configured, this may require elevated or Administrator privileges. You may also drag the application to your Desktop and run the file from there.

Once the application has been added to the Applications directory, or the .app file has been added to the Desktop, you can open the application.

The first time you try to open the application, you may be prompted with a warning indicating the app "can't be opened because Apple cannot check it for malicious software." You may get around this issue, by right-clicking on the application and selecting Open, rather than double clicking.

If you are experiencing issues with the .zip file, you may need to use the .dmg. Please contact NDA Help with any issues.



How to install on Linux

The application for Linux will have an ".AppImage" file extension. To start the tool, you must first make the application file have the executable flag set, e.g. "chmod +x nda-guid-client-*version*.AppImage." The AppImage format is compatible across Linux distributions. You can also make the application executable in a UI environment by opening the file's properties in a file browser and setting the executable flag from there.

Updating the NDA GUID Tool

The NDA GUID Tool will automatically check for updates when launched. If an update is available, it will be downloaded and installed automatically. The application cannot be opened until the update is complete. Note that the application will only check if any updates are available and update automatically when running on Windows or Mac OS X operating systems.

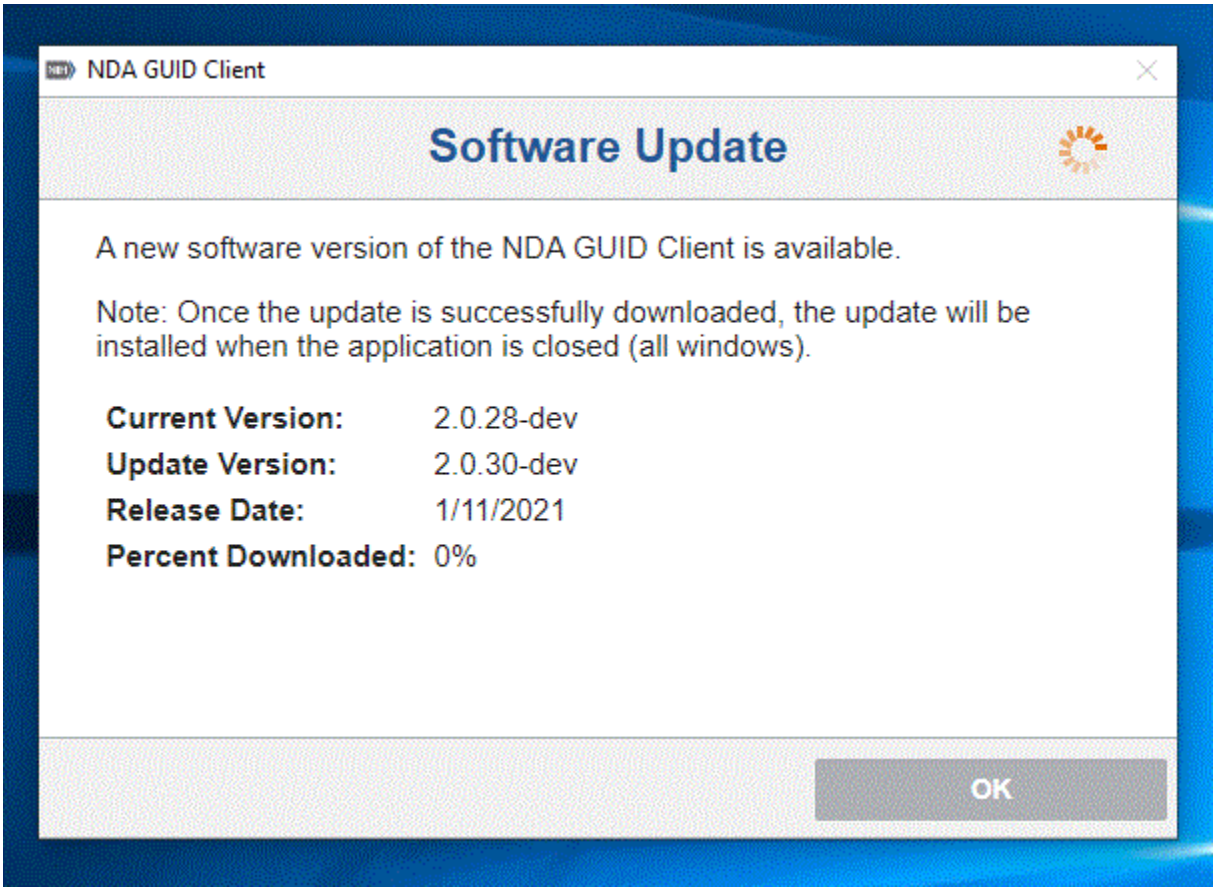


Figure 3 NDA GUID Client Update

Using the NDA GUID Tool

The NDA GUID Tool can be launched by double-clicking on the desktop shortcut that was created during installation, or by running it from the command line.

Logging In

The first screen you will see after launching the NDA GUID Tool is the login page. Here you can review the Terms and Conditions of use and authenticate with your NDA user account credentials. You must indicate agreement to the Terms and Conditions by marking the checkbox on the login panel. The Sign In button will not be enabled until all fields have been filled out.

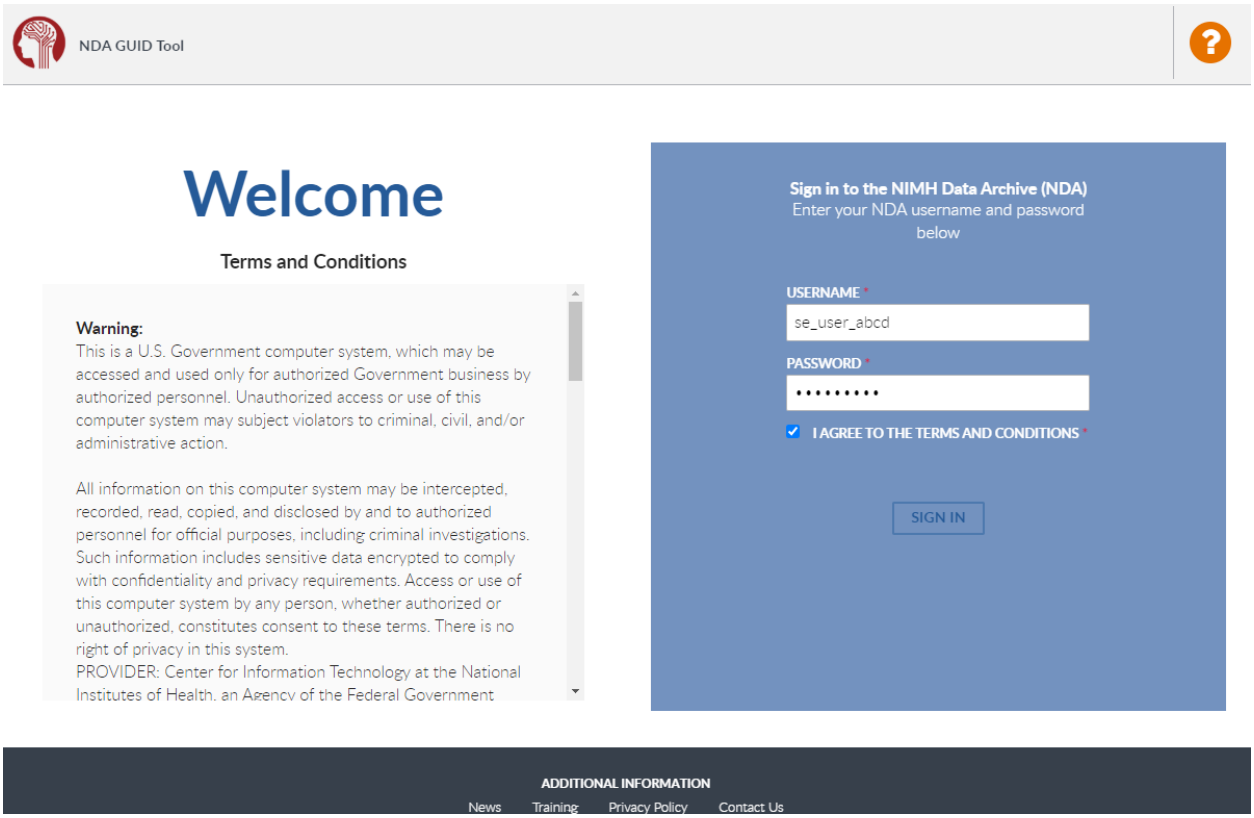


Figure 4 Login Page

Dashboard

The NDA GUID Tool Dashboard is the first page you will see after successfully authenticating. You can navigate to the other sections within the tool from the dashboard.

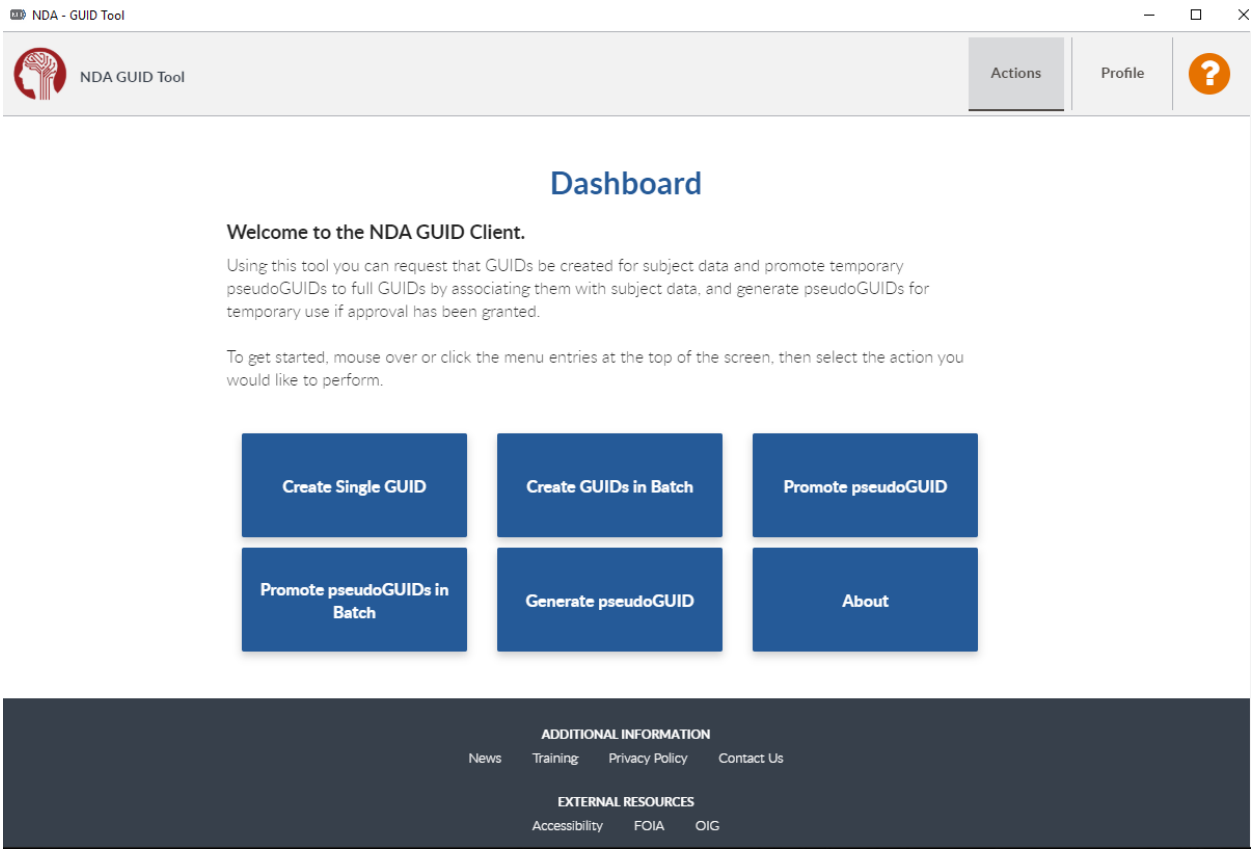


Figure 5 Dashboard

User Interface

Once you leave the Dashboard page you can navigate within the NDA GUID Tool by clicking the Actions dropdown tab at the top of the screen or return to the Dashboard page using the menu and navigate from there.

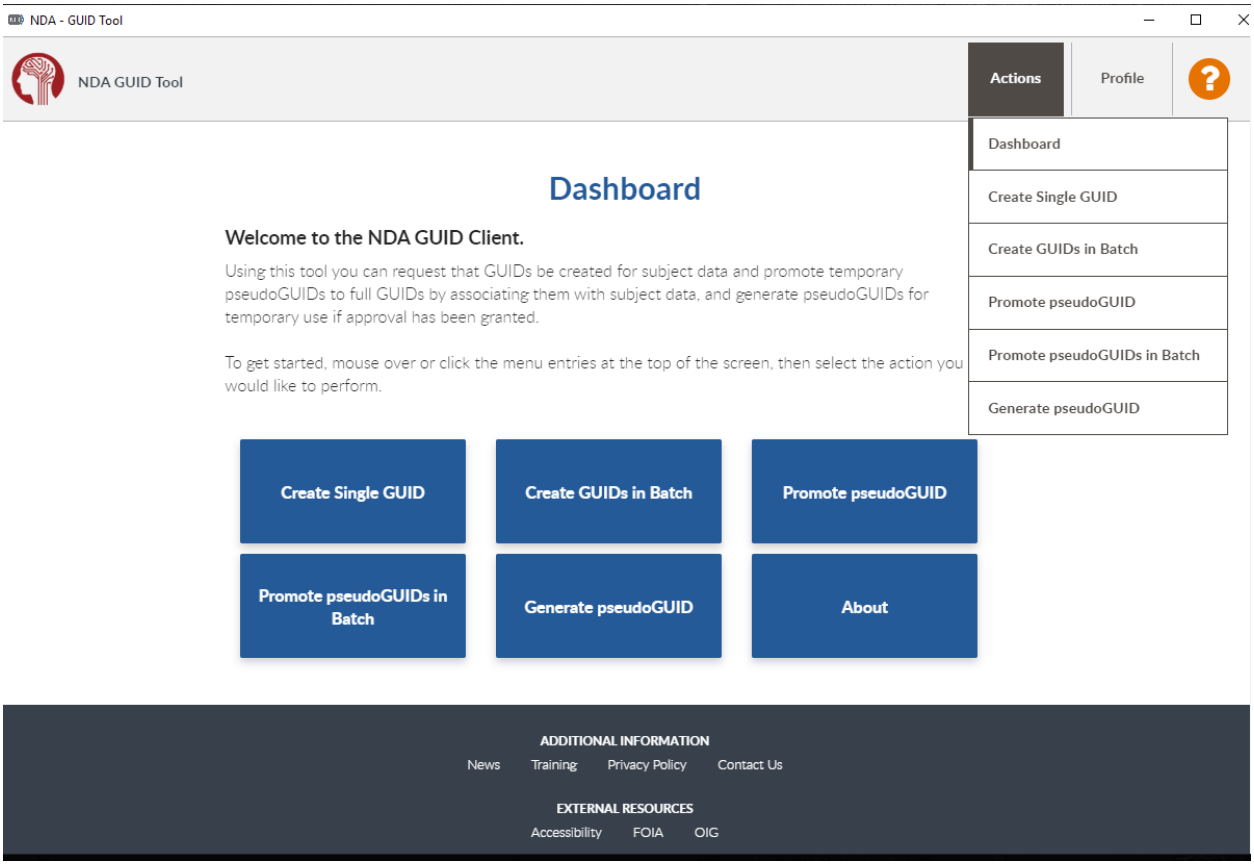


Figure 6 Actions

Clicking the Profile tab dropdown on the top bar of the screen will give you About and Logout options. Under the About dropdown you will find helpful information such as basic definitions, the link to this User Manual, and a link to contact NDA Help Desk.

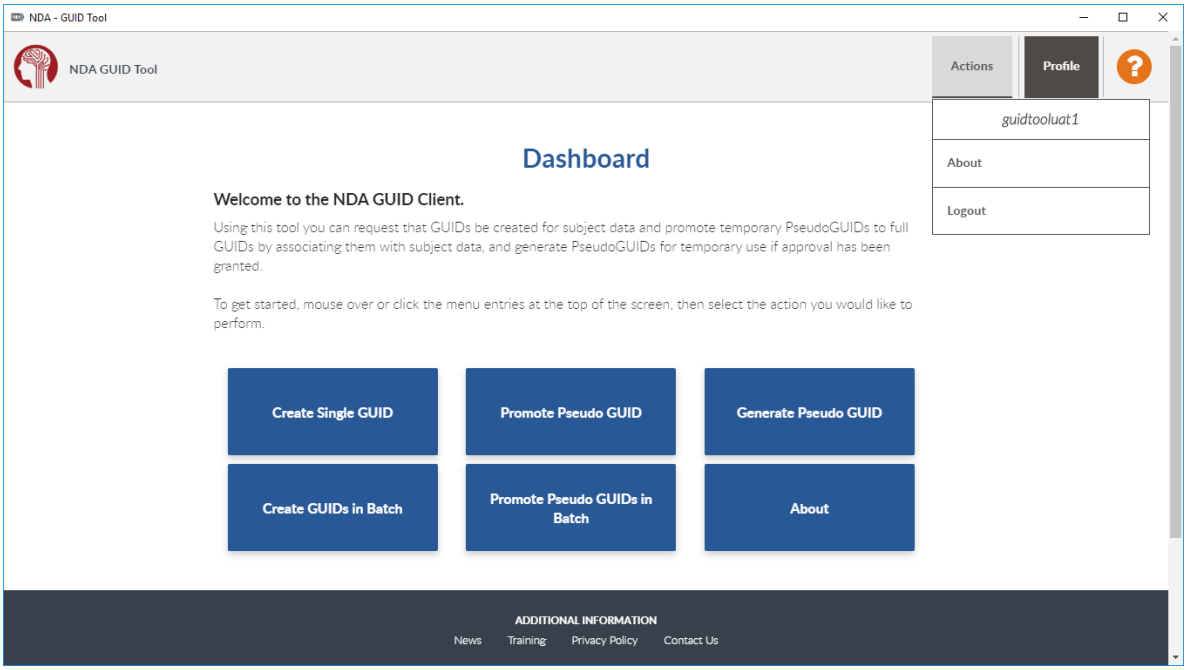


Figure 7 Profile

Clicking the Orange Question mark will often provide you with helpful content to better understand a screen you may be navigating within the tool. It will always provide you with a link to contact the NDA Help Desk.

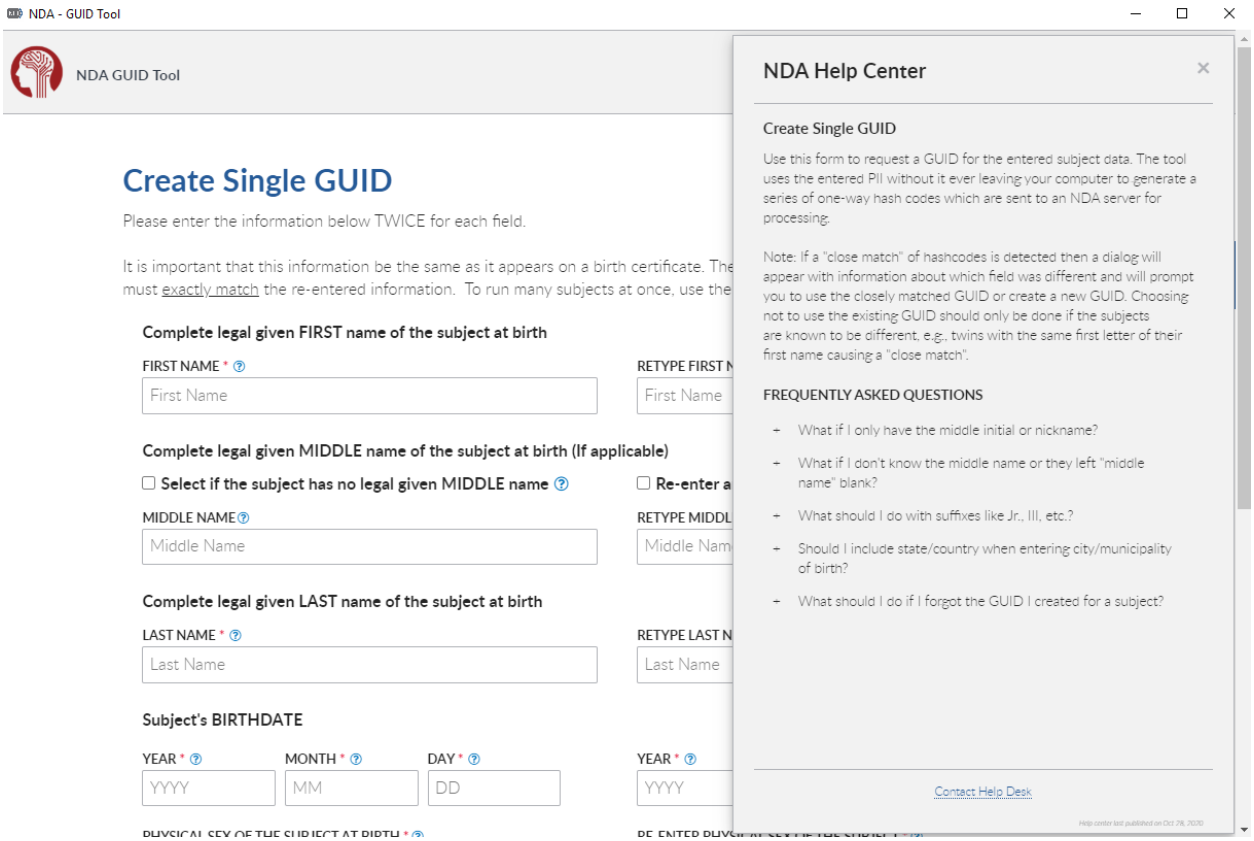


Figure 8 NDA Help Center

Creating a Single GUID

The primary function of the NDA GUID Tool is to create GUIDs from subject data. The Create Single GUID page provides a data entry form for users to enter and submit individual GUID requests.

From the Dashboard or the Actions dropdown select “Create Single GUID” to navigate to this page.

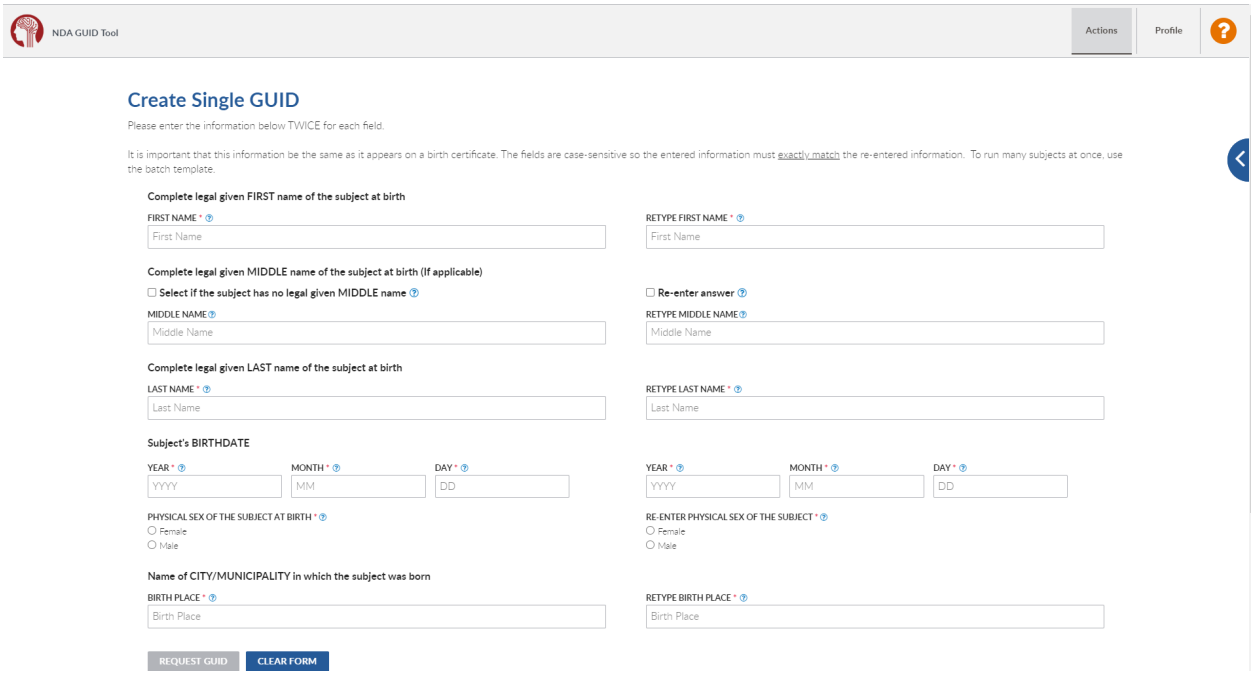


Figure 9 Create Single GUID

Data entered on this screen should exactly match the information on the subject's birth certificate. You will need to complete each field on this screen. For help completing the screen, hover over the questions marks next to each field header or review the information in the NDA Help Center.

As you enter the subject data, the tool will automatically validate that the data matches between the associated fields, for example that both of the "First Name" fields match.

Figure 10 Create Single GUID Field Error Message

After all the required subject data has been entered and validated, the Request GUID button will be enabled. Once clicked, the tool processes the subject data on your local machine by combining the fields and creating a set of one-way hashes. These hashes are then sent to the NDA GUID Service; none of the individual subject data are ever transmitted, so no PII ever leaves your computer. You also have the option to clear all the data you have entered on the form by clicking the Clear Form button.

Figure 11 Request GUID button

When the GUID is created, the form will automatically scroll to the top of screen, and provide a message indicating that the GUID request was successful. At this time, you can click the Copy GUID button to easily copy the GUID to your clipboard for pasting directly to where you are recording GUIDs. Once you have copied the GUID, you can click the Clear Form button to begin entering the data to create your next GUID.

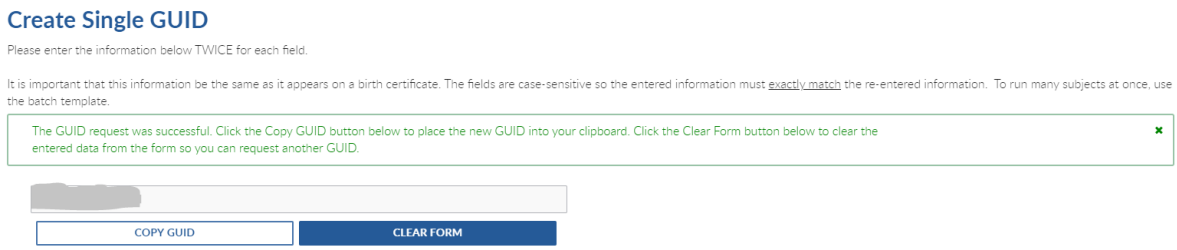


Figure 12 Create a Single GUID Success Message

You can search to see if a GUID or pseudoGUID already exists in the system from the Create Single GUID and Promote pseudoGUID pages. Click the arrow that shows on the right of the screen which will expand a search dialog. Make sure to include the prefix “NDAR” which searching for a GUID or “NDAR_” when searching for a pseudoGUID.

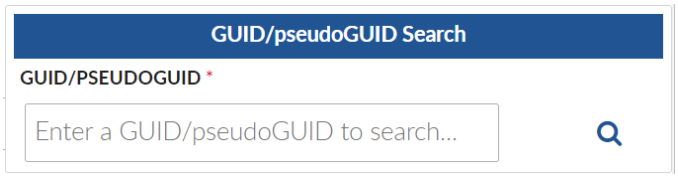


Figure 13 GUID/pseudoGUID Search

Handling Close Matches

Occasionally, the submitted hashes will closely (but not exactly) match the hashes of an existing GUID subject. This situation primarily occurs when working with twin research subjects who have differing first names beyond the first letter. When this happens, the tool will prompt you to indicate whether it should use the existing GUID or create an entirely new GUID. Generally, unless you know for certain that the subject is truly a different person, e.g., as in the twin example, you should choose to “Create New GUID.”

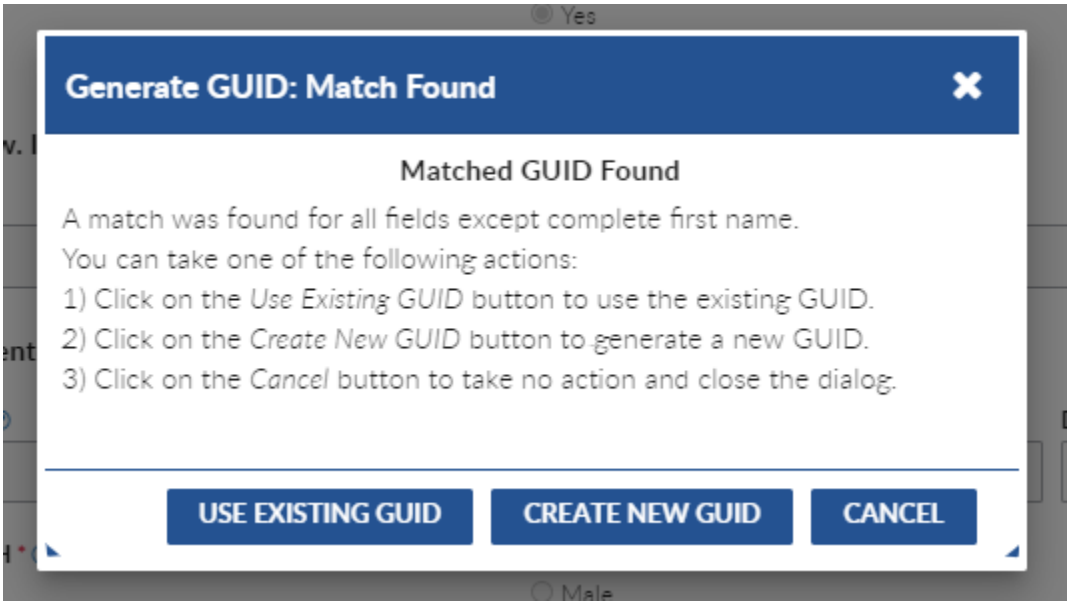


Figure 14 Close Match Action Dialog

Creating GUIDs in Batch

The NDA GUID Tool supports requesting multiple GUIDs at once by allowing users to submit subject source data in a comma separated value (CSV) format. You access this screen from either the Dashboard or the Actions tab dropdown on the top bar.

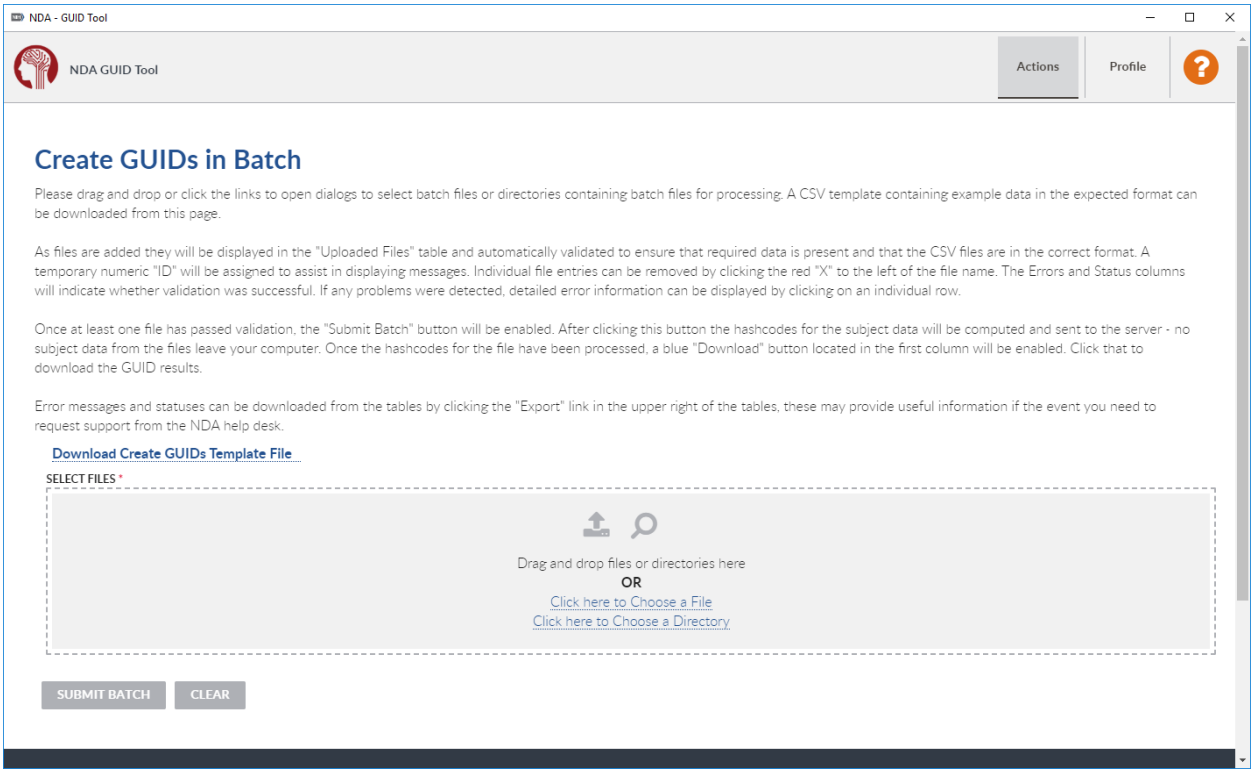


Figure 15 Create GUIDs in Batch

Preparing and Selecting Subject Data

Batch processing requires that users prepare and submit subject data in CSV files with specific column requirements. A template with the required columns and example data can be downloaded from the tool using the Download Create GUIDs Template File link on the Create GUIDs in Batch page.

	A	B	C	D	E	F	G	H	I	J
1	FIRSTNAME	MIDDLENAME	LASTNAME	MOB	DOB	YOB	COB	SEX	SUBJECTHASMIDDLENAME	ID
2	Demonstration	Middle	Manual	1	1	1920	Rockville	M	YES	1
3	Demonstration	Middle	Manual	1	1	1921	Rockville	M	YES	2

Figure 16 Create GUID Template Example

The fields match the input fields from the Create Single GUID page, with the addition of an “ID” field which is user assignable. This ID field allows you to specify a number which the GUID system will use when returning results so you can match subjects with returned GUIDs and error messages.

After preparing your data files for submission, you can either drag and drop the files onto the target area of the tool, or you can click the link to open a file browser dialog to navigate and perform selection. You may select an individual file or a directory to be processed. When a directory is selected, the tool will automatically add the files within the directory to the submission.

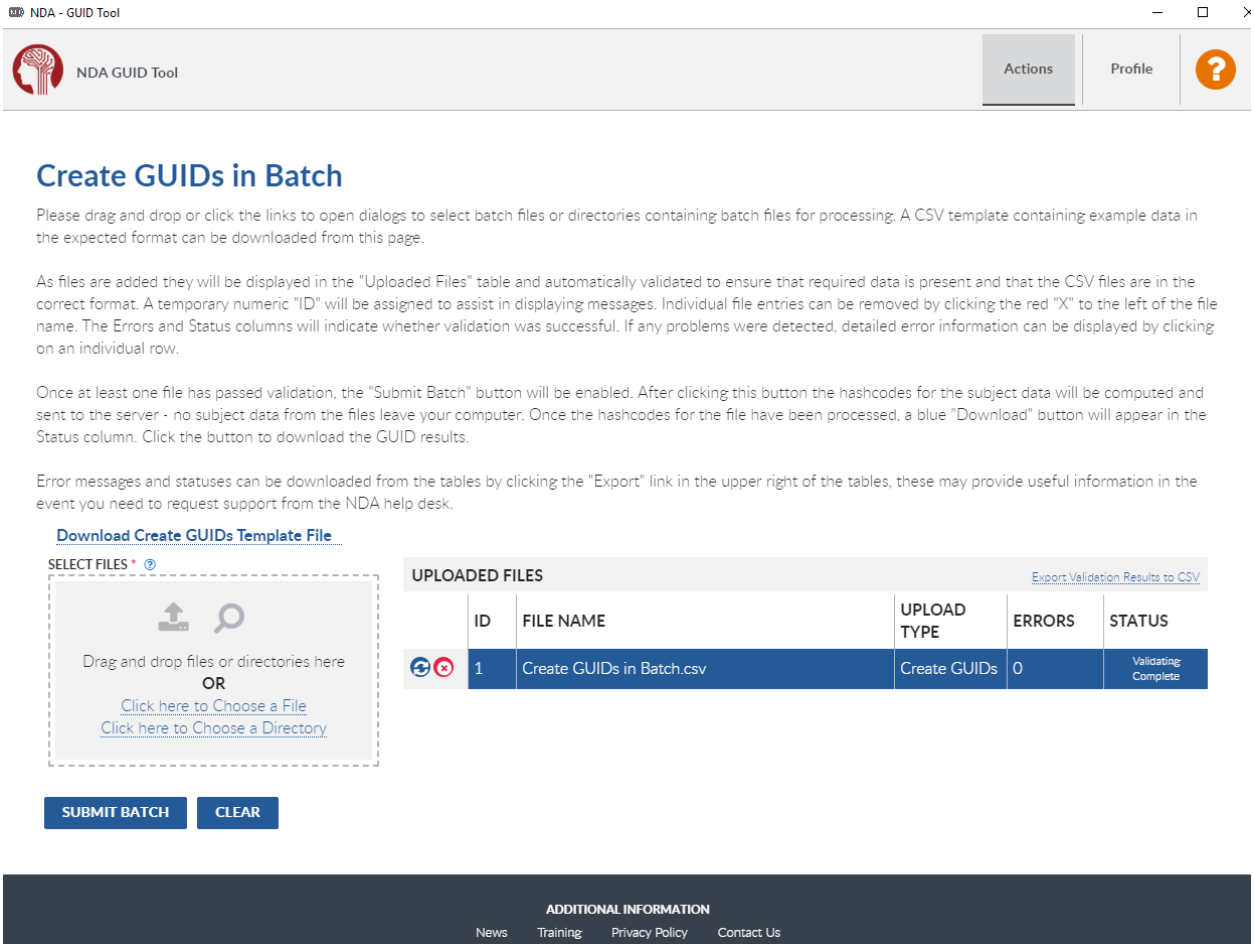


Figure 17 Successfully Validated Create GUID Batch Data

Once a file has been added to the batch for submission, the NDA GUID Tool automatically performs some basic data validation to ensure that all required fields are present and meet format requirements. The tool lists the number of errors found in each file if any problems are detected, and the status column for that file shows a failure state.

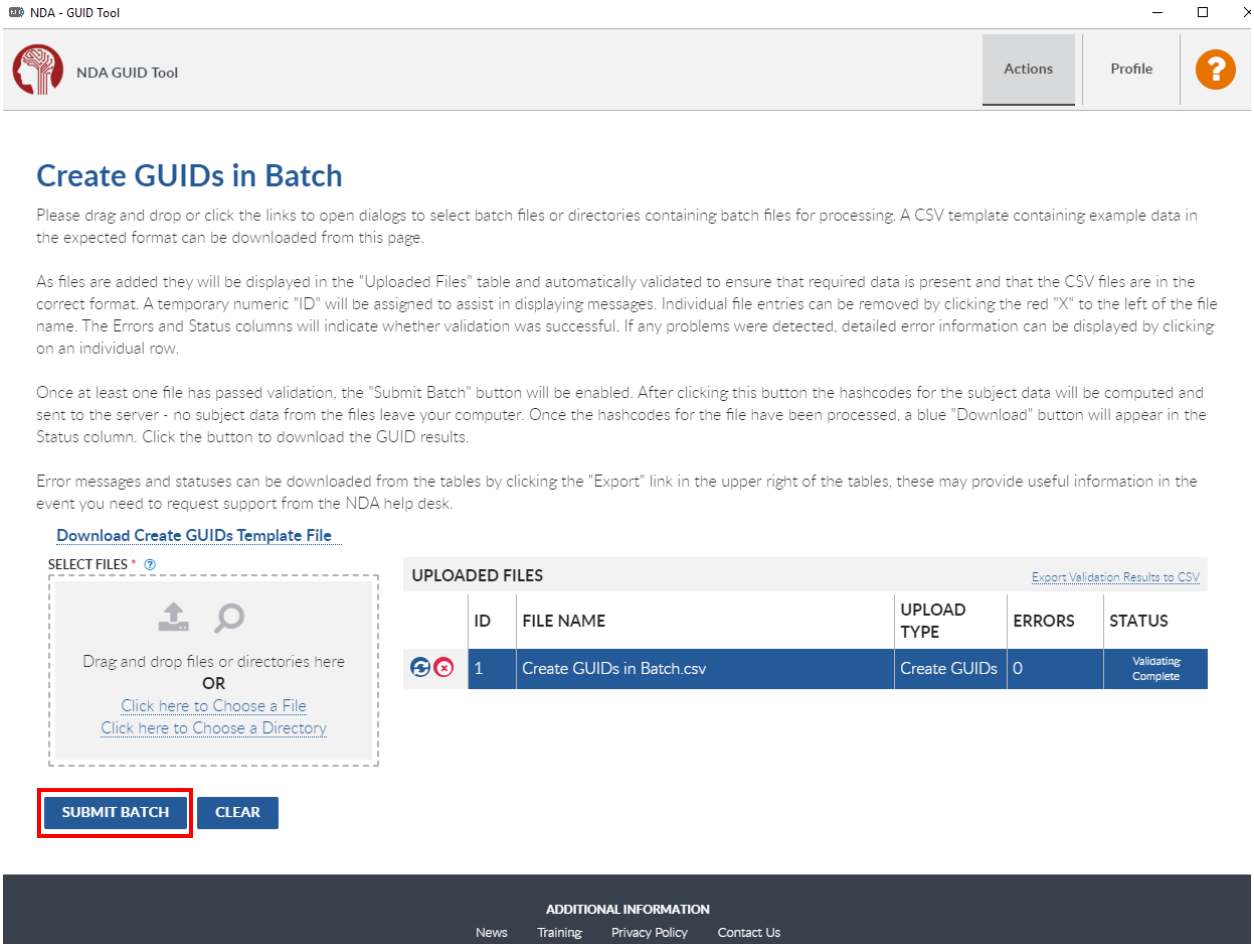


Figure 18 Submit Batch Data

When at least one data file has validated, the Submit Batch button will be enabled allowing the user to submit validated files to be processed.

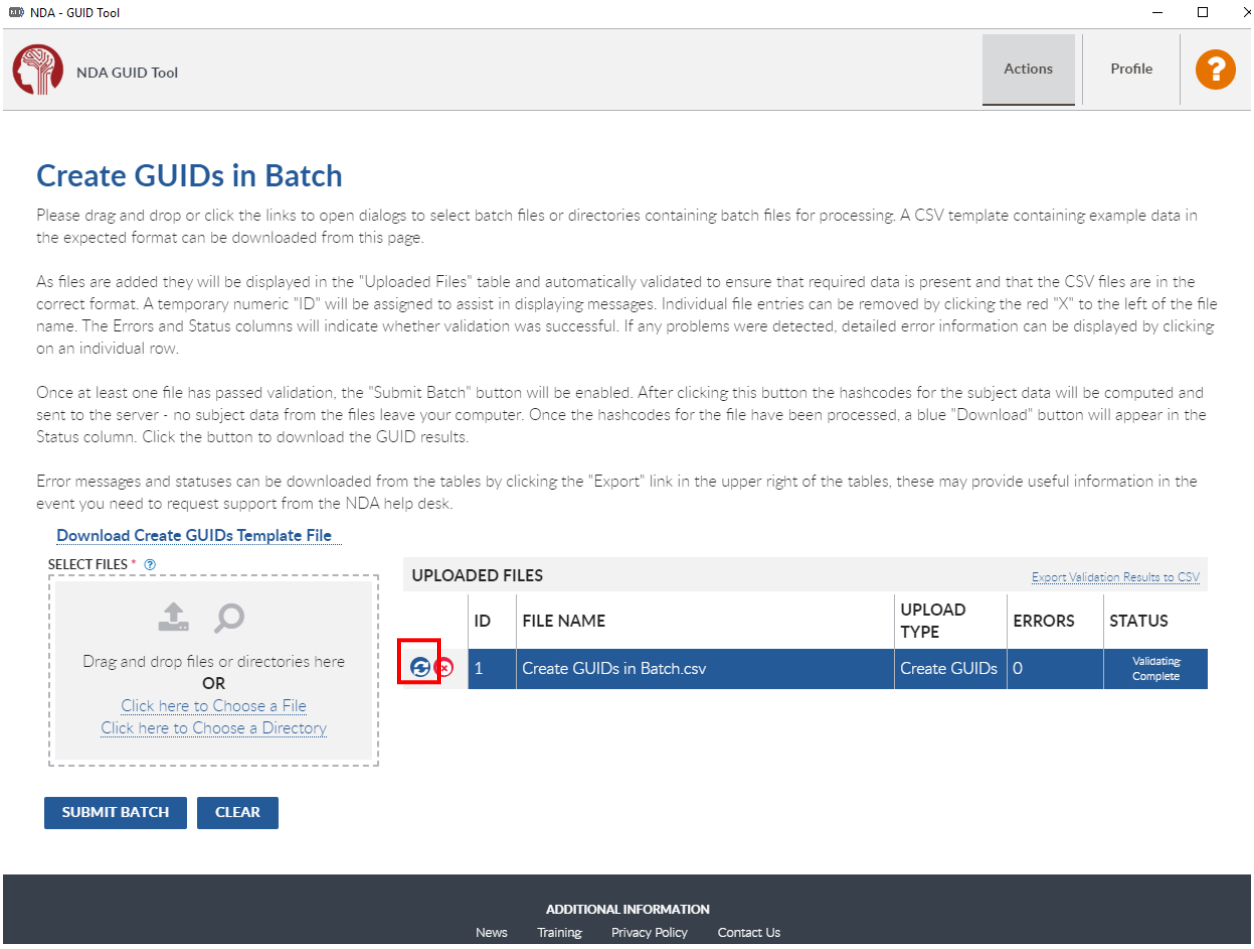


Figure 19 Reload File

If any errors were detected during the data validation phase, users can click on the file in the Uploaded Files table which will trigger the tool to display the error details in a table below the main batch submission table. Users should review the error and correct the problem in the selected input file. After correcting the error, the file can be reloaded by clicking the Revalidate Batch File button, which is the blue button with the curved arrows to the left of the ID and File Name columns in the Uploaded Files table, to have the tool run the validation procedure on the file again.

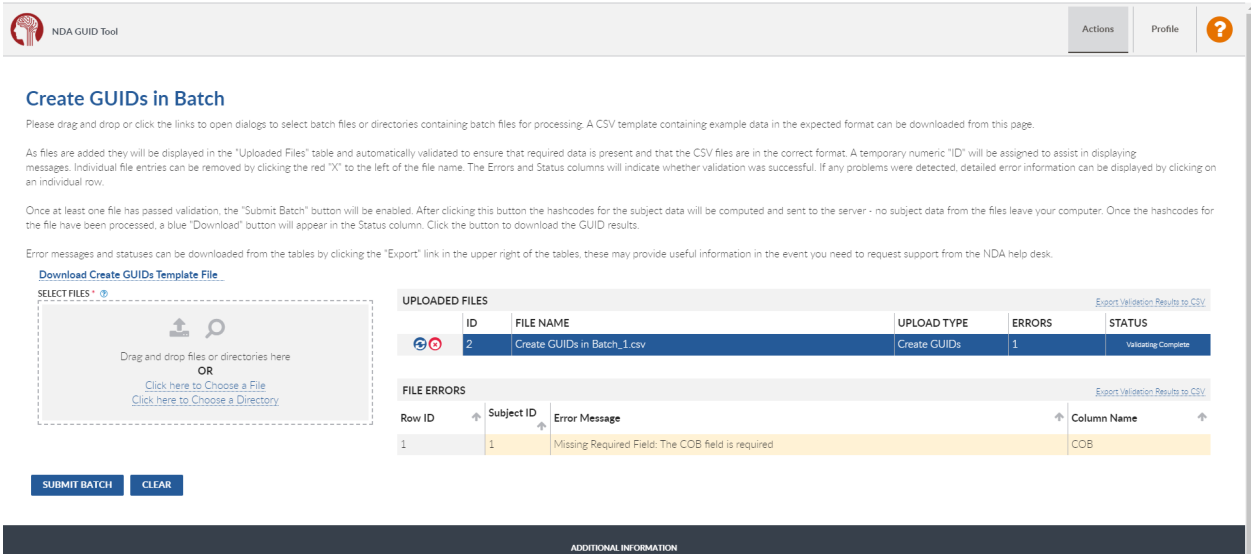


Figure 20 Create GUIDs in Batch Error Detail

In this example, the error detail message lets the user know that the subject with the user assigned ID of 1 was missing data in the “Community of Birth” field.

Submission and Results

For each valid file, when the “Submit Batch” button is clicked, the tool will compute the hash codes for each subject within the file. The tool will then send these hashes to the NDA GUID server to perform GUID creation or matching. The number of errors and status will indicate if a file was able to process successfully.

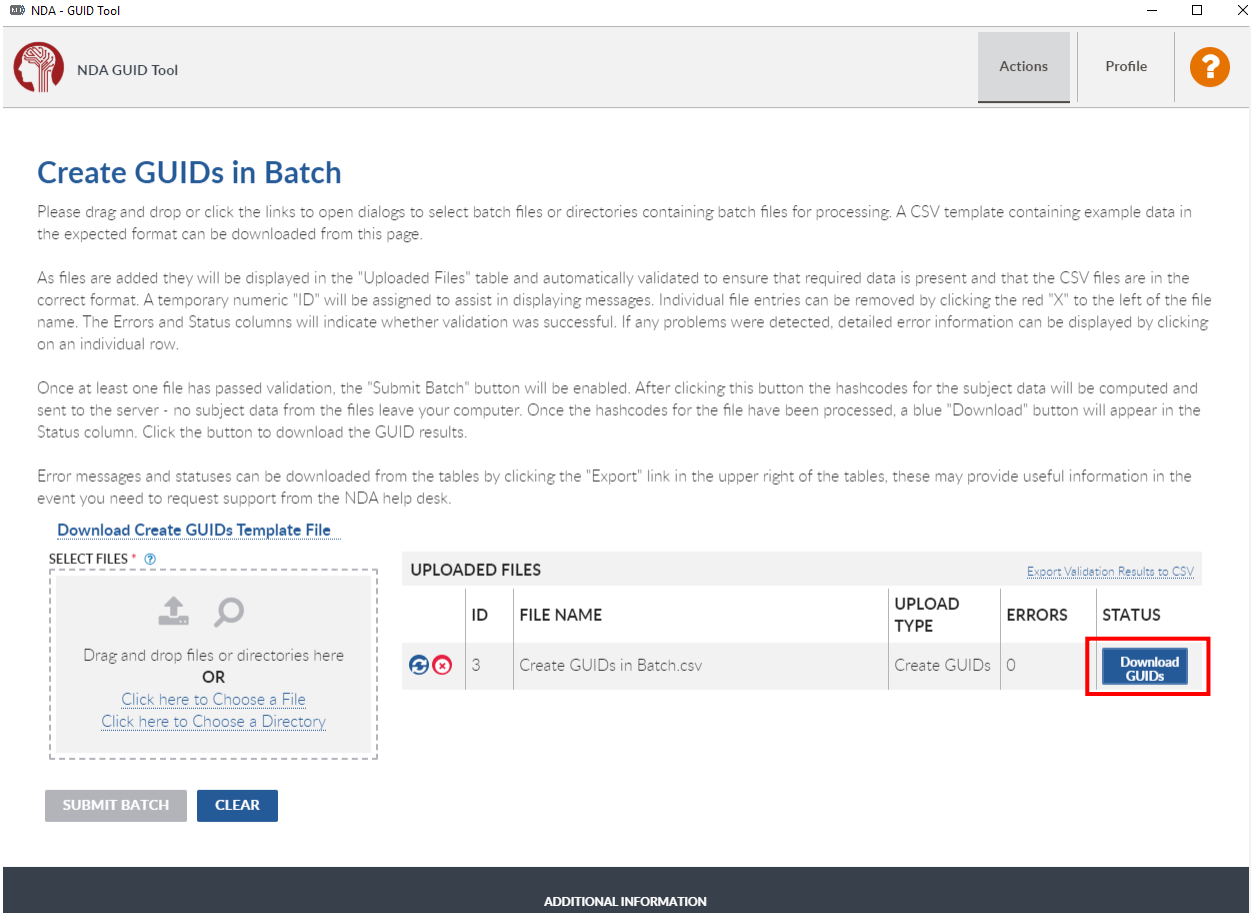


Figure 21 Download File Results

After a file has been submitted, users can download the results of each file in the batch by clicking the blue Download GUIDs button in the Status column in the Uploaded Files table. When the Download GUIDs button is clicked, the tool will prompt the user to specify a download location and name. By default, the file name will be the uploaded file name with a timestamp appended to it.

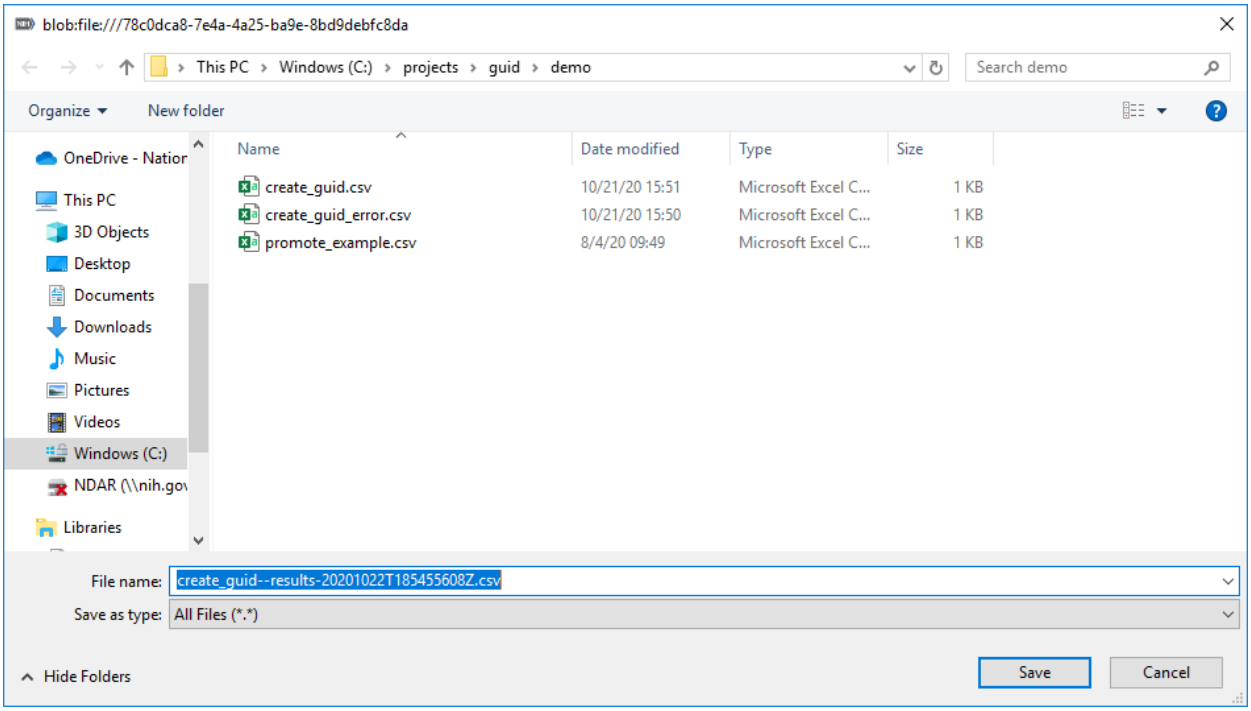


Figure 22 Download Batch Results Location Dialog

After selecting the location to save the file, the tool writes out a CSV file containing the GUID for each subject. If a close match was located for one of the subject's hash codes, then a message indicating which field was closely matched will be included. Note that only successful responses will be saved with this operation. If the file status indicates an error occurred, you will need to click on the file row to see the error details.

	A	B	C
1	RECORD_ID	GUID	MESSAGE
2	1	NDARYZ875RK8	
3	2	NDARMZ680RE7	A match was found for all fields except the year of birth.

Figure 23 GUID Batch Result Example

During batch processing a new GUID will always be created for the subject when a close match occurs. If you have reason to believe that the close match should have been used for the submitted subject, please contact the NDA Help Desk so they can work with you to identify which subject hashes should be unified.

A warning message will also appear when you are nearing the maximum number of GUIDs allotted to you which will give you time to contact the NDA Help Desk should you need to create additional GUIDs.

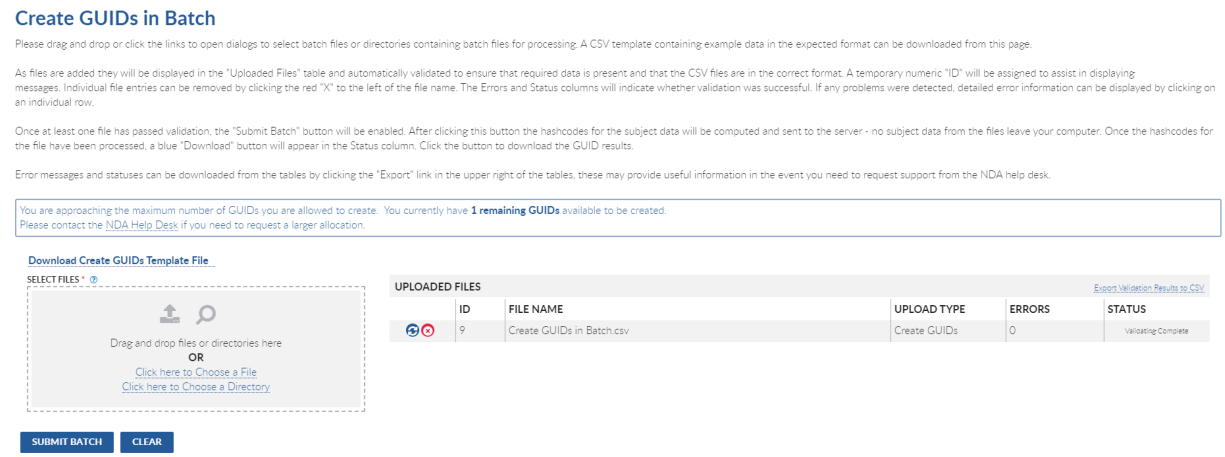


Figure 24 GUID Batch Result Example

Promoting a Single pseudoGUID

A pseudoGUID is a unique identifier not associated with specific subject data. It is generally intended to be used as a temporary placeholder until full subject data can be obtained. PseudoGUIDs must be requested from the NDA Help Desk.

Promoting a single pseudoGUID behaves in the same way as requesting a single GUID, except that it also requires the associated pseudoGUID be entered as well. You access this screen from either the Dashboard or the Actions dropdown on the top bar. After the data has been entered and you request that the pseudoGUID be promoted, the pseudoGUID is sent along with the constructed hashes to the NDA GUID Service.

Please refer to the Creating a Single GUID section of this User Manual to review details on how to navigate the specific features of this tile.

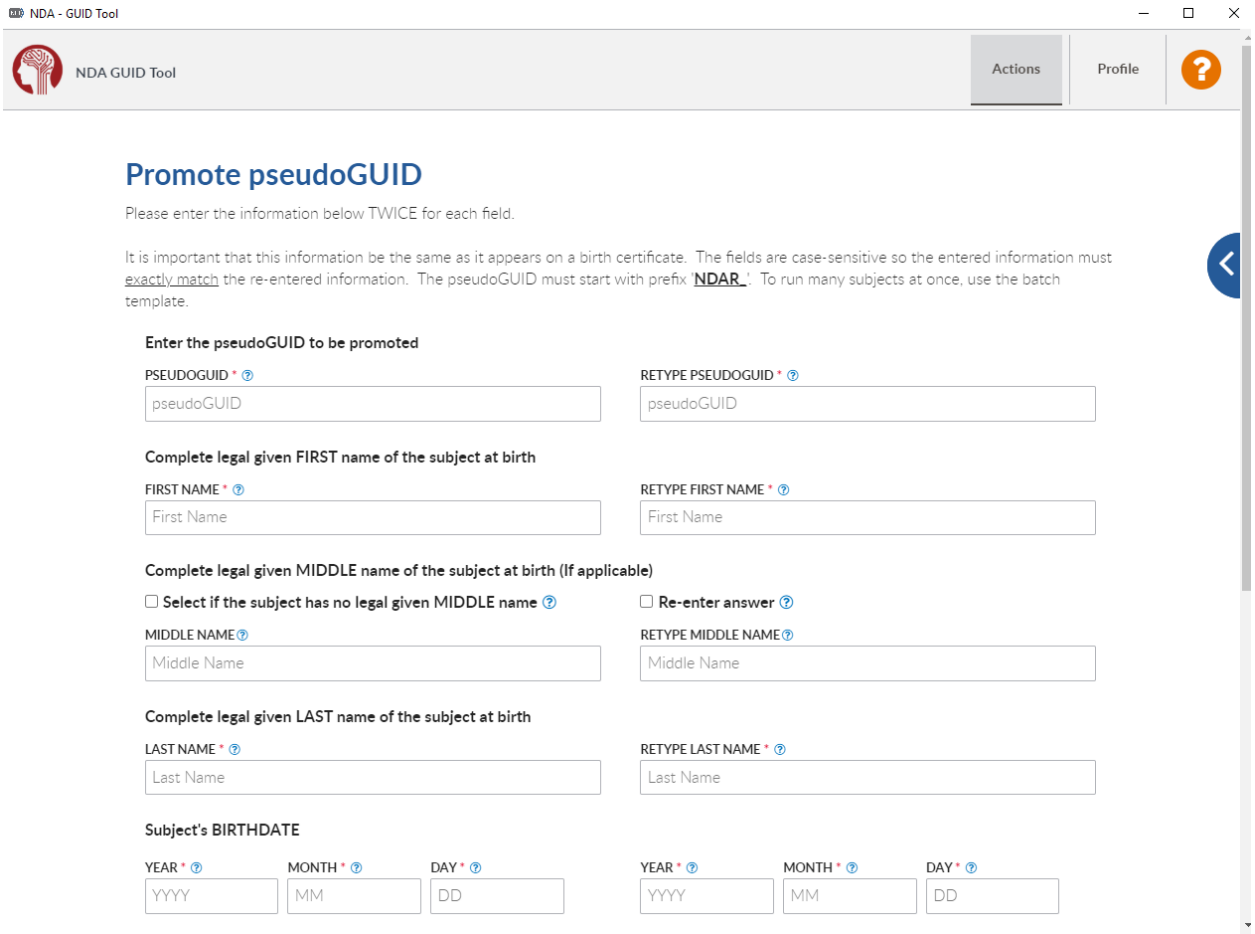


Figure 25 Promote a single pseudoGUID

Promoting pseudoGUIDs in Batch

The NDA GUID Tool supports promoting multiple pseudoGUIDs at once by allowing users to submit the subject source data associated with the pseudoGUID in a comma separated value (CSV) format. You access this screen from either the Dashboard or the Actions dropdown on the top bar.

First, select files to be included in the batch. The tool then performs basic validation to ensure all required data are present and in the correct format. Then, submit the batch of validated files for processing.

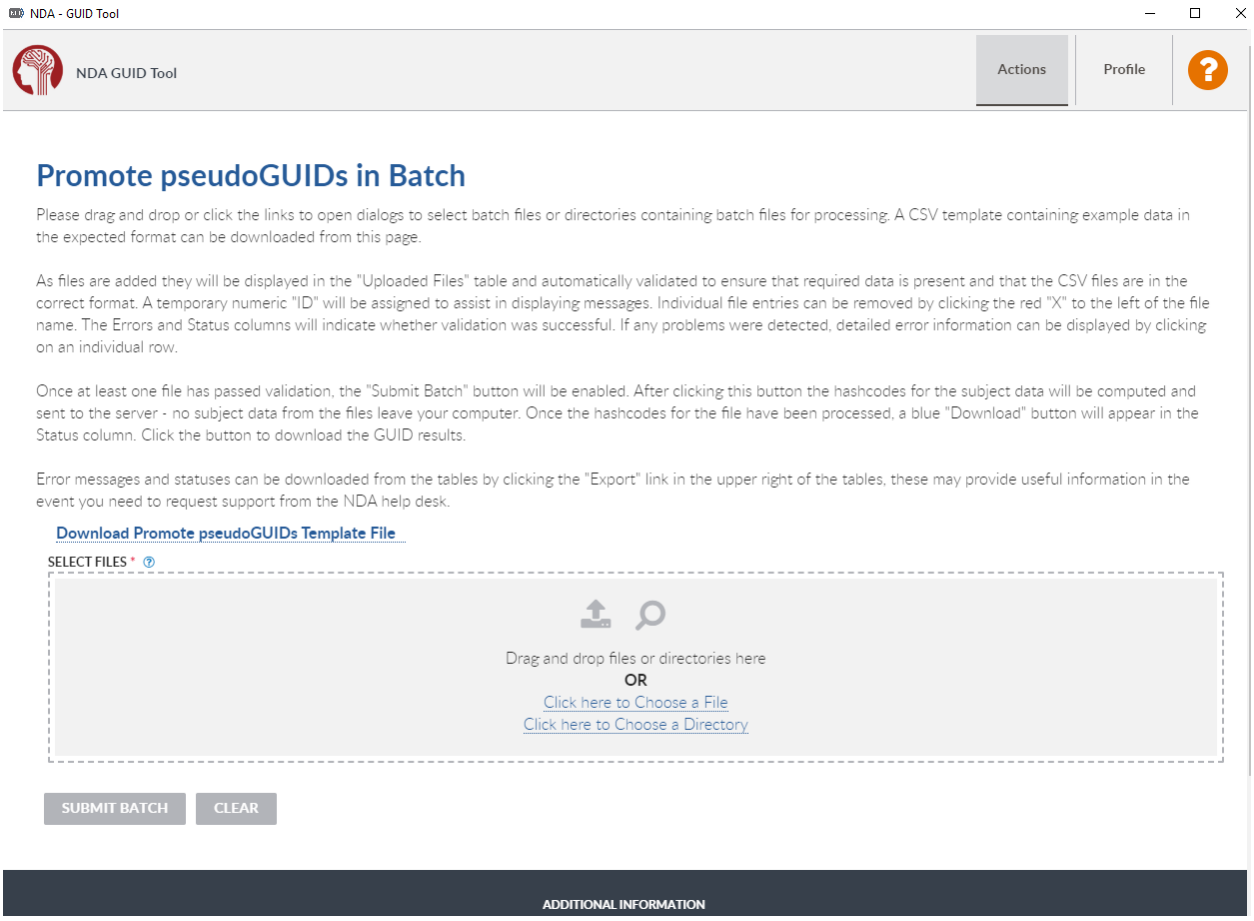


Figure 26 Promote pseudoGUIDs in Batch

Preparing and Selecting Subject Data

Batch processing requires that users prepare and submit subject data in CSV files with specific column requirements. A template with the required columns and example data can be downloaded from the tool using the “Download Promote pseudoGUIDs Template File” link from the Promote Pseudo GUIDs in Batch screen.

	A	B	C	D	E	F	G	H	I	J	K
1	ID	FIRSTNAME	MIDDLENAME	LASTNAME	MOB	DOB	YOB	COB	SEX	SUBJECTHASMIDDLENAME	PSEUDO-GUID
2	1	Demo	Nda	Promotion	1	1	1950	Rockville	M	YES	NDAR_INVTY287JD8
3	2	DemoTwo	Nda	Promotion	1	1	1952	Rockville	M	YES	NDAR_INVUY888PKZ

Figure 27 Promote pseudoGUID in Batch Example File

The fields match the input fields from the manual Promote pseudoGUID page, with the addition of an “ID” field which is user assignable. This ID field allows you to specify a number which the GUID system will use when returning results so you can match subjects with returned GUIDs and error messages.

After preparing your data files for submission, you can either drag and drop the files onto the target area of the tool, or you can click the link to open a file browser dialog to navigate and perform selection. Individual files or a directory can be selected and processed. When a directory is selected, the tool will automatically add the files within the directory to be added to the submission.

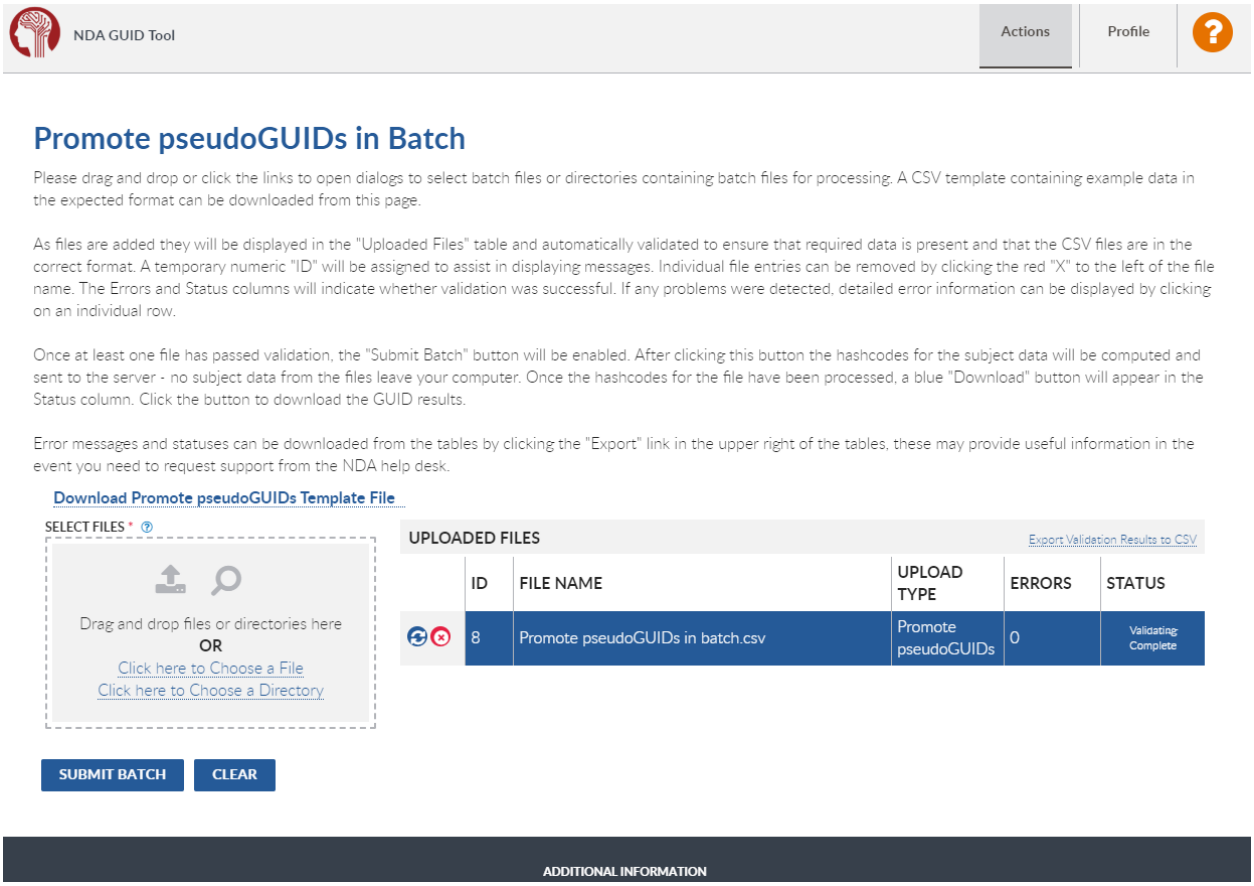


Figure 28 Successfully Validated Promote pseudoGUID Batch Data

Once a file has been added to the batch to be submitted, the NDA GUID Tool will automatically perform some basic data validation to ensure that all required fields are present and meet formatting requirements. The tool will list the number of errors found in each file if any problems are detected, and the status column for that file will show a failure state. When at least one data file has validated, the Submit Batch button will be enabled allowing the user to submit validated files for processing (see *Figure 18* for a similar image).

If any errors were detected during the data validation phase, users can click on the file in the Uploaded Files table which will trigger the tool to display the error details in a table below the main batch submission table. Users should review the error and correct the problem in the selected input file. After correcting the error, the file can be reloaded by clicking Revalidate Batch Files button, which is the blue button with

the curved arrows to the left of the ID and File Name columns in the Uploaded Files table, to have the tool run the validation procedure on the file again (see *Figure 19* for a similar image).

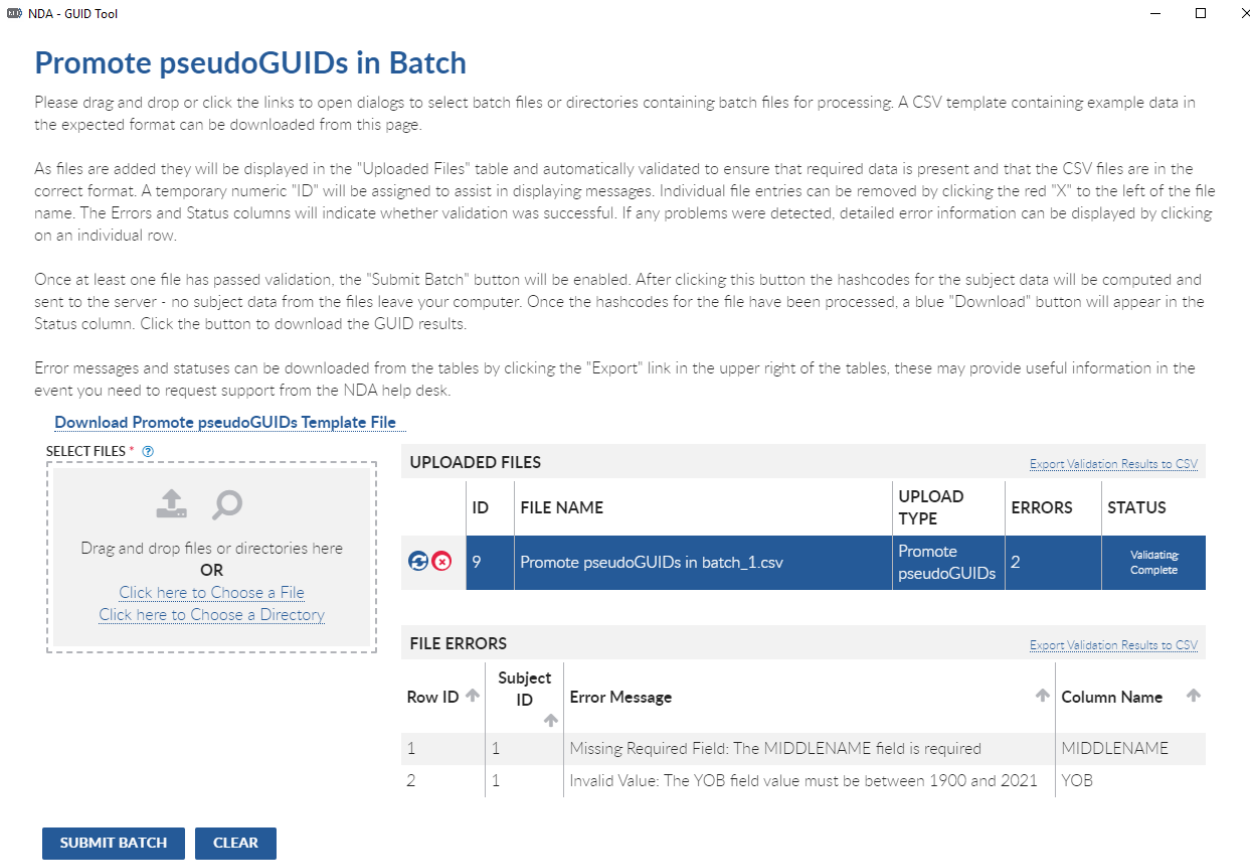


Figure 29 Promote pseudoGUID Error Detail

Submission and Results

When the Submit Batch button is clicked, for each valid file the tool will compute the hash codes for each subject within the file. Users then download the results of each file in the batch by clicking the blue Download GUIDs button in the Status column in the Uploaded Files table. When the Download GUIDs button is clicked (see *Figure 21* for a similar image), the tool will prompt the user to specify a download location and name. By default, the file name will be the uploaded file name with a timestamp appended to it.

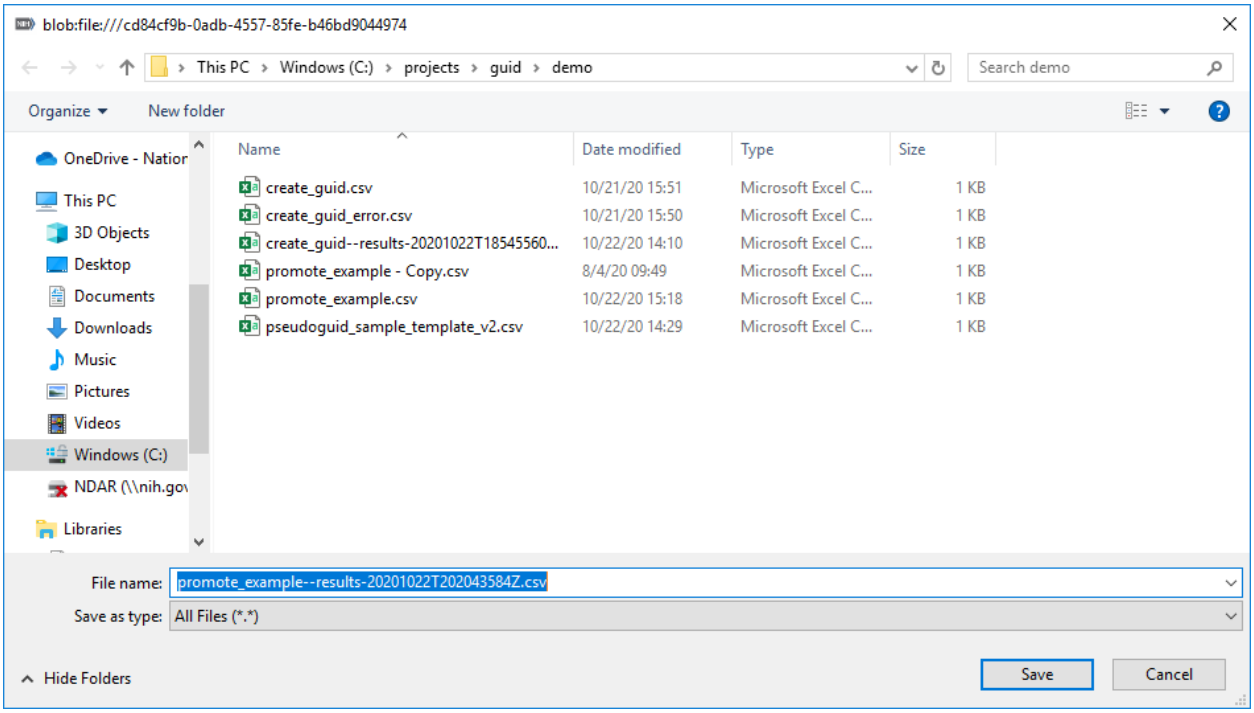


Figure 30 Promote pseudoGUID Batch Results Location Dialog

After selecting the location to save the file, the tool produces a CSV file containing the GUID for each promoted pseudoGUID and subject. If a close match was located for one of the subject's hash codes, then a message indicating which field was closely matched will be included.

	A	B	C
1	RECORD_ID	GUID	MESSAGE
2	1	NDARTY287JD8	
3	2	NDARUY888PKZ	

Figure 31 Promote pseudoGUID Result Example

During batch processing, a new GUID will always be created for the subject when a close match occurs. If you have a reason to believe that the close match should have been used for the submitted subject, please contact the NDA Help Desk so they can work with you to identify which subject hashes should be unified.

Attempting to Re-promote pseudoGUIDs

If you attempt to promote the same ~~a~~ pseudoGUID with two differing sets of PII then the system will return error messages indicating that the pseudoGUID is already associated with a different GUID.

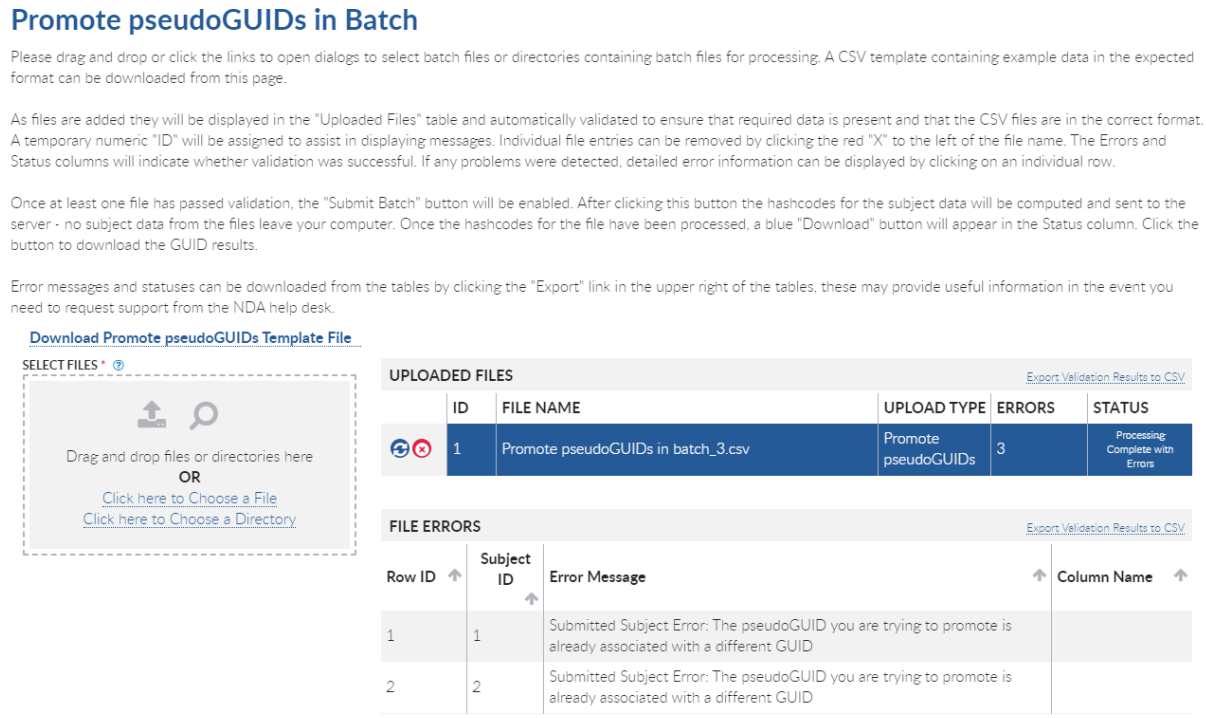


Figure 32 Error message after attempting to Re-promote pseudoGUID

Generating pseudoGUIDs

Generating pseudoGUIDs is restricted to a small number of NDA staff, but may be granted in exceptional circumstances to users for specific and approved purposes. Access to generate pseudoGUIDs must be requested from the NDA Help Desk and should include a clear description about why data to generate real GUIDs cannot be collected and whether the data collection protocol has been reviewed by the investigator's Institutional Review Board.

When a user is authorized to generate pseudoGUIDs, the Generate pseudoGUIDs page provides a simple interface allowing them to specify the number of pseudoGUIDs to create.

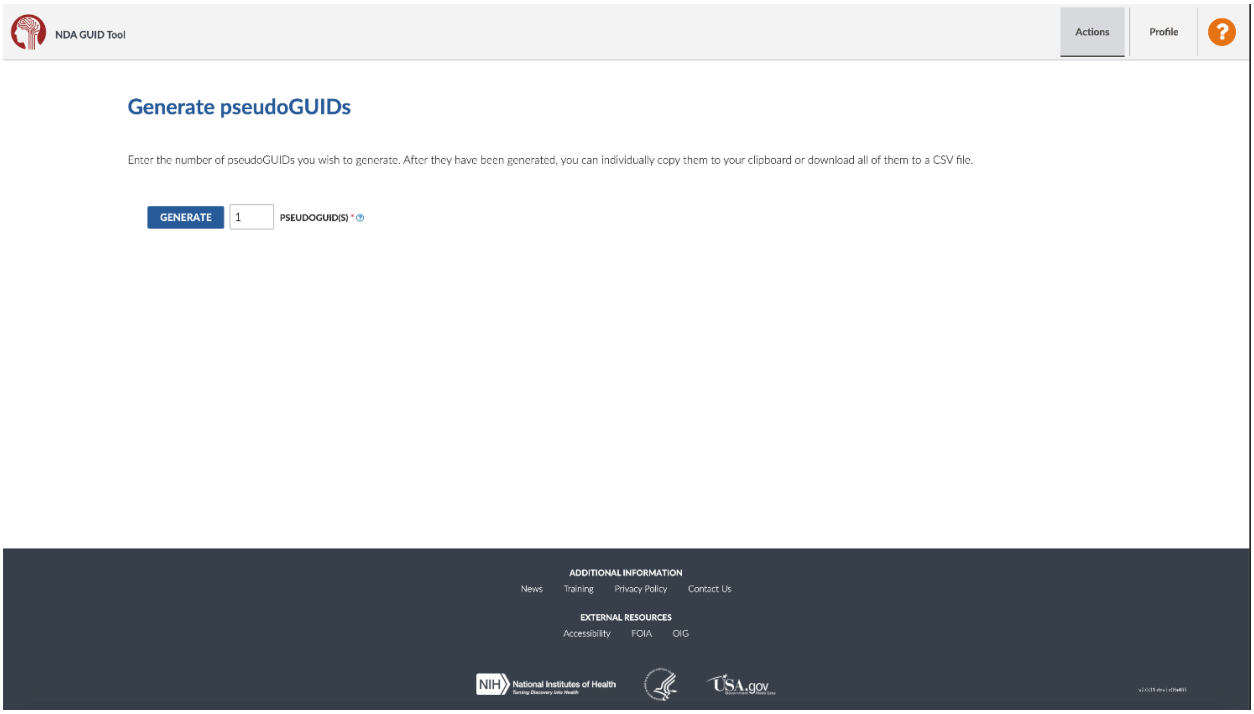


Figure 33 Generate pseudoGUIDs

Once the creation operation has completed, a list of pseudoGUIDs is displayed along with a copy button to allow them to be easily copied one-by-one to the clipboard for use in other applications or documents. Alternatively, the entire list of pseudoGUIDs can be downloaded by using the Export to CSV File link.

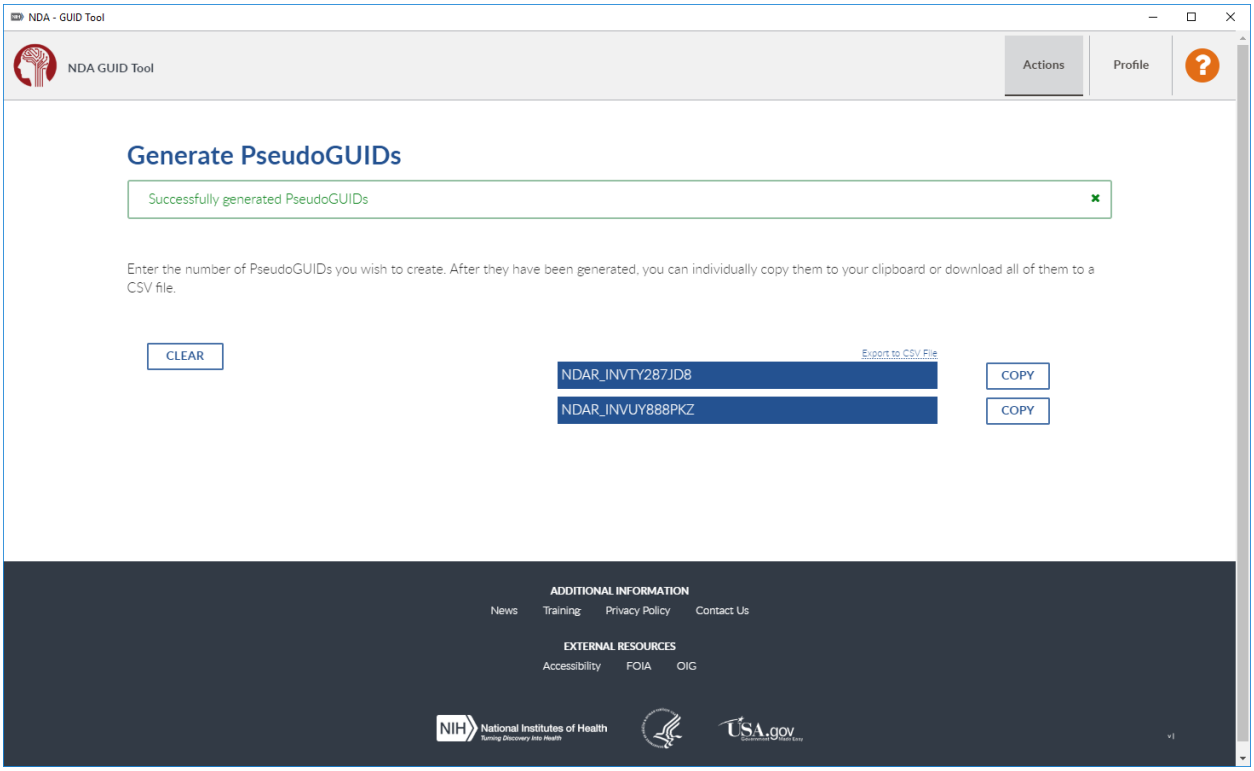


Figure 34 Generate pseudoGUID Results

Session Timeout

If no actions are performed within the tool for more than 30 minutes, you will automatically be logged out of the NDA GUID Tool. The message can be dismissed by clicking the red X, and you can simply submit your credentials again if you wish to continue working.

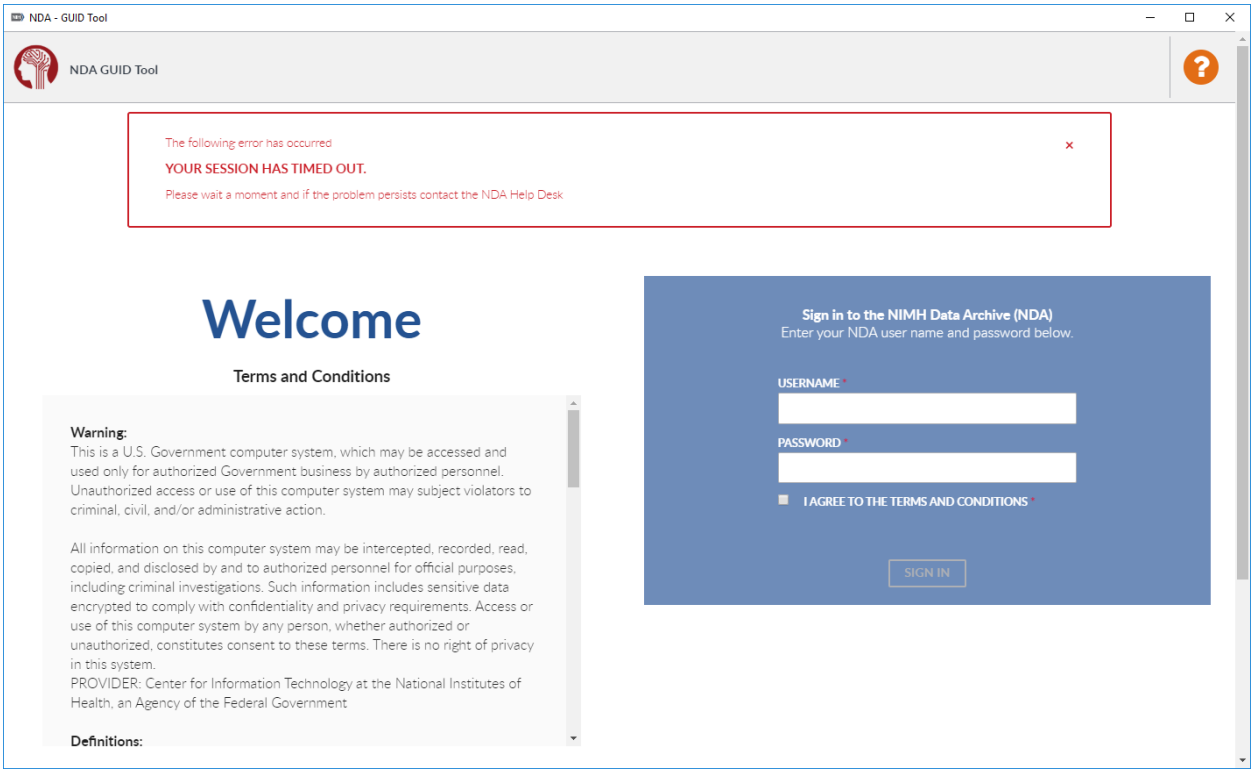


Figure 35 Session Timeout Message

Troubleshooting

Problem communicating with NDA Server

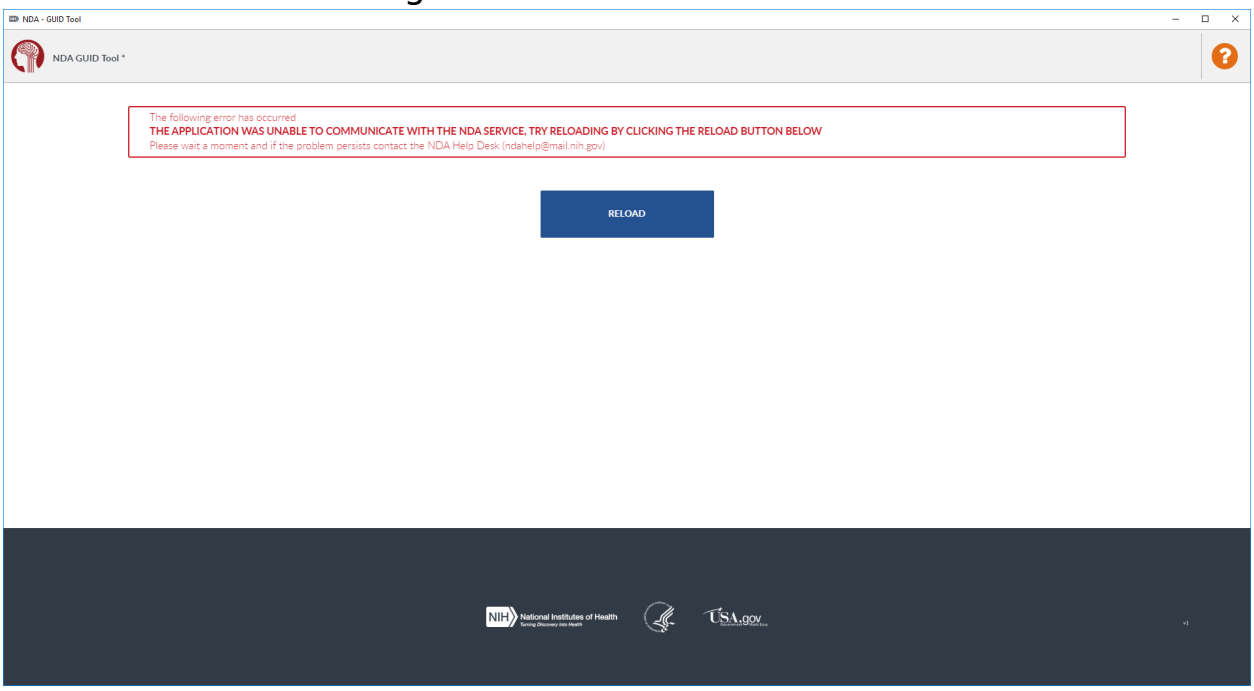


Figure 36 Server Communication Error

You will receive this error message when you first attempt to start the application if the NDA GUID Tool is unable to communicate with the NDA GUID Service. The problem could be a networking issue between your computer or the NDA GUID Service, or an unexpected problem with the NDA GUID Service. If you continue to receive this error reach out to the NDA Help Desk.

Unable to Generate pseudoGUIDs

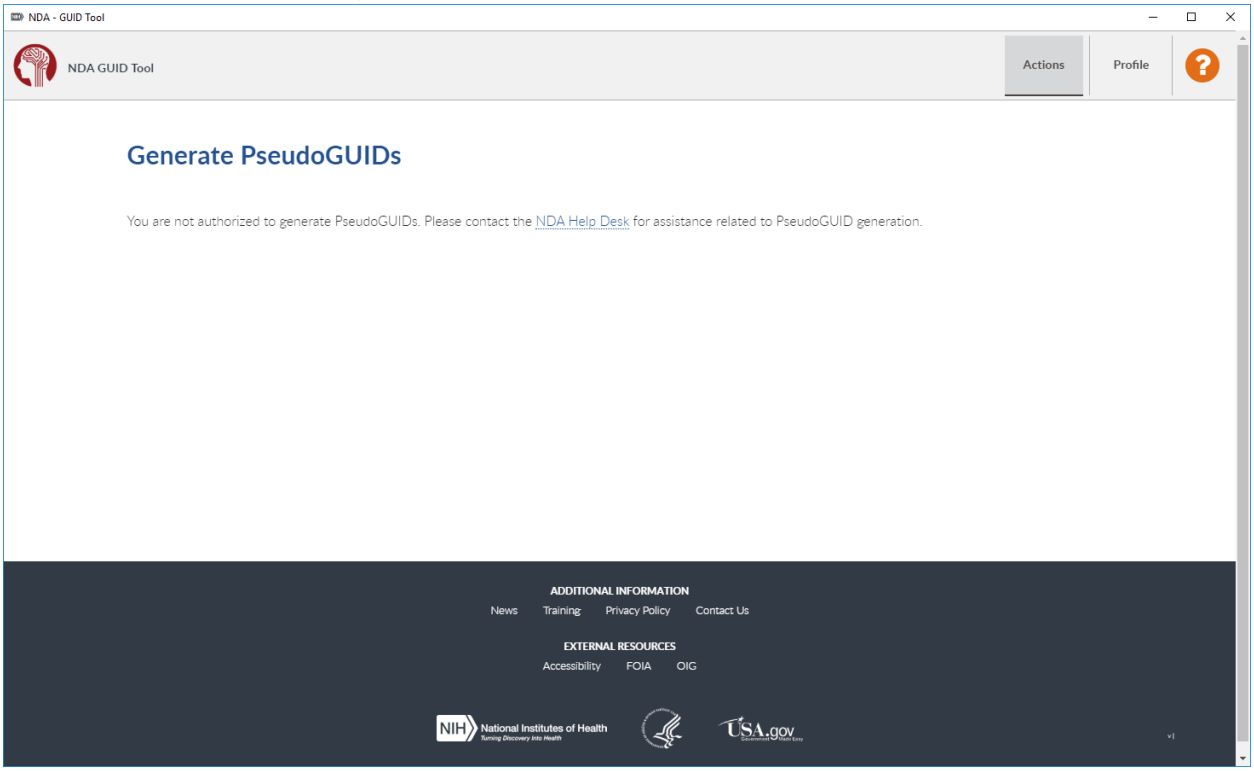


Figure 37 Not Authorized to Generate pseudoGUIDs

Most pseudoGUID generation requests will be handled by discussing your needs with the NDA Help Desk. If you believe you have been granted authorization to generate pseudoGUIDs yourself, but still see this not authorized to generate pseudoGUIDs message, the most likely cause is that your account has not been updated, or authorization was granted very recently and you have not logged out or restarted the tool again.

Requesting Help

From the bottom of every Help Center panel you can click the link to email the NDA Help Desk. This link will attempt to open your default e-mail client and prepopulate the “to” address.