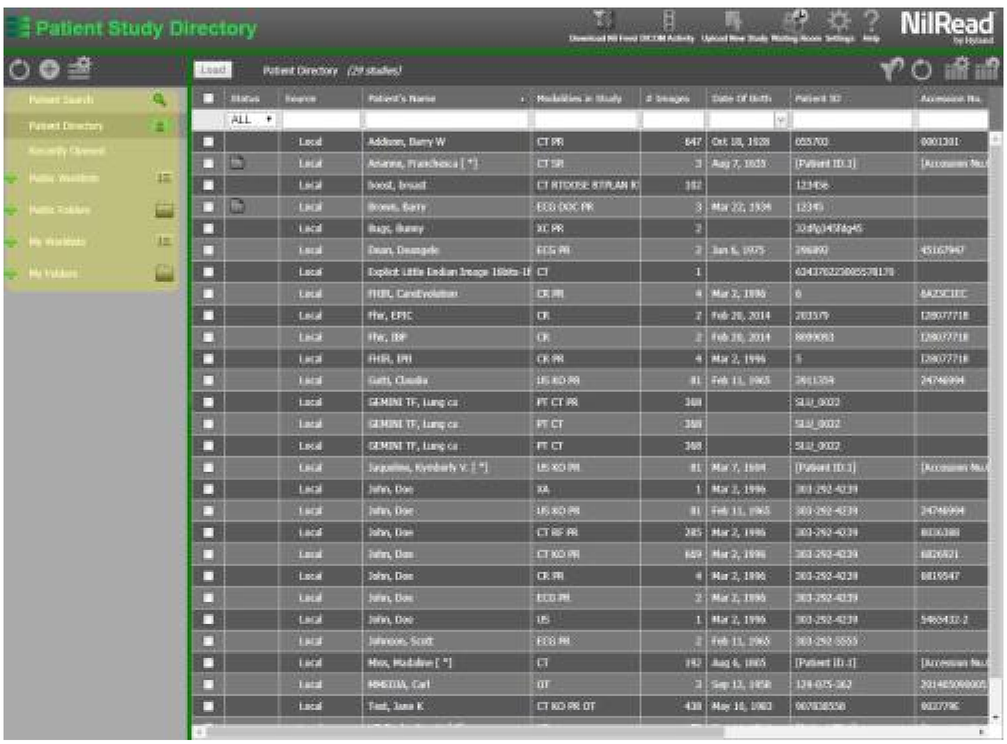
> **Note**
>
> Select to refresh the navigation tree and see any new worklists and folders.

2. Select a worklist or folder. The studies in the worklist or folder are shown.
3. Select a study to open it.

Manage studies

Access studies

When you first start NilRead, the Patient Study Directory opens. The navigation tree on the left side of the directory opens at the item you used most recently (for example, the Patient Directory or a worklist).



> **Note**
>
> To hide the navigation tree, select in the top-left corner.

The Patient Study Directory contains several options for finding a study.

- **Patient Search** Search for a study on all local and remote repositories. For details, see **Use Patient Search**.

> **Note**
> Studies on restricted sites can only be opened through Patient Search. Users must have the appropriate privileges to access restricted sites.

- **Patient Directory** Lists all studies in the local repository. For details, see **Open a study**.
- **Recently Opened** Lists the studies you have opened most recently. A maximum of 50 studies are listed for each repository you have used.
- **Worklists and Folders** Create a collection of studies that you want to view as a group. For details, see **Open a study in a worklist or folder**.

> **Note**
> The studies you can view depend on your privileges in NilRead. You may be given access to specific studies or you may be able to view the full directory.

Use Patient Search

1. In the Patient Study Directory, select **Patient Search**.
2. In the **Patient Search** area at the top of the screen, enter information about the study. Select **More** to view additional fields.
   - **Accession No.** Study accession number.
   - **Data Sources** DICOM and XDS servers you want to search. You can select multiple servers.
   - **Time Range** Time period during which the study was created.
   - **Patient ID** Patient's ID.
   - **Patient Name** Patient's name.
   - **Date of Birth** Patient's date of birth.
   - **Sex** Patient's gender.
   - **Modality** Modality in the study.
3. Select **Query**. Studies matching your search criteria are shown.

> **Note**
> Studies are loaded on demand as you scroll down the page. On mobile devices, you can also swipe to move through the pages.

4. To open a study, click (or tap) anywhere on the directory entry for the study.

To find a study in the search results:

1. Enter information about the study in the blank row below the column headings (patient name, patient ID and so on).
2. To find a study based on status, select one of the following options in the **Status** column:
   - **All** Show all studies.
   - **Available** Show studies containing at least one report.
   - **Not Available** Show studies with no reports.
   - **Approved** Show studies containing at least one approved report.
   - **Locked** Show locked studies.
3. To view all studies again, select **Clear** .

To customize the columns:

- Select **Customize** in the top-right corner. To add a column, drag a column from the **Customize** list to the location where you want to place it. To remove a column, drag it to the **Customize** list.
- Click (or tap) a column heading to sort the studies. Click (or tap) the column heading again to sort the studies in the reverse order.
- To rearrange the columns, drag a column heading to a new location.
- Select **Reset** to reset the columns to the default sort order, remove any custom columns and reload all studies.
- Select **Refresh** to refresh the studies list and view the latest changes made by all users.

Open multiple studies

You can open multiple studies at once. This allows you to review multiple studies in a single session without having to return to the Patient Study Directory.

1. Use any of the options in the navigation tree to find a study (Patient Search, Patient Directory, Recently Opened, Worklists and Folders). For details, see **Access studies**.
2. Select the checkbox beside the studies you want to open. You can also select studies from a folder or worklist. To select all studies in a folder or worklist, select the checkbox in the top row.
3. Right-click (or touch and hold) one of the studies and select **Load Studies**. Select one of the following options:
   - **Load as batch** Load the studies separately (as separate patients). You can also select the **Load** button to load studies separately.
   - **Load as priors** Treat the studies as a collection of studies from a single patient. The most recent study will open in the image viewer and older studies will appear as prior studies in the patient timeline.
4. The studies open in the image viewer. If you selected **Load as batch** (or the **Load** button), the number of loaded studies is shown at the top of the image viewer (for example, **1 of 5**).
   - Use the arrows beside the number of loaded studies to navigate through the studies.
   - Click (or tap) the number of loaded studies to select a study.
   - Click (or tap) the patient name to view patient details.

Use “Break Glass” to find studies

If you are a NilRead guest user, you may be able to use emergency override (“break glass”) to find a patient study. Emergency override should only be used to search for studies that you should be authorized to view but are not appearing in the Patient Study Directory.

1. In the Patient Study Directory, select **Break Glass**.
2. Read the privacy rule requirements, then select **I agree** if you agree to comply with the requirements. The Emergency Override page appears.

3. To find a patient study, enter information in the search fields at the top of the page:
   - **Family Name** Patient’s last name.
   - **Given Name** Patient’s first name.
   - **Soundex** Select this option to also search for names that sound like the **Family Name**/**Given Name** you have entered.
   - **Accession Number** Study accession number.
4. Select **Find**.

Lock studies

NilRead automatically deletes older studies from the database when diskspace is low. You can lock studies to ensure they are never deleted.

> **Note**
> appears beside locked studies. The total number of locked studies is shown in the top-right corner of the Patient Study Directory.

In the Patient Study Directory:

1. To lock or unlock a study, right-click (or touch and hold) a study, then select **Lock** or **Unlock**.
2. To lock or unlock multiple studies, select the checkbox beside each study, then right-click (or touch and hold) one of the studies and select **Lock** or **Unlock**.

Upload studies

NilRead provides multiple ways to upload studies to the database.

> **Note**
> Ensure popups are enabled in your browser settings before uploading studies. Google Chrome supports all of the following upload options; other browsers may not support all options.

Upload DIOCM files from media

Upload DICOM files from removable media such as a CD, DVD or USB flash drive. The media must contain a DICOMDIR file. The files may be from multiple patients and studies.

1. Select **Upload New Study**.
2. Select **Upload DICOM Media**.
3. Select the folder containing the DICOM files and the DICOMDIR file. Be sure to select the entire folder; NilRead will ignore files that should not be uploaded.
4. Select **Next**. A list of studies to be uploaded is shown.
5. Select **Upload**. A confirmation message appears when the upload is complete.

Upload zipped DICOM files

Upload a .zip file containing DICOM files. The .zip file must contain DICOM files only. The files may be from multiple patients and studies.

1. Select **Upload New Study**.
2. Select **Upload Zip with DICOM files**.
3. Select the .zip file.
4. Select **Upload**. A confirmation message appears when the upload is complete.

Upload a folder containing DICOM files

Upload a folder containing DICOM files. The folder must contain DICOM files only. The files may be from multiple patients and studies.

1. Select **Upload New Study**.
2. Select **Upload Folder with DICOM files**.
3. Select the folder containing the DICOM files.
4. Select **Next**. A list of studies to be uploaded is shown.
5. Select **Upload**. A confirmation message appears when the upload is complete.

Upload individual DICOM files

Upload individual DICOM files. The files must be uploaded from the same location (for example, the same folder) and may be from multiple patients and studies.

1. Select **Upload New Study**.
2. Select **Upload DICOM files**.
3. Select the DICOM files.
4. Select **Next**. A list of studies to be uploaded is shown.
5. Select **Upload**. A confirmation message appears when the upload is complete.

Upload non-DICOM files

Upload non-DICOM files. The files must be for the same patient and study.

1. Select **Upload New Study**.
2. Select **Upload non-DICOM files**.
3. Select the non-DICOM files.
4. Select **Next**. Enter the study details.
5. Select **Upload**. A confirmation message appears when the upload is complete.

Create an upload link

Create an encrypted link that other people can use to upload files. The link can be used to upload a .zip file containing DICOM files or to upload individual DICOM and non-DICOM files.

1. Select **Upload New Study**.
2. Select **Create Upload Link**.
3. Determine how long the link will be active. You must select at least one of the following options:
   - **Limit number of upload sessions to X** Number of times the link can be used before it expires.
   - **Link will expire in X days** Number of days until the link expires.
4. Determine if the user must login to NilRead to use the upload link. You must select only one of the following options:
   - **User must login to upload** If selected, the user must login to their NilRead account before using the link. If not selected, the user does not require an account with NilRead to use the link.

- **User required to enter this password** If you did not select the **User must login to upload** option, enter the password the user must enter to use the link. The password must contain at least eight characters.

5. Determine if the user can upload DICOM files only.
   - **Allow uploading non-DICOM files** If selected, the user can upload DICOM and non-DICOM files. If not selected, the user can only upload DICOM files.
6. Select **Next**.
7. The upload link is shown. Select one of the following options:
   - **Copy link to clipboard** Copy the link. You can now paste the link into an email or instant message.
   - **Click to send link by email** Create an email with the link, using your default email application.
8. When done, click **Close**.

Attach files to studies or patients

You can attach files to a study or patient. If you attach files to a study, they are saved as a new series. If you attach files to a patient, they are saved as a new study. You can attach files using the Patient Study Directory or when viewing a study.

> **Note**
> Ensure popups are enabled in your browser settings.

1. In the Patient Study Directory, right-click (or touch and hold) a study, then select **Attach files to this study** or **Attach files to this patient**.
   or
   While viewing a study, right-click (or touch and hold) a series (side panel), then select **Upload**. Select **Attach files to this study** or **Attach files to this patient**.
2. Select **Choose Files** and select the files to attach. You can select multiple files if they are located in the same folder.
3. Select the type of files you are attaching (**DICOM** or **Image/Video**).
4. If attaching an image or video file, enter the patient and study information.
5. Select **Upload**.

Edit or split studies

You can edit information for a study such as the patient name or referring physician. You can apply your changes to all series or to selected series, and you can choose to save the changes in the original study or create a copy of the study.

You can split a study by modifying specific series and moving the modified series to a new study. You can leave the unmodified series in the original study or delete them.

In the Patient Study Directory:

1. Right-click (or touch and hold) a study, then select **Edit Patient/Study**.
2. Make changes to the patient and study information. If you want to retrieve information about the patient from a modality worklist, select **Reconcile**. Enter information about the patient and select **Search**. If a match is found, select the patient and select **Select**.
3. To apply the changes to specific series in the study, select **>**. A list of series appears on the right. Select the series you want to apply the changes to. Note that this option is only available if the **Copy to new study** option is selected.
4. To save your changes in a new study, select **Copy to new study**. To make changes to the original study, do not select this option.

   > **Note**
   > If you are modifying only some of the series in the study, the modified series will be moved to a new study. The unmodified series will remain in the original study (unless you choose the **Delete original instances** option).

5. To apply your changes to all studies for this patient, select **Apply changes to all studies for the same patient**.
6. If you are saving your changes in a new study and want to delete the original study, select **Delete original instances**.
7. Select **Save**.

Download studies, series or images

You can download a copy of a patient study, series, or image.

1. In the Patient Study Directory, right-click (or touch and hold) a study, then select **Download Study**.
   or
   While viewing a study, right-click (or touch and hold) an image, then select **Download**.
2. You can select the following options.
   - **Download encapsulated documents in the original file format** Download non-DICOM files in their original format.
   - **Download as DICOM CD** Download an ISO CD image containing the studies and a DicomDir file which you can view with a DICOM viewer. You can burn this image to CD using standard CD burning software. You can also mount the CD image (for example, as a virtual clone drive) which allows you to view the files without creating a CD. Depending on your NilRead configuration, the CD image may also contain a DICOM viewer.
   - **Create DicomDir file** Create a catalog of the downloaded studies to be used with a DICOM viewer.
   - **Deidentify** Anonymize the study. Select a confidentiality profile (for more information, see **About anonymization**).
3. Select **Download**.

Merge patients

You can update patient information in one study to match patient information in another study. You can also update information in all studies for the same patient. This ensures consistent patient information exists across all studies.

In the Patient Study Directory:

1. Select the checkbox beside the study that contains the patient information you want to copy into another study.
2. Select the checkbox beside the study you want to copy the patient information into.
3. Right-click (or touch and hold) one of the studies, then select **Merge Patients**. Information for the selected patients is shown.
4. To update patient information in all studies with the same patient ID, select **Apply changes to all studies for the same patient**.

5. To use the patient information from the study shown on the left, select **Merge to left**. The study on the right will be updated to match the study on the left.
6. To use the patient information from the study shown on the right, select **Merge to right**. The study on the left will be updated to match the study on the right.
7. Select **Continue**. The patient information in the study is updated. If you selected **Apply changes to all studies for the same patient**, the patient information is also updated in all studies with the same patient ID.

Merge studies

You can combine two studies into a single study. When you merge studies, one of the studies is deleted.

In the Patient Study Directory:

1. Select the checkbox beside the two studies you want to merge.
2. Right-click (or touch and hold) one of the studies, then select **Merge Studies**. Information for the selected studies is shown.
3. To merge the studies into the study shown on the left, select **Merge to left**.
4. To merge the studies into the study shown on the right, select **Merge to right**.
5. Select **Continue**. The studies are merged into the study you selected. The other study is deleted.

Delete studies, series or images

You can permanently delete a patient study, a series or an image.

To delete a study:

- In the Patient Study Directory, right-click (or touch and hold) a study, then select **Delete**.

To delete a series or image:

1. Open a patient study.
2. Right-click (or touch and hold) a series (side panel), then select **Delete Series**.
3. Right-click (or touch and hold) an image, then select **Delete Image**.

Delete series containing segmentation results

You can delete series that contain part segmentation results. Part segmentation results are typically created through a data lifecycle activity (see **Manage data lifecycle policies**).

In the Patient Study Directory:

1. Right-click (or touch and hold) a study, then select **Delete Pre-processed Results**.
2. Select **OK**.

Export images

You can export a screenshot of the patient study currently loaded in the image viewing area. The screenshot can include one or all viewports and is saved as an image (JPG).

1. (Optional) If you want to export a screenshot of a single viewport, click (or tap) the viewport to select it.
2. Select **Save**, then select **Export** (toolbar).
3. Select the following options for the screenshot:
   - **Save: Viewport/Display** Create a screenshot of the selected viewport (**Viewport**) or all viewports (**Display**).
   - **Titles: Show/Hide** Include (**Show**) or exclude (**Hide**) the information shown on the image (patient name, series number, and so on).
4. Enter a filename in the **Save as** field in the bottom-left of the screen.
5. Select **Download**.
6. When done, select **Close**.

Print images

You can print the patient study currently loaded in the image viewing area. You can print one or all viewports.

1. (Optional) If you want to print a single viewport, click (or tap) the viewport to select it.
2. Select **Print** (toolbar).
3. Select the following options for the screenshot:

- **Save: Viewport/Display** Print the selected viewport (**Viewport**) or all viewports (**Display**).
- **Titles: Show/Hide** Include (**Show**) or exclude (**Hide**) the information shown on the image (patient name, series number, and so on).

4. Select **Print**.

   or

   To use a DICOM printer, select **DICOM Print**. Select a printer and the page layout options, then select **OK**.

   > **Note**
   > You must first configure a DICOM printer to use with NilRead (see **Manage DICOM services**).

5. When done, select **Close**.

View reports

If one or more reports exist for a patient study, a folder icon is shown in the study's Status column in the Patient Study Directory. Reports can be DICOM structured reports or can be provided through DICOM Detached Interpretation. NilRead also supports custom HL7 integration for obtaining reports from a RIS/HIS system.

> **Note**
> You can also access DICOM embedded PDF reports through the patient timeline when viewing a patient study (see **Use the patient timeline**).

1. (Optional) In the blank row at the top of the Patient Study Directory, select an option in the **Status** column.
   - **All** Show all patient studies.
   - **Available** Show patient studies containing at least one report.
   - **Approved** Show patient studies containing at least one approved report.
   - **Not Available** Show patient studies with no reports.
2. To view the reports for a study, select the folder icon beside the patient name. The reports in the study appear below the directory. If the study contains multiple reports, use the **Previous** and **Next** arrows in the report area to scroll through the reports.

3. The following options are available when viewing reports:
   - **Delete** Delete the report.
   - **Save** Save a PDF copy of the report.
   - **Print Report** Print the report from your browser.
   - **Vert/Horiz** Place the report area on the right side (**Vert**) or bottom (**Horiz**) of the screen.
   - **Maximize/Restore** View the report area only and hide the directory (**Maximize**) or view both the report area and the directory (**Restore**).
   - **Close** Close the report.

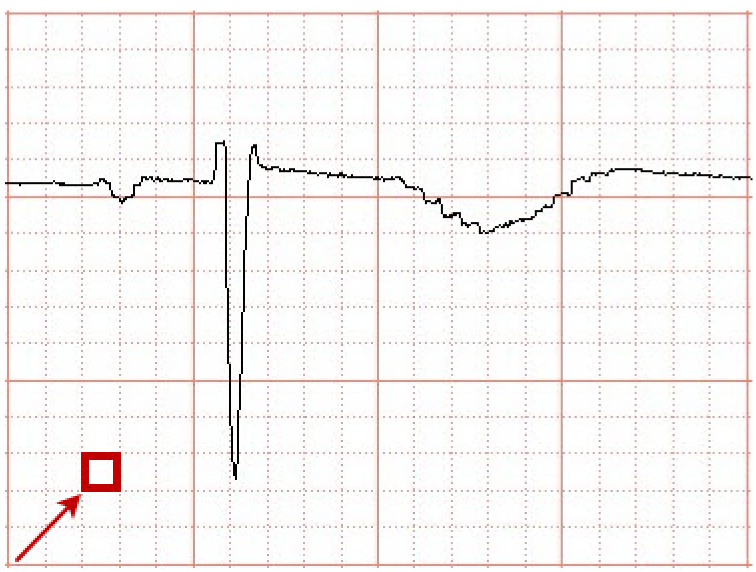
> **Note**
> To resize the directory and report areas, drag the divider between the two areas.

Review ECG studies

About ECG paper

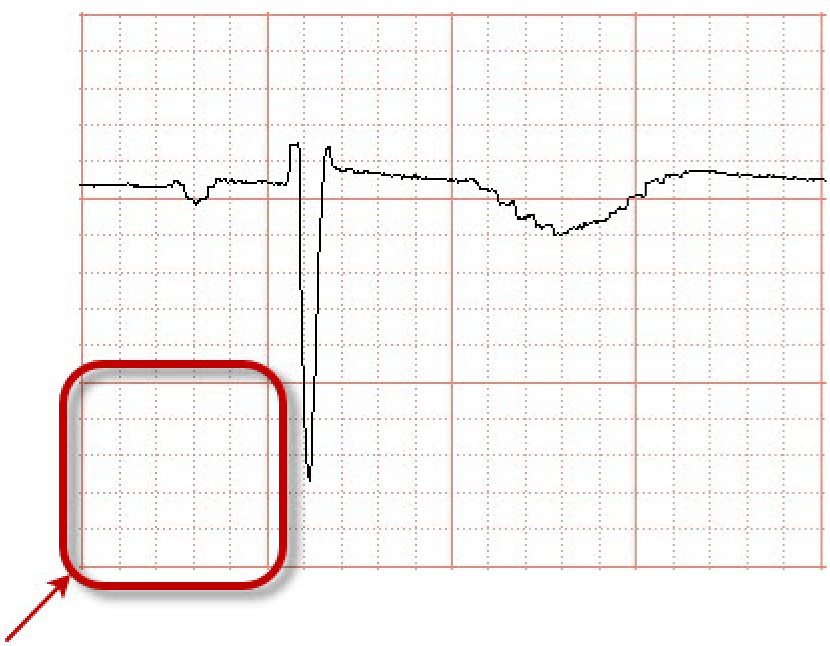
ECG graphs are presented on standard ECG paper. ECG paper speed is usually 25 mm/second.

If you zoom in on a graph, you can see that the paper is divided into small boxes. Each box represents a 1 mm interval or 0.04 seconds (40 ms).



A group of 5 horizontal boxes, bordered by a thick line, represents a 5 mm interval or 0.2 seconds (200 ms).

A group of 25 boxes, bordered by a thick line, represents a 25 mm interval or 1 second.



Use ECG views