National Alzheimer's Coordinating Center

MRI Submission System manual

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NACC
National Alzheimer's Coordinating Center

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Introduction

The MRI Data Submission System is used to input or upload MRI images and forms for subjects in the UDS database. MRI data be entered into the MRI database only for IDs already in the UDS database. Forms and/or images can be uploaded or entered. An ID may have more than one MRI scan. Because scans are indexed by scan date, each MRI must have a unique patient ID and date.

Requirements

The following are recommended for use of the MRI Submission System:

- Hard-wired internet connection. A modem can be used instead of a hardwired connection but may be slow and tedious.
- Browser: Microsoft Explorer (version 8.0 or later) or Firefox (version 1.0 or later). Other browsers and versions will work, but the displays may be difficult to use.
- Screen size of at least 17 inches. Smaller sizes will work but will be more difficult to use.

Contacts

If you have questions or comments or would like to obtain a password, please contact NACC by email at naccmail@uw.edu or by phone at 206-543-8637.

Software description

The data are stored in Oracle 10g, with SAS 9.3 used as the front end. Most programs for web data entry, file uploading, error checking, and data access are therefore written in SAS. An automated data element dictionary has been written into the database, as well as version control and error checking.

Backups

All data are backed up every night. Monthly backups are done and archived. Backups are stored offsite in case of disaster.

Security

Only authorized personnel have access to the system. Users must obtain a user name and password from NACC. Users have access only to data from their own Center, not data from other ADCs. All data transmitted across the Internet is encrypted with at least a 256-bit encryption suite.

MRI scans to be submitted

NACC would like each Center to input data for all MRI scans that are present at the Center for UDS IDs. This information is used to further research by investigators using the NACC database.

MRI data

We would like MRI data in two forms:

- an uploaded DICOM scan of the MRI
- a form containing specified data on the MRI

If possible, NACC would like both the scan and the form submitted for each MRI. If both are not available, then either one alone is acceptable.

Methods of submitting data

FOR FORMS:

NACC currently accepts form data from Centers in two ways:

- forms entered using web data entry through the NACC website; and
- files uploaded using the NACC website.

Uploaded files must be in the specified ASCII fixed-field format (see the Data Element Dictionary in the "Documentation" section of the APOE Submission System), comma-delimited, Excel, SAS version 7, 8, or 9, SPSS sav files, or tab-delimited files.

FOR IMAGES:

Images are uploaded in DICOM format as .zip files. These images are stored and can be used by DICOM software to view them on local PCs. Each image must have an associated image date, which is the date the MRI scan was done.

Database storage

The database for forms consists of three parts:

- Working Database: data is stored here when it is first uploaded or entered; may have errors
- Current Database: error-free data
- Frozen Database: "frozen" copies of the current database, for manuscripts and reports

Images are stored as uploaded and not error checked.

Sequence of data submission for uploading form files

A typical sequence of data submission for uploading form files might include the following:

- Create file from Center's local database using the template for guidance.
- Upload the file using "Upload Files" process.
- Correct file if indicated on pre-processing; repeat until accurate.
- Using the "Error Checks" process, execute "Form Check"; correct any errors. (Correct the forms using web data entry OR correct within your local database and reload.)
- Re-run error checks until all forms are accurate.
- Using the "Finalize" process, execute "Finalize Data" to move the IDs to the current database. If an ID has an error, fix it and then re-finalize.

Sequence of data submission for form web data entry

- Select **Web Data Entry**
- Select **Edit ID**
- Select the ID to edit
- Input the requested data and click **Submit**

Sequence of data submission for MRI Images

- Select **Upload Files**
- Select **Upload Image**
- Select the Patient ID
- Select the date of the Image
- Use the **Browse** button to fine the image on your local computer
- Click **Upload**

Disclaimer

Because all websites are dynamic by nature, the sample screens provided in this manual may not be an exact representation of the most current page on the NACC website itself. Although details may change, the sample screens still provide the user with a visual companion to the written instructions, as well as navigational orientation.

General operation
of the MRI Data Submission System

Accessing the system

The MRI Data Submission System is accessed by performing the following steps:
- Go to https://www.alz.washington.edu
- Click the ADCs button
- Click **Data Cores/Data Managers** (left side of page)
- Click **MRI Data Submission**
- Enter your username and password
- Find and click the name of your Center
- Click **MRI Data Submission System**

Navigating the system

The first page of the system will be shown (see Figure 1, below):
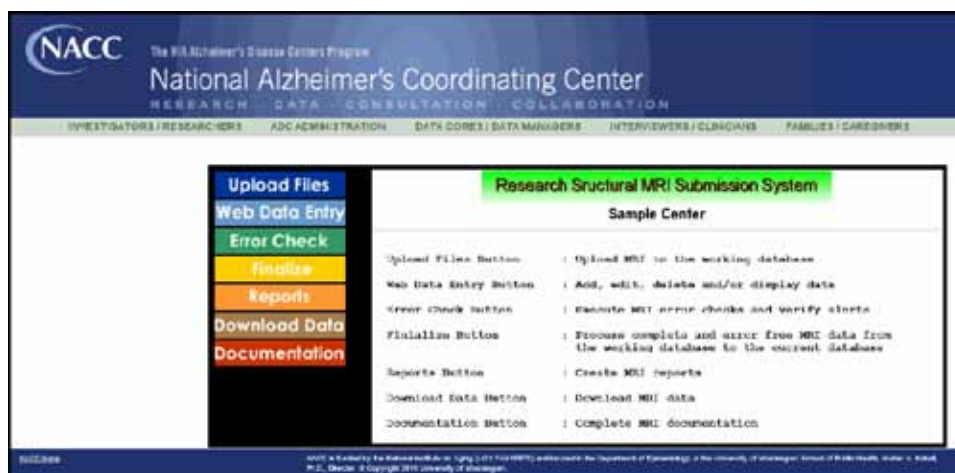
Figure 1

From this menu, the whole MRI Submission System can be accessed. The buttons down the left side of the page (**Upload Files**, **Web Data Entry**, etc.) represent the major sections of the System.

Once a button is clicked, the appropriate page will be shown in the color of the button. For example, this page has a black outline and represents the initial page. The error check section will be green, and so on.

Across the top of the colored outline are buttons for the sub-sections.

The buttons at the very top of the page access various parts of the NACC website. The **Previous Menu** button is especially important, as it will go back one page (the browser's **Back** button may not work).

Upload Files

Uploading

To upload data files from your local computer to the NACC database, click the **Upload Files** button. The following page will be displayed (Figure 2):

Figure 2

To upload MRI forms, click the **Upload & Pre-Process** button (see Figure 3). To upload DICOM images, click the **Upload Image** button. The **View Batch Processing Log** button will display a list of uploads and finalizations that are still in the queue to be uploaded.

If the Upload & Pre-Process button is selected then the page below will be displayed (Figure 3).

Figure 3

Files uploaded must be in the correct format and with the correct column alignment, as described in the template and the data element dictionary. Only the following file types, with the extensions shown, are accepted:

FORMAT	EXTENSION
ASCII	.txt
comma-delimited	.csv
SAS	.sas7bdat
Excel	.xls
SPSS	.sav
tab-delimited	.tsv

To upload a file, type in the path and name of the file in the box or click the **Browse** button to look for files on your local computer. Once the file is found, double-click the file name. When the file name is displayed in the box, click the **Upload!** button underneath, and the file will be uploaded and pre-processed.

Pre-processing

Once a file is uploaded, the software will verify that it's in the correct format and test for non-numeric characters in numeric fields, characters where blanks should be, and illegal characters. All IDs will be tested to verify that they are already in the UDS database. When pre-processing is complete, a report page is displayed. If there are no errors, click the **Submit** button and add the uploaded data to the working database. Any errors will cause the file to be unusable, and the user will have to correct the file and upload again. Below is an example of a pre-processing report (Figure 4):

Figure 4

Pre-processing errors include:
- Missing data elements
- Extra data elements

- Wrong type for data
- Wrong Center number (ADCID)
- Data in separator columns (applies to ASCII files only)
- IDs not in the UDS

These errors must be corrected before the file can be uploaded. If there are no errors, a message to that effect will be displayed. Click **Submit** once again, and the following will be displayed (Figure 5).
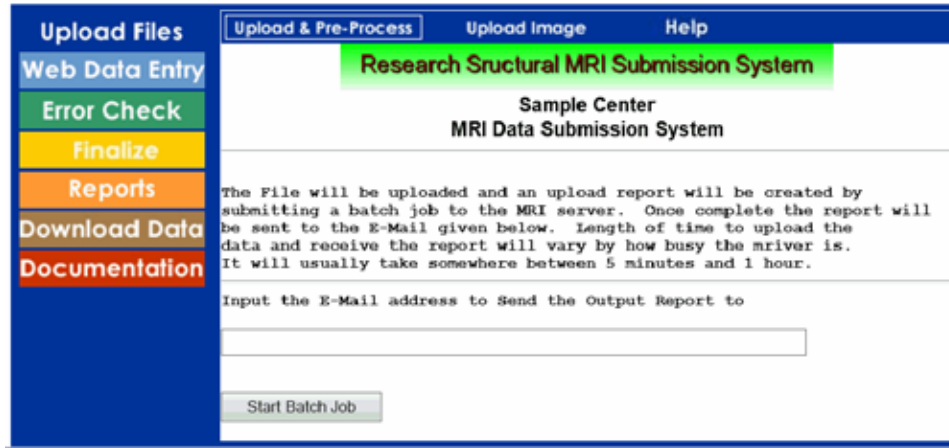

Figure 5

In the box provided, type the email address where you would l ike the report sent, and then click the **Start Batch Job** button. This will submit a batch job that will process the file that has been uploaded into the MRI database. The beginning page will be displayed. You should receive an email in a few minutes describing the file uploaded. If the server is very busy this could take longer.

If the **Upload Image** button is selected, then the page below will be displayed (Figure 6):
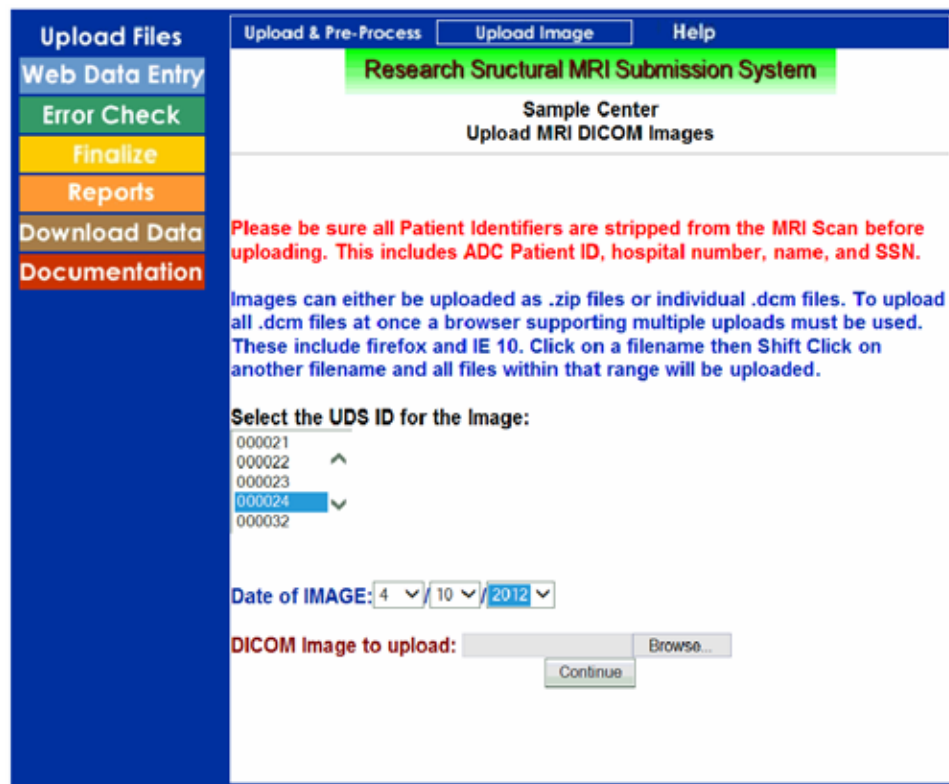
Figure 6

Select the UDS Patient ID for the image. Then select the date the scan was done. Next use the **Browse** button to find the image on your local computer. For uploading, the image must be in DICOM format and be in a .zip file. **PLEASE BE SURE TO REMOVE ALL PATIENT IDENTIFIERS FROM THE IMAGE BEFORE UPLOADING.** When you are ready to upload the image, click the **Upload!** button. The page shown in Figure 7 will be displayed when the image has been uploaded.

Figure 7

Web data entry

Web data entry allows MRI data forms to be added, edited, and deleted. To access web data entry, click the **Edit ID** button. This accesses all the form data in your working database, including data you have uploaded from files and entered through the website (Figure 8):
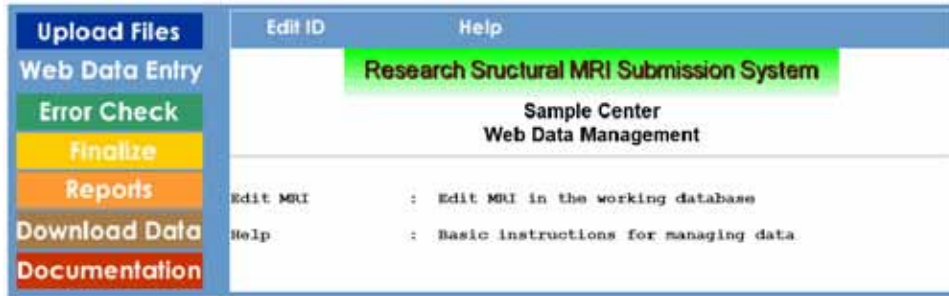
Figure 8

Editing an ID

Click the **Edit ID** button, and all of the IDs currently in your working database will be displayed for editing. Once an ID is selected, this is the gateway for adding, editing or deleting MRI form values for specified IDs (Figure 9):
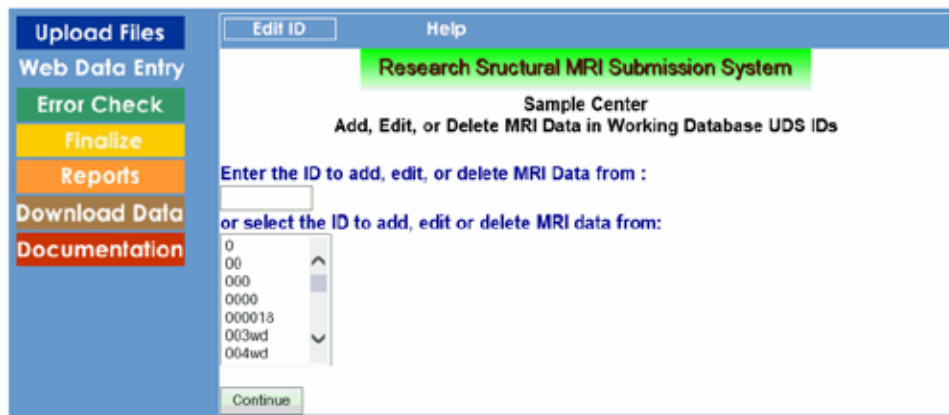
Figure 9

Use the scroll bar next to the box to find the ID to edit. Click the ID and then click **Continue** at the bottom of the page. This will display the following page, which allows adding, editing, and deleting of the MRI data (Figure 10):

Figure 10

To edit an MRI, first select the MRI you want to edit, and then click the **Edit MRI** button. This will show the following page (Figure 11):

Figure 11

To edit, click the box under the data element to be edited. Click the value desired, or if necessary use the scroll bars to display the value wanted, and then click the value.

Next, click the **Update MRI** button at the bottom. This will range-check and then update the data in the working database.

To add a new MRI, click the **Add a New MRI** button. This will display the page in Figure 12:

Figure 12

Click each box and select or fill in the values. A **Date of MRI** must be provided in order to add a new MRI. Next, click the **Add MRI** button. The new MRI form will be added. The form data can be modified later using the **Edit MRI** functions.

To delete an MRI, first click the MRI you would like to delete, then click the **Delete an MRI** button. This will delete this MRI from the database. A message will be displayed stating that the MRI was deleted, and the **Edit ID** page will be displayed.

Error check

Click the **Error Check** button, and the following page will be displayed (Figure 13):
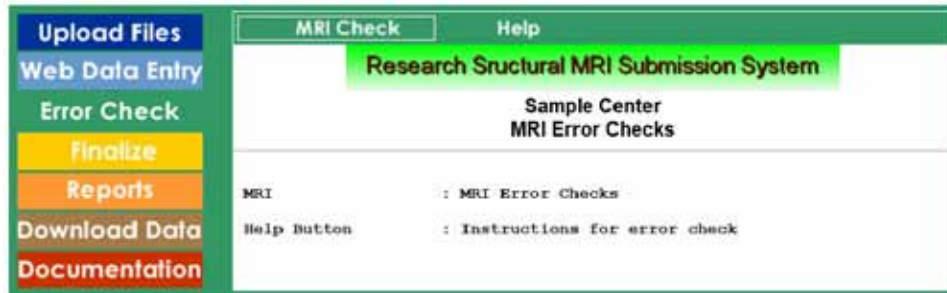
Figure 13

Before an MRI can be moved to the current database, all errors found in MRI form data error check must be corrected.

MRI Check

Click **MRI Check** at the top of the page to run the MRI error checks. Following is an example of the page that will be displayed (Figure 14):
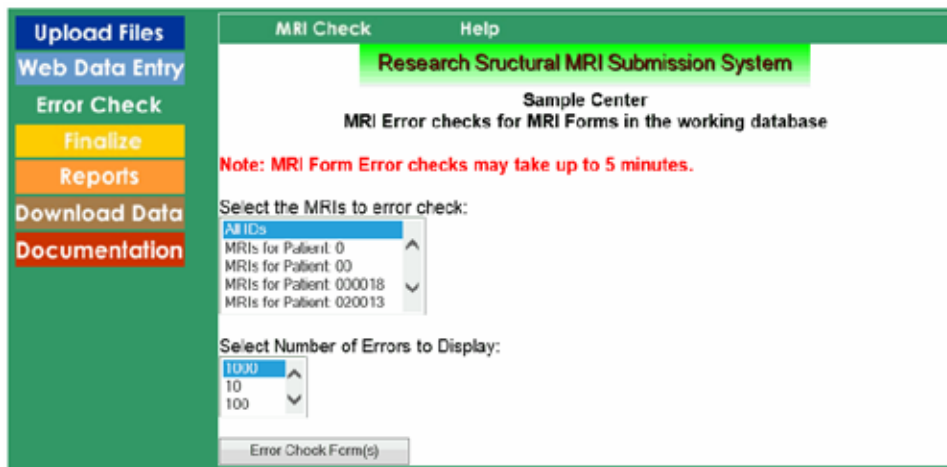

Figure 14

Click the ID to be error-checked or click **All IDs** to check all available IDs. Each ID's MRIs are checked for data element range errors, as well as other potential inconsistency errors. Following are examples of errors and alerts (Figure 15):

Figure 15

The column headings refer to the following:

Item . . . . .Form IDs and the item number

Data Element . . . . . .Name of the data element with an error or alert

E-# . . . . .Number of the error, which can be cross-referenced with the error-check documentation. Range errors will be listed under E-# as O (zero).

Error . . . . .Short description of the error check

Value . . . . .Value of the data element in question. For within-form error checks, VAR COMP is the name of the data element being compared to the error-checked data element.

Finalize

Finalize Data

When all errors have been corrected, the data can be finalized. This involves moving the data from your working database to the current database. Click the **Finalize** button, and the page below will be displayed (Figure 16):
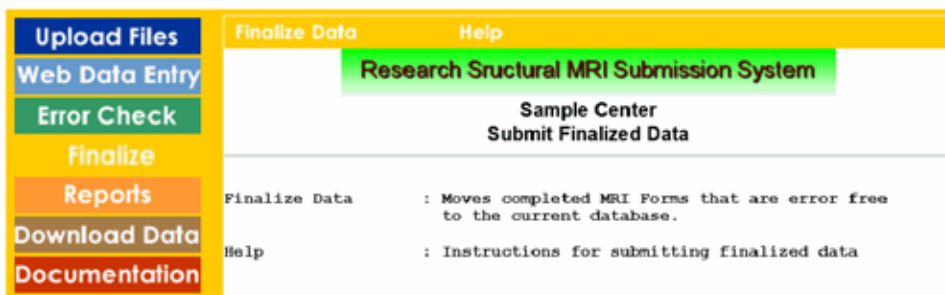
Figure 16

Click the **Finalize Data** button at the top of the page, and the following page will be displayed (Figure 17):
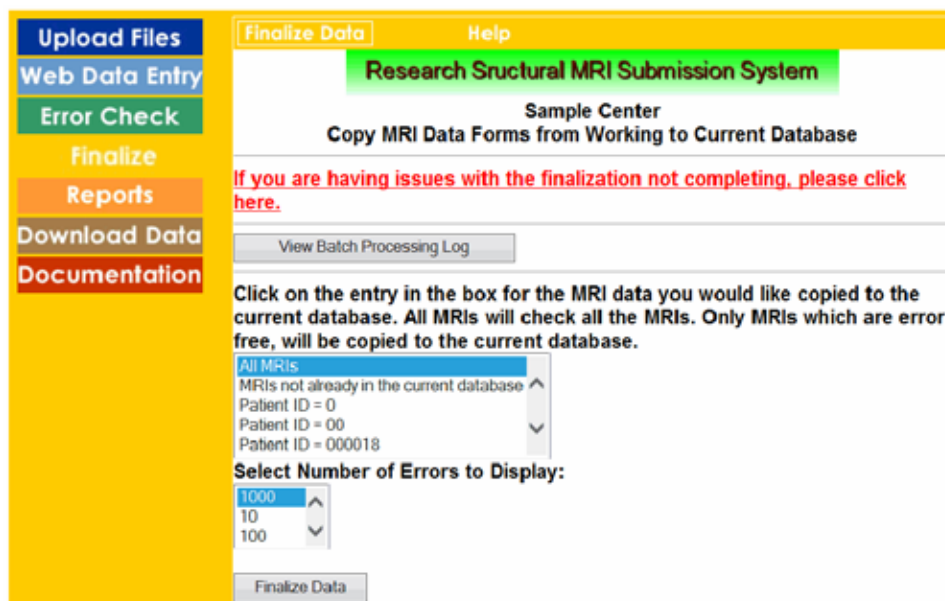

Figure 17

To move the data to the current database, click the **Finalize Data** button at the bottom of the page. This will process the data into the current database from the working database.

IDs with errors in any form will not be moved. A list will be generated showing the number moved and the number with errors (Figure 18):

Upload Files
Web Data Entry
Error Check
Finalize
Reports
Download Data
Documentation

Finalize Data	Help

Research Sructural MRI Submission System

Sample Center

Total MRIs in the working database = 11

Print File **- Please note latest print file may NOT be displayed. Once the file is shown press F5 or Refresh to get latest file.**

Patient ID = 000018 ,6 /1 /2012
VISITMO out of range. Must be 1 - 12. Value is missing
VISITDAY out of range. Must be 1 - 31. Value is missing
VISITYR out of range. Must be 1980 - 2013. Value is missing.
SMRIBVOL out of range. Must be 800-1800, 9999. Value is missing.
SMRICVOL out of range. Must be 1000-2000, 9999. Value is missing.
SMRIHVOL out of range. Must be 1-15, 99.9. Value is missing
SMRIDIC out of range. Must be 0, 1, 8, or 9. Value is missing
SMRIADNI out of range. Must be 0, 1, or 9. Value is missing

Patient ID = 020013 ,3 /6 /2004
VISITMO out of range. Must be 1 - 12. Value is missing
VISITDAY out of range. Must be 1 - 31. Value is missing
VISITYR out of range. Must be 1980 - 2013. Value is missing.
SMRIBVOL out of range. Must be 800-1800, 9999. Value is missing.
SMRICVOL out of range. Must be 1000-2000, 9999. Value is missing.
SMRIHVOL out of range. Must be 1-15, 99.9. Value is missing
SMRIDIC out of range. Must be 0, 1, 8, or 9. Value is missing
SMRIADNI out of range. Must be 0, 1, or 9. Value is missing

Patient ID = 2033 ,4 /7 /2003
SMRIBVOL out of range. Must be 800-1800, 9999. Value is missing.
SMRICVOL out of range. Must be 1000-2000, 9999. Value is missing.
SMRIHVOL out of range. Must be 1-15, 99.9. Value is missing
SMRIDIC out of range. Must be 0, 1, 8, or 9. Value is missing
SMRIADNI out of range. Must be 0, 1, or 9. Value is missing

Patient ID = 99322521 ,4 /5 /1984
VISITMO out of range. Must be 1 - 12. Value is missing
VISITDAY out of range. Must be 1 - 31. Value is missing
VISITYR out of range. Must be 1980 - 2013. Value is missing.
SMRIBVOL out of range. Must be 800-1800, 9999. Value is missing.
SMRICVOL out of range. Must be 1000-2000, 9999. Value is missing.
SMRIHVOL out of range. Must be 1-15, 99.9. Value is missing
SMRIDIC out of range. Must be 0, 1, 8, or 9. Value is missing
SMRIADNI out of range. Must be 0, 1, or 9. Value is missing

Patient ID = duane ,7 /10 /2013
SMRIDIC out of range. Must be 0, 1, 8, or 9. Value is missing
SMRIADNI out of range. Must be 0, 1, or 9. Value is missing

The following MRIs have not been moved to the current database!

Patient ID = 000018 Date = 6 /1 /2012

Patient ID = 020013 Date = 3 /6 /2004

Patient ID = 2033 Date = 4 /7 /2003

Patient ID = 99322521 Date = 4 /5 /1984

Patient ID = duane Date = 7 /10 /2013
All errors and alerts are shown.

Total Errors = 31

Total Clean MRIs = 6

Total Rejected MRIs = 5

MRIs that will be copied to the current database:
Patient ID = 0 Date = 7 /10 /2000
Patient ID = 0 Date = 6 /1 /2012
Patient ID = 00 Date = 5 /5 /1985
Patient ID = 101 Date = 5 /5 /1985
Patient ID = 101 Date = 6 /1 /2012
Patient ID = 1923 Date = 7 /10 /2000

Copy the above Patient Packets to the Current Database!

Copy Packets using Batch Input

**Clicking this button will ask for your E-Mail
and allow a batch processing task to be executed.**

Figure 18

For MRI forms with no errors, the MRI form data may be copied to the current database by clicking the **Copy Packets Using Batch Input** button. Once the button is clicked, a page will be displayed asking for your email address:
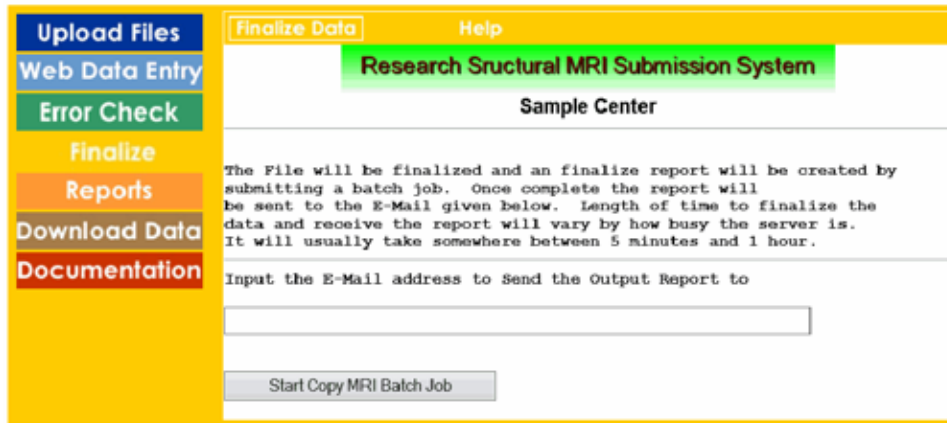

Figure 19

Provide the email address where you would like to receive a report that details the MRIs finalized to the current database. It is recommended that you keep these emails. The programs normally complete within 10 minutes (although completion can take as long as two hours when the system is busy), and you will receive your email shortly thereafter.

Click **Reports** to display the reports page (Figure 20):

Figure 20

Click the **Center Reports** button at the top to display the following page (Figure 21):

Figure 21

These reports will help you manage your MRI data:

Report 1: Total MRI Forms in Database — Creates a report of the total MRIs submitted for your Center. Also indicates whether the MRI forms are in working or current database and whether associated DICOM scans have been uploaded.

Report 2: Total MRI Images Uploaded — Creates a report of the total MRI DICOM images uploaded for your Center. Indicates whether image has an associated form.

Download data

Click the **Download Data** button and the following page will be displayed (Figure 22):

Figure 22

The buttons across the top of the page allow for downloading of data in various formats. The data will be downloaded to your local computer in the requested format.

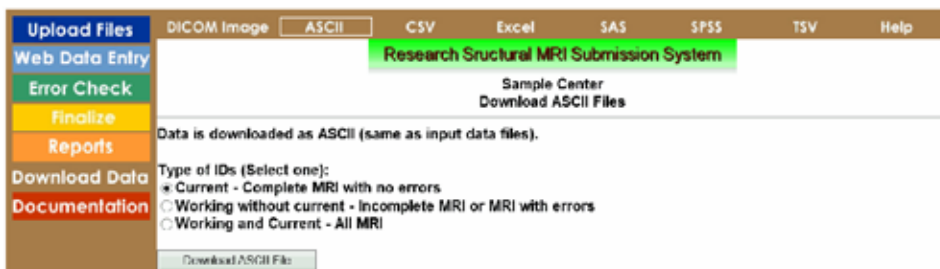Click the **ASCII** button, and the following page will be displayed (Figure 23):

Figure 23

 NOTE: This manual uses the ASCII button as an example; however, all of the download file procedures are the same except that different types of files will be created and downloaded.

Once selections have been made, the "Download ASCII File" button is clicked and the following is displayed (Figure 24):
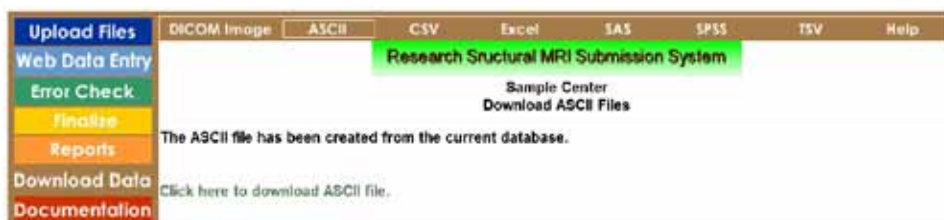

Figure 24

Click the green link to download your file. You will be asked whether you want to save or open the file. If you have the correct software on your local computer, opening the file is a good way to check it. Otherwise, just save the file.

Documentation

Click the **Documentation** button, and the following page will be displayed (Figure 25):

Figure 25

The buttons at the top of the page provide access to the MRI Submission System documentation, much of which is in the form of PDF files for easier printing.