National Biomedical Imaging Archive 4.5

User's Guide

Center for Biomedical Informatics
and Information Technology

This is a U.S. Government work.

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About This Guide

This chapter introduces you to the *NBIA 4.5 User's Guide*. It includes the following topics:

- *Purpose* on this page
- *Audience* on this page
- *Topics Covered* on this page
- *Text Conventions Used* on page 2

Purpose

This guide provides an overview of National Biomedical Imaging Archive (NBIA). It explains how to use NCIA to access local, and if available, remote imaging archives.

Audience

The *NBIA 4.5 User's Guide* is the documentation for the NCIA web-based application. The intended audience for this guide are researchers including pathologists and radiologists at cancer centers, CAD developers, academia, and industry that access NBIA through commonly available web browser software.

Topics Covered

The *NBIA 4.5 User's Guide* discusses the following topics:

- *Chapter 1 Getting Started in NBIA* provides an introduction to NBIA and describes how to access NBIA.
- *Chapter 2 Searching for Images* describes how to search the local and any selected remote image databases.
- *Chapter 3 Viewing Search Results* describes how to review results from NBIA database searches.
- *Chapter 4 Submitting Images* describes how to submit images to NBIA.
- *Chapter 5 NBIA Administration*discusses administrative functions in NBIA.
- *Appendix A URL References* provides a list of URLs for references referred to within the text.

- *Appendix B NBIA Glossary* includes a list of abbreviations and their meanings.
- *Index* references key words and terms.

Text Conventions Used

This chapter explains conventions used in this guide. The various typefaces represent interface components, keyboard shortcuts, toolbar buttons, dialog box options, and text that you type.

Convention	*Description*	*Example*
Bold & Capitalized Command **Capitalized command > Capitalized command**	Indicates a Menu command Indicates Sequential Menu commands	**Admin > Refresh**
TEXT IN SMALL CAPS	Keyboard key that you press	Press ENTER
TEXT IN SMALL CAPS + TEXT IN SMALL CAPS	Keyboard keys that you press simultaneously	Press SHIFT + CTRL and then release both.
`Monospace type`	Used for filenames, directory names, commands, file listings, and anything that would appear in a Java program, such as methods, variables, and classes.	`URL_definition ::= url_string`
Icon	A toolbar button that you click	Click the **Paste** button ( ) to paste the copied text.
Boldface type	Options that you select in dialog boxes or drop-down menus. Buttons or icons that you click.	In the Open dialog box, select the file and click the **Open** button.
Italics	Used to reference other documents, sections, figures, and tables.	*caArray User's Guide*
`Italic boldface monospace type`	Text that you type	In the New Subset text box, enter ***`Proprietary Proteins.`***
Note:	Highlights a concept of particular interest	**Note:** This concept is used throughout the installation manual.
Warning!	Highlights information of which you should be particularly aware.	**Warning!** Deleting an object will permanently delete it from the database.

Table i.1 NBIA User's Guide Text Conventions

Convention	Description	Example
{ }	Curly brackets are used for replaceable items.	Replace `{root directory}` with its proper value, such as `c:\cabio`

Table i.1 NBIA User's Guide Text Conventions (Continued)

CHAPTER

1

GETTING STARTED IN NBIA

This chapter describes how to get started using the NBIA.

Topics in this chapter include:

- *Introduction to NBIA* on this page
- *Registering a New User* on page 6
- *Logging into NBIA* on page 9
- *Changing User Password* on page 10
- *Using the NBIA Portal* on page 14
- *Using NBIA Online Help* on page 17

Introduction to NBIA

NBIA provides the cancer research and medical community, industry, and academia access to imaging archives that can be used for many purposes, including the potential to assist in the development and validation of analytical software tools supporting these functions:

- Lesion detection and classification software
- Accelerated diagnostic imaging decision
- Quantitative imaging assessment of drug response

Note: If the Remote Search option appears on the NBIA home page, you can search remote imaging archives located outside of the local NBIA archive.

The archive provides access to imaging resources that improve the use of imaging in today's cancer research and practice by increasing the efficiency and reproducibility of imaging cancer detection and diagnosis, leveraging imaging to provide an objective

assessment of therapeutic response, and ultimately enabling the development of imaging resources that will lead to improved clinical decision support.

Clinical trials, physicians and other researchers submit images to NBIA using the CTP (Clinical Trial Processing) software. Any potential user may then access NBIA to search for and download images and associated annotation files.

Images are stored in the medical image standard, Digital Imaging and Communications in Medicine (DICOM). A DICOM file stores the digital image along with a series of tags that contain metadata about the image such as patient ID, study ID, patient weight, anatomic site, and so forth. For more information about DICOM, see http://medical.nema.org/.

NBIA is accessible at https://imaging.nci.nih.gov. In the Welcome/Login page that opens, you can perform the following tasks:

- Learn the basics about NBIA by reading the welcome page introduction
- Open a window that provides links for downloading DICOM viewers
- Open Quick Links to web sites relevant to the goals and tasks of NBIA. See *Home Page Left Sidebar* on page 12.
- Register for a new user account.
- Log into NBIA.

Registering a New User

To register a new user in NBIA, from the NBIA welcome and login page, follow these steps:

1. Click the **Register Now** hypertext link under the **Login** button.
2. Review the Legal Rules of the Road page and indicate your agreement, then click the blue **Clicking Here** link to continue.

3. In the registration form that opens (*Figure 1.1*), enter the required information for the new user. Items with an asterisk are required fields.

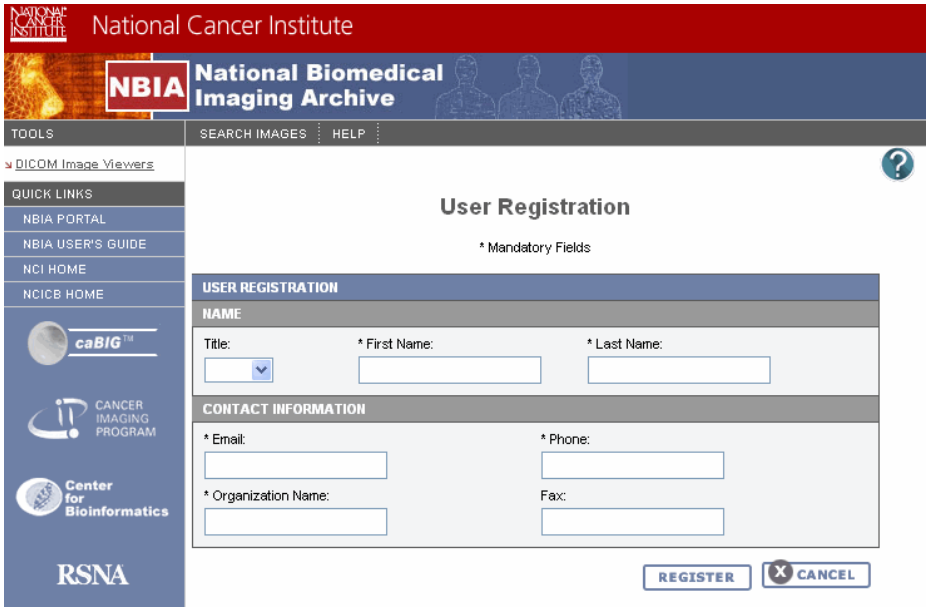


Figure 1.1 New user registration form

4. Click **Register** to execute the submission of the user information. Click **Cancel** to return to the login screen.

Once you have submitted your entry form, a message will be conveyed to the NBIA administrator who will create the new user account in the UTP. For more information, see *Creating a New NBIA User* on page 69.

Using NBIA Without Logging In

You do not have to log in to access public data in NBIA. Simply begin to use the features on the Welcome page, including search functions (*Figure 1.2*).

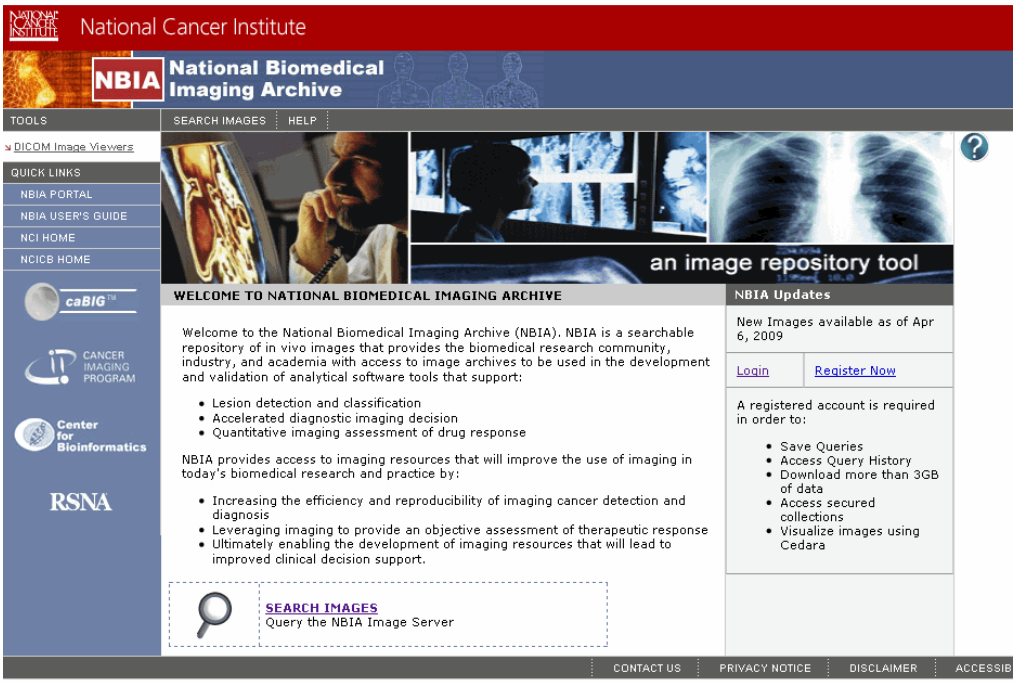


Figure 1.2 NBIA Welcome page, for guest access without logging in

You can use the search function as a "guest" without logging in. All data that NBIA returns without being logged in is public data. As a guest, you can add data to the data basket. For more information, see *Managing the Data Basket* on page 45.

If you are not logged into the application, some functions are unavailable: saving a search query, viewing image annotations, remote searches and visualizing images using Cedara software. You also cannot download more than 3 gigabytes of data at one time.

If the application is configured to enable the guest account access, the login section will be "hidden" by the login link by default. Additionally, you should be able to see the **Search Image** link on the home page.

Note: In some cases of local installation, the decision may have been made not to enable public data access without login. If the application is configured to disable the guest account access, the login section is "expanded" by default. If that's the case, there is no way for the user to bypass login and perform tasks.

Logging into NBIA

When you click the https://imaging.nci.nih.gov to access NBIA, the welcome/login page displays.

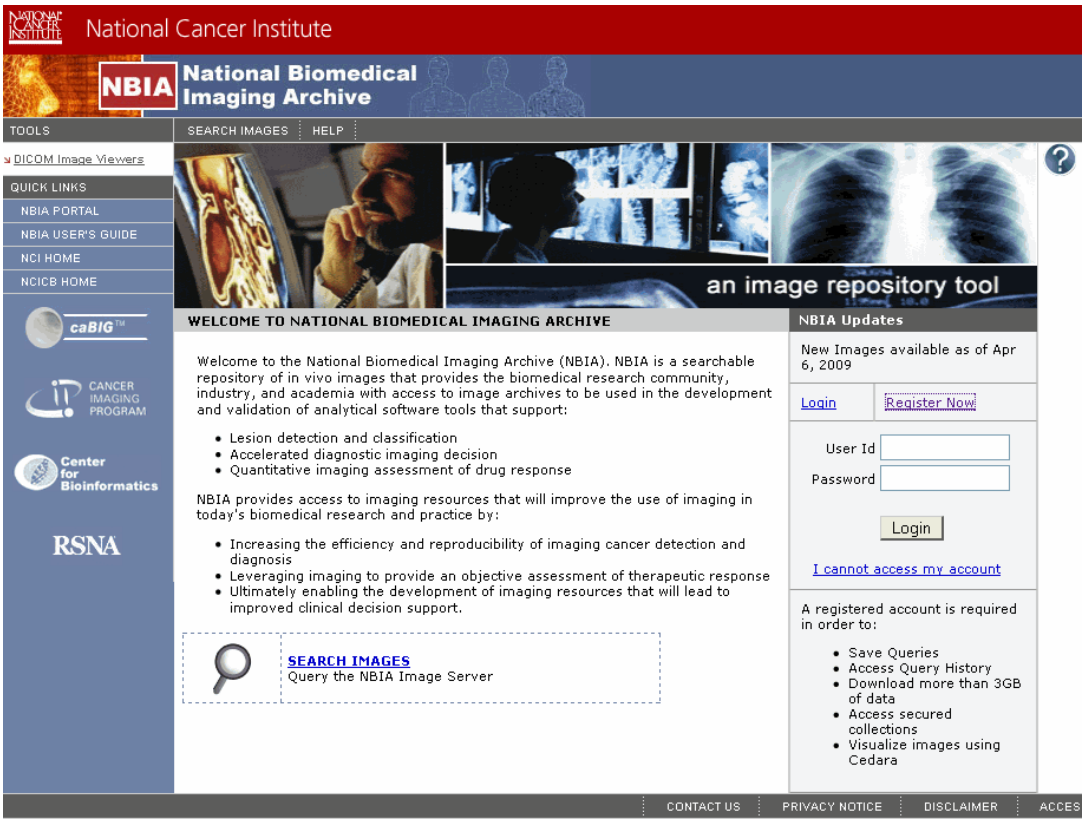


Figure 1.3 NBIA Welcome/Login page

If you have already registered with NBIA, perform the following steps to login from the User Login panel (*Figure 1.3*).

1. Enter the login information, your **USER ID** and **PASSWORD**.
2. Click **Login**.

   If your login is successful, NBIA opens the application to its home page.

In Case of Login Failure:

Tip: If your USERNAME or PASSWORD is not correct, "Invalid Username/password. Please try again." displays in red text on the login page. Additionally, a popup opens, informing you of a failure to login and its possible reasons. *In your browser, you should enable a popup blocker exception for the NBIA site URL. If you fail to do that, the login failure message may not appear.*

1. If you do not have a login ID or password, on the login page, click **Register Now** to apply for a user account. For more information, see *Registering a New User* on page 6.

2. If you have persistent difficulty logging in, click **I cannot access my account** on the NBIA login page. An NBIA Account Help topic opens, describing help options for resolving your login problem.
3. Follow the directions on the Login Failed pop-up message and/or on the NBIA Help Account page. Note that you can contact Application Support using the contact information on that page.

Note: If you launch a search of the NBIA database from another application, when you do so, you are brought to the NBIA login page. Use the same login instructions described in this topic.

Changing User Password

Note: The Change Password feature is only available if you are using a CBIIT instance of NBIA.

Passwords for versions of NBIA prior to 3.1 will no longer work in the application. If you are a previous user, you should have received an email with a new reset password. You can continue to use the reset password, or you can change to a password of your choice. At any time during your tenure as an NBIA user, you can change the password following these directions.

To change your password, when using the CBIIT instance of NBIA follow these steps:

1. Log into NBIA using the current (or reset) password.
2. On the NBIA Welcome page, click **Change Password** under the **Tools** section of the left sidebar.

   Note: This option is present only in the NCICB instance of NBIA.

   The change password link directs you to the NCI password station.
3. Enter your NCI User ID in the appropriate text box. Follow the directions given at this web site to change your password.

Using the NBIA Home Page

The NBIA welcome/home page that opens after login displays several panels and menu bars (*Figure 1.4*).

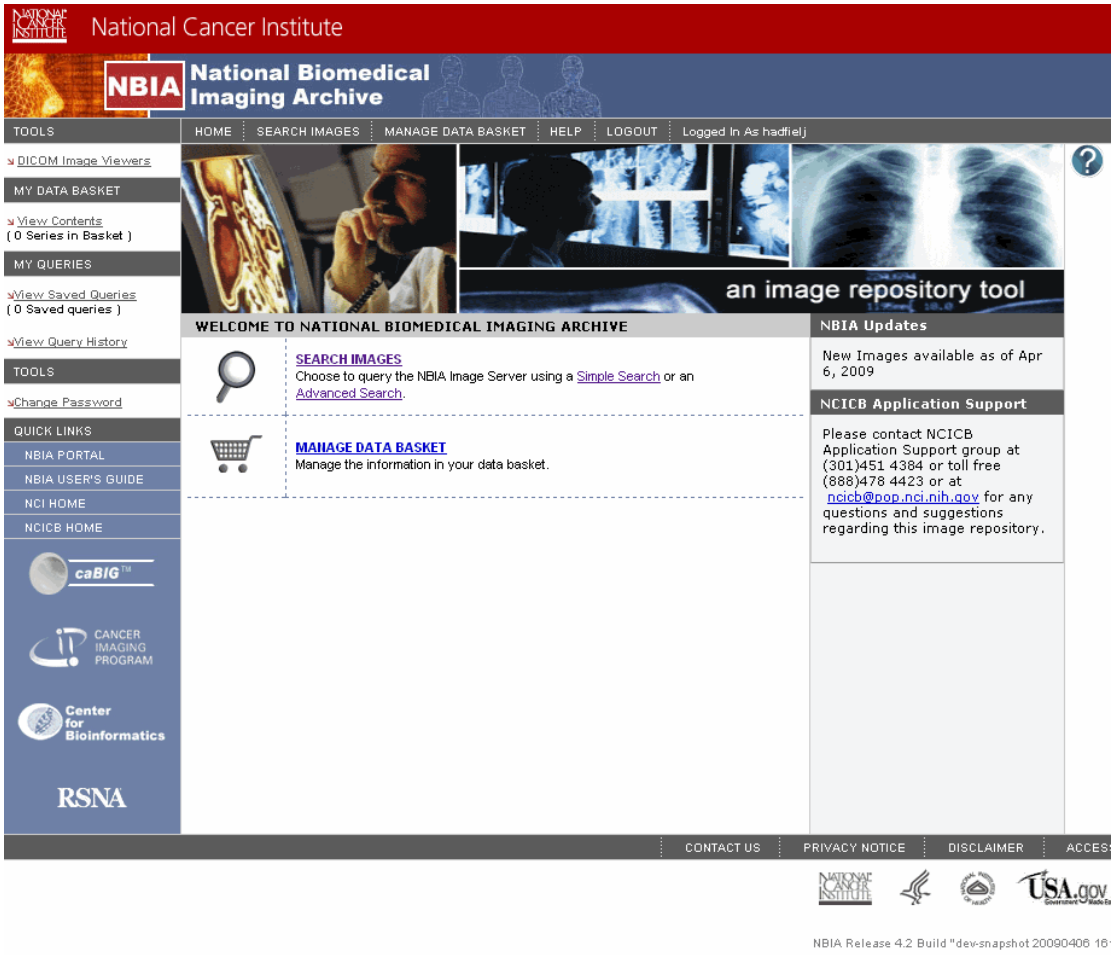


Figure 1.4 NBIA home page after login

Home Page Menu Bar

The top menu bar on the welcome/home page consists of the options described in Table *1.1*.

Option	*Description*	*See for More Information*
Home	Returns you to the NBIA Home page	N/A
Search Images	Displays the Simple Search page	*Performing a Simple Search* on page 20

Table 1.1 NBIA home page menu bar options

Option	Description	See for More Information
Remote Search	Displays the Search Remote Sites page This function is available only when NBIA is configured for remote image sites.	*Specifying Remote Search Sites* on page 31
Manage Data Basket	Displays the My Data Basket page; This is the same option as choosing **My Data Basket > View Contents** from the side menu bar.	*Managing the Data Basket* on page 45
Help	Displays a separate online Help window	*Using NBIA Online Help* on page 17
Logout	Logs you out of NBIA and returns you to the NBIA home page	N/A

Table 1.1 NBIA home page menu bar options

Home Page Left Sidebar

The left sidebar of the Welcome page down through **My Queries** consists of the options described in Table 1.2.

Option	Description	See for More Information
Tools > DICOM Image Viewers	Displays the DICOM Viewer Links window	*Obtaining DICOM Viewers* on page 51
My Data Basket > View Contents	Displays the My Data Basket page	*Managing the Data Basket* on page 45
My Queries >View Saved Queries	Displays the Saved Queries page	*Managing Saved Queries* on page 32
My Queries >View Query History	Displays the Query History page	*Viewing a Query History* on page 34
Tools > QC Tool	Allows a curator to evaluate a submission and assign a QC status	*Using the Quality Control (QC) Tool* on page 71
Tools > Verify Submission	Verifies an image submission and its status through a report	*Viewing Submission Reports* on page 75

Table 1.2 NBIA home page left sidebar options

Quick Links

The **Quick Links** menu options on the lower left sidebar displayed in most NBIA viewers provide sources for NBIA- and NCI-related bioinformatics information on the Internet. The options are described in Table 1.3.

Option	Description	See for More Information
Quick Links > **NBIA News**	Displays the NBIA News page in a separate window.	*Using the NBIA Portal* on page 14

Table 1.3 Left sidebar Quick Links

Option	*Description*	*See for More Information*
Quick Links > NCI Home	Displays the NCI home page in a separate window.	N/A
Quick Links > NCICB Home	Displays the NCICB home page in a separate window.	N/A

Table 1.3 Left sidebar Quick Links

Other Home Page Panels

The various panels of the welcome/home page display an additional variety of options described in Table *1.4*.

Option	*Description*	*See for More Information*
Center Panel		
Search Images	Displays the Simple Search screen	*Performing a Simple Search* on page 20
Simple Search	Displays the Simple Search screen	*Performing a Simple Search* on page 20
Advanced Search	Displays the Advanced Search screen	*Specifying Remote Search Sites* on page 31
Remote Search	Displays the Search Remote Sites screen	*Specifying Remote Search Sites* on page 31
Manage Data Basket	Displays the My Data Basket page	*Managing the Data Basket* on page 45
Right-hand panel		
NBIA Updates	Displays the last date and time visible images were made available. This date reflects the last update of any images and does not consider whether you have access to them.	N/A
NCICB Application Support	Displays phone numbers to contact NCICB Application Support.	*Application Support* on page 17.
Bottom menu bar		
Contact Us	Displays an email addressed to ncicb@pop.nci.nih.gov so you can email questions to NCICB application support	N/A
Privacy Notice	Displays the Health and Human Services (HHS) Privacy Policy Notice.	N/A
Disclaimer	Displays the NBIA Legal Rules of the Road disclaimer.	N/A

Table 1.4 NBIA home page welcome panel options

Option	Description	See for More Information
Accessibility	Displays the NCI Web Accessibility Feedback Form to be used by users with disabilities who have comments about the accessibility of NCI's web pages.	N/A
Support	Displays the Welcome to the NCICB Application Support Site web site.	N/A

Table 1.4 NBIA home page welcome panel options

Using the NBIA Portal

To open the NBIA Portal page, click on the corresponding link under *Quick Links* on the lower left sidebar of any NBIA page.

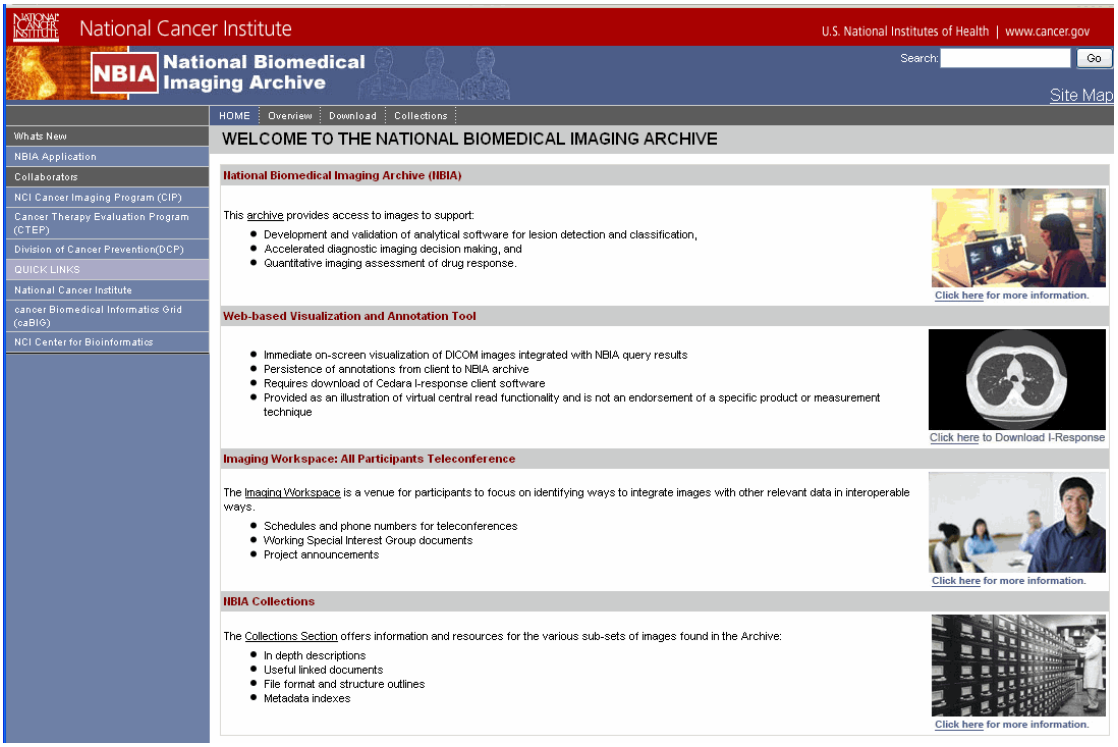


Figure 1.5 NBIA portal page

The NBIA Portal page (*Figure 1.5*) consists of a center panel that displays current NBIA-related information as well as sidebar and menu bar options that navigate to web sites and NBIA pages relevant to your tasks.

NBIA Portal Menu Bar

The NBIA Portal page top menu bar (*Figure 1.5*) consists of the options described in Table *1.5*.

Option	*Description*
Home	Returns you to the NBIA News home page
Overview	Provides an overview of NBIA and its goals
Download	Displays NBIA software available for download
Collections	Describes existing and future collections.

Table 1.5 News page top menu bar descriptions

Portal Site Map

Click the **Site Map** link in the upper right hand corner of the NBIA Portal page to display a list of site map information provided in the center panel (see *Figure 1.6*).

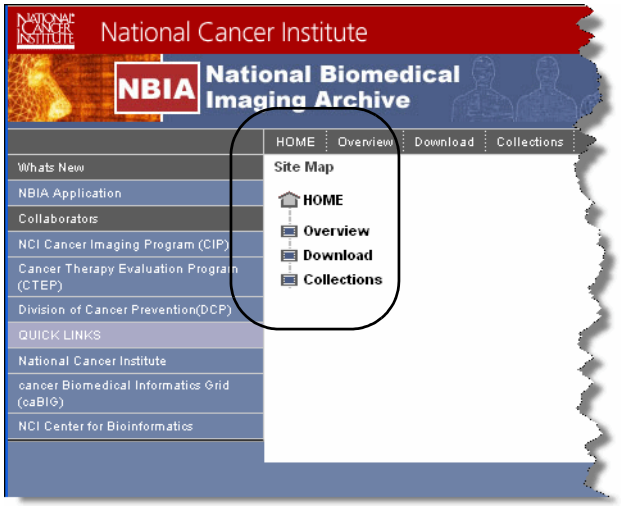


Figure 1.6 News page Site Map

If you click the **Download** menu option or the link in the Site Map, each takes you to a Download page that has a link to the NCICB Download Center, where you can download the latest release of NBIA and its related files. For more information, refer to https://imaging.nci.nih.gov.

Portal Page Left SideBar

The left side bar of the Portal page down through **Collaborators** consists of the options described in Table *1.6*. For more information about the Quick Links options, see *Quick Links* on page 12.

Option	*Description*
NBIA Application	Contains a link to the NBIA application
Collaborators > NCI Cancer Imaging Program (CIP)	Displays the CIP web site in a separate browser window

Table 1.6 News page left sidebar descriptions

Option	*Description*
Collaborators > Cancer Therapy Evaluation Program (CTEP)	Displays the CTEP web site in a separate browser window
Collaborators > Division of Cancer Prevention (DCP)	Displays the DCP web site in a separate browser window
Quick Links > National Cancer Institute	Link to NCI
Quick Links >Cancer Biomedical Informatics Grid (caBIG®)	LInk to caBIG®
Quick Links > NCI Center for Bioinformatics	Link to NCICB

Table 1.6 News page left sidebar descriptions (Continued)

Accessing NBIA from Another Application

Searches in NBIA can be launched from other applications configured with this feature. For specific information about launching NBIA from another application, refer to the online help or user documentation from that application.

When NBIA is launched by a search defined and initiated from another application, the system runs the query, then opens to the NBIA login page where you must login to see the search results. This search feature is designed to search the image repository to find images specified by the link in the other application, then to display images as identified there. Once you are logged into NBIA, if the search is successful, NBIA displays a viewer showing one or more search result image(s) you defined in the other application.

Example:

This feature is found in the caIntegrator application, I-SPY. The application I-SPY can launch a search for images identified as "before" and "after" (such as before and after treatment). If the search is successful, the before and after shots specified in the search criteria would display in NBIA. For I-SPY, see the download page on the NCICB web site: http://ncicb.nci.nih.gov/download/.

From this Search Results page that opens in NBIA, you can perform the following actions:

- Click **Add to Basket** to add the image to the Data Basket.
- Click **View Series** to display the Images for Series page. This page displays all of the image thumbnails for the series containing the image(s) displayed above the link.
- Click **Open Full Size JPEG** to display the image in full size mode (in a separate browser window).

Application Support

For any general information about the application, application support or to report a bug, contact NCICB Application Support.

Email: ncicb@pop.nci.nih.gov	When submitting support requests via email, please include: • Your contact information, including your telephone number. • The name of the application/tool you are using • The URL if it is a Web-based application • A description of the problem and steps to recreate it. • The text of any error messages you have received
Application Support URL	http://ncicb.nci.nih.gov/NCICB/support
Telephone: 301-451-4384 or toll free: 888-478-4423	Telephone support is available Monday to Friday, 8 am – 8 pm Eastern Time, excluding government holidays.

Using NBIA Online Help

The online help has been written to help you master the NBIA software.

To access online help in NBIA, use any of the following methods:

- Click the **Help** menu option on the top menu bar to open the complete online help project.

  Note: You can access online help without being logged into NBIA.

- Click the **Help** icon or button at the top of each page to open a context sensitive topic.

Once you are in online help, an array of options helps you locate topics of interest.

- Context-sensitive help displays online help topics that correspond to the “form” or page from which help was opened. Click the TOC button ( ) at the top left of the title bar to open the full online help directory.
- Follow hypertext links or the **Related Topics** buttons in the help topics to open other closely related topics.

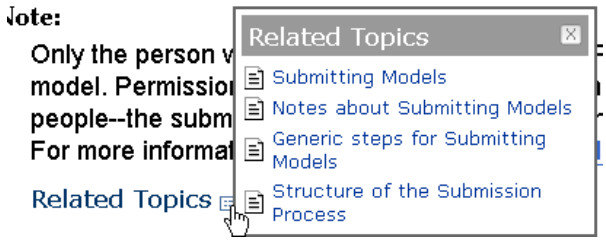


Figure 1.7 Related Topics button and associated list

- Locate topics using the table of contents that displays in the left panel of the online help project or the Index tab that displays at the top of the Table of Contents panel.

Perform word searches of Help by entering query text in the search text box.

CHAPTER 2

SEARCHING FOR IMAGES

This chapter describes how to search the NBIA database for images.

Topics in this chapter include:

- *Performing Searches* on this page
- *Specifying Remote Search Sites* on page 31
- *Working with Saved Search Queries* on page 32
- *Initiating Searches from Other Applications* on page 35

Performing Searches

NBIA enables you to search for images in the local NBIA *in vivo* image repository, and if available, to use the Remote Search function to search in remote imaging archives. NBIA is designed to perform the following tasks:

The NBIA *in vivo* image repository is designed as an archive which you can use to perform the following tasks:

- Search for images in simple or advanced search mode
- Combine search criteria defined in those searches with keyword searches of curated annotation data
- Save the search queries to be used repeatedly
- Review query histories
- As subjects, studies, series or images are located, save them to your data basket for download

  Note: When you download a series that have annotation files (indicated by **Yes** in the **Contains Annotations** column), they are automatically downloaded as well.

The NBIA submissions are organized in the following hierarchy, which is important to remember in creating your search query and reviewing search results:

Collection > Patient (Subject) > Study > Series > Images

NBIA provides three search modes:

- Simple Search
- Advanced Search
- Annotation Keyword Search

Some search pages contain toggle buttons to allow you to switch back and forth between the Simple Search and Advanced Search pages.

Each search page contains selection boxes, drop-down lists and text fields. Selected objects are used as search criteria.

1. **Selection Boxes.**
    - To move an item from the **Available** box to the Selected panel, highlight it in the Available box and click **Select**.
    - Click **Select All** to select all available items and move them to the Selected panel in one keystroke.
    - To remove an item from the Selected panel, highlight the item(s) and click **Remove** or click **Remove All** to remove all items.
2. **Drop-down Lists.** Click on a drop-down list arrow and select the appropriate choice.
3. **Text fields.** Enter the information requested.

Performing a Simple Search

A simple search consists of basic criteria; they can be expanded for an advanced search. Criteria that you select helps narrow the data search.

Note: The data shown in the search results come from the supplied source, not from what NBIA derives unless explicitly stated.

Perform the following steps to complete a Simple Search.

1. Initiate the search by following one of these options:
    - Click **Search Images** from the top menu bar.
    - Click the **Search Images** link in the Welcome panel or on the menu bar
    - Click the **Simple Search** link in the Welcome panel.
    - From the Advanced Search page, click the **Simple Search** button in the upper right hand corner. The Simple Search page displays with the basic criteria that may have already been selected.

Any of these options open the Simple Search page. The Nodes to Search section at the top of the page lists the remote databases you can identify to be searched outside the local NBIA imaging archive (*Figure 2.1*). (See *Specifying Remote Search Sites* on page 31.)

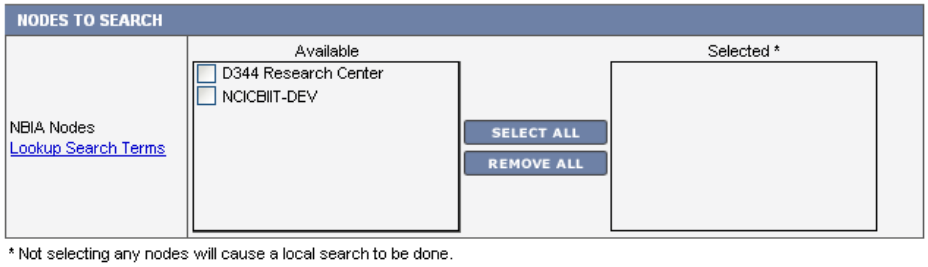


Figure 2.1 Simple Search page (top)

The remainder of the Simple Search page displays the search criteria (*Figure 2.2*).

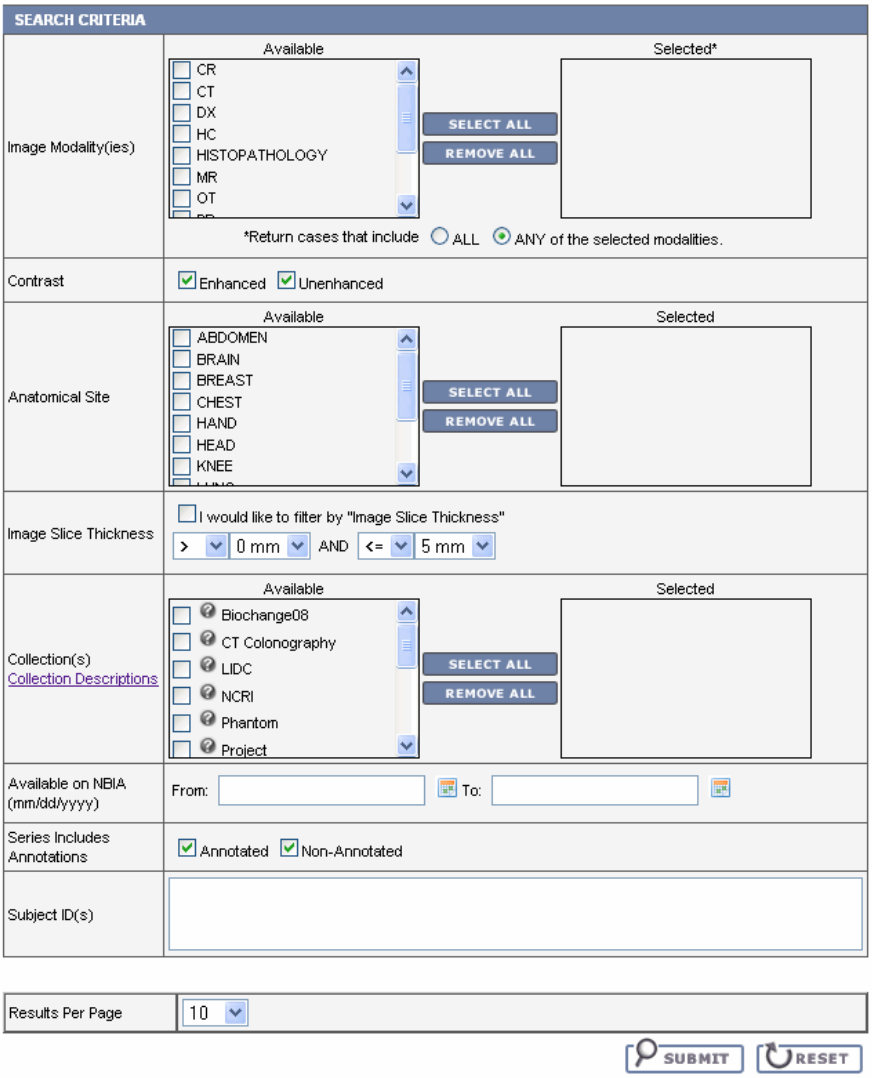


Figure 2.2 Simple Search criteria

2. Choose the search criteria described in *Table 2.1*.

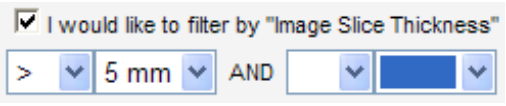
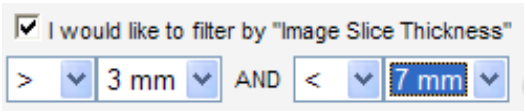
Simple Search Criteria	***Description***
Image Modality(ies)	Select from the available image classifications and move them to the **Selected** panel. If none are selected, then the search returns data for all modalities. Regarding the text options: • Select **ALL** to return only cases where all selections apply. • Select **ANY** to return cases to which one or more of the selections apply.
Contrast	Select either option: • **Enhanced** • **Un-enhanced** If you leave both options unselected, or if you select both options, the results will be the same--as though you had selected both options.
Anatomical Site	Select from the available anatomical sites. If none are selected, then the search returns data for all anatomical sites. **Note:** The value **NOT SPECIFIED** means that the field has no value, is empty or is not given a value as supplied by the source. If you select **NOT SPECIFIED**, then all images are found where anatomical sites are not specified.
Image Slice Thickness	Select **Image Slice Thickness** to allow you to select a thickness range or number. Use the first set of drop-down boxes only to select one thickness by using (=), greater than (>) or greater than or equal to (>=) to a selected thickness. For example, for a thickness greater than 5mm, select the > symbol followed by 5 mm. Leave the text box after "and" blank:  Use both sets of drop-down boxes to select a range of numbers. For example, for a range between 3mm and 7 mm, select > symbol then enter 5 mm. After "and" select the < symbol, then enter 7mm.  If you do not select this, then the search returns data for all image slice thicknesses.

Table 2.1 Simple Search criteria

Simple Search Criteria	*Description*
Collection(s)	Collections are NCI-defined groupings of image data sets. Select from the collections to which you have been assigned accessibility. If none are selected, then the search returns data for all collections. Click the (**?**) icon next to the collection name to display a popup with the collection description if it exists. Click **Collection Descriptions** for more information about the collections.
Available on NBIA (mm/dd/yyyy)	Using the date convention, enter a date range for images to be searched. All images submitted within that range and for which you have viewer privileges will be listed as part of the search results.
Series Includes Annotations	Select either option: • **Annotated** • **Non-Annotated** If you leave both options unselected, or if you select both options, then the search returns both series that have annotations and do not have annotations.
Results per Page	Select the number of search results per page the search will return. **Note:** This number also defines the number of thumbnail images that will display in the *Search Results (Images for Series)* on page 41.
Subject IDs	Enter one or more subject ID strings, separated by commas.

Table 2.1 Simple Search criteria (Continued)

3. Click the appropriate button to initiate, enhance or reset the search.

   a. Click **Submit** to start the search. The Search Criteria and Search Results (by Subject) pages display (see *Initiating Searches from Other Applications* on page 35).

   b. Click **Reset** to reset the search criteria to their default values.

Performing an Advanced Search

An Advanced Search has all fields available for a Simple Search, as well as expanded options. Criteria that you select helps narrow the data search. All advanced searches are made at the series level from the Advanced Search page.

To perform an Advanced Search, follow these steps:

1. Either before or after logging in, click the **Search Images** link in the Welcome panel of the NBIA home page. The Simple Search page opens by default. Proceed to step 2.

   – OR –

After logging in, bypass the Search Images link and click the **Advanced Search** link in the Search Images section. Proceed to step 3.

2. Click the **Advanced Search** link on the Simple Search page. Criteria that you may have already selected on the Simple Search page displays on the Advanced Search page.

3. At the top of the Advanced Search page, the Nodes to Search section lists the remote databases you can identify to be searched outside the local NBIA imaging archive (*Figure 2.1*). (See *Specifying Remote Search Sites* on page 31.)

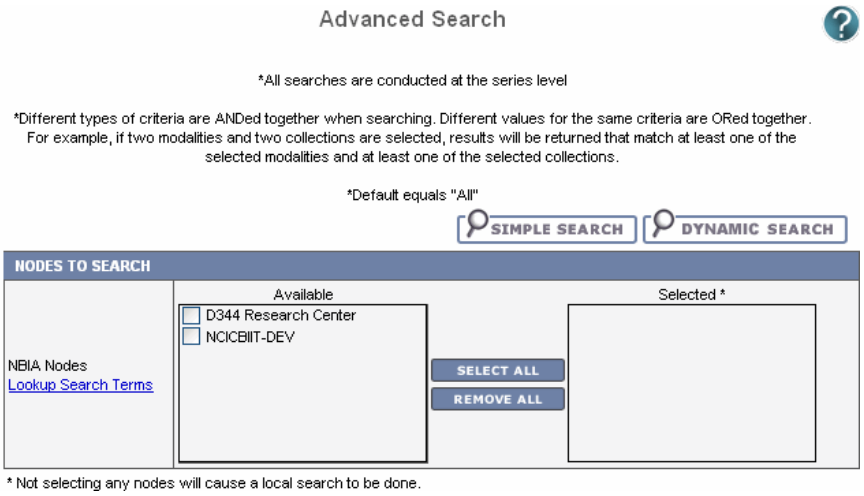


Figure 2.3 Advanced Search Page

The remainder of the Advanced Search page displays the search criteria (*Figure 2.4*).

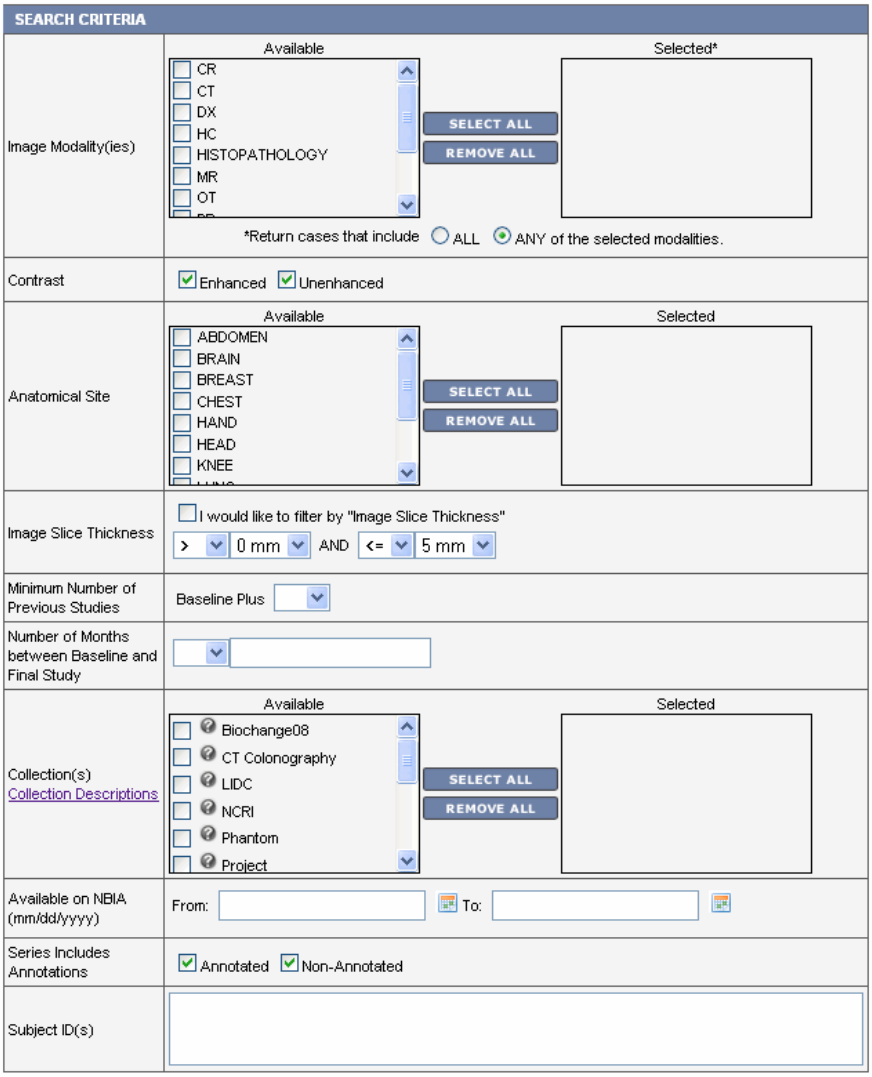


Figure 2.4 Advanced Search page

4. Choose the search criteria as described in *Table 2.2*.

Advanced Search Criteria	***Description***
Image Modality(ies)	Select from the available image classifications and move them to the **Selected** panel. If none are selected, then the search returns data for all modalities. Regarding the text options: • Select **ALL** to return only cases where all selections apply. • Select **ANY** to return cases to which one or more of the selections apply.

Table 2.2 Advanced Search Criteria

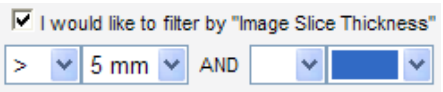
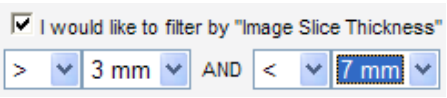
Advanced Search Criteria	*Description*
Contrast	Select either option: • **Enhanced** • **Un-enhanced** If you leave both options unselected, or if you select both options, the results will be the same--as though you had selected both options.
Anatomical Site	Select from the available anatomical sites. If none are selected, then the search returns data for all anatomical sites. **Note:** The value **NOT SPECIFIED** means that the field has no value, is empty or is not given a value as supplied by the source. If you select **NOT SPECIFIED**, then all images are found where anatomical sites are not specified.
Image Slice Thickness	Select **I would like to filter by Image Slice Thickness** to allow you to select a thickness range or number. Use the first set of drop-down boxes only to select one thickness by using (**=**), greater than (**>**) or greater than or equal to (**>=**) to a selected thickness. For example, for a thickness greater than 5mm, select > 5mm and leave the second text box blank:  Use both sets of drop-down boxes to select a range of numbers. For example, for a range between 3mm and 7 mm, select > 5 mm and < 7mm:  If you do not select this, then the search returns data for all image slice thicknesses.
Previous Minimum Number of Studies	Patients are selected if more than the entered number of studies has been performed on the patient. It is specified as baseline (first visit) plus the number of subsequent visits. Select a number from the drop-down list.
Number of Months between Baseline and Final Study	This allows selection of cases with the desired amount of follow-up. Select equal (**=**), greater than (**>**), greater than or equal to (**>=**), less than (**<**) or less than or equal to (**<=**) from the drop-down list and enter the desired number of months.

Table 2.2 Advanced Search Criteria (Continued)

Advanced Search Criteria	*Description*
Collection(s)	Collections are groupings of image data sets defined by a system administrator. Select from the available collections. Select from the available collections. If none are selected, then the search returns data for all collections. Click the (**?**) icon next to the collection name to display a popup with the collection description, if it exists. Click **Collection Descriptions** for more information about the collections.
Available on NBIA (mm/dd/yyyy)	Using the date convention, enter a date range for images to be searched. All images submitted within that range and for which you have viewer privileges will be listed as part of the search results.
Series Includes Annotations	Select either option: • **Annotated** • **Non-Annotated** If you leave both options unselected, or if you select both options, then the search returns both series that have annotations and do not have annotations.
Subject IDs	Enter one or more subject ID strings, separated by commas.
The following criterion displays below the DICOM criteria on the search page:	
Results per Page	Select the number of search results per page the search will return. **Note:** This number also defines the number of thumbnail images that will display in the *Search Results (Images for Series)* on page 41.

Table 2.2 Advanced Search Criteria (Continued)

5. Choose the modality manufacturer search criteria as shown in *Figure 2.5* and described in *Table 2.3*.

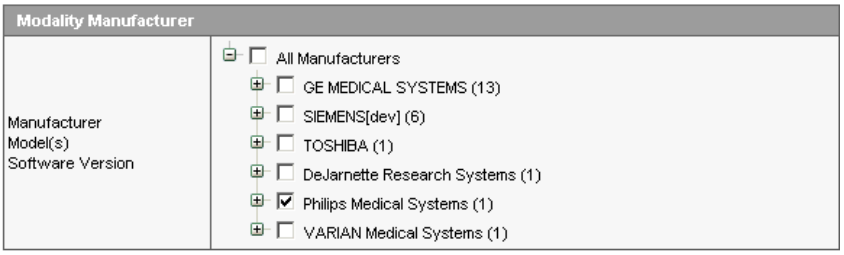


Figure 2.5 Modality Manufacturer Search Criteria

Criteria	*Description*
Manufacturer **Model** **Software Version**	This option displays a tree view of the manufacturers, models and software versions for the image modality. The number in parentheses indicates the number of items under that branch of the tree. • Click on the plus sign to expand a branch of the tree or click on the minus sign to collapse a branch of the tree. • Select a manufacturer, model or software version for your search by clicking in the box next to the item. Any items under the branch you selected are automatically selected for you. For example, Phillips Medical Systems was selected above. If none are selected, then the search returns data for all manufacturers.

Table 2.3 Modality Manufacturer Search Criteria

6. Choose the DICOM search criteria as shown in *Figure 2.6* and described in *Table 2.4*. For more information on DICOM, see http://medical.nema.org/.

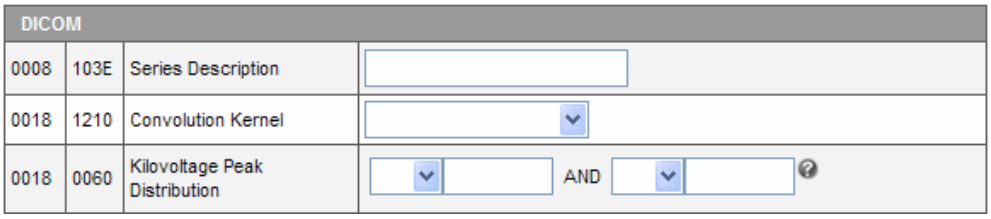


Figure 2.6 DICOM Search Criteria

Criteria	*Description*
Series Description	Enter your description of the Series. The Series Description is a DICOM tag with a group number of 0008 and element number of 103E. The specified text must exactly match a portion of an existing series description (not case-sensitive).
Convolution Kernel	Select from the available convolution kernels. Convolution kernel is a label describing the convolution kernel or algorithm used to reconstruct the data. The DICOM tag group number is 0018 and the element number is 1210. If none are selected, then the search returns data for all convolution kernels.

Table 2.4 DICOM search criteria

Criteria	*Description*
Kilovoltage Peak Distribution	Kilovoltage Peak Distribution is the kilo voltage output of the x-ray generator used by a modality. The DICOM tag group number is 0018 and the element number is 0060. The DICOM attribute name is KVP. Use the first set of drop-down boxes only (before the AND) to select a peak distribution by using (**=**), greater than (**>**) or greater than or equal to (**=>**). Use both sets of drop-down boxes to select a range of numbers. From the first drop-down box, select greater than (**>**) or greater than and equal to (**=>**) and specify a peak distribution. Then, select less than (**<**) or less than and equal to (**=<**) form the second drop-down list and specify the maximum peak distribution.

Table 2.4 DICOM search criteria (Continued)

7. Click the appropriate button to initiate, enhance or reset the search.
   a. Click **Submit** to start the search. The Search Criteria and Search Results (by Subject) pages display (see *Initiating Searches from Other Applications* on page 35).
   b. Click **Reset** to reset the search criteria to their default values.

After the search is submitted, search criteria are summarized in a Criteria Selected table. Search results display below the table. See *Viewing Search Results* on page 37.

Performing a Dynamic Search

A dynamic search allows you to build search criteria based on data values or ranges.

To launch a dynamic search in the NBIA database at image series level, follow these steps:

1. Either before or after logging in, click the **Search Images** link in the Welcome panel of the NBIA home page. The Simple Search page opens by default. Proceed to step 2.

   – OR –

   After logging in, bypass the Search Images link and click the **Dynamic Search** link in the Search Images section. The Dynamic Search page opens (*Figure 2.7*). Proceed to step 3.

2. Click the **Dynamic Search** button on the Simple Search page. The Dynamic Search page opens (*Figure 2.7*).

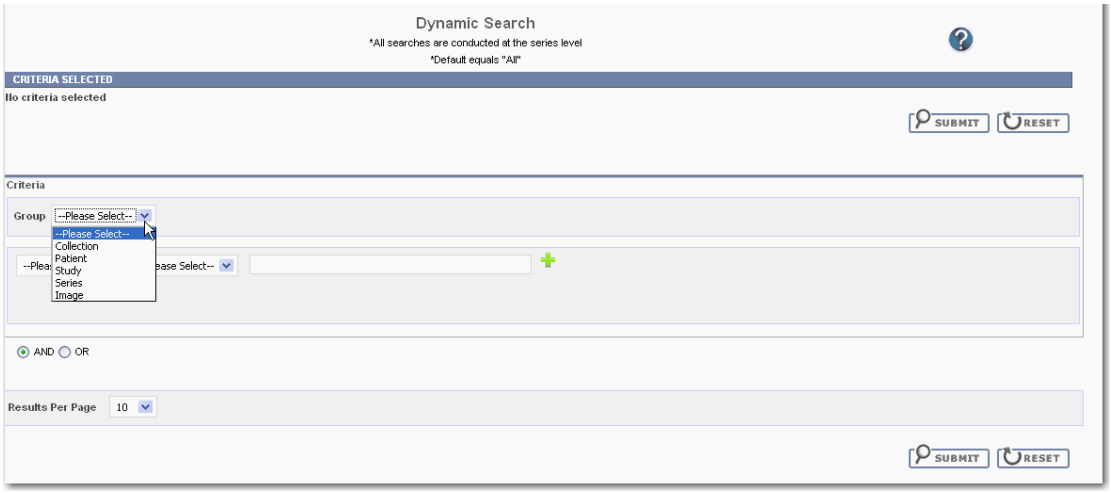


Figure 2.7 Dynamic Search page

3. On the Dynamic Search page, define criteria for the **Group** category, using the following suggestions:

   Select an option in the first drop-down list. Options include NBIA entities.

   Your selection drives the options that display in the second drop-down as well as the options or text box that display for the rest of the category. Select from the third drop-down the operand appropriate for the other selection. Where appropriate, enter the value or selected text in the drop-down list.

4. Click the **Add** icon ( ) for each set of criteria you define.

5. As you add criteria, they display in a table above the criteria fields on the page. To remove criteria you have added, click the **Remove** icon ( ).

6. Select the **And** or **Or** operand at the bottom of the page that determines whether the search finds image series that meet only all of the criteria or that meet any one of the criteria.

7. Indicate the Number of Results that will display per page. Default is set at 10.

8. To clear all fields and start again, click the **Reset** button.

9. To execute the search, click the **Submit** button.

For information about search results, see *Search Results Overview*.

After a search is submitted, search criteria are summarized in a Criteria Selected table. Search results display below the table. For more information about search results, see *Initiating Searches from Other Applications* on page 35.

Specifying Remote Search Sites

A remote search site is an image database residing outside of the local NBIA imaging archive. When you select a remote image database, Simple, Advanced, and Annotation Keyword Search pages display search results for the local NBIA imaging archive AND any selected remote sites.

To select remote search sites, follow these steps:

1. Initiate the search by following one of these options:
   - Click **Search Images** on the menu bar.
   - Proceed with a **Simple Search** in the search form that opens, as described in *Performing a Simple Search* on page 20.

     OR
   - Click **Advanced Search**, as described in *Performing an Advanced Search* on page 23.

   At the top of either page that opens, NBIA displays a Nodes to Search section (*Figure 2.8*).

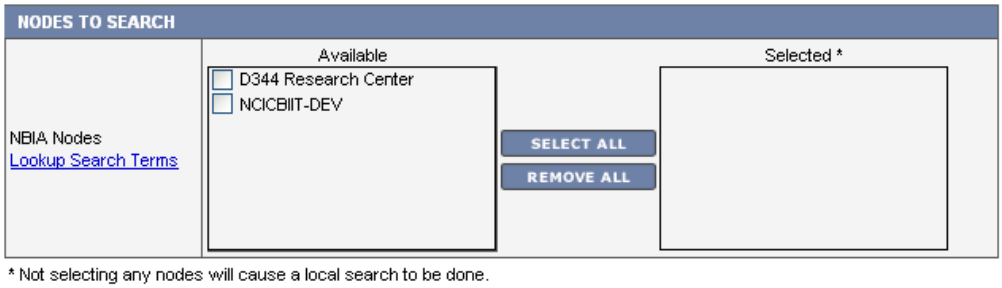


Figure 2.8 You can interact with remote sites by selecting remote nodes on the Search page.

2. The **Available** panel shows the name of the remote node. The name used is the research center display name from the service metadata (acquired from the grid index service). As you mouse over the available sites, a popup displays where the site resides, for example “local” or a URL to the service. Select the remote site(s) that you want to search.

   Note: By default, if you make no node selection, only the local node is searched.

3. Click the **Lookup Search Terms** link

   The search criteria: modality, anatomic site, convolution kernel, collection, and equipment are populated based upon what actually exists in the searchable nodes. These criteria do not distinguish which comes from where (in the main UI) but Lookup Search Terms breaks this down so you will avoid searching for modality X that isn't available on node Y.

4. Continue defining search criteria as described in *Performing a Simple Search* on page 20 or *Performing an Advanced Search* on page 23.

Note: Once retrieved, you can download remote node data using the Download Manager and the Download All button in the data basket. For more information, see *Managing the Data Basket* on page 45.

Working with Saved Search Queries

After you launch a search, the Search Criteria page displays the search criteria summary for your review. It allows you to save the query for future use. A text field for entering the query name and a **Save Query** button displays below the search criteria (circled in *Figure 2.9*).

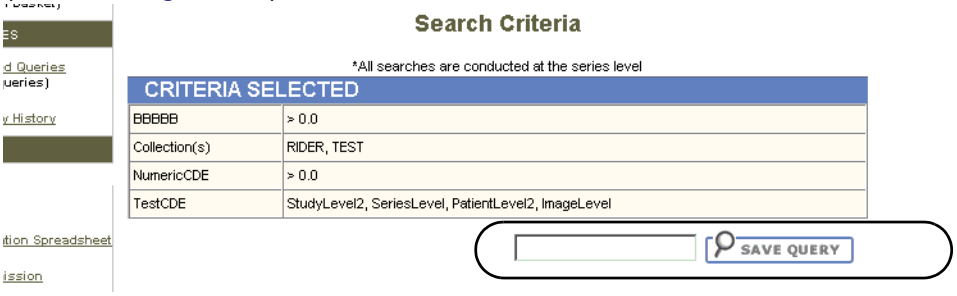


Figure 2.9 Save Query option

Note: If you launched the search from a previously saved query, then the text field and **Save Query** buttons do not display.

Saving a Search Query

To save a search query, perform the following steps:

1. Enter a name for the saved query in the **Save Query** text field.
2. Click the **Save Query** button.

NBIA attempts to save the query and displays a message that indicates the success or failure and suggests any additional actions that are required.

Managing Saved Queries

Click the **View Saved Queries** link in the left sidebar of the viewer to display the Saved Queries page (*Figure 2.10*).

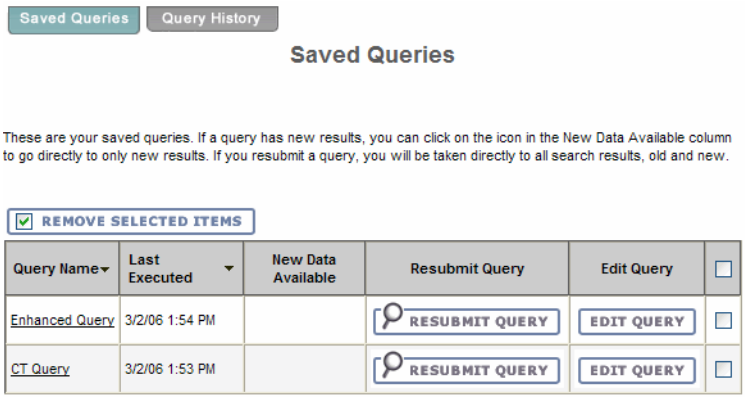


Figure 2.10 Saved Queries page

This page displays a table of all queries that are currently saved for you. Table columns are described in *Table 2.5*. The table is sorted in descending order by **Last Executed** date by default. You can also sort by **Query Name** by clicking on the down arrow next to the column title.

Saved Query	*Description*
Query Name	The name of the query displays as a link. The default is that the criteria themselves do not display. The link toggles whether the criteria for the saved query displays. Click the link to display/not display the criteria selected for the query.
Last Executed	The most recent date and time you executed the query displays. The time is displayed for the Eastern Time (US and Canada) time zone.
New Data Available	An icon appears if new data is available for the saved query. Click the icon to display the results (new data only) on the Search Results page.
Resubmit Query	Click the **Resubmit Query** button to submit the query using the saved criteria and display the results on the Search Results page. The results contain both old and new data.
Edit Query	Click the **Edit Query** button to display the Search page displaying the criteria that was saved for the query. You can then modify the criteria.
Check Box	Click the check box to mark the query for deletion. You can click the check box in the header to select all queries or you can select queries individually.

Table 2.5 Saved Query descriptions and tasks

You can perform the following actions on the Saved Queries page.

- **Remove Selected Items**--Check the box corresponding to any Saved Query line items and click the **Remove Selected Items** button to delete selected saved queries.

  After NBIA attempts to delete the queries, it returns you to the **Manage Saved Queries** page; a message displays that indicates the success or failure and suggests any additional actions that are required.

- **View Query History**--Click the **Query History** tab to display the View Query History page (see *Viewing a Query History* on page 34).

- **Resubmit a Saved Query**--If you resubmit a saved query, the name of the saved query displays on the Search Results page with the following message:

  These are the results of the {Name} saved query.

  If the query is executed for new data only, the following message appears:

  These are the results of the {Name} saved query (new data since {Date} only).

  {Date} is the last executed date used as part of the criteria of the query to make it only display new results.

Editing Saved Queries

Note: You cannot edit the name of a saved query. You can, however, re-run the query and save this as a new query with a new name. You can then go back and delete the old query.

Perform the following steps to edit a saved query.

1. Click the **Edit Query** button from the Saved Queries page (*Figure 2.10 Saved Queries page* on page 32) to display the Search page containing the criteria that was saved for the query. The name of the saved query being edited is shown in the following information message:

   Saved query {Name} is being edited. After pressing Submit and viewing the results, you will have the option to save the changes.

2. Edit the criteria for the saved query and click **Submit**.

3. The Search Criteria page (*Figure 2.11*) displays the criteria and the Search Results page displays the results for the edited criteria.

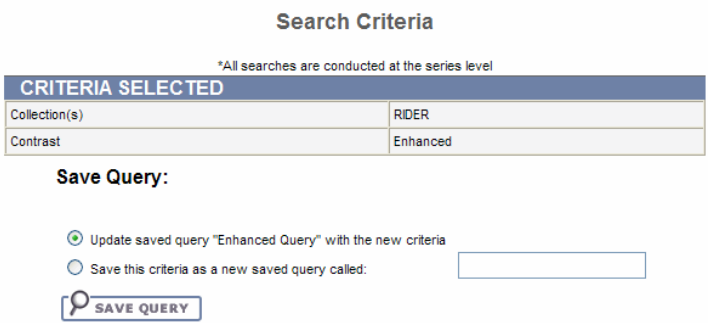


Figure 2.11 Save Edited Query

4. Choose one of the following choices (see *Figure 2.11*).

   a. Select **Update saved query {Query Name} with the new criteria** and click **Save Query**.

   b. Select **Save this criteria as a new saved query called**, enter a new query name and click **Save Query**.

   c. If you do not like the results returned by the criteria, navigate back to the Search page to try again.

   If you clicked the **Save Query** button, the system attempts to save the query and displays a message which indicates the success or failure and performs any additional actions that are required.

Viewing a Query History

Click the **View Query History** link in the left sidebar or the **Query History** tab from the Saved Queries page to display the Query History page (see *Figure 2.12*). The Query

History page displays a table of the last twenty queries that you executed which includes queries that are not saved and saved queries that are resubmitted.

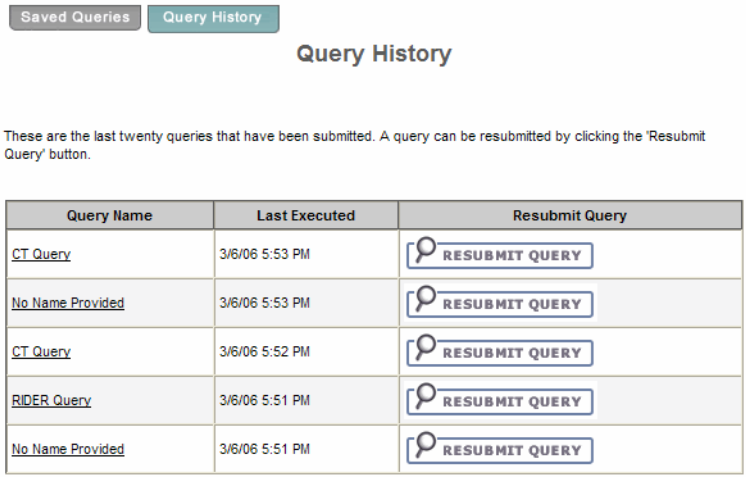


Figure 2.12 Query History page

The Query History table contains the data in *Table 2.6*

Field Name	***Description***
Query Name	The name of the query displays as a link. The link toggles whether the criteria for the executed query is displayed. The text of the link can appear three different ways depending on the situation • If the query was not saved, **No Name Provided** displays as the link. • If the query is a saved query that has not been edited since the last execution date, the name of the saved query is displayed. • If the query is a saved query that has been edited since the last execution date, the name of the saved query is displayed with an asterisk. The asterisk refers to a message at the bottom of the page which is a warning to you that the results are based on the criteria that were used at the time the query was run, not the criteria that is currently saved for the query.
Last Executed	The date and time that you executed the query. The time is displayed for the Eastern Time (US & Canada) time zone.
Resubmit Query	Click the **Resubmit Query** button to submit the query using the saved criteria. The results display on the **Search Results** page (see *Initiating Searches from Other Applications* on page 35).

Table 2.6 Query History

Click the **Saved Queries** tab to display the Saved Queries page (see *Managing Saved Queries* on page 32).

Initiating Searches from Other Applications

Searches in NBIA can be launched from other applications. For more information, see *Accessing NBIA from Another Application* on page 35.

CHAPTER

3

VIEWING SEARCH RESULTS

This chapter describes how to view results from NBIA database searches.

Topics in this chapter include:

- *Search Results Overview* on page 37
- *Working with the Data Basket* on page 45
- *Obtaining DICOM Viewers* on page 51

Search Results Overview

In reviewing search results, it is important to review the hierarchy of submissions in NBIA.

Collection > Patient (Subject) > Study > Series > Images

Search results display first as *Search Results (by Subject)*. As you click on **Show Studies** links in those results, NBIA drills down to *Search Results (Studies for Subject)* where more details for studies display. From these results, when you click **Show Images** links, the *Search Results (Images for Series)* display, revealing thumbnail images within a series.

Note: At any point in the process of reviewing results, you can add items--the entire patient, a study, or a series—to your data basket by selecting the items and clicking the **Add to Basket** button. This identifies objects to be downloaded.

When you download a series that has annotation files (indicated by **Yes** in the **Contains Annotations** column), they are automatically downloaded as well.

Search Results (by Subject)

The Search Results (by Subject [patient]) page displays search results categorized by each host site you searched, named at the upper left of each set of results. You can collapse each set by clicking the down arrow by the host site.

The results of the search by subject (*Figure 3.1*) display in table format. Below the table, the numbered sequence of hits in the visible list displays as well as the number of entire hits.

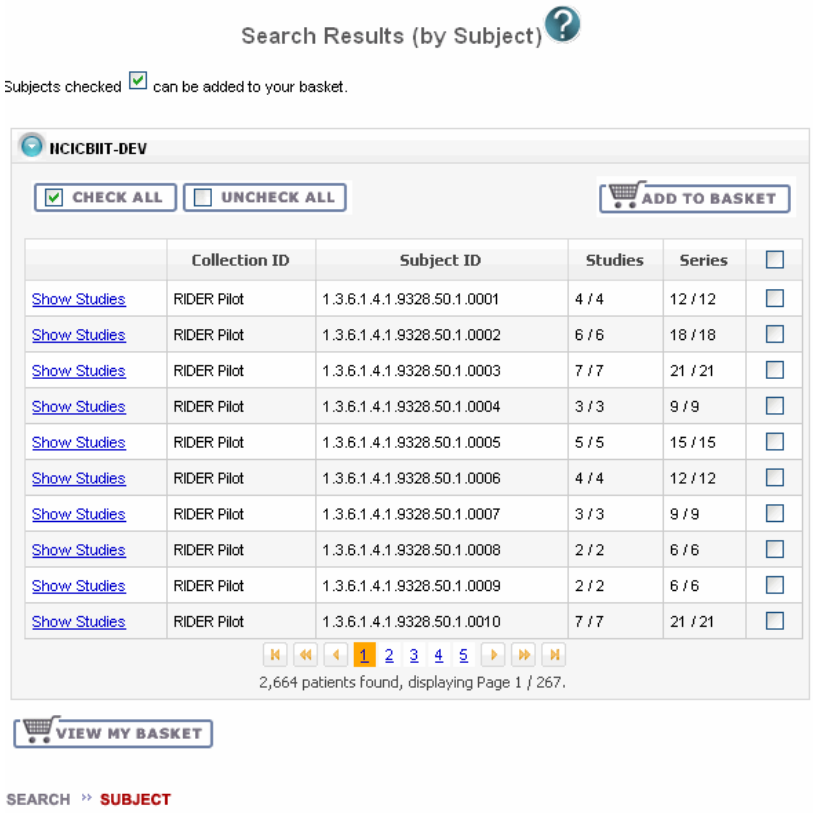


Figure 3.1 Search Results by Subject

Table 3.1 describes each item in the Search Results (by subject) table.

Search Result	***Description***
Show Studies	Click this hypertext link to display the studies for this subject.
Collection ID	Collection identifier
Subject ID	Subject identifier
Studies	Contains two numbers: the number of studies that met the criteria / total number of studies for the subject
Series	Contains two numbers: the number of series that met the criteria / total number of series

Table 3.1 Search Results (by Subject)

Search Result	Description
[Basket] Check Boxes	Use the check boxes to mark the result for addition to your data basket. Click the **Check All**/**Uncheck All** buttons to select or deselect all results, or you can select results individually.

Table 3.1 Search Results (by Subject) (Continued)

1. Click any **Show Studies** links to display the studies for this subject where more details for studies display. See *Search Results (Studies for Subject)* on page 39.

   Some search results may display, but results from a disallowed collection are not included.

   When you save a query when you have access to a collection, and then resubmit the query later (after your access to the collection has been revoked), the system still has the disallowed collection criteria saved.

2. You can perform the following actions on the Search Results (by Subject) page (*Figure 3.1*).

   - Click the down arrow next to a column title to sort the column by that item.
   - Click the **Previous** (or **<<**) and **Next (**or **>>**) buttons at the bottom of the table to display the previous or next set of results. The numbers of the results displayed is shown.
   - Click the page number links to move to a specific page of results.
   - Click the **Add to Basket** button to add items selected to your data basket (see *Adding Items to Your Basket* on page 45).
   - Click **View My Basket** to display the items in your data basket (see *Managing the Data Basket* on page 45).

Search Results (Studies for Subject)

When you click a study in the *Search Results (by Subject)* page, the Search Results (Studies for Subject) page opens, showing Study level in the bread crumbs at the page

bottom. This page displays specific information for each study: the **Study ID**, **Date** and **Description** followed by a table containing the details for each study (*Figure 3.2*).

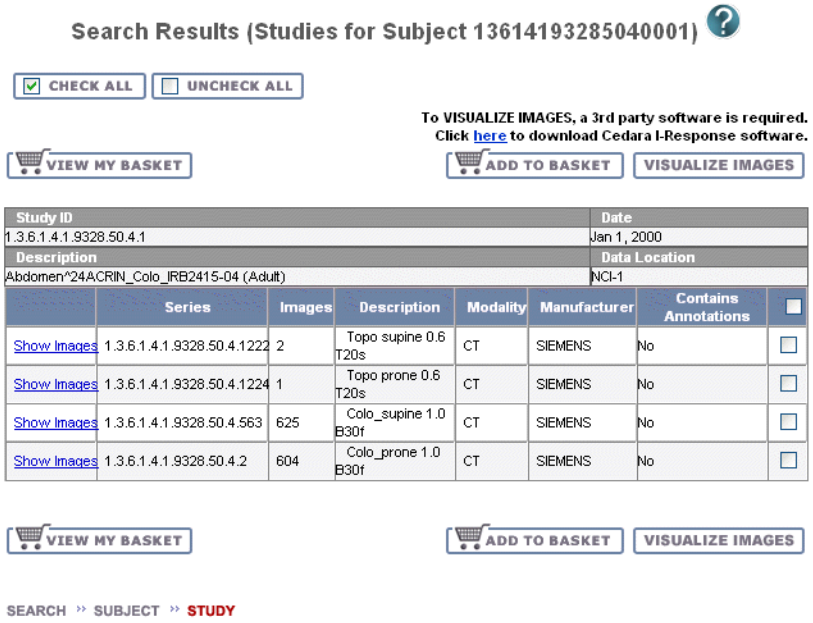


Figure 3.2 Studies for Subject Search Results

Table 3.2 describes each item in the Search Results (for subject) table.

Search Result	***Description***
Show Images	Click this link to display the images for the series.
Series	Series ID
Images	Number of images for that series which can be displayed by clicking the **Show Images** link. This number includes both visible images that meet the criteria and those that do not. For example, where "3/4" displays, there are 4 studies total for the patient, and 3 of those 4 have images that met the search criteria. Note: If you select a series with more than two images, you can view an animation of the image collection. For more information, see *Search Results (Images for Series)* on page 41 and *Viewing Image Animation* on page 43.
Description	Description of the Series
Modality	Modality
Manufacturer	Name of the manufacturer
Contains Annotations	Displays **Yes** or **No,** revealing if there are annotation files. **Yes** becomes a hypertext link if the series has corresponding annotations for which the content type has been identified by curators. Hover over or click the link to display the annotation content type(s). If annotation files are available, but the content type is not known, **Yes** displays but is not hypertext.

Table 3.2 Studies for Subject Search ResultsSearch Results for Studies for Subject

Search Result	Description
Check Box	Click the check box to mark the result for addition to your basket. You can click the check box in the header to select all results or you can select results individually.

Table 3.2 Studies for Subject Search ResultsSearch Results for Studies for Subject

- To visualize images identified on the search results page, you must have the Cedara I-Response Workstation (IRW) installed on your system.

  Note: If you do not have the IRW installed, click this link to the NCICB GForge Download page: https://gforge.nci.nih.gov/frs/?group_id=312. Toward the top of the page, click the **I-ResponseR.v.[x.zip** hypertext link**.** You can download the corresponding user's guide, accessible from the same site, as well.

1. Start the Cedara IRW on your system.

   Note: If the IRW is not executed, you cannot visualize images. NBIA will inform you to install/execute the Cedara first.

2. Click the **Visualize Images** button to open the IRW window and visualize images in the data basket. For complete instructions on how to use the IRW, refer to the Cedara online help.

   Note: If you are not logged in, when you click this button, NBIA informs you that you must log in to access this feature.

3. You can perform the following additional actions on the Search Results (Studies for Subject) page.

   - Click the **Check All** or **Uncheck All** buttons to select or deselect all items on the search results page or click the check boxes individually.
   - Click the **Add to Basket** button to add items selected to your data basket (see *Adding Items to Your Basket* on page 45).
   - Click **View My Basket** to display the items in your data basket (see *Managing the Data Basket* on page 45).

Search Results (Images for Series)

When you click the **Show Images** link in the *Search Results (Studies for Subject)* page, this opens the Search Results (Images for Series) page. The bread crumbs at the top and bottom of the page show that you are viewing image thumbnails at the series level.

A table at the top of the page (*Figure 3.3*) contains information defined for the series, followed by an option to launch an animation of the images (where there are more than two). Thumbnail images for the series you selected are also display on the page. The

number of images that displays corresponds to the results per page that you defined when you set the search criteria. .

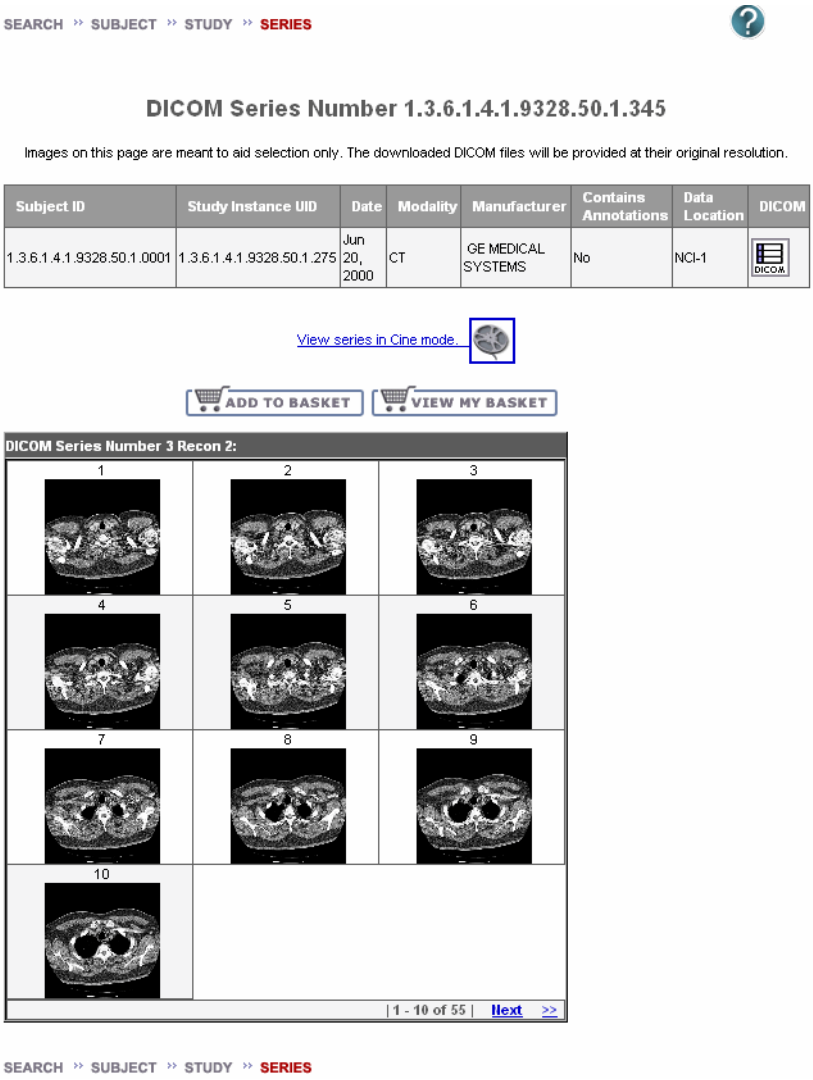


Figure 3.3 Images for Series Search Results

Table 3.3 describes each item in the Search Results (Images for Series) table.

Search Result	***Description***
Subject ID	Subject identification number
Study ID	Study identification number
Date	Date
Modality	Modality
Manufacturer	Name of the manufacturer

Table 3.3 Images for Series Search Result fields

Search Result	*Description*
Contains Annotations	Displays **Yes** or **No,** revealing if there are annotation files. **Yes** becomes a hypertext link if the series has corresponding annotations for which the content type has been identified by curators. Hover over or click the link to display the annotation content type(s). If annotation files are available, but the content type is not known, **Yes** displays but is not hypertext.
Data Location	Displays the name of the center housing the data
DICOM	Click the **DICOM** icon to open a new window that displays DICOM metadata about the first image in the series. Each image series can have multiple images whose thumbnails display in this search results page. While each image has its own DICOM file whose attributes may vary slightly from the others in the series, the DICOM file that opens displays values for only the first image in the series. These values represent the values for all images in the series.

Table 3.3 Images for Series Search Result fields (Continued)

You can perform the following actions on the Search Results (Images for Series) page:

- Launch an animation of the series (where there are more than two thumbnails). Under the table summarizing the series information, click **View Movie** at the end of the sentence, “To view an animation of the images in this series, ...”. For more information, see *Viewing Image Animation*.
- To enlarge an image, float your cursor over an image thumbnail (or click it). A larger version of the image displays in the upper right hand corner of the page.
- Click the **Add to Basket** button to add the entire series to your data basket (see *Adding Items to Your Basket* on page 45). Images that you add become highlighted on the Images for Series page.

  Note: You cannot add images individually to the data basket.
- Click **View My Basket** to display the items in your data basket (see *Managing the Data Basket* on page 45).

Viewing Image Animation

From the *Search Results (Images for Series)* (DICOM Series) page, you can launch an animation of thumbnails where there are more than two images in the series. Click the **View Series in Cine Mode** link.

You can also launch the animation of an image series from the Data Basket. In the **View** column of the Data Basket, click the magnifying glass symbol, ( ) corresponding to the series you want to view. On the View Series Images page, click the **View Series in Cine Mode** link.

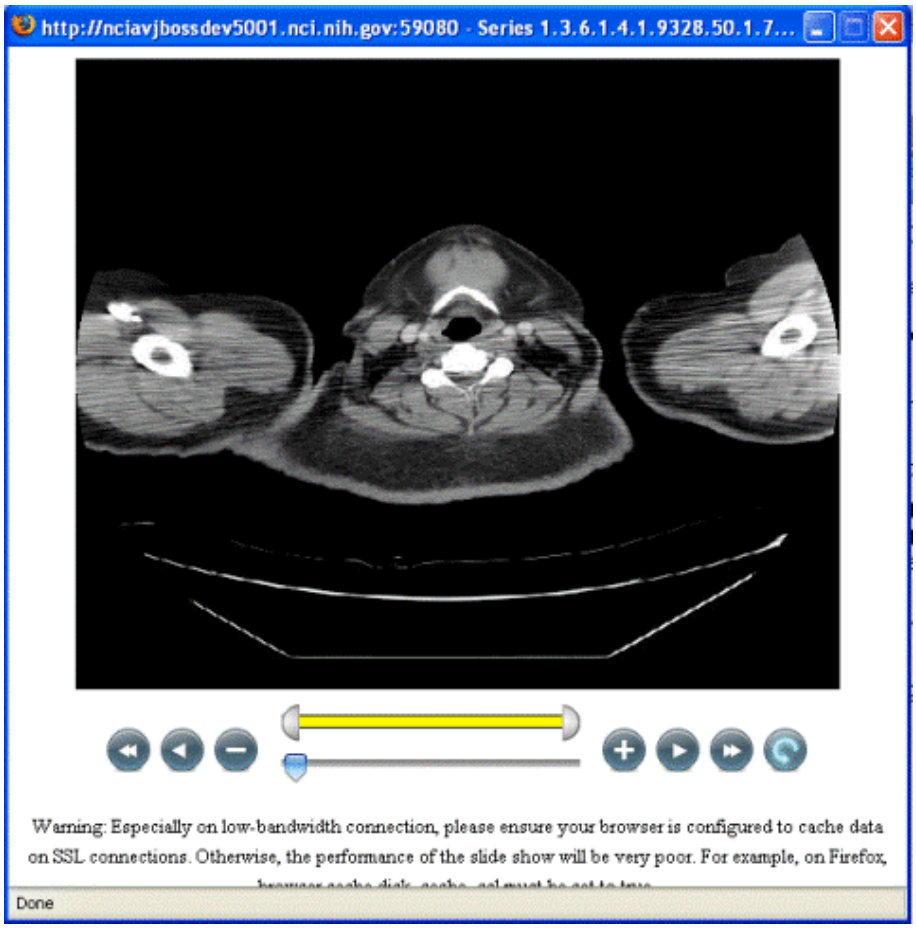


Figure 3.4 Image animation viewer

When the viewer opens (*Figure 3.4*), click the play forward button (. NBIA proceeds to display the images sequentially in a "movie".

The following table describes the action of each of the animation controls.

		Drag the arrow to set which frame of the movie displays. This also monitors the progress of the animation.
		Drag ends of the yellow bar to vary the range of images playing.
a. .	b. .	a. Click to return to the first image in the series. b. Click to progress to the last image in the series.
a.	b.	a. Click to play animation backwards through the series b. Click to play animation forward through the series

Table 3.4 Image animation controls

a.	b.	a. Click to stop the animation; click successively to display one image at a time, moving backwards through the series. b. Click to stop the animation; click successively to display one image at a time, moving forward through the series.
c.		Click to cycle the animation forward or backward. Once set, the animation continues *ad infinitum*.

Table 3.4 Image animation controls

Note: If the animation if very sluggish, be sure and note the warning at the bottom of the page.

Working with the Data Basket

As you review search results in NBIA, you can add items at any level to your data basket for subsequent download.

Adding Items to Your Basket

You can add items to your basket at the subject [patient], study, and series levels.

1. To select items, use the **Check All** and **Uncheck All** buttons above the search results tables to select or deselect all items on a given search results page or click the corresponding check boxes for items individually.

   Note: Check boxes do not exist on the Images for Series page. If you click the **Add to Basket** button on the page, all of the images in the series are added to the Data Basket.

2. When satisfied, click the **Add to Basket** button.

The items added to the basket are highlighted on the page from which you initiated this task.

Managing the Data Basket

Click the **View Contents** link in the left sidebar, **Manage Data Basket** from the top menu bar or the **View My Basket** button from Search Results pages to display the My

Data Basket page. This page displays a table of all the items in your data basket (*Figure 3.5*).

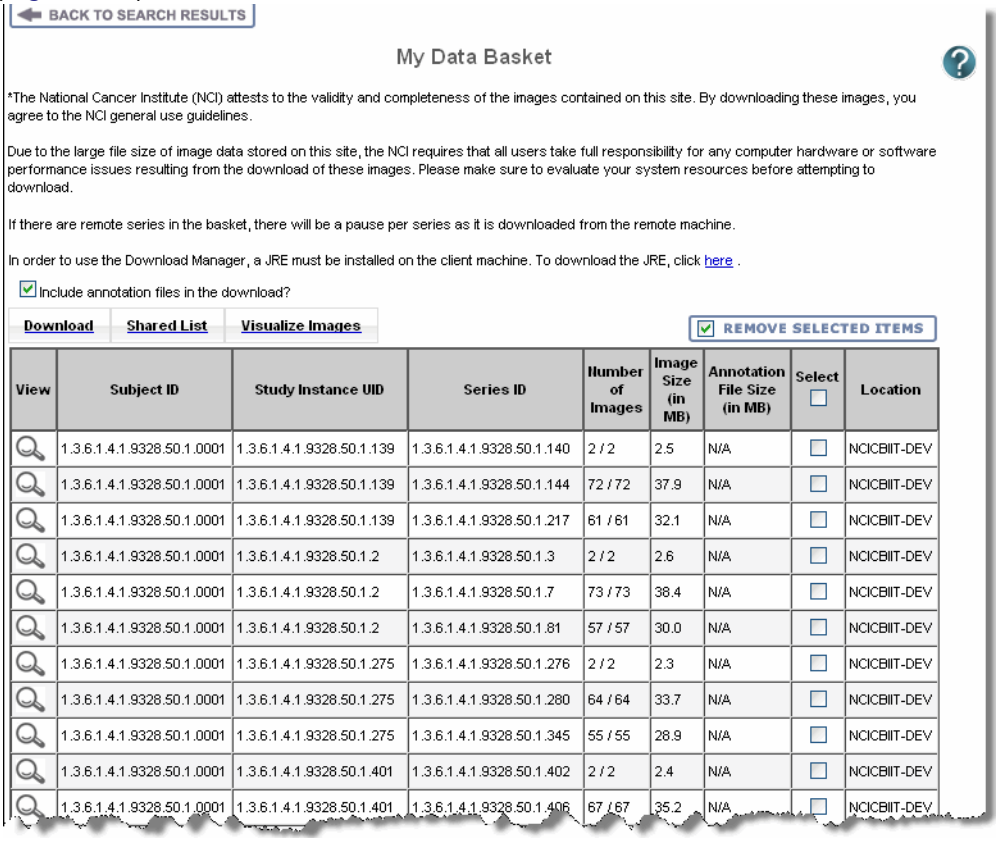


Figure 3.5 My Data Basket page

Table 3.5 describes each item in the Data Basket table

Data Basket Field	***Description***
Subject ID	Subject identification number
Study Instance UID	Study identification number
Series ID	Series identification number
Number of Images	Contains two numbers: Number of Images Selected / Number Available
Image Size (in MB)	Size of the image file in megabytes
Annotation File Size (in MB)	Size of the annotations file in megabytes. This column is **N/A** if there are no annotations.
Select	To remove the item from the basket, select the check box and click the **Remove Selected Items** button.

Table 3.5 My Data Basket field

Data Basket Field	Description
Location	The location of the image "Local" represents the NBIA imaging archive that you are currently logged into. Other locations are remote sites selected with the Remote Search option. For more information about the Remote Search option, see *Specifying Remote Search Sites* on page 31.

Table 3.5 My Data Basket field (Continued)

The total size of your data basket and the estimated download time displays at the bottom of the My Data Basket page (*Figure 3.5*).

To delete an item from your basket, select the check box of an item and click the **Remove Selected Items** button. You can continue to add items to your data basket from the Search Results pages.

Note: If the series you mark for deletion is part of a Shared List, a message appears alerting you to that fact. The message also includes the name of the shared list and the shared list creator's email address. This gives you the opportunity to back out of the deletion. For more information see *Working With Shared Lists*.

Working With Shared Lists

NBIA provides a way for you to identify and label a collection of image series for you to use or share with other NBIA users.

Creating a Shared List

Note: Anyone can create a shared list. Once you do so, you will need to record the exact name of the shared list to distribute to others who may want to use the list. That is the only way they can access it.

You can initiate creating a shared list by clicking the **Create Shared List** link under **Tools** on the left sidebar or by putting series in the data basket. To create a shared list, follow one of the two following methods:

Left Sidebar Link:

1. Click the **Create Shared List** link under Tools on the left sidebar.
2. In the Create My Shared List page that opens:
   a. Enter a **Name** for the list (required).
   b. Add **Comments** and a **Hyperlink**, where appropriate, which links to relevant or more detailed information about the list (optional).
   c. In the **Upload File** field, enter the name of a `.csv` file that includes all of the series instance IDs you want to be in the shared list. This file should have a series instance UID per line.
   d. Click **Submit**.

   Image series from the uploaded file is added to the data basket.

Data Basket

1. Add image series that you want to include in the shared list to the data basket.
2. Click the **Create Shared List** button.
3. In the Create My Shared List page that opens:
   a. Enter a **Name** for the list (required).
   b. Add **Comments** and a **Hyperlink**, which links to relevant or more detailed information about the list (optional).
   c. Click **Submit**.

Note: NBIA will warn you that not all public users will have access to your list if the list contains any non-public image series.

Editing a Shared List

Note: From the data basket, you can export image series instance IDs to a .csv file for later use in creating or editing a shared list. See *Exporting a Shared List* on page 49 for more information.

You can edit the list only by uploading a `.csv` file with all the series instance IDs for the list. You can only edit shared lists you have created yourself.

To edit a shared list, follow these steps:

1. Click the **Edit Shared List** link under Tools on the left sidebar.

   The Edit My Shared List page that opens displays a list of Shared Lists you have created.
2. Click the name of the shared list you want to edit. The details for the list open on the page.
3. Enter an appropriate comment or hyperlink that provides relevant information about the edited shared list.
4. Browse for the `.csv` file you want to upload. Doing so replaces the current shared list.

Tip: You cannot delete a shared list.

Because editing a shared list is only possible by replacing it, you might consider backing up a shared list when you create it. To do so, export the shared list as a `.csv` file when you create it. See *Exporting a Shared List* on page 49.

Searching a Shared List

Any user can search for a shared list. To do so, follow these steps:

1. Click the **Search Shared List** link under Tools on the left sidebar.
2. In the Search Shared List page that opens, enter the exact name of an existing shared list. To retrieve the list, you must know the exact name given to the shared list.
3. Click **Submit** to launch the search or **Reset** to clear the field and start again.

If the search is successful, NBIA adds the image series in the shared list to the data basket. If the shared list includes series for which you do not have visibility rights, NBIA informs you that the displayed shared list is not complete.

Exporting a Shared List

Once you have created a shared list, you can export it as a `.csv` file. To do so, open the shared list in the data basket. Above the data table, click **Shared List** and select **Export Series ID**.

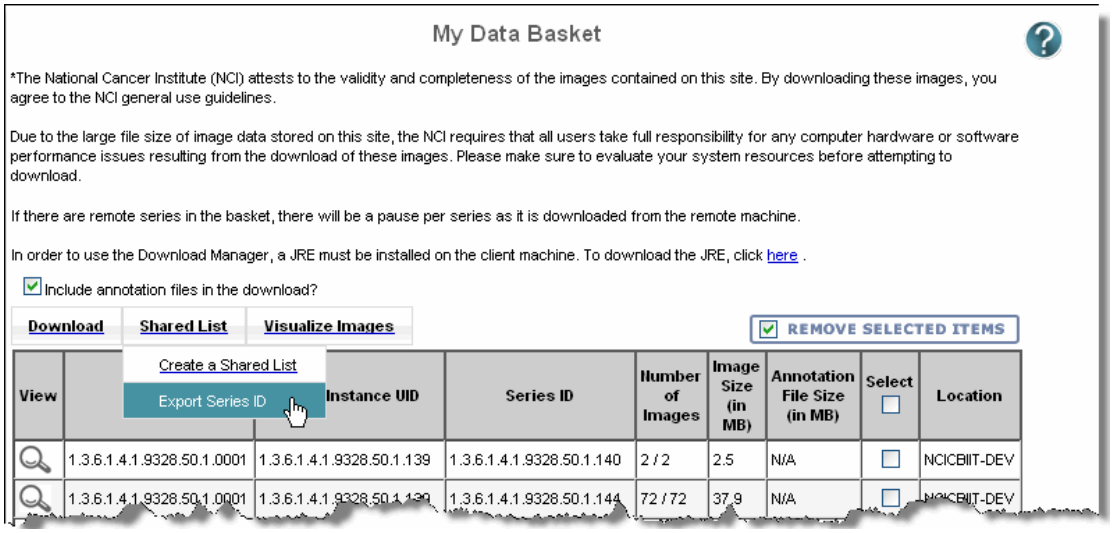


Figure 3.6 Data basket displaying export shared list options

The export begins, with a dialog box that opens asking if you want to open (in Excel) or save the file.

Downloading the Data Basket

In the data basket, select the items you want to download.

Tip: Disable popup blockers before you download the files. If you do not want to download the annotation files, deselect the **Include annotation files in your download** check box.

Once you are satisfied with your selections, click **Download** at the top left of the results table. Select one of the following modes for the download:

Download All Items

Download Manager

Download All Items

- **HTTP (HTTP threshold is less than 3GB)**

  If total size of the selected files is below the HTTP download threshold of 3 GB, you can click the **Download All Files** button to download your files or click the *Download Manager* button. If you click **Download All Files**, NBIA zips the files and displays a progress bar to show the progress of the download. As the file is zipped, the progress bar updates. Once the file is 100% zipped, enter the path (or destination) where the file should be downloaded on your local workstation.

The status of the download, including the percent downloaded, displays until the download is completed.

Note: If you are not logged in, you have a download limit of up to 3 GB of data. NBIA warns you and stops you when you add data that will exceed the limit. You cannot download the data until you remove something from the basket. Alternatively, you can login, after which the data basket limit is relaxed.

- **Download threshold is greater than 3GB)**

  If the size is above the HTTP download threshold, NBIA hides the Download All Files button, leaving you to download your files using the Download Manager. See *Download Manager* on page 50 for more information.

Download Manager

An alternative to downloading files using the *Download All Items* is to use the Download Manager.

- This feature allows you to replicate items in your data basket, downloading them to your local machine.
- There is no limit to the total size of the download if you use the Download Manager.
- You cannot download items from remote sites using the Download Manager.

Note: The Download Manager initially lists everything in your Data Basket. After you open the Download Manager, however, you can remove from the Download Manager the items you do not want to download .

To download objects using the Download Manager, follow these steps:

4. Click the **Download Manager** button. This opens the Download Manager (*Figure 3.7*).

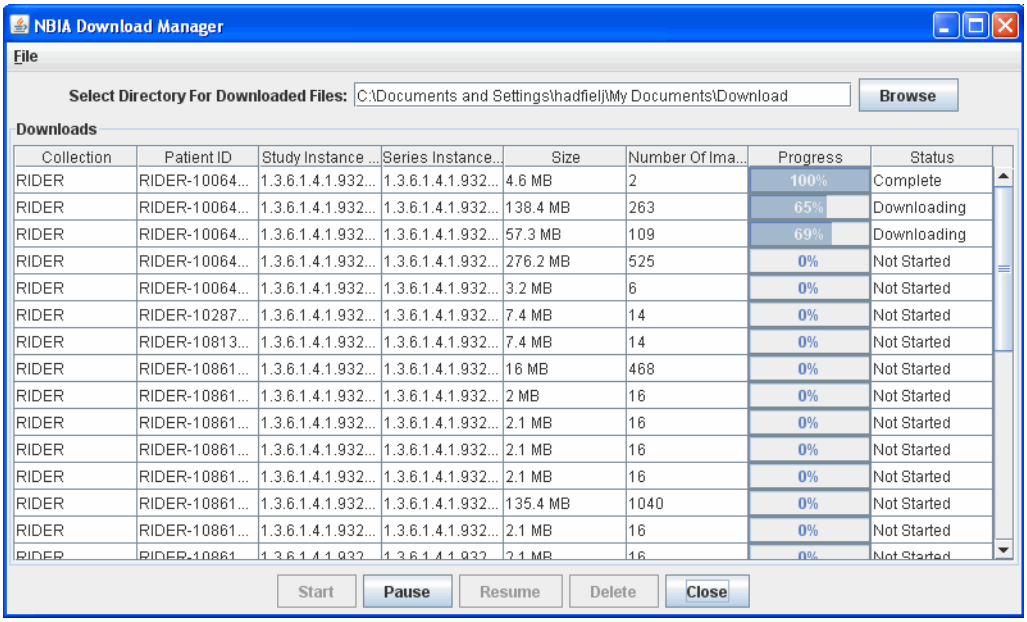


Figure 3.7 Download Manager showing a download in process in the Progress column

Note: You must have version 6 or higher of the Java Runtime Environment (JRE) installed to be able to open the Download Manager.

If JRE 6 is installed, the Download Manager attempts to start. To run the application, you must click **Run** in the Warning dialog box indicating the application's digital signature cannot be verified. Before doing so, you can select the **More Information...** link at the bottom of the dialog to view a more detailed report of any security issues. Then you can evaluate whether you want to run the application.

- If JRE is installed but the version is older than version 6, the browser automatically attempts to upgrade the JRE to version 6o.

If the JRE is not installed, when you click the Download Manager button, the browser prompts you for what it should do with the JNLP file. The Data Basket page includes a link to a page where you can download the JRE: http://www.java.com/en/download.

.The Download Manager lists series items you selected in the data basket. You can mouse over the Patient ID, Study Instance and Series Instance columns to reveal the complete corresponding IDs or you can resize the column by grabbing the header.

1. Browse for the destination where you want the images/annotations to be downloaded.

   Note: If you want to delete items from the Download Manager, select and click the **Delete** button. NBIA does not delete the same item from your data basket when you do so.

2. Click **Start** to execute the download. You can monitor the download in the Progress column. The Status column indicates when the download for each item is complete.

3. At any point in the process, you can click the **Pause** and **Resume** buttons to temporarily stop and restart the process.

   Note that files downloaded this way are not zipped. The downloaded file(s) are stored in a file structure such as Collection name/patient id/study instance UID/ series instance UID/image SOP instance UID under the destination folder.

Obtaining DICOM Viewers

Images in the NBIA repository are stored in the medical image standard, Digital Imaging and Communications in Medicine (DICOM). A DICOM file stores the digital image along with a series of tags that contain metadata about the image such as patient ID, study ID, patient weight, anatomic site, and so forth. For more information about DICOM, see http://medical.nema.org/.

Below are selected links to freeware DICOM image viewers, provided for your convenience. This is not an endorsement of the listed viewers. Many other DICOM viewers are available on the Internet.

Note: The images in this *in vivo* image archive must be downloaded before you can view them using the viewers.

- ImageJ (runs on Linux, Mac OS 9, Mac OS X, Windows, and the Sharp Zaurus PDA): http://rsb.info.nih.gov/ij/
- OSIRIX (runs on MAC OSX): http://www.osirix-viewer.com/
- ClearCanvas Workstation: http://www.clearcanvas.ca/dnn/Creations/PACSWorkstation/tabid/64/Default.aspx

CHAPTER

4

SUBMITTING IMAGES

This chapter describes how to submit images to NBIA.

Topics in this chapter include:

- *Image Submission Overview* on this page
- *Configuring Security for Newly Submitted Data* on page 59
- *Alternative Image Configuration/Submission Methods* on page 68

Image Submission Overview

When you submit an image to NBIA using FileSender, the process follows this path:

In summary, the process involves the following steps:

1. Installing the CTP (Clinical Trial Processor) client and FileSender.
2. Unzip the file and open both tools on your local machine.
3. In FileSender, locate the image(s) to be submitted.
4. Update the anonymization script.
5. FileSender sends the image(s) to the RSNA Clinical Trial Processor (CTP) client, which anonymizes the data to comply with patient privacy policies.
6. The CTP client forwards the image(s) over the internet to the CTP server.

7. The CTP server transfers the image(s) to your NBIA database repository.

See also *Alternative Image Configuration/Submission Methods* on page 68.

Configuring the CTP Client

To submit images, you must have the CTP client and FileSender both installed and running on your machine. For more information, refer to the NBIA Installation Guide, available here: http://gforge.nci.nih.gov/frs/?group_id=312. For information regarding your specific installation issues, contact NCICB Application Support ncicb@pop.nci.nih.gov.

1. To start your local CTP client, execute the `ctp.bat` (`ctp.sh` in Linux) in the CTP-Client/CTP folder.
2. Open a browser and type in the URL for your local installation. You can find the port number by looking in the `config.xml` file in the CTP folder. The third line of the standard file is "<Server port="24080" />". If changes are made to this number, the localhost port needed to access the CTP admin page will change in tandem.

   Tip: You may want to refer to the helpful information about this part of the CTP setup on the NCI wiki at this URL: https://wiki.nci.nih.gov/display/Imaging/CTP+Pipeline+Templates+for+NBIA

   The CTP Client Console opens in your browser.

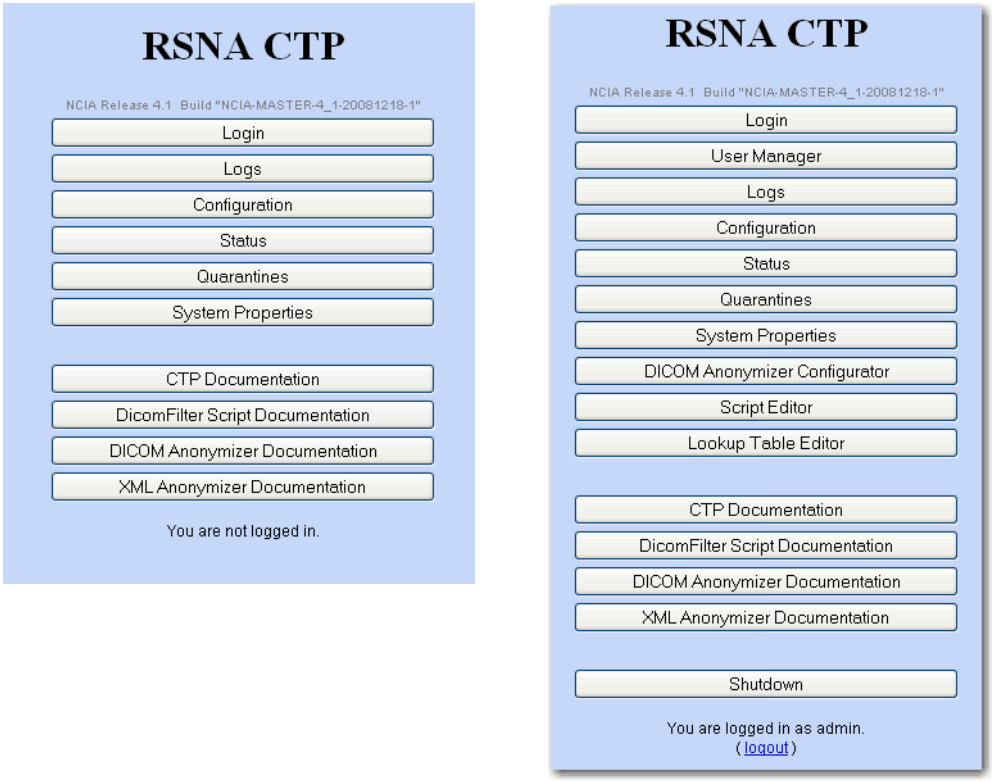


Figure 4.1 CTP client main menu, when you are not logged in (left), and when you are logged in (right)

Note: You do not need to be logged in to the CTP client to review some of the pages. See *Figure 4.1*. You do need to be logged in to configure the anonymizer.

3. Click the **Configuration** button. This opens the Configuration page, described below. For more information on using the Anonymizer Configurator, see https://wiki.nci.nih.gov/x/LQTx.

4. On the Configuration page, verify the URL in the bottom section of the page, HTTP Export. This should point to the import service of the CTP server to which the images will be exported from the CTP client. You cannot change the text on this page; it must be changed in the `config.xml` file referred to in step 2.

5. Once file(s) are received in the CTP client, they are anonymized there. To configure the anonymization parameters, you must be logged in. Get the login credentials from your administrator.

6. Click the **DICOM Anonymizer Configurator** button on the CTP client main page. (This option appears only after you are logged in.)

7. Click the hypertext link in the first screen that opens. This takes you to the page where you can enter, verify or edit anonymization parameters (*Figure 4.2*). The default configuration is from the `da.script` file.

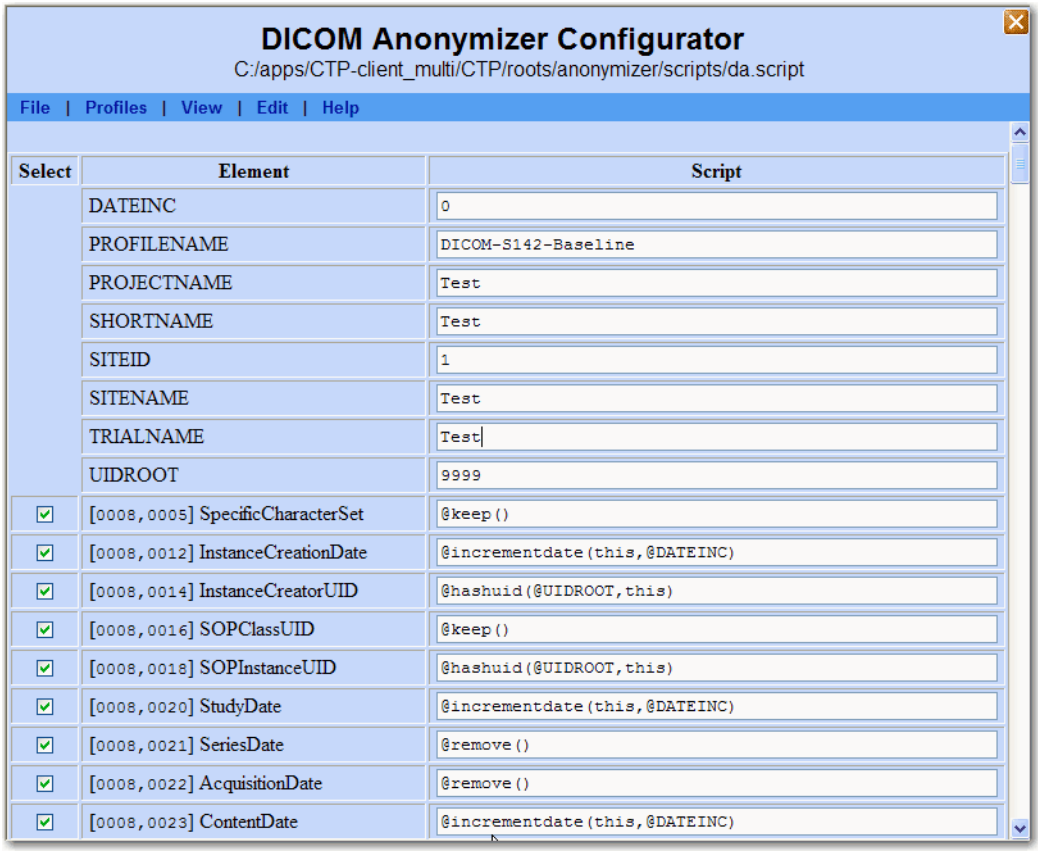


Figure 4.2 DICOM Anonymizer Configurator page from the CTP client.

This page indicates how the image's DICOM tags are modified to anonymize the data, thus meeting HIPAA regulations to preserve patients' privacy. For example, the patient's birth date and patient ID are anonymized.

The following fields on this page are required:

- **PROJECT NAME**--This must correspond to whatever you are going to call the collection. The name might indicate the type of data, the research center that provided the data, or the collection type such as CT colonography for CT images of colonography.
- **TRIAL NAME** – This must be the same as the project name.
- **SITE NAME** – This identifies where data is coming from. Example = BioU. Several different collections could be submitted from there, but all would have same site name. The NBIA user does not see the source site for the data, except when using the Verify Submission feature, described in *Viewing Submission Reports* on page 75.

Note: Authorization controls pay attention to the site. So a user, based on permissions, for example, may be able to search on collection X//site A, but not collection X//site B.

- **SITE ID** – This is a predetermined, unique ID that always maps to the specific site. This is always constant for a given site and must be used when you submit images to your image repository. Example: BioU = 17. The four values above are required; without them the submission will fail.

The following field can also be configured.

- **UID ROOT** – This ID, assigned by an NBIA administrator, remains unique for every submitted collection from a particular research center. The anonymizer uses the identifier, typically a prefix for series instance UIDs, to determine the values for DICOM tags.

  If you are submitting only to your local isolated system, you, as an administrator, can determine the UID root yourself. If, at some point, you foresee using caGrid®, you should use valid, globally registered UID root numbers. Information on how to register can be found here: http://www.dclunie.com/medical-image-faq/html/part8.html#UIDRegistration

  If a true globally unique ID Root is obtained, the UID Root will need to be appended by an UID Root End for each collection/site combination that will be submitted to that node of NBIA. This will keep the UIDs truly unique. For example:

  UID Root = 555

  Collection A, Site 1 UID Root End = .1

  Collection A, Site 2 UID Root End = .2

  Collection B, Site 1 UID Root End = .3

  Collection B, Site 2 UID Root End = .4

  Collection A, Site 1 UID Root = 555.1

Collection A, Site 2 UID Root = 555.2

Collection B, Site 1 UID Root = 555.3

Collection B, Site 2 UID Root = 555.4

Other fields can also be configured. The configuration and operation of the Anonymizer Configurator is described at this location: https://wiki.nci.nih.gov/x/qQLj.

Note: The current CTP client contains a WG 18 S142 compliant anonymization baseline. For more information about the Working Group 18, Supplement 142 profile, see https://wiki.nci.nih.gov/x/xIL-/.

Once the CTP client has been configured, you can begin the submission process in FileSender.

Submitting Images

1. To open the FileSender, execute the `filesender.bat` (`filesender.sh` in Linux) the CTP-Client/FileSender folder..

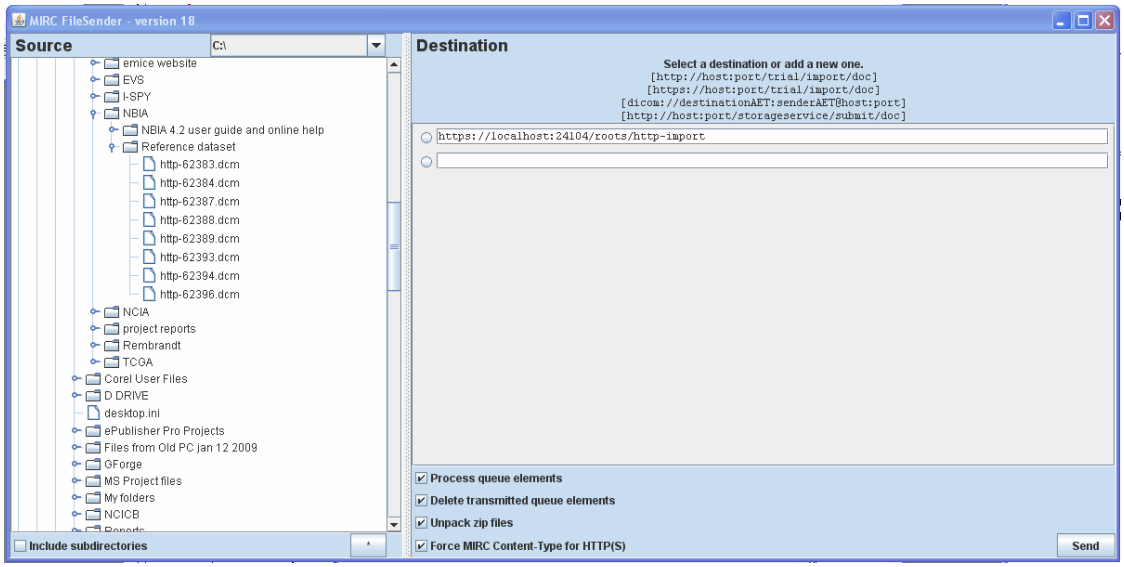


Figure 4.3 FileSender working panels

2. In the left panel of FileSender, select one image or a folder of images to be submitted (*Figure 4.3*). You cannot select and submit multiple individual images at one time.
3. Select **Include Subdirectories** if you want subdirectories to your selection to also be submitted.
4. Select the default URL for the destination in the Destination panel. This is the host and port number where the CTP client is located.

   Note: The CTP client must be started to successfully submit images.
5. Leave the check boxes at the bottom of the Destination panel checked in the default selections.

6. Click **Send** to execute the submission process to the CTP client. The Destination panel displays the progress of the task.
7. In the CTP client, click the **Status** button on the main page.

   All of the fields supply information about the submission, but you might check especially the **Last File Received At** fields under each section. Correlate the date and time stamp when the submission was received with the time you sent the image(s). Refresh the page periodically to view the latest status.
8. If the Status tab does not indicate that the file(s) were received, verify the URL on the Destination tab of File Sender.

Troubleshooting Unsuccessful Image Submission

1. If you suspect your files have not been submitted successfully to the CTP client, click the **Quarantines** button in the CTP client main page to see if any files have been received there. If no files are quarantined, the quarantine indicators remain at zero.

   Note: Each stage of processing in CTP can cause a quarantine, therefore the quarantine count is broken down by stage.
2. To see the list of quarantined files per stage, click the corresponding hyperlink for that stage.
   - If something is quarantined in the Import stage, the file is likely not a DICOM file.
   - If something is quarantined in the Anonymizer stage, there is likely an error in the anonymization script. Common problems with the anonymization script are:
     - Incorrect syntax (see the CTP section of the mircwiki for syntax:http://mircwiki.rsna.org/index.php?title=CTP-The_RSNA_Clinical_Trial_Processor)
     - referring to parameters that don't exist. For example if @PROJECTNAME is referred to in a rule, but not defined as a parameter.
3. If the quarantine feature indicates a file has been sent there, click the corresponding hypertext link. You will be able to view one row link to the DICOM header file of the quarantined file.
4. Click the **Log** button on the CTP client main page.
5. Click the hypertext link to the `CTP.log` or `All.log` to review the activity of the CTP client. This may help you determine the cause of an unsuccessful submission.
6. The same troubleshooting rules apply for CTP server, but the stages are different.
   - If a quarantine occurs in the storage service, a likely cause is that there is not enough disk space or the drive is not accessible by CTP.

- If a quarantine occurs in the export service, there is likely something more subtle "wrong" with the DICOM file that NBIA doesn't like. For example, submitting an image that has the same series instance UID as a different, previously submitted image could cause a quarantine here. Looking in the log may reveal the issue.

To trouble-shoot server-side submission problems or for other submission issues, contact NCICB Application Support: http://ncicb.nci.nih.gov/NCICB/support or ncicb@pop.nci.nih.gov.

Configuring Security for Newly Submitted Data

Once you have submitted data to NBIA, then the NBIA administrator must go into UPT to set up security for the image data. You, as the administrator, must create protection elements (PE) and at least one protection group (PG) for the data just submitted. Specifically, you must create a protection element for a collection/project and a separate protection element per site within a collection. All projects must have at least one site.

After the PEs and PGs have been created, you should assign users and or user groups to the PGs. Their access to the imaging data is dependent upon the roles they were assigned in the UPT by an NBIA administrator. For more information, see *Assigning a User to a Protection Group With Roles* on page 63.

Note: While the name of NBIA (National Cancer Imaging Archive) has been changed to NBIA (National Biomedical Imaging Archive), until notified otherwise, the acronym in the UPT configuration remains “NCIA”.

Creating a Protection Element

Tip: You must be an NBIA administrator to perform this task.

You must create two protection elements for the data you just submitted: a protection element for the collection and a second protection element for the site.

Collection Protection Element

Note: While the name of NCIA (National Cancer Imaging Archive) has been changed to NBIA (National Biomedical Imaging Archive), until notified otherwise, the acronym in the UPT configuration remains “NCIA”.

1. Open UPT and log in to NCIA.
2. Select the **Protection Element** menu option at the top of the page.

3. Click the **Create a New Protection Element** link. This opens a dialog box where you enter details for the collection PE you are creating (*Figure 4.4*).

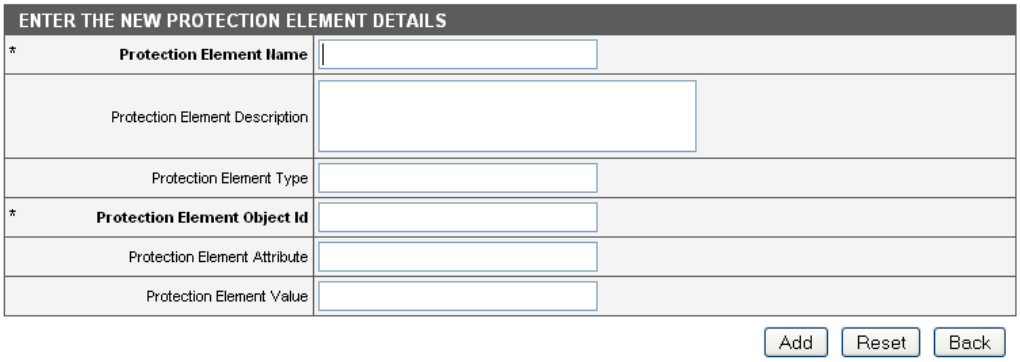


Figure 4.4 Dialog box for creating a new protection element

4. Enter PE details as described in *Table 4.1*

Protection Element Fields	***Description***
Protection Element Name	Enter the **Protection Element Name**. You must use the project name set during the submission process. You can retrieve this from the DICOM Anonymizer Configurator tab in CTP, or if the `da.script` file has been successfully updated, get the values from there. **Note:** Every name must have "NCIA" pre-pended to the project name: NCIA.{project_name}.
Protection Element Description	This "tells" UPT where the protection element name is coming from. The convention is that you MUST enter ***NCIA.TRIAL_DATA_PROVENANCE*** for this field.
Protection Element Type	Leave this field blank.
Protection Element Object ID	This is the same as the PE name.
Protection Element Attribute	For a collection you MUST enter ***NCIA.PROJECT***.
Protection Element Value	For NBIA, leave this field blank.

Table 4.1 Fields for describing a Protection Element

5. Click **Add** to add the PE to UPT.

You must add a PE for both the collection itself and the combination of the collection + site. Some of the NBIA tools don't just look at what collection data is part of but also where it is coming from. Examples are data for which verifying the submission and QC tools granting access is based on what site it is coming from as well as what collection the data is part of.

You must now create a *Site Protection Element* for the same set of submitted images.

Site Protection Element

After you have created a *Collection Protection Element*, you must also create a site protection element for the same set of submitted images. To do so, follow these steps:

1. In UPT, select the **Protection Element** menu option at the top of the page.
2. Click the **Create a New Protection Element** link.
3. In the Enter the New Protection Element dialog box that opens, enter site PE details as described in *Table 4.2*

Protection Element Fields	*Description*
Protection Element Name	Enter the **Protection Element Name** you used in *Collection Protection Element* on page 59, adding "//" at the end of the name, then enter the site. name: {project_name}//{site name}. You must use the project name set during the submission process. You can retrieve this from the DICOM Anonymizer Configurator tab in CTP, or if the `da.script` file has been successfully updated, get the values from there. **Note:** Every name must have "NCIA" pre-pended to the project name: NCIA.{project_name}.
Protection Element Description	Enter the same **Protection Element Description** you used when you created the collection protection element: The convention is that you MUST enter ***NCIA.TRIAL_DATA_PROVENANCE*** for this field.
Protection Element Type	Leave this field blank.
Protection Element Object ID	Enter the **Protection Element Object ID**, which is the same as the PE name: {project_name}//{site name}.
Protection Element Attribute	Enter the **PE Attribute**. For a site, you MUST enter ***NCIA.PROJECT//DP_SITE_NAME.***
Protection Element Value	For NBIA, leave this field blank.

Table 4.2 Fields for describing a Site Protection Element

4. Now return to the main **Protection Element** menu at the top of the page. Click **Select Existing Protection Element**.
5. Leave the search criteria blank and and click **Search**. The search returns a list of all PEs.
6. Scroll down to find the values for the newly entered PEs to verify them. To edit the PEs, click the **View Details** button on the left sidebar.

Creating a Protection Group

Note: While the name of NCIA (National Cancer Imaging Archive) has been changed to NBIA (National Biomedical Imaging Archive), until notified otherwise, the acronym in the UPT configuration remains "NCIA".

Once data is identified as being part of a protection element, you must assign the PE to a protection group to associate the PE with a user. You might add the PE to the existing **NCIA.PUBLIC** protection group, thus providing wide access to the data. If you prefer a more limited distribution, you can create a unique protection group to which you can assign the PE. To do so, follow these steps:

1. Choose the **Protection Group** menu item from the top menu in the UPT.
2. Click the **Create a New Protection Group** link.
3. In the form that opens, enter details as described in *Table 4.3*.

Protection Group Fields	***Description***
Protection Group Name	Enter a name of choice. There are no naming conventions for protection groups
Protection Group Description	Add a description, however, this is optional.
Protection Group Large Count Flag	Leave this button set at **No**.

Table 4.3 Fields for describing a Protection Group

4. Click **Add** to add the PG or click **Reset** to clear the fields.
5. If there are multiple sites for a collection, you might want to create a PG for each site. This process would grant access to verify submissions per site.

Associating Protection Elements with Protection Groups

You are setting up security to make a collection visible on NBIA and grant users access to the data. If you prefer that the data set have limited access, an NBIA admin can assign a user to a particular protection group and assign roles which allow the user data access. If the PE is set to public, a user only needs to be in the public group to have access.

Once you have created the necessary protection group(s), you must associate the protection elements you created with the protection group(s).

1. In the UPT, choose the **Protection Group** menu option from the top menu.
2. At the top of the Protection Group tab, select **Select an Existing Protection Group**.
3. Leave the search field blank to find all PGs or enter identifying information for the protection group in the query fields. Click **Search**.
4. Select the PG of interest and click **View Details**.

5. In the details page, click the **Associated PEs** button. This opens a page that displays PEs already associated with the protection group. This page also allows you to add new assignees to the PG.

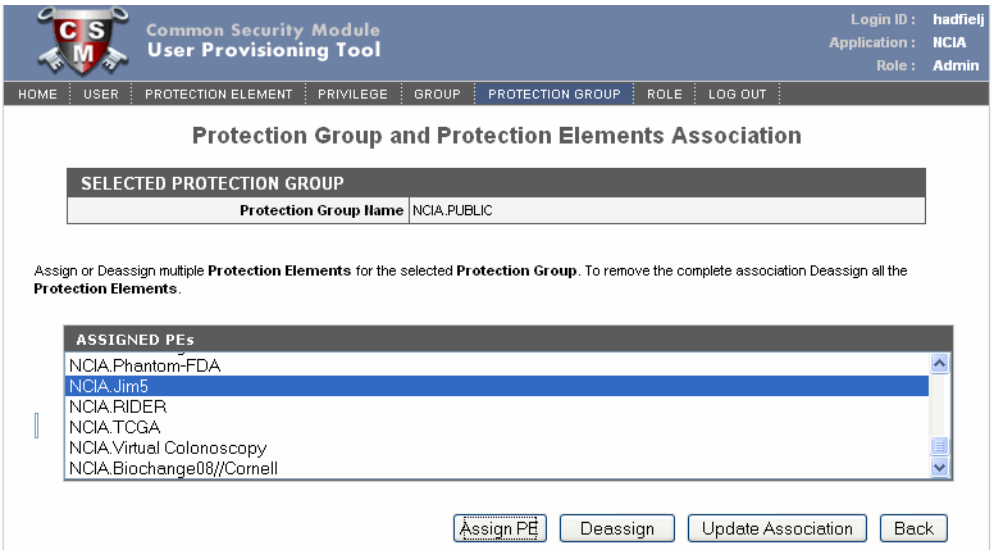


Figure 4.5 UPT page displaying PEs that are part of the selected PG

6. To add a new PE to the selected PG, click the **Assign PEs** button.
7. In the page that opens, enter any appropriate information about the PE you want to assign to the PG, or leave all query fields blank. Click **Search**.

   The search results displays protection elements that meet your criteria. All protection elements display if you left the search criteria blank.
8. On the search results page, scroll through the results, if necessary, and select the check box corresponding to the protection element you want to add to the protection group. Click **Assign PE**. Typically, you will do this on a one to one basis, so you would associate one protection element to the group.

Assigning a User to a Protection Group With Roles

Once the PEs and PGs have been created, the next step is to assign users and/or user groups to a protection group. The users/user groups can be assigned roles by the NBIA administrator when they are created in the UPT or they can be assigned as you complete the steps in this section. For more information, see *Creating a New NBIA User* on page 69 as well as the UPT documentation corresponding to the UPT application itself.

The feature described in this section could be used if multiple users are going to have the same roles for the same data set. You can create a user group for those multiple users, then assign the user group to the PG with roles. See *Creating a Protection Group* on page 61.

Note: While the name of NCIA (National Cancer Imaging Archive) has been changed to NBIA (National Biomedical Imaging Archive), until notified otherwise, the acronym in the UPT configuration remains “NCIA”.

The role structure in NBIA is defined as described in *Table 4.4*:

Role	*Functionality*
NCIA.READ	Search capability
NCIA.MANAGE_VISIBILITY_STATUS	Privilege to access QC Tool
NCIA.VIEW_SUBMISSION_REPORT	Privilege to access Verify Submission

Table 4.4 Roles that can be assigned in NBIA to users and/or user groups

The roles you assign then allow the user to perform tasks in NBIA.

To assign a user to a Protection Group (PG), follow these steps:

1. In the UPT home page, click the **User** menu option.
2. Click the **Select an Existing User** link.
3. Perform a search to locate the user you want to assign to either a user group or to a protection group. You can enter any user detail such as **Last Name** to launch the search, or launch a search for all users by clicking the **Search** button having entered no search criteria.

   Note: UPT returns a maximum of 100 users in an undefined search.
4. Select the radio button corresponding to the selected user and click **View Details**.
5. To assign a user to a group, click **Associated Groups** at the bottom of the User Details page. Select the group to which you want to assign to the user, click **Assign**, and **Update Association** at the bottom of the page.

   Note: The advantage of working with user groups is that you do not have to assign roles to each user individually. You can assign users to a user group to which you assign a role, and then assign that user group to the protection group, or you can assign a role collectively to a protection group after it is created.
6. To assign a user to a PG, in the User Details page, click **Assign PG and Roles**.

7. In the User, Protection Group and Roles Association page, the user you selected displays at the top of the page.

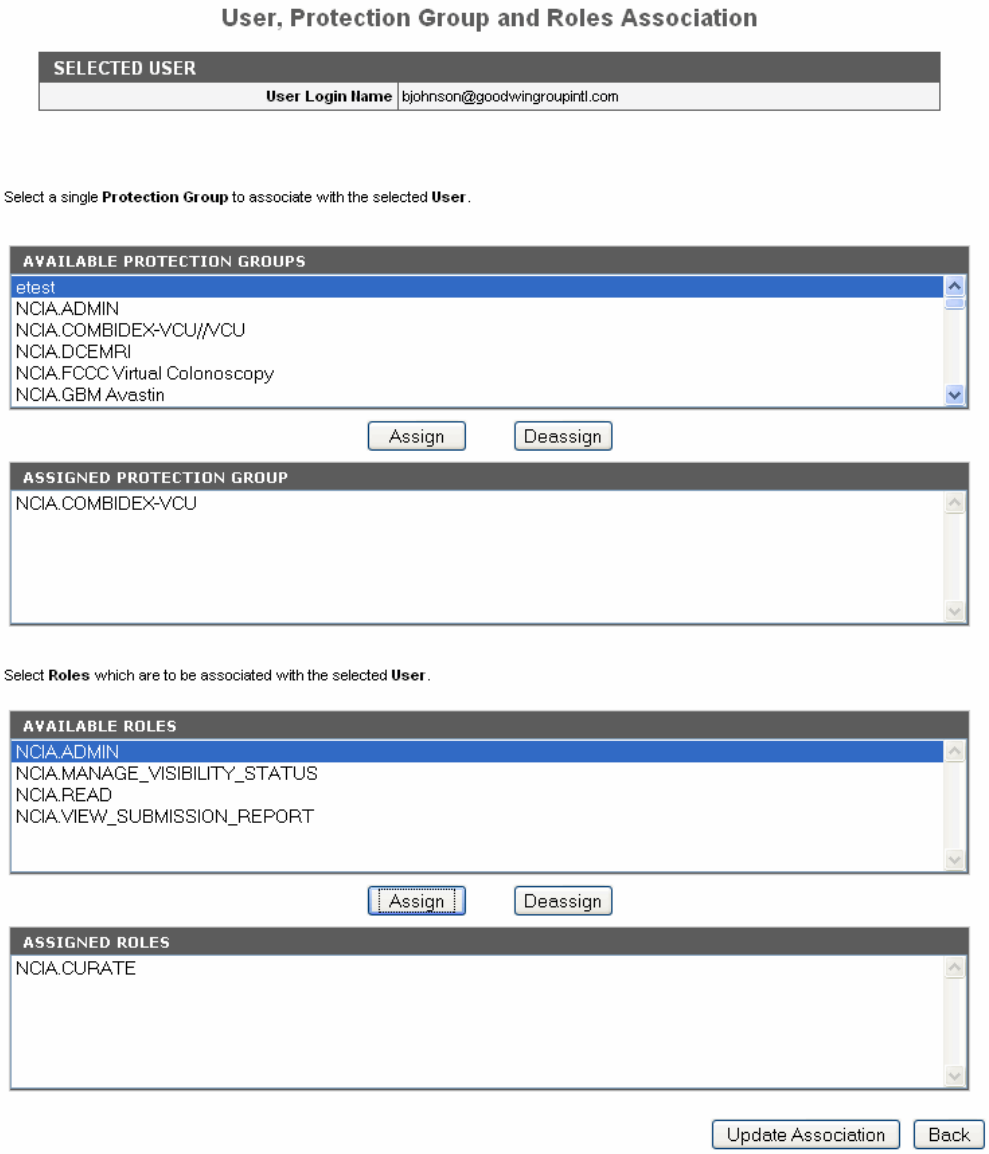


Figure 4.6 Page for assigning a user to a PG and role(s).

8. Select a PG from Available Protection Groups and click **Assign**. The PG name moves to the Assigned Protection Group section.
9. Scroll further down the page to the Available Roles section. Select the appropriate role(s) for the user in that PG and click the **Assign** button to move it to the Assigned Roles section.
10. Click the **Update Association** button at the bottom of the page to confirm your selections.
11. To verify that this user has been appropriately assigned to the Protection Group, the user should log into NBIA. On the search page, the collection assigned to this protection group should appear on the Simple, Advanced and Dynamic

Search pages under Collections. For more information, see *Performing Searches* on page 19.

12. The appropriate access and assigned roles can also be verified in the Verify Submissions and QC Tools sections in NBIA.

Assigning a User Group to a Protection Group

Performing this task is similar to *Assigning a User to a Protection Group With Roles*, but slight differences are explained in this section. The advantage of working with user groups is that you do not have to assign roles to each user individually. You can assign users to a user group to which you assign a role, and then assign that user group to the protection group, or you can assign a role collectively to a protection group after it is created.

The feature described in this section could be used if multiple users are going to have the same roles for the same data set. You can create a user group for those multiple users, then assign the user group to the PG with roles. See *Creating a Protection Group* on page 61.

To assign a user group to a Protection Group, follow these steps:

1. In the UPT home page, click the **Group** menu option.
2. Click the **Select an Existing Group** link.
3. Perform a search to locate the group you want to assign to a protection group. You can enter any group detail such as its name or enter an asterisk followed by a letter to launch a wild card search. If you prefer, you can launch a search for all groups by clicking the **Search** button having entered no search criteria.
4. In the search results, click the radio button corresponding to a selected group and click **View Details**.
5. To assign a group to a protection group, on the details page, click **Assign PG and Roles**.

6. In the Group, Protection Group and Roles Association page, the user you selected displays at the top of the page.

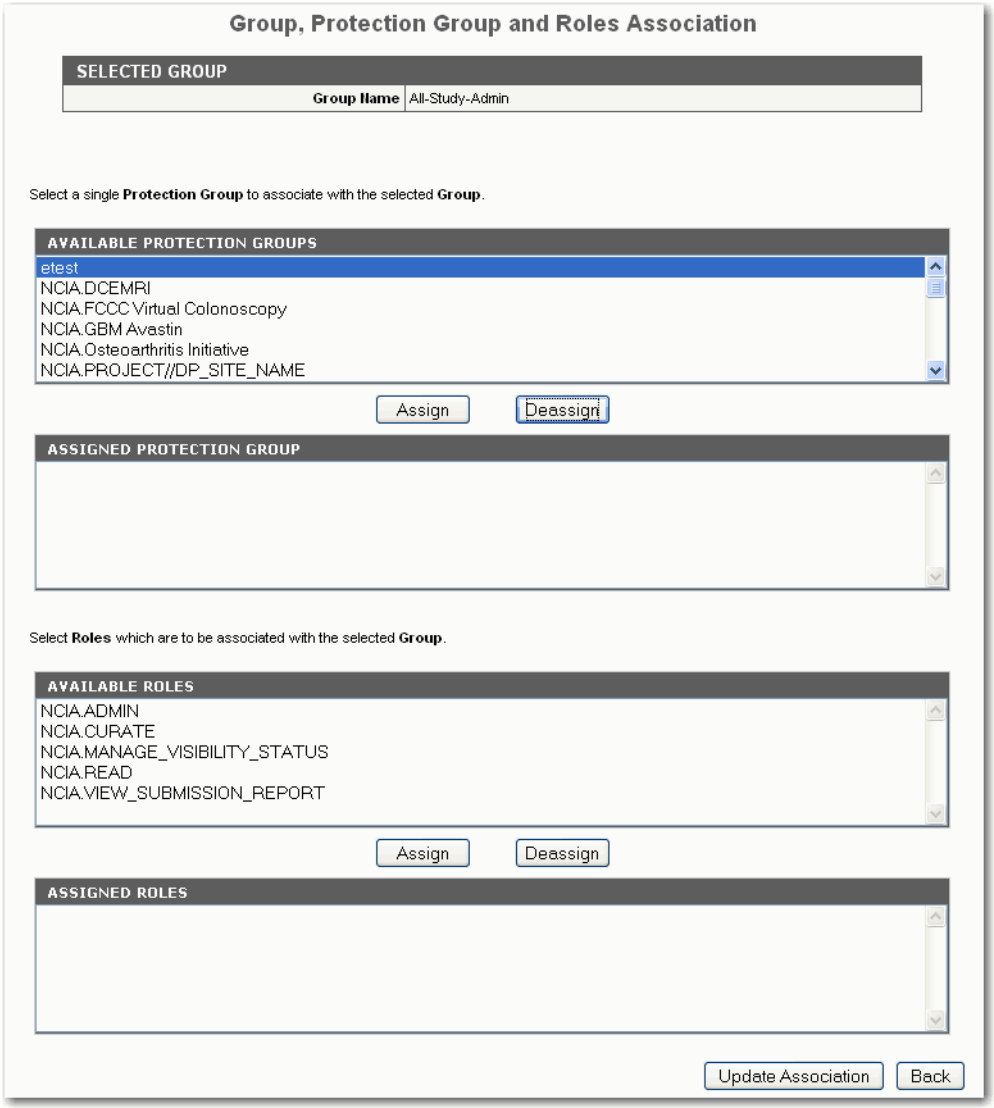


Figure 4.7 Page for assigning a group to a PG and role(s).

7. Select a PG from Available Protection Groups and click **Assign**. The PG name moves to the Assigned Protection Group section.
8. Scroll further down the page to the Available Roles section. Select the appropriate role(s) for the group in that PG and click the **Assign** button to move it to the Assigned Roles section.
9. Click the **Update Association** button at the bottom of the page to confirm your selections.
10. To verify that this user has been appropriately assigned to the Protection Group, the user should log into NBIA. On the search page, the collection assigned to this protection group should appear on the Simple, Advanced and Dynamic Search pages under Collections. For more information, see *Performing Searches* on page 19.

The appropriate access and assigned roles can also be verified in the Verify Submissions and QC Tools sections in NBIA.

Alternative Image Configuration/Submission Methods

You can use several other alternative methods for configuring and submitting images to the CTP client and/or servers. An example is the PACS radiology machine which takes DICOM images and sends them directly to a CTP server, circumventing the need to send the images and accompanying patient information over the internet. For more information about using these alternative submission methods, contact NCICB Application Support: http://ncicb.nci.nih.gov/NCICB/support.

CHAPTER

5

NBIA ADMINISTRATION

This chapter discusses administration functions in NBIA.

Topics in this chapter include:

- *Administration Functions Overview* on this page
- *Creating a New NBIA User* on this page
- *Creating a New NBIA Grid User* on page 70
- *Using the Quality Control (QC) Tool* on page 71
- *Deleting Image Series* on page 73
- *Viewing Submission Reports* on page 75

Administration Functions Overview

Note: Administration privileges for NBIA are assigned using the User Provisioning Tool (UPT) by NCICB Application Support personnel.

All of the administration tools in NBIA are restricted by security. When you log into NBIA, only the administration tools for which you have been granted permissions are visible under **Admin Tools** on the left sidebar. Admin tasks display as hypertext links. Their use is described in the appropriate sections that follow in this chapter.

Creating a New NBIA User

Only an NBIA administrator can create new users for NBIA, and this must be done in the separate Common Security Module (CSM) User Provisioning Tool (UPT) application. NBIA, as do other applications, installs with its own CSM schema that has sample/default users and a role/permissions structure.

Note: While the name of NCIA (National Cancer Imaging Archive) has been changed to NBIA (National Biomedical Imaging Archive), until notified otherwise, the acronym in the UPT configuration remains "NCIA".

Before NBIA users can be created, a UPT administrator must register the NCIA application in the UPT and assign an admin user to the NCIA application there. Then, the NCIA administrator can assign users to NBIA and roles to each user. This is done by opening user details and clicking the **Assign PG and Roles** button at the bottom of the user details page. The role structure in NBIA is defined as described in Table *5.1*:

Role	***Functionality***
NCIA.READ	Search capability
NCIA.MANAGE_VISIBILITY_STATUS	Privilege to access QC Tool
NCIA.VIEW_SUBMISSION_REPORT	Privilege to access Verify Submission
NCIA.MANAGE_COLLECTION_DESCRIPTION	Privilege to edit a collection description
NCIA.SUPER_CURATOR	Privilege to approve the deletion of image series
NCIA.DELETE_ADMIN	Privilege to execute the deletion of images approved for deletion

Table 5.1 Roles that can be assigned in NBIA to users and/or user groups

The roles you assign then allow the user to perform tasks in NBIA. Additionally, an NBIA administrator can perform the following tasks, described in this chapter:

- Assign a user right to use the QC tool for the purpose of reviewing submitted imaging data and managing visibility status for the data. See *Using the Quality Control (QC) Tool* on page 71.
- Verify submitted files. This includes the permission to view the image submission report which includes submission statistics and information regarding what has been received by the image repositories. See *Viewing Submission Reports* on page 75.
- Configuring security for data submitted to NBIA. For more information, see *Configuring Security for Newly Submitted Data* on page 59.

For more information about creating new NBIA users/user groups and performing other tasks in the UPT, contact NCICB Application Support: http://ncicb.nci.nih.gov/NCICB/support. They can tell you how to access the UPT as well as help you locate user documentation for the application.

Creating a New NBIA Grid User

The NBIA Grid interface can be configured for public access or for secure access.

- If configured for public use (at deployment time), there is no need to create any users for grid access.

- If configured for secure access (at deployment time), each grid user that will access the system must be created.

Only an NBIA administrator can create new grid users for NBIA, and this must be done in the separate Common Security Module (CSM) User Provisioning Tool (UPT) application. NBIA, as do other applications, installs with its own CSM schema that has sample/default users and a role/permissions structure.

Note: While the name of NCIA (National Cancer Imaging Archive) has been changed to NBIA (National Biomedical Imaging Archive), until notified otherwise, the acronym in the UPT configuration remains "NCIA".

The process for creating a grid user mirrors the process for webapp user creation (see *Creating a New NBIA User* on page 69). The important difference is that the name for the user must be the X.509 identifier for the grid user within the target grid that NBIA is configured to use.

For example, a grid identifier from the NCI staging grid for joesmith would look like this:

```
/O=caBIG/OU=caGrid/OU=Stage LOA1/OU=NCI STAGE/CN=joesmith
```

The O and OU elements will be different depending on the target grid (NCI production grid, or some other private grid).

For more information on grid credentials, see: http://cagrid.org/display/dorian/Overview.

Using the Quality Control (QC) Tool

Note: This administrative tool is available only to logged in users who have "manage visibility" privileges, as defined in UPT. For more information, see *Creating a New NBIA User* on page 69.

When an image is uploaded into NBIA, it is not made public immediately. A curator takes it through a quality control process to ensure that no private patient data is available, the image is of good quality, and so forth. Using the NBIA QC tool as a curator, you can define search criteria to locate image series for you to evaluate. You can then evaluate the submission and assign the QC status to an image or series of images.

To use the QC tool, follow these steps:

1. Click the **Perform QC** hypertext link under **Admin Tools** on the left sidebar. This opens the QC Tool page (*Figure 5.1*).

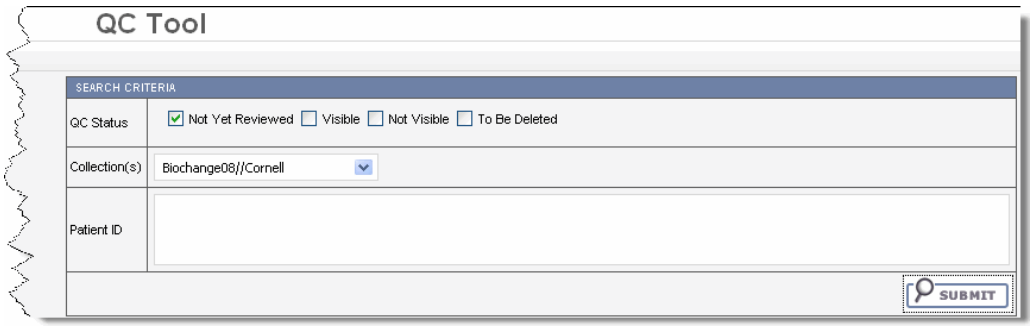


Figure 5.1 The QC Tool

The QC Tool displays the four categories of curation, or visibility, status--**Not yet reviewed** (selected by default), **Visible**, **Not Visible** and **To be deleted**.

2. Check the QC Status for the series you want to locate. Four status options are available. They are described in Table *5.2*:

Submitted Object Status	***Description***
Not Yet Reviewed	This status is automatically assigned to an image upon submission to the NBIA database.
Visible	All images in the series are visible.
Not Visible	No images in the series are visible.
To Be Deleted	Selected image series are to be deleted from the system.

Table 5.2 Status options for NBIA images

3. Select one collection//site you want to search.

   Tip: You cannot search multiple sites at one time.

4. Enter patient IDs, where appropriate. You should separate multiple patient IDs by commas.

5. Click **Submit**. NBIA searches for image series that match the criteria you defined.

   Tip: All criteria that you define are combined by the Boolean AND.

   When you submit the search, the image series located by your criteria display(s) in table format below the QC section of the page (*Figure 5.2*). In that segment of the page, you can perform actions that manage the visibility status of the selected component(s).

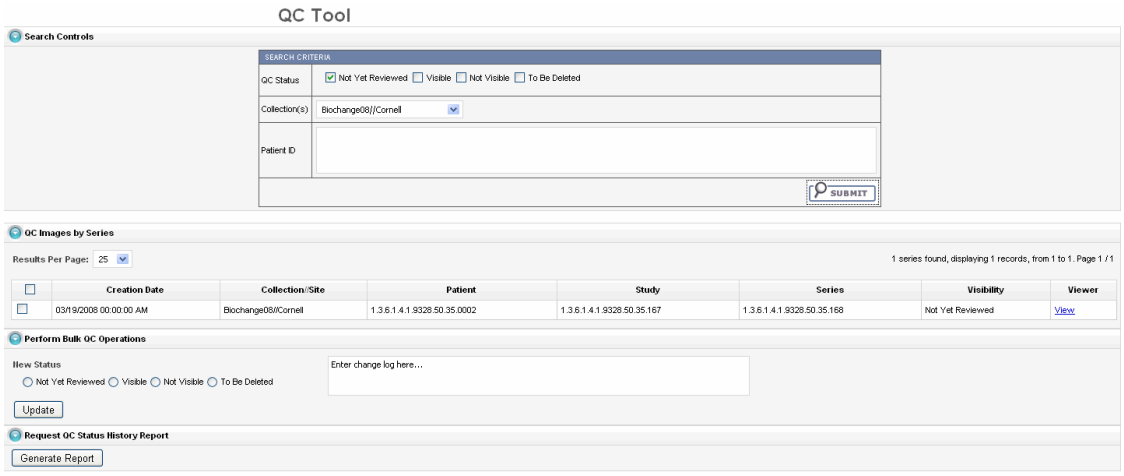


Figure 5.2 The quality control results display on the QC Tool page.

You can change image status in two ways, a batch update or individually.

6. For individual series, click the corresponding **View** hyperlink at the extreme right on the row. The window that opens display the series DICOM header file and a slide show of the images in the series. Move the slider or click the forward or back arrows to see each image. For more information about viewing the slides, see *Viewing Image Animation* on page 43.

   The annotations to the right of the image change to correspond to the image display. To change the status, proceed with step 8.

7. For a batch update, on the QC Tool page, select the checkbox for each series whose status you want to change. Proceed in the Perform Bulk QC Operations section on the page.

8. Select the new status you want to assign to the selected series. See Table *5.2* for status descriptions.

9. In the text box, describe the nature of the image status change. This text will be part of the QC Status report you can generate to track changes in visibility. See *Generating a QC Status Report* on page 73.

10. Click **Update** to update the selected series.

    If you have done this for an individual series, the window is updated to the next image series from the search results, where you can perform another update. When you reach the end of the series, the last series continues to display. Click **Close Window** to return to the QC Tool page.

After the image series' status has been changed, the status column of the image series in the QC Tool search result page changes as well.

Note: While still on the QC Tool page, you can select other groups to which you assign different visibilities.

Generating a QC Status Report

To view the status change log from the QC Tool page search results, check relevant series and click **Generate Report**.

The QC Status History Report that displays shows all changes that have been made to the status of the selected series.

Deleting Image Series

As an administrator, you can assist in the two-tier process of deleting NBIA data. To do so, you must have been granted specific roles. For more information about the roles and the deletion processes, see *Approving Image Deletions* and *Manually Deleting Image Series*.

Approving Image Deletions

Note: This administration feature is available only to logged in users who have Super Curator privileges that were defined in UPT. For more information, see *Creating a New NBIA User* on page 69.

This function is part of a two-tier deletion process. You, as a super curator, can approve the deletion of image series that have been identified as "To be deleted".

To approve series deletions, follow these steps:

1. Under the Admin Tools section on the left sidebar, click the **Approve Deletions** link.
2. On the Deletion Approval page, select a collection//site from the drop-down list.
3. Enter patient IDs (required). Separate multiple IDs by commas.
4. Click **Submit** to initiate a search for the series marked for deletion.
5. From the results, click **View** to review the detail for an individual series. From the page that opens, click **Delete** to approve the deletion. Click the **Skip** button to go to the next series.

   Tip: If you click **Skip**, this signals that you do not approve the deletion. If that is so, you should generate a report *Using the Quality Control (QC) Tool* to see who requested the deletion and work with that person to resolve any deletion disagreement.
6. For batch deletion, select the checkbox for one or more series and click **Delete** to approve the deletion.

Image series approved for deletion are still visible in the system, identified as "To Be Deleted". They are removed from the system at a system-configured time, such as at midnight (called an "off-line deletion"), unless a manual deletion (called an "online deletion") is performed. For more information, see *Manually Deleting Image Series* on page 74.

Note: Notes about deletions:

- After an image series is approved for deletion, the action cannot be reversed.
- Any new image submissions to a series identified "To be deleted" will be successful, but the status of the series does not change.
- Images submitted to files that are "Deleted" are quarantined.

Manually Deleting Image Series

Note: This administration feature is available only to logged in users who have delete admin privileges that were defined in UPT. For more information, see *Creating a New NBIA User* on page 69.

This function is part of a two-tier deletion process. You, as a Delete Admin, can execute the online deletion of image series that are "approved for deletion". This function immediately removes images that are approved for deletion rather than waiting for the next scheduled system-wide deletion job.

To manually delete series, follow these steps:

1. Under Admin Tools on the left sidebar, click the **Perform Online Deletion** link.

   NBIA opens a list of image series that have been approved for deletion.

2. Click **Delete** to execute the real time series removal.

Note: All series listed in this page are deleted. There is no way to specify individual series for online deletion.

Viewing Submission Reports

Note: This administration feature is available only to logged in users who have view submission report privileges that were defined in UPT. For more information, see *Creating a New NBIA User* on page 69.

When a site submits images to NBIA, a user with admin privileges can run various reports to verify that the images have been received and to monitor the status of the submitted images. This is accomplished in NBIA by generating a report with this information.

To view submission reports, follow these steps:

1. Click the **View Submission Reports** hypertext link under **Tools** on the left sidebar. This opens the Submission Reports page (*Figure 5.3*).

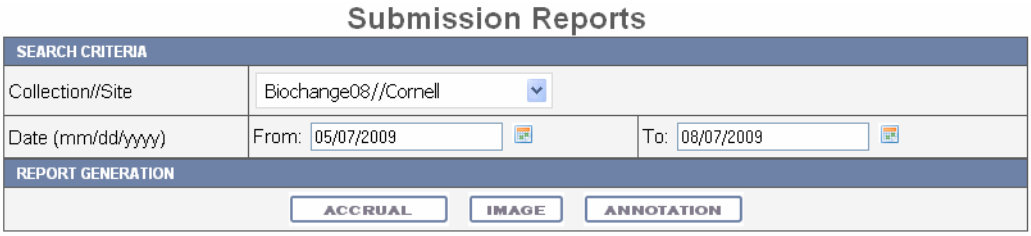


Figure 5.3 Verify Submission page for submitting a search to generate a submission report

2. The **Collection**//**Site** section displays in the drop down list all collections for which you, as an Admin, have permissions to view. In the **Available** panel, select a collection.
3. Enter a valid date range using permissible format in the **Date Range** fields, **From** and **To**. Click the calendar icons to select the dates on a calendar.
4. Click the report type you want to run; this launches the search, which may take a few moments.
5. Follow these links for more information about the report types:
   - *Accrual Report* on page 76
   - *Image Submission Report* on page 78
   - *Annotation Submission Report* on page 79

To assist in viewing the reports, use the following icons:

- In the report results in the upper right segment of the page, click the Help button ( ) to learn details about the report type you selected.
- To hide/show displayed results, click the arrow at the left of the section ( ).

- To view an expanded view of the image report results, click the Expand icon ( ) preceding each row of the New Image or Corrected summaries.

The results display Count by Day details of the submissions. For example, for each day in the time frame, you can view a list of affected patient IDs, study instance UIDs and series instand UIDs.

Accrual Report

After you have submitted a query for viewing accrual reports, NBIA displays the results on a page as shown in *Figure 5.4*.

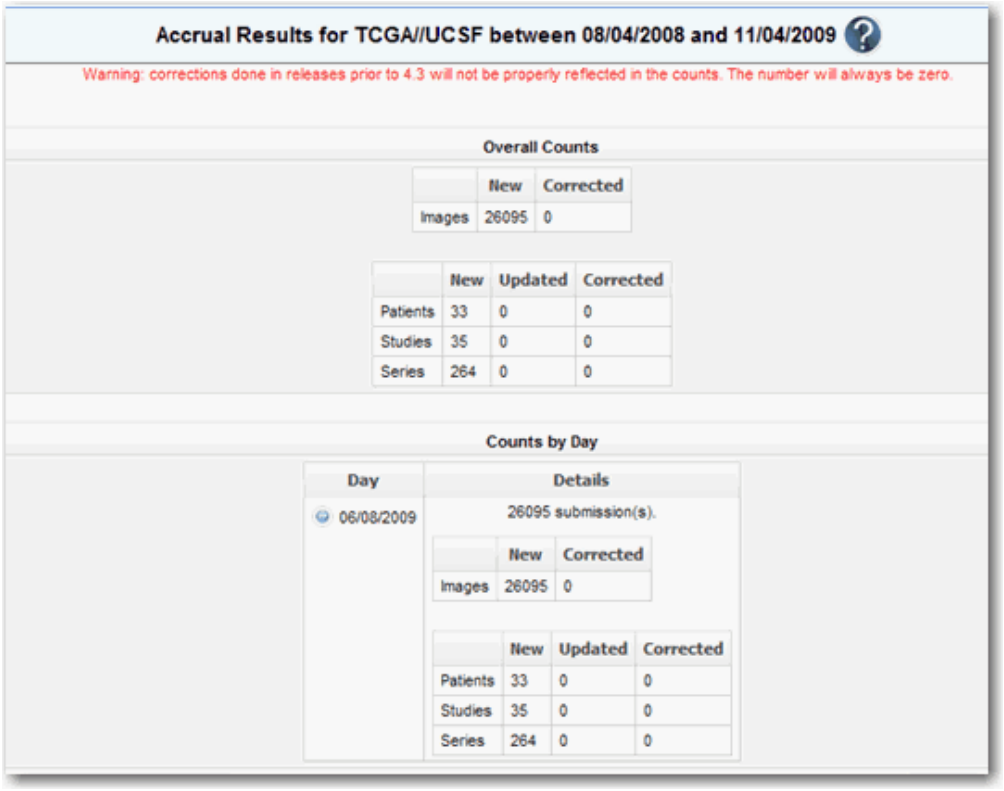


Figure 5.4 Accrual results

Fields that appear on the report are described in *Table 5.3*

Submitted Files Counts Fields	***Description***
New Image	An image that does not exist in the system at the time of submission
Corrected Image	An Image that has been successfully submitted more than once. The time of the original image submission does not affect whether a subsequent image is considered as "corrected". Each time, an image is re-submitted in the time frame, the count is incremented.
New Patient	A patient that had no images submissions prior to the start of the date range, but at least one image submission within the date range

Table 5.3 Report fields describing accrual results

Submitted Files Counts Fields	*Description*
Updated Patient	A patient that had at least one image submission prior to the start of the date range, and at least one image submission within the date range
Corrected Patient	A patient that has at least one image submission in the time frame that has been corrected.
New Study	A study that had no image submissions prior to the start of the date range, but has at least one image submission within the date range
Updated Study	A study that had at least one image submission prior to the start of the date range, and at least one image submission within the date range
Corrected Study	A study that has at least one image submission in the time frame that has been corrected.
New Series	A series that no image submissions prior to the start of the date range, but has at least one image submission within the date range
Updated Series	A series that had at least one image submission prior to the start of the date range, and at least one image submission within the date range
Corrected Series	A series that has at least one image submission in the time frame that has been corrected

Table 5.3 Report fields describing accrual results

Note: The reports contain a count of patient/study, series or images that have been affected during the date range in the specified collection/site. The exception to this is that affected counts will not be available for submissions made against versions of NBIA older than 4.3.

Image Submission Report

After you have submitted a query for viewing image submission results, NBIA displays the report on a page as shown in *Figure 5.5*.

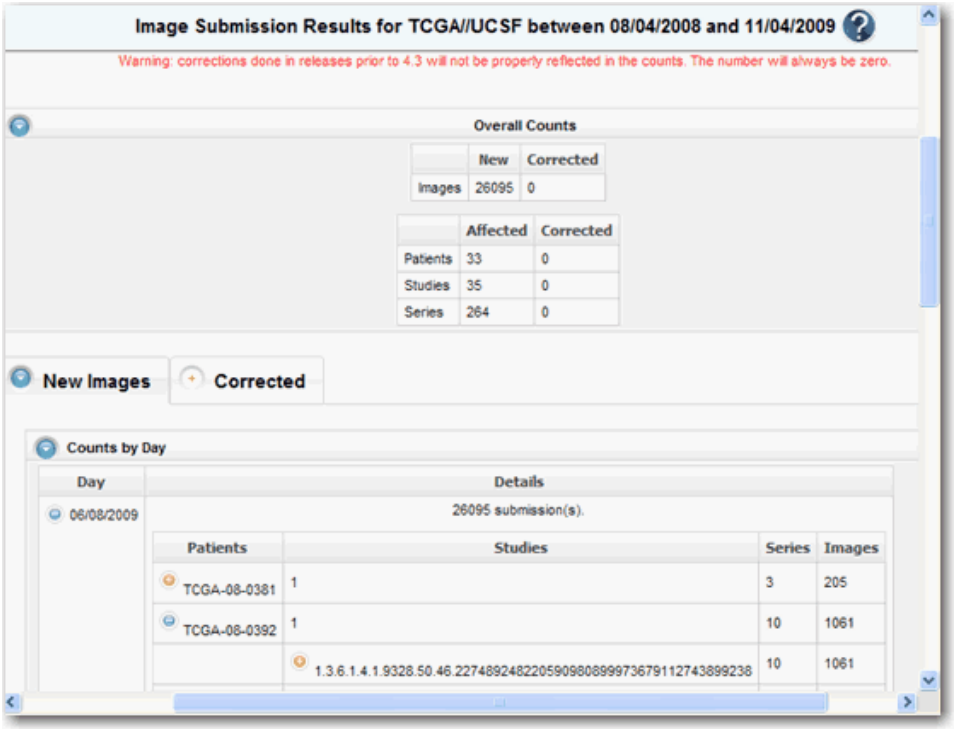


Figure 5.5 Image Submission report

Image submission results display a count of patients, studies or series for or to which an image was submitted during the specified date range in the collection or site you selected. Fields that appear on the report are described in *Table 5.3*.

Submitted Files Counts Fields	***Description***
New Image	An image that does not exist in the system at the time of submission
Corrected Image	An Image that has been successfully submitted more than once. The time of the original image submission does not affect whether a subsequent image is considered as "corrected". Each time, an image is re-submitted in the time frame, the count is incremented
Affected Patient/ Study/Series	A patient/study/series is one for which there was at least one new image submission
Corrected Patient/ Study/Series	A patient/study/series that has at least one image submission that has been corrected in the time frame.

Table 5.4 Report fields describing image submission data

Note: The reports contain a count of patient/study, series or images that have been affected during the date range in the specified collection/site. The exception to this is that affected counts will not be available for submissions made against versions of NBIA older than 4.3.

Annotation Submission Report

After you have submitted a query for viewing annotation submission results, NBIA displays the report on a page as shown in *Figure 5.5*.

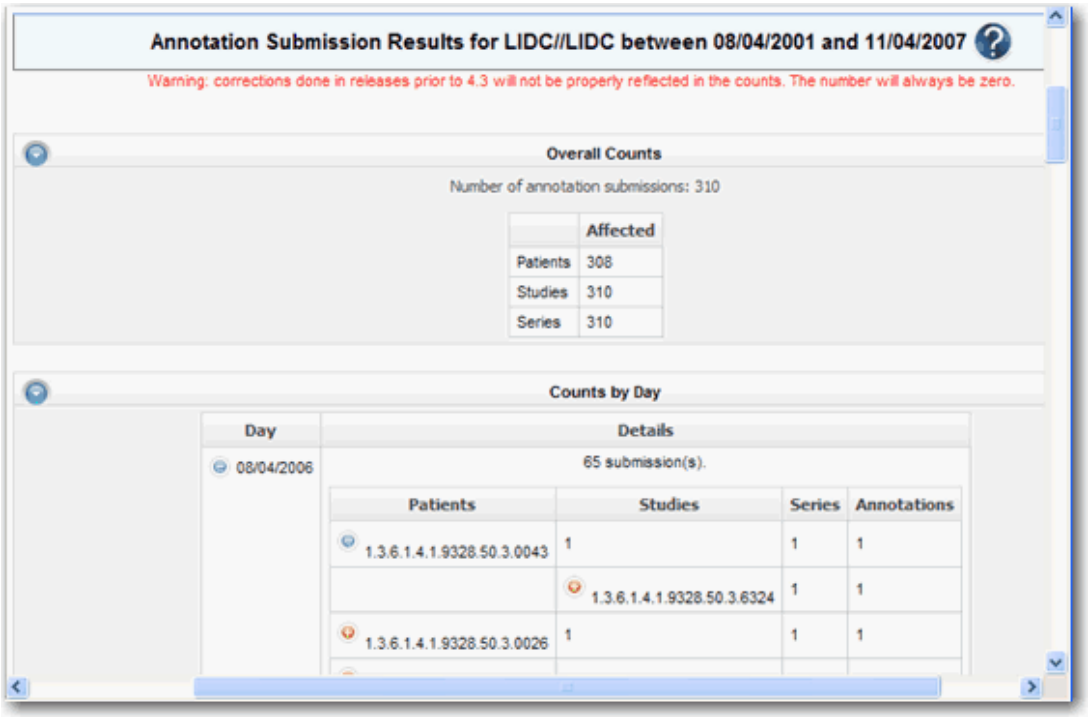


Figure 5.6 Annotation Submissions report

The annotation submission report contains a count of annotations submitted and affected patient/study/series during the specified date range for that collection site. Fields that appear on the report are described in *Table 5.5*.

Submitted Files Counts Fields	***Description***
Annotation	An annotation that has never been submitted in the system prior to the start of the date range
Corrected Image	A patient/study/series is one for which there was at least one new annotation submission

Table 5.5 Fields describing annotation submission data

Note: The reports contain a count of patient/study, series or images that have been affected during the date range in the specified collection/site. The exception to this is that affected counts will not be available for submissions made against versions of NBIA older than 4.3.

Editing a Collection Description

Note: This administration feature is available only to logged in users who have manage collection privileges that were defined in UPT. For more information, see *Creating a New NBIA User* on page 69.

This feature allows you as an administrator to enter a brief description for a collection so the NBIA user knows what type of data comprises the collection.

To edit a collection description, follow these steps:

1. Under Admin Tools on the left sidebar, click **Edit Collection Description**.
2. From the drop-down list, select a collection name.
3. In the text box, enter a description or edit an existing description for the collection. Use the text formatting tools to format the text, if you like. If appropriate, you can add a hyperlink to a resource such as a wiki with a longer description.

The description displays on the simple/advanced search screen when you click the (**?**) button next to the collection name.

APPENDIX

A

URL REFERENCES

This chapter lists URLs associated with NBIA.

- *FTP Client Software Products* on this page
- *DICOM* on this page
- *Cedara* on this page
- *NBIA* on page 82

FTP Client Software Products

1. Filezilla:http://prdownloads.sourceforge.net/filezilla/FileZilla_2_2_16_setup.exe?download
2. NetFinder: http://www.versiontracker.com/dyn/moreinfo/macosx/3107
3. Fetch: http://fetchsoftworks.com/

DICOM

1. DICOM: http://medical.nema.org/.
2. ImageJ DICOM Viewer: http://rsb.info.nih.gov/ij/
3. OSIRIX DICOM Viewer: http://www.osirix-viewer.com/
4. ClearCanvas Workstation:http://www.clearcanvas.ca/dnn/

Cedara

Cedara I-Response Workstation (IRW): https://gforge.nci.nih.gov/frs/?group_id=312

NBIA

1. NBIA access: http://imaging.nci.nih.gov
2. NBIA portal site: http://ncia.nci.nih.gov

APPENDIX B

NBIA GLOSSARY

Acronyms referred to in this NBIA guide are described in this glossary.

Term	*Definition*
caBIG	cancer Biomedical Informatics Grid
CIP	Cancer Imaging Program
DICOM	Digital Imaging and Communications in Medicine
GUI	Graphical User Interface
HHS	Health and Human Services
NCI	National Cancer Institute
NBIA	National Biomedical Imaging Archive
NCICB	National Cancer Institute Center for Bioinformatics
WAR	Web Application Resource

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