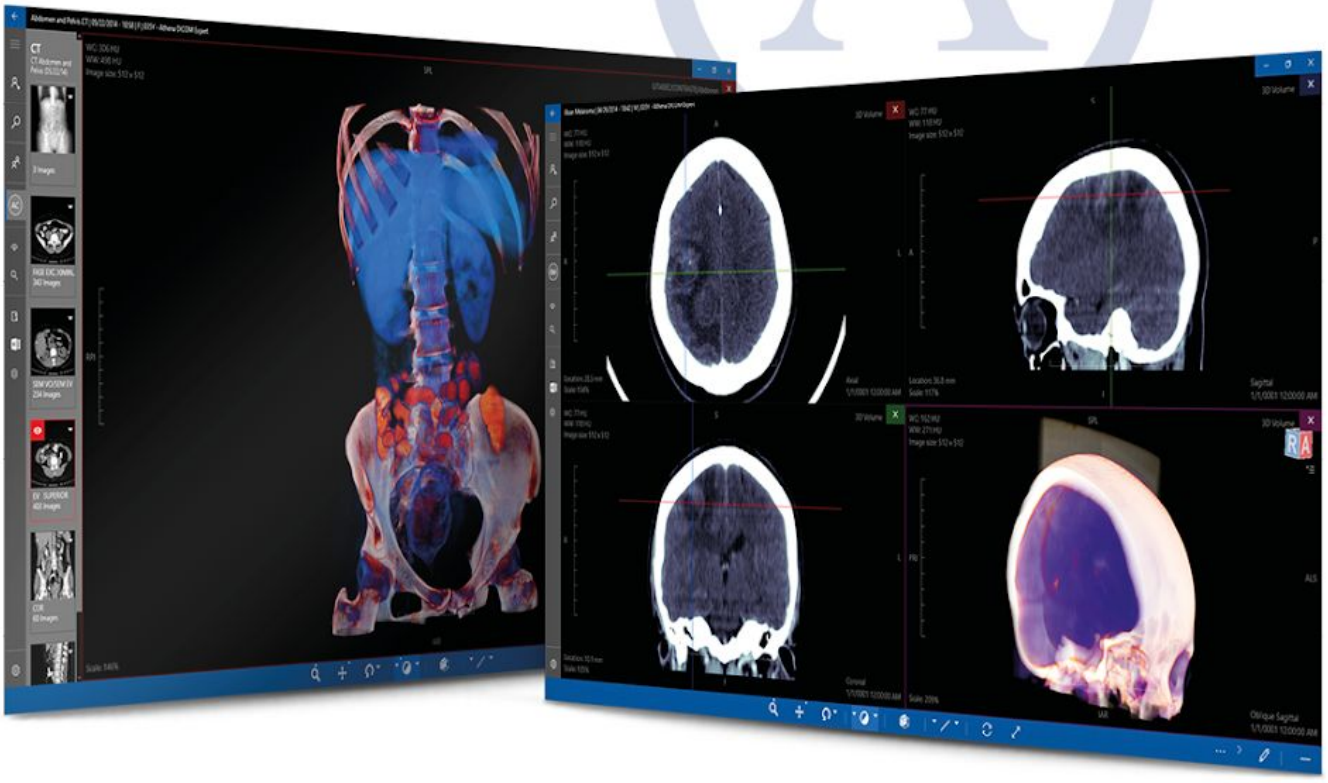
User Manual

ATHENA DICOM - Medical Images Solutions



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Athena DICOM
User Manual
v2.0

Florianópolis • Santa Catarina • Brasil • Address: Rodovia SC 401 Km 01, nº 600, mód. 3.13 / ParqTec Alfa (CELTA)
phone: +55 48 4042-2015 • sales@athenadi.com • www.athenadicomviewer.com

* Topics marked with an asterisk are only available in the **Athena DICOM Expert version.**

1. Introduction

The Athena DICOM is a revolutionary software made to read medical images and developed to give a higher productivity to healthcare professionals. The platform incorporates many valuable features, shortcuts and tools that helps users get better diagnostics quickly and easily.

The DICOM Viewer enables the user to access patients with just one click, and can be connect with PACS (Picture Archiving and Communication System) servers anywhere, anytime with maximum convenience and flexibility. It's designed to be intuitive, making it easy to access DICOM images located anywhere, including USB devices, DVDs, local disks, PACS or clouds servers.

With an modern design, the Athena DICOM has a clean, straightforward interface specially designed for touchscreens. That said, it can be used in Desktop Computers, Laptops or Tablets. The software gives instant visualization of a series of images in different ways, on the same screen, allowing the evaluation of multiple series in a simultaneous and synchronized way.

The entire development of the platform follows standards stipulated by the DICOM protocol and was designed by a highly qualified team, with graduate diplomas, in areas such as engineering and biomedicine. To better meet the needs of each medical specialty, Athena DICOM Viewer has two versions of the software.

Athena DICOM Essential is ideal for patients, students, requesting physicians and researchers, as the platform contains all the basic tools needed for less demanding diagnostics.

Athena DICOM Expert was developed as a advanced reconstruction platform and has been specially made for radiologists, health technicians and requesting physicians who deal with densers analyzes and need advanced reconstruction tools to perform diagnostics. In addition to more specific tools, the Expert version of Athena is registered and certified by ANVISA (National Health Surveillance Agency).

ANVISA is the brazilian organ responsible of all regulamentation, fiscalization and authorization of services related to health and sanitation, acting in a similar way to the american organ FDA (Food and Drug Administration).

In addition, Athena DICOM has a version called **Athena Corporate**, a version of the *software* for hospitals and clinics, that enables rapid integration with remote PACS servers. For more information about Athena Corporate and its benefits, please contact us.

For a better understanding of this manual, we will cover subjects related to the two *softwares* as Athena DICOM, and when necessary, we'll distinguish them with their respective names: Athena DICOM Essential and Athena DICOM Expert.

1.1 Description

The DICOM protocol (*Digital Electrical Imaging and Communication in Medicine),* which is defined by NEMA (*National Electrical Manufacturers Association*) and incorporated by Athena, allows you to import images from a CD/DVD, pendrive, local folder or PACS (images server).

The transfer and retrieval of images from/to a PACS follows the *query/retrieve* model stipulated by DICOM, with the possibility of applying security layers as SSL/TLS if desired. The software is able to organize files by patients, studies, dates and series, helping to locate exams quickly and effectively. You can display images without any modification to them (original mode), and you can apply changes to them when opening in multiplanar mode (MPR), which can aid in the diagnostic process.

1.2 Indications of Use

The Athena DICOM is indicated for the visualization, organization and processing of exams (DICOM files) obtained in procedures of radiography, tomography, magnetic resonance, among others, acting as a tool to aid in diagnosis.

1.3 Software Features

Athena DICOM display and process digital medical images (DICOM). The software does not interacts and does not contact patients directly, nor with any device linked to them. Its main function is to assist health professionals in the visualization and interpretation of medical images in a fast and precise way, in order to perform a quality diagnosis.

1.4 Quality Policy and Homologation

The software follows a rigid policy of product quality, performed through a diversity of tests like: integration tests, system tests, certification tests and individuals ones, to then go through an homologation process. Athena follows all specifications of the DICOM standards determined by the NEMA standard PS3.

To ensure the quality of the software, Athena DICOM allows the exhibition of simultaneous images with clear data and non manipulated, at the same time that can show processed images. This operation guarantee the veracity of informations, including the exhibition of real values retrieve from said clean data.

Another feature that insures the quality and security of our platform, is the multiple forms to transfer (download and upload), and the DICOM image search, once that Athena embraces the use of

TLS/SSL protocol through all the search and retrieving of said images (all the way guided by the DICOM protocol). In cases which the DICOM images do not follow the DICOM protocol, an error notification will be displayed and the corrupted images will not be shown to the user.

In addition, the software is distributed through the Microsoft Store platform and therefore must also pass the Microsoft Certification quality tests that ensure the stability, quality, and compliance of the software.

Therefore, the platform in its entirety has passed local tests on top of the Microsoft certification tests that reinforce the quality and reliability of the information presented. In addition, with each upgrade, new testings are performed to ensure product quality and user experience.

1.5 Warnings and Precautions

The platform allows free importation, exportation, manipulation and transferring of images. Therefore, be aware of the norms of the local health establishment, and recommendations and norms of the council of medicine in your country, mainly regarding the sharing of images. All messages and alerts displayed by the software to the user are relevant to the safe and effective operation of the platform, and should be read and considered carefully. There may be DICOM images not adequated to the DICOM standard, and you must pay attention to the software messages about data with possible distortions, avoiding their use and probable errors.

1.6 Report Problems

Athena has a remote logging system, located in 

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where all errors that occur are reported and collected. The user can send these logs to the support team if necessary, and specify in details the ocurrying problem. If there's any abnormality in the platform, our development team will be notified and as soon as a solution is available, it will be incorporated into the next version of software.

In addition, you will find a button with the  , which is designed to brief reports of *bugs* encountered while using the software.

The contact can be made through the email (support@medicalharbour.com), telephone (+55 48 3028-1702) or the address (Rod. SC 401 km 01, nº 600 - room 3.13 - CELTA - Florianópolis / Santa Catarina / Brazil).

1.7 Hardware Requirements

Athena has some minimum hardware requirements for running the software and some recommended requirements for a greater user experience, valid for both versions of Athena.

Minimum Requirements	Recommended Requirements
32-bit or 64-bit processor	64-bit processor (Intel i7 or similar)
8GB of RAM	8GB of RAM
Windows 10	128 GB SSD or higher
DirectX 10	Touchscreen display
	Surface Dial
	Windows 10
	DirectX 10

1.8 Installation

The Athena DICOM Viewer is distributed and installed using the Microsoft Store platform, which allows a quick installation in a few steps. The Microsoft Store verifies the previously recommended requirements, allowing installation only on Athena-compatible devices.

Athena DICOM allows **free use** of its **Expert and Essential version for 7 days and after that, it will be passed to the Lite version.**

2. General

Athena DICOM has several configurations and general tools that optimize the time spent on the software, allowing the customization for each user.

2.1 Responsive View

Athena has automatic and responsive display modes, so in some cases it's possible to automatically hide the menu and toolbars. They are:

2.1.1 Compact Mode

The left menu and its submenus can be placed in compact mode, and the viewer toolbar can be hidden for a broad view of the image (Image 1). This function is responsive, when you hover the mouse quickly over the menu, it will be automatically placed in compact mode. If you wish to

disable this function, simply click on the icon located at the top of the menu. To reduce the toolbar, simply click the button , located in the lower right corner.

Image 1 - Compact mode

2.1.2 Intermediary Mode

The intermediary mode can be accessed in the lower right toolbar in the viewer screen, and can be used by clicking once in the Hide button. In this mode, the tools can be seen (Image 2).

Image 2 - Intermediary mode

2.1.3 Full Mode

The full screen mode can be accessed at the bottom right of the viewer toolbar, by clicking the button Hide. This will allow you to have a wider view of the selected image. To return to the view mode with all images opened, just click the Hide button again (Image 3).

Image 3 - Full mode

2.2 Languages

Athena DICOM Viewer supports multiple languages. To change the current language of the software , simply access Settings, then select the General tab and choose the language of interest (Image 4). To apply the settings, Athena must be restarted.

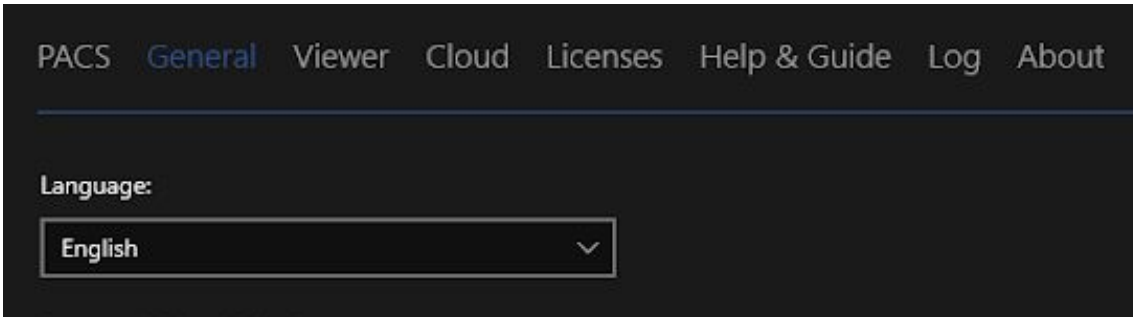


Image 4 - Location of language settings

2.3 Voice Command

Athena can use voice commands to perform some functions such as "open last study", "open patient", "list all tomography exams from this morning", etc. At the end of this section, you'll find some examples of available voice commands.

You can run the voice command from any screen during any task. To use the tool, simply click the icon Voice above the button Settings on the left bar, speak the command and wait for its recognition (Image 6).

To change the speech language, you'll need to change the language of all software in Settings and, if necessary, change the language of the device in "Speech" in the Windows configuration (Settings → Time & Language → Speech).

Examples of Local Commands	Examples of PACS commands
"Open Patient X"	"Open last exam from the server/PACS"
"Open latest study"	"Open patient X from the server"
"Open all series"	"List the latest exams"
"Close all studies"	"List the patients from yesterday"
	"Show studies earlier this morning"
	"Show CT scan from last week"

2.4 Feedback

Taking in consideration the opinion of our users, you'll find a feedback in the lower toolbar in the Settings. Here you can give us a review of the *software* and ways we can improve. (Image 5).

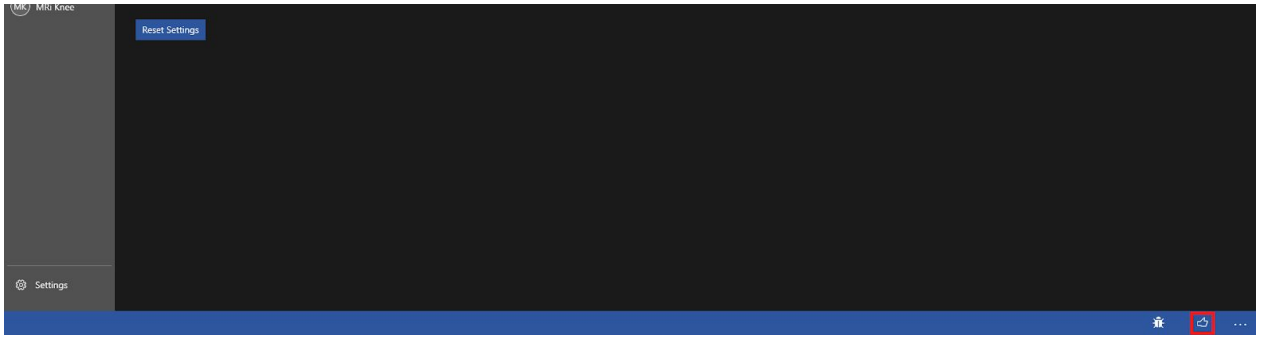


Image 5 - Location of feedback button

2.5 Restricted Mode*

Restricted mode is a tool that allows the user to make changes to their views, and they will not be saved in the image. To use it, just click on , located in the Settings tab (Image 6).

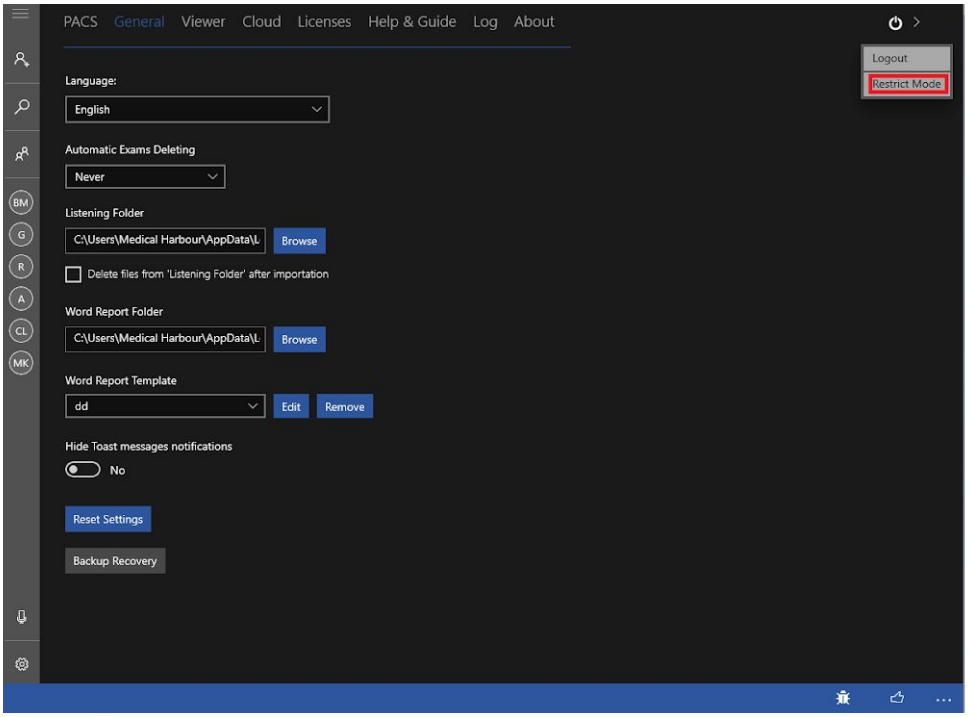


Image 6 - Location of restricted mode

2.6 User Settings

Athena lets you conImage various general and specific viewer functionalities. To access, just go to Settings, located in the lower left corner. When accessing, you can see the available settings in Athena.

Available Settings:

PACS	PACS server settings
	Automatic Recovery
General	Automatic exclusion of exams (number of days that Athena will keep studies after importation); *
	Listening folder (folder selected by the user to automatically upload to Athena, all studies contained in it); *
	Option to exclude files from the "Listening Folder" after import; *
	Word Report folder (set in which folder Athena saves Word reports);

	Word report template (selection, edition and creation of templates);
	Hide Notifications
	Reset settings.
	Recover Backup;
	Languages
Viewer	Upload DICOMized Key Images (send the image to the current PACS server);
	Upload of DICOMized files (send the files to the current PACS server);
	Hide toolbar by default (hide or show viewer toolbar when opening);
	Magnifying glass interpolation (linear interpolation or near ones);
	Number of samples when static (number of samples used when 3D mode is static);
	Number of samples during Manipulation (number of samples used in 3D mode during manipulation);
	Display message when the images don't follow the DICOM pattern (show or hide message when the study is not compatible with DICOM).
	Reset Settings.
Licenses	User information and the Athena access key;
Help & Guide	Access to videos, manual and Athena Quick Guide;
Log	Report of events and possible errors while using Athena;
About	Contact information for questions and suggestions, and information on the latest software actualizations. To check the information about software updates, you'll need to click in the button that tells the version, for example: Version 1.5.0.0.

* Items marked with this asterisk are only part of the **Athena Expert version.**

2.7 MHKB (Medical Harbor Knowledge Base)

The *Medical Harbor Knowledge Base* is a DICOM library with dozens of studies of different modalities and specialties. You can access these studies by clicking the button 

in the left side menu, selecting *Medical Harbor Knowledge Base* from the list of PACS servers and clicking the button 

(Image 7).

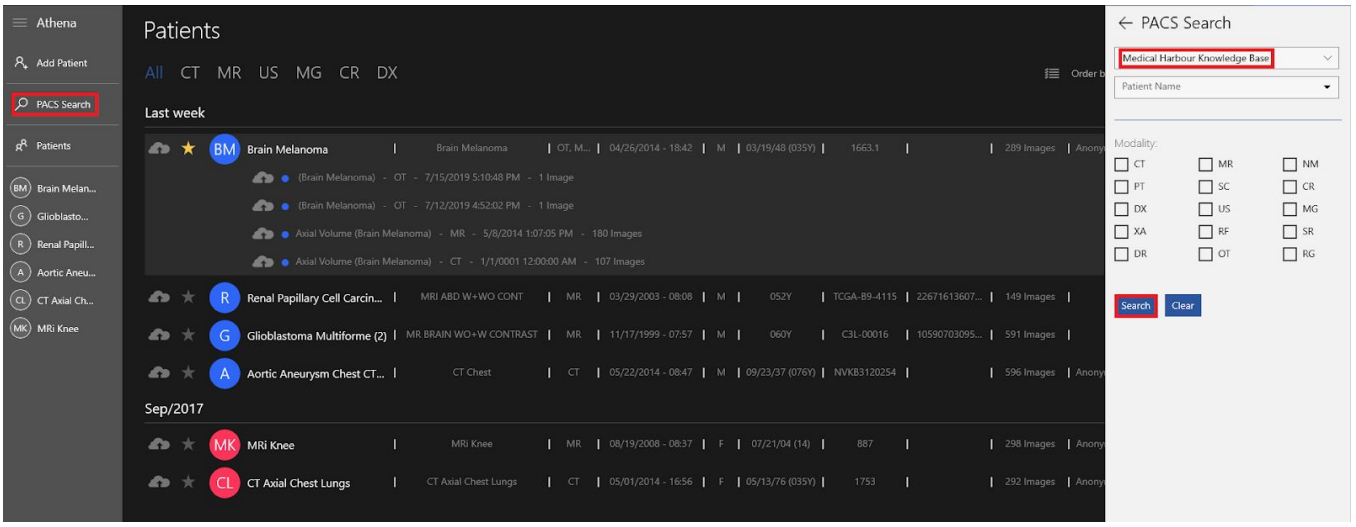


Image 7 - Location of MHKB

3. Patients

This chapter addresses all the characteristics of the "Patient" home screen, including:

- Import and export of patients from fast and advanced local search;
- Editing and anonymizing DICOM headers;
- Merge of different ID patients;
- Display Modes;
- Tools;
- Classification;

3.1 Local Import of Patients/Open Directly

It is possible to open DICOM files directly in Athena DICOM, to do so, just double-click on the DICOM file and select Athena DICOM Expert or Athena DICOM Essential as the visualization software (Image 8).

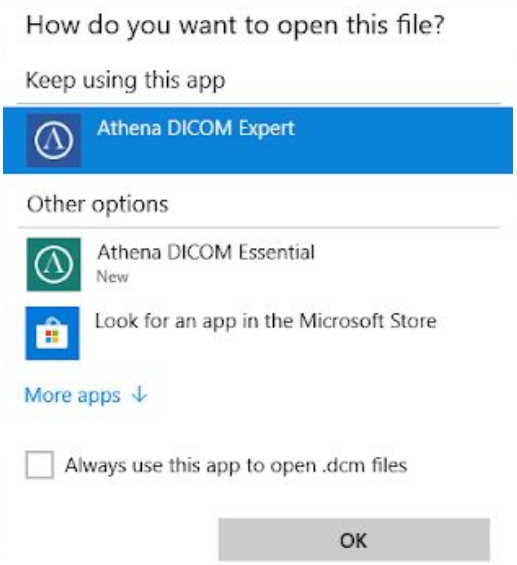


Image 8 -Opening DICOM files directly in the software

You can also import local DICOM images by clicking the button 

in the sidebar menu (Image 8 and 9).

Image 9 - Local import of patients

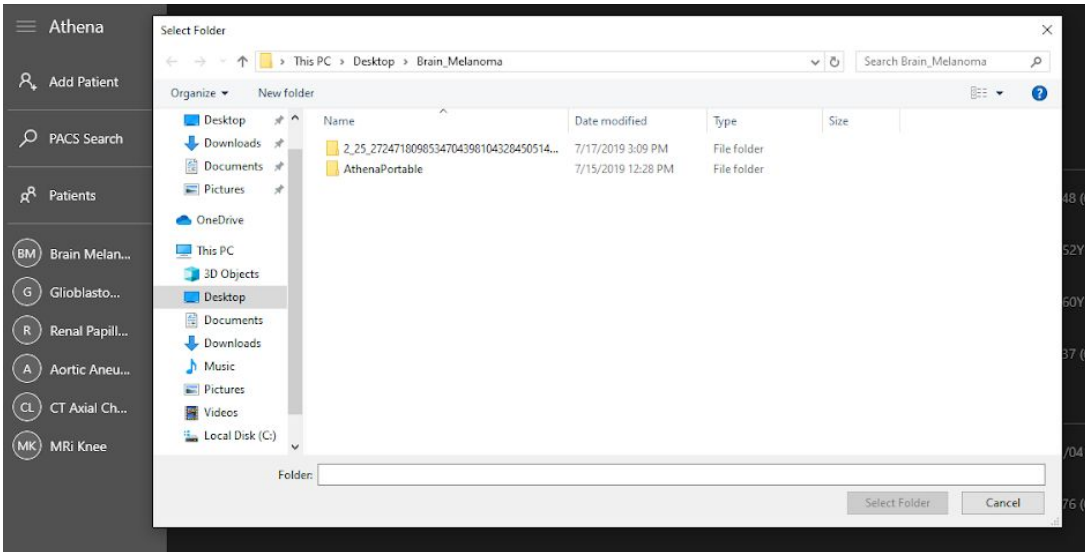


Image 10 - Selection of files for local importation of patients. .

Just select a folder and Athena will import automatically all DICOM files os said folder. **It's not necessary to access each folder individually to import all studies.**

After the import, the new patient will appear with a green circle, indicating that it is new. Whenever a new patient is added to Athena, it receives this indication and only after the first visualization of the images it's removed. With this, the user becomes aware that an imported patient has not yet been visualized (Image 11). The patients screen has a distinction of colors for their patients: Male patients, are pointed with blue spheres, while female patients, with pink spheres. If the patient is not identified, the sphere will be purple.
In addition, there are two colors to facilitate the identification of a study: New downloaded studies will be flagged with a small green sphere, while studies not downloaded, will be flagged with a gray sphere. To import all DICOM files from a device or computer, simply perform the same procedure and select the unit of interest.

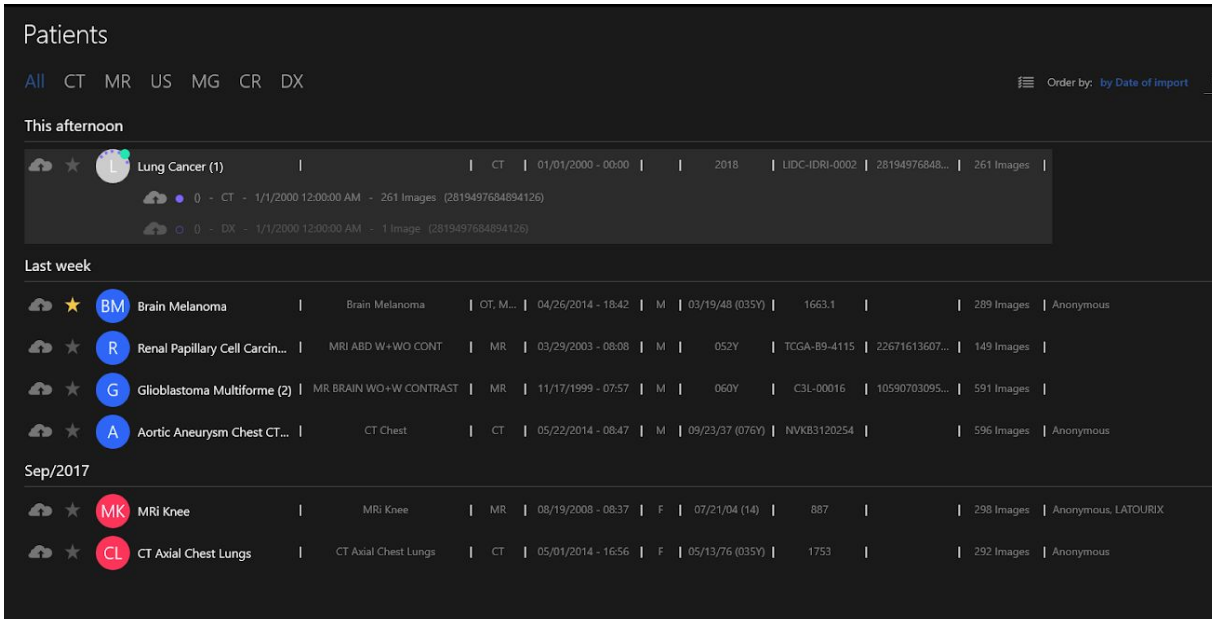


Image 11 - New patients and Athena's color differentiation

Athena DICOM Viewer can import files through:

- CD
- DVD
- USB
- HDD / SSD
- Cloud Drives (OneDrive, Google Drive, Dropbox, if available locally).

3.1.1 ZIP Files

Athena also supports ZIP archives. You can import them directly to the platform and it will extract the files automatically.

3.1.2 Drag and Drop

You can also use Drag and Drop to import images. Just drag and drop a folder, DICOM file or a ZIP archive over to Athena and it will automatically import the images.

3.2 Arrange Patients

Athena allows you to arrange the list of patients by the following items:

- Name (by clicking on the sphere with the patients initials)
- Date (study date)
- Date of Import (date the study was imported)
- Marking (manual marking - marks the study of interest as a favorite)

To do so, simply choose the desired option on the Athena patient screen (Image 12). In addition, you can put a patient as a favorite by clicking on the star next to the name initials.

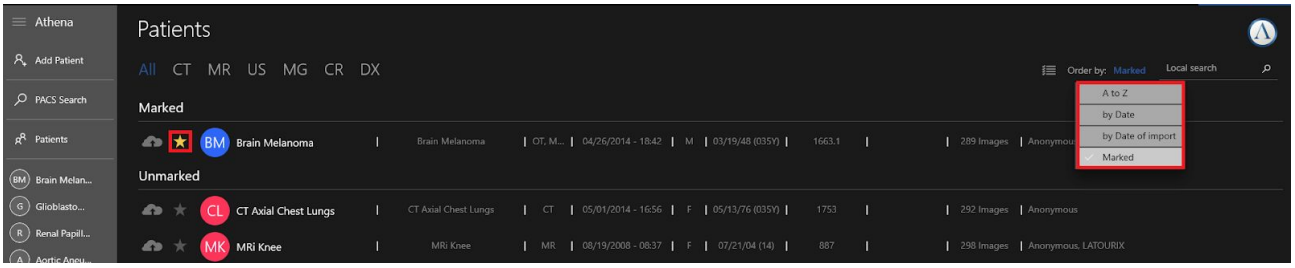


Image 12 - Arranging options for patients

3.3 List of View

The Patients screen has a list of all the images added to the Athena DICOM. The patient list allows you to view a summary of each patients information. (Image 13).

The displayed information are:

- Initials of the name
- Description last study
- Date of Last Study
- Date of birth or age:
- Access number
- Patient Name
- Assessment
- Gender
- Patient ID
- Notification for new patients

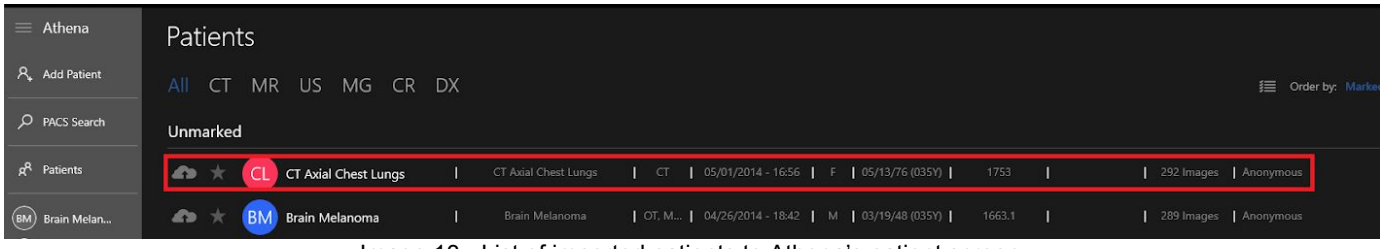


Image 13 - List of imported patients to Athena's patient screen

3.4 Tooltip

This feature is designed to provide quick access to the summary of exams, and contains all the information about a patient or a study/series. To access it, simply hold the mouse (without clicking) on the patient or on the series of interest (Image 14 and 15).

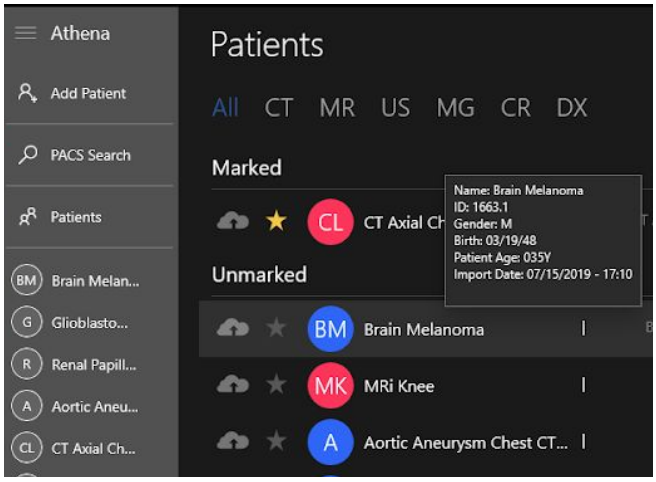


Image 14 - Summary of informations regarding add images in the patient list of Athena

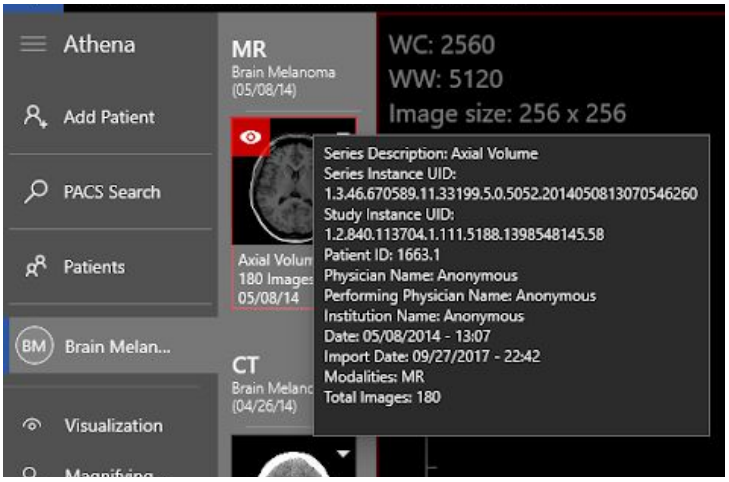


Image 15 - Summary of informations regarding add images in open views in Athena

3.5 Merge

There are some cases in which the same patient may have different IDs. Athena allows you to merge studies and patients, in order to organize or compare different studies/series.

To do this, simply click the selection button  located at the top right of the screen, select the patients you want to merge, and click on the button  located on the bottom bar. A new menu will appear with the options "Patient Name" and "Patient ID" so that you can assign new identities to this document (Image 16).

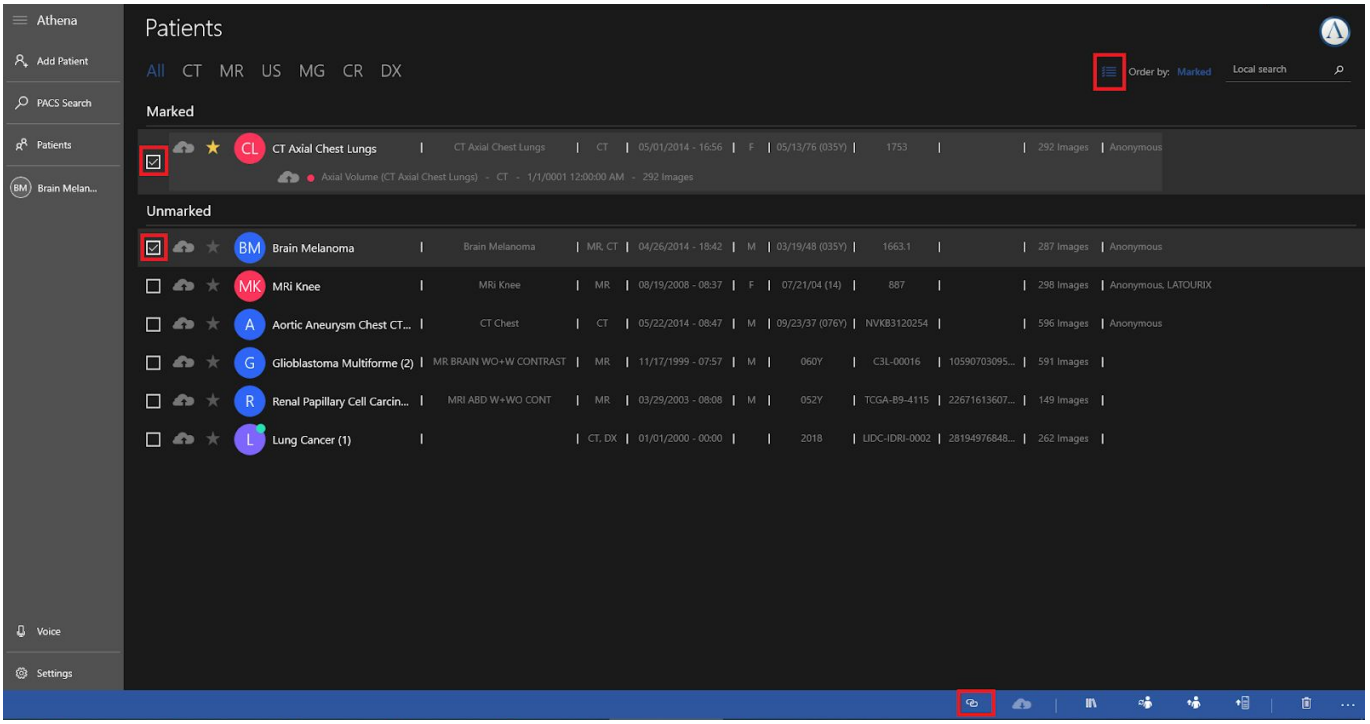


Image 16 -Merge tool responsible for merging studies in Athena

3.6 Quick Access

Quick access is a list sorted automatically by the last study opened, which allows you to view the last exams seen. You can add or remove shortcuts according to your needs, which allows for unique customization and greater flexibility of the tool.

3.6.1 Add Shortcut

To add a shortcut, simply open a patient's exam and Athena will automatically link a shortcut in the left menu. You can also add it manually by dragging the circle with the patients initials to the left menu and releasing it (Image 17 and 18).

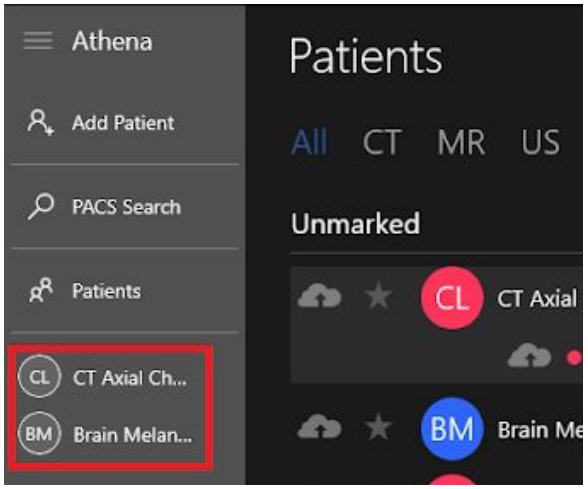


Image 17 - List of shortcuts in Athena.

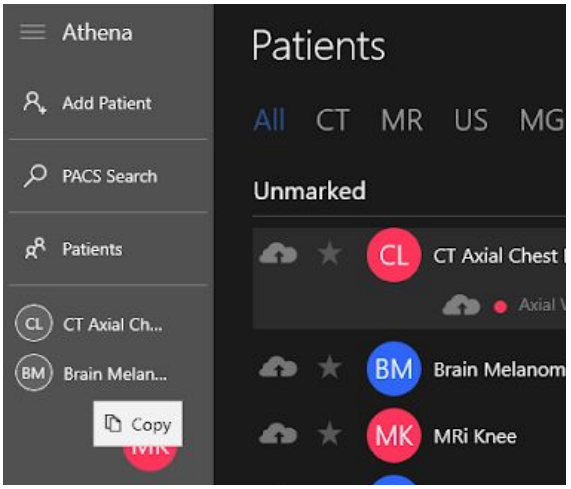


Image 18 - Manual vinculation of shortcuts in Athena

3.6.2 Remove Shortcut

To remove a study, you must remove it manually. To do so, right click on the item and select "remove" (Image 19).

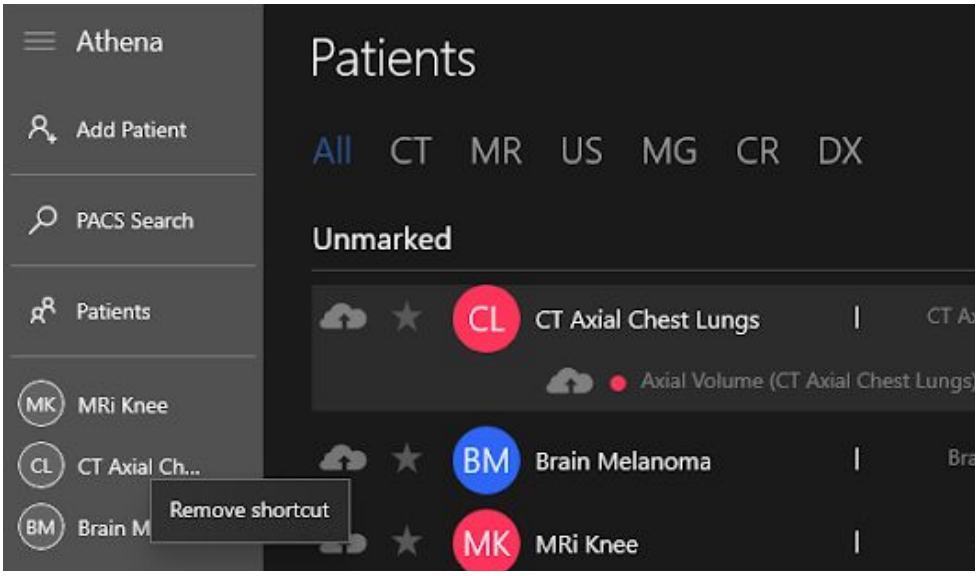


Image 19 - Manual removal of shortcuts in Athena.

3.7 DICOM Information

You can quickly access a synopsis of the information from the imported studies, to do so, just right-click on the patient of interest and select the "Information" option (Image 20). In this synopsis are present information such as: patient id, institution name, gender, birth, among others (Image 21).

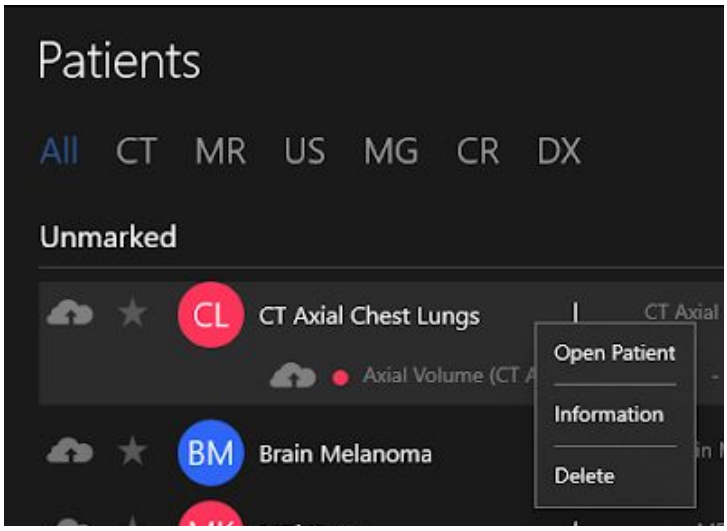


Image 20 - Access to patients informations

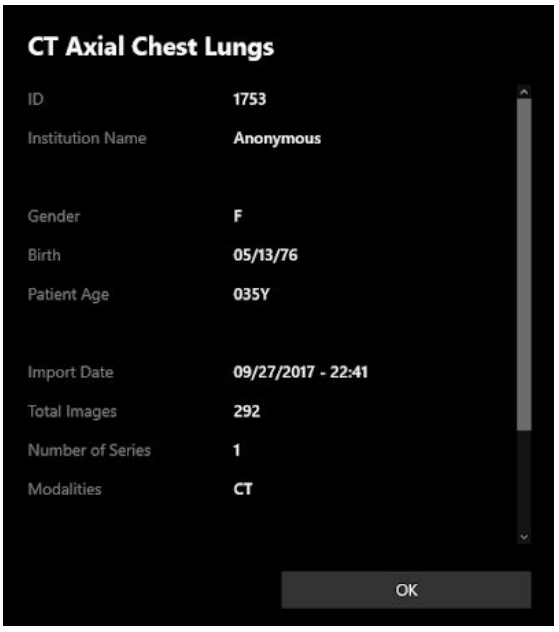


Image 21 - Summary of informations about the patient

3.8 Local Quick Search

The Athena has a search tab, which makes possible to find a patient already imported by name. The search displays all patients who have the word/letter somewhere in their name, in the search field (Image 22).

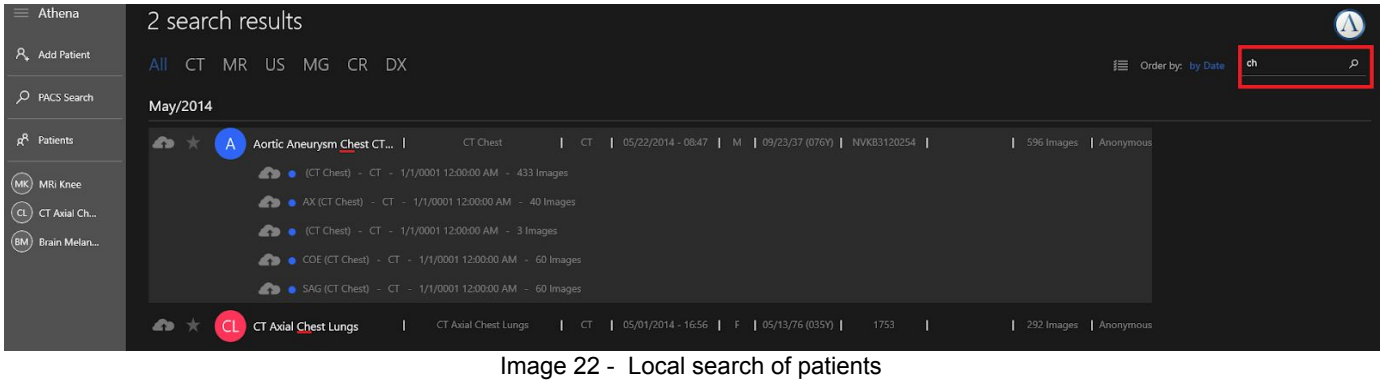


Image 22 - Local search of patients

3.9 DICOM tags (DICOM Header)

Athena allows you to view the entire DICOM header of a series or patient. In this way, you can edit the tags and automatically anonymize the image of interest.

3.9.1 Search and Display

To access the DICOM header, simply right-click the desired series and select "Other → DICOM *Header*" (Image 12), or the desired patient and select "DICOM *Header*".

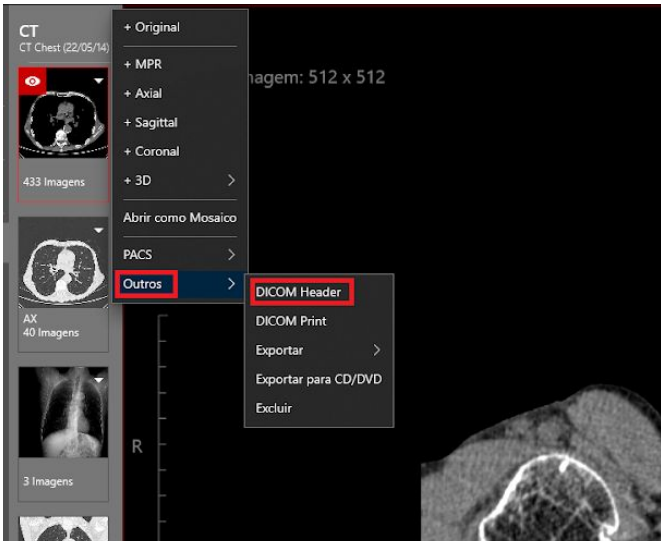


Image 23 - Access to the DICOM Header in the series list in Athena's viewer screen.

3.9.2 Editing

To edit a DICOM tag , simply click on the desired item, change it and click on the icon  located in the lower right bar. All images in this series will be saved with the new item.

On the upper right side, you can search for a specific DICOM *tag* or scroll in order to see all information (Image 24).

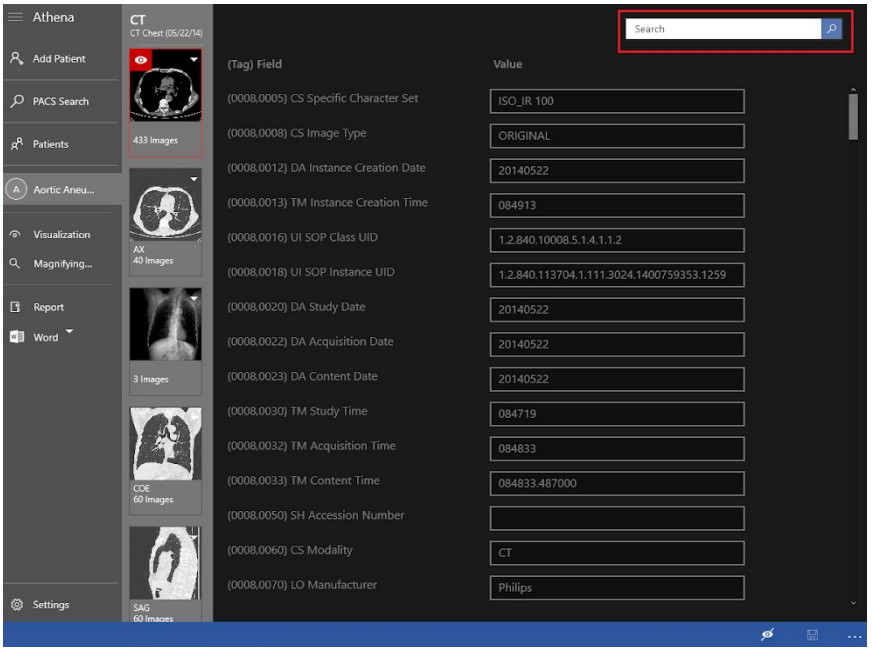


Image 24 - DICOM tag search bar in the header

3.9.3 Anonymization

The Athena DICOM Viewer allows you to automatically anonymize the DICOM tags that identify patients, such as name of the institution, name of the doctor, name of the station, name, identification and patient's birth data, among others informations. You can also dismiss/select the fields that you want to anonymize. To perform this action, click on the button located in the bottom bar of Athena, and the fields for anonymization will be enabled. To save all changes, just click the icon , located in the lower right bar (Image 25).

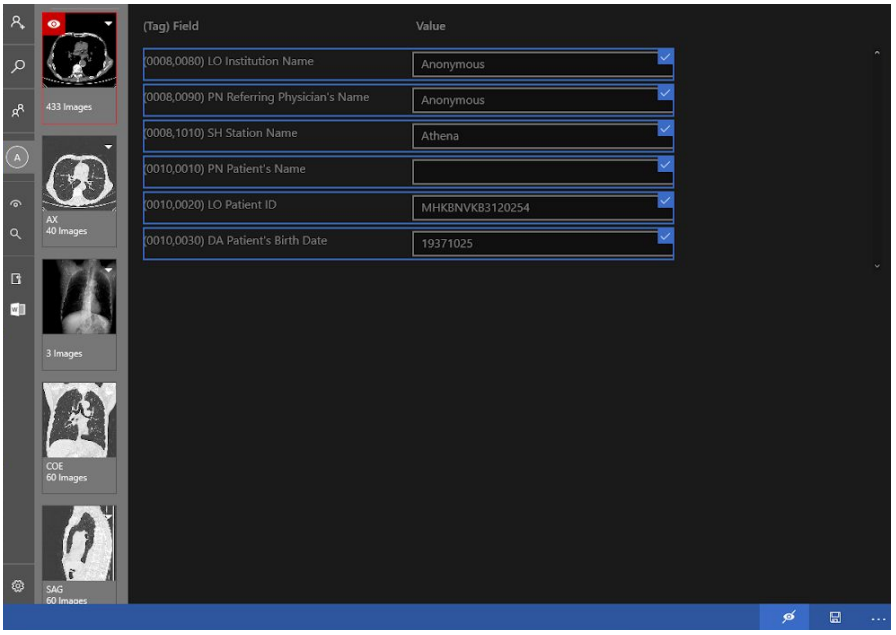


Image 25 - Automatic anonymization of DICOM tags that can identify the patient.

3.10 Export to Local

In Athena you can also export DICOM images or JPEG images from your desired studies or series to local units. This feature is available in the submenu, accessed with a right-click on each patient or series (Image 26).

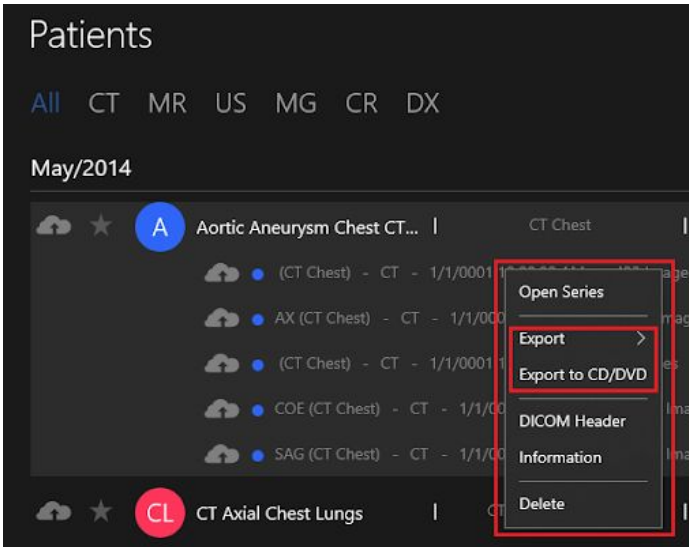


Image 26 - Local export of Athena

3.10.1 Export to DICOM and JPEG

This feature allows you to save all DICOM files (extension .dcm) separated by series to the destination folder, and to do the same process with DICOM files in JPEG format (Image 27).

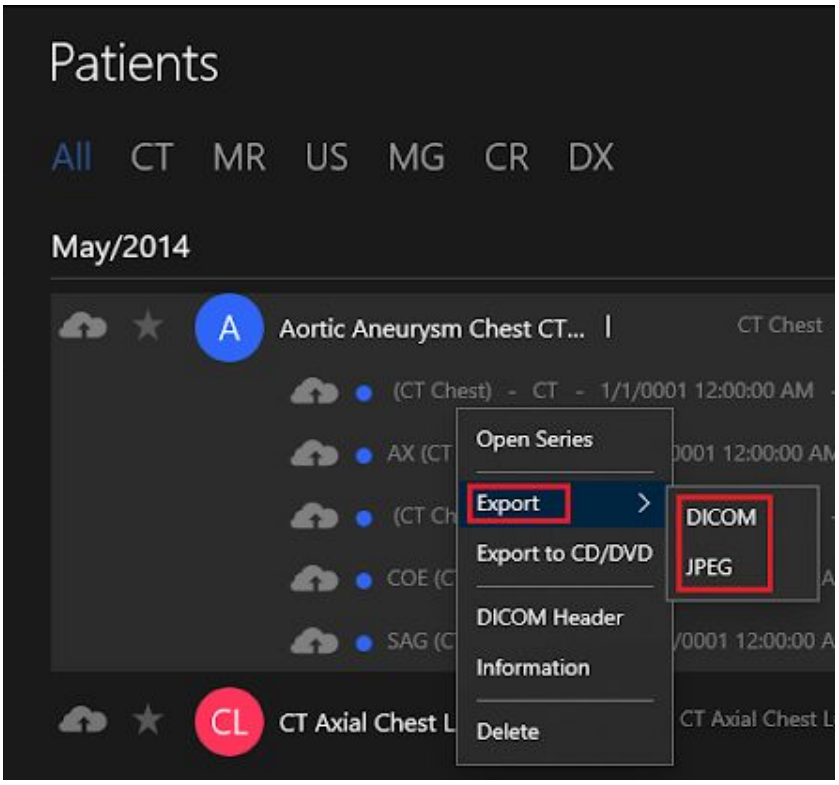


Image 27 - DICOM and JPEG export of Athena

3.10.2 Exporting to CD / DVD

Athena lets you create a CD or DVD with the selected images of interest. This feature copies the files to the drive, and incorporates a portable *web* viewer, to view the images on the CD/DVD, without the need to install any software for it. The only requirement, is that the web browser should run on Windows or MacOS. **You can also export to any folder or pendrive.**

To export a series of images to a CD or DVD, follow these steps:

1 - Right-click on the patient or series of interest and select "Export to CD/DVD" or "Other → Export to CD/DVD" when selecting from the list of series in the viewer (Image 28 and 29).

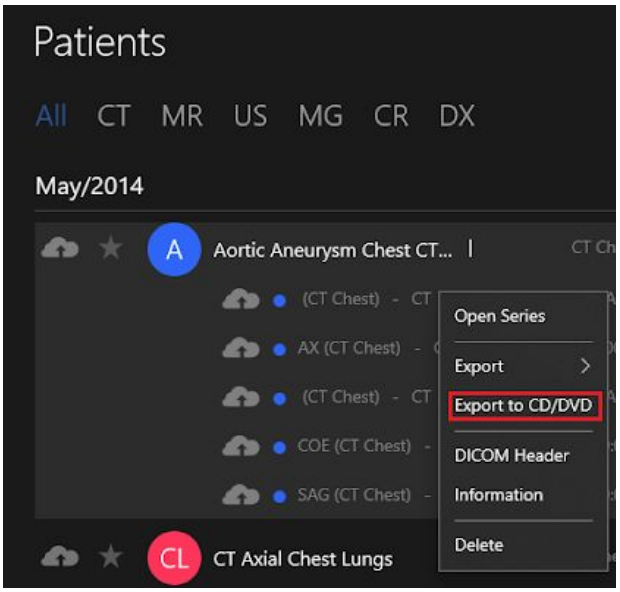


Image 28 - CD/DVD export directly from the patients screen of Athena

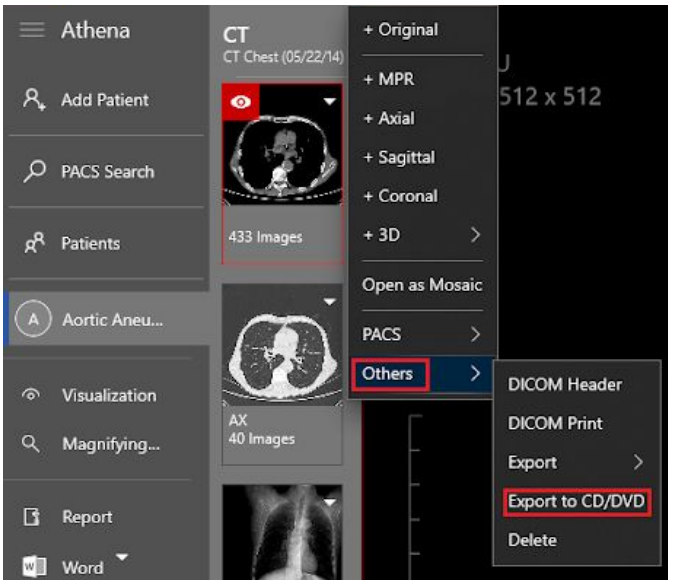


Image 29 - CD/DVD export diractly from the list of series of the viewer screen from Athena.

2 - Select the unit or folder to be exported;

3 - Choose the name of the new unit;

4 - Click on the unit and select "Save";

To run and view the files, open the drive used to save the images and click "runWindows.bat" (for Windows) or click "runMac.command" (for MacOS). The operating system may request permission to open the file, just select "Run" or equivalent. After executing, the following screen will be displayed (Image 30).

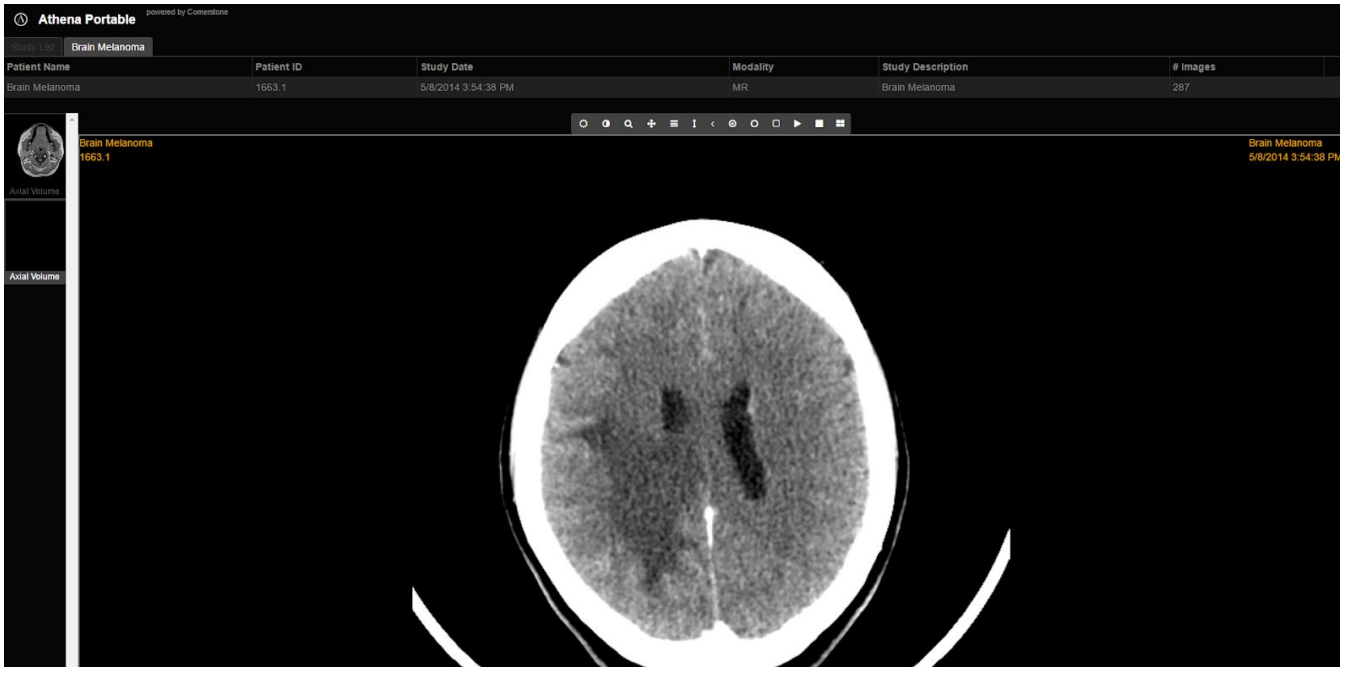


Image 30 - Athena visualizer of images from an external unity

3.11 DICOMization of files

In Athena it's possible to DICOMize any type of file. With this feature you can easily access images, PDF files, scanned reports, among other files directly related to the list of series of a patient of interest. This feature allows the exportation and storation of DICOM files in any preconImaged PACS.

To do this, simply select the "DICOMize" option by right-clicking on the patient of interest, and select the "Image" or "Other" option. After DICOMization a new series will be added to the patient, and the type of file will be indicated in the name (Image 31).

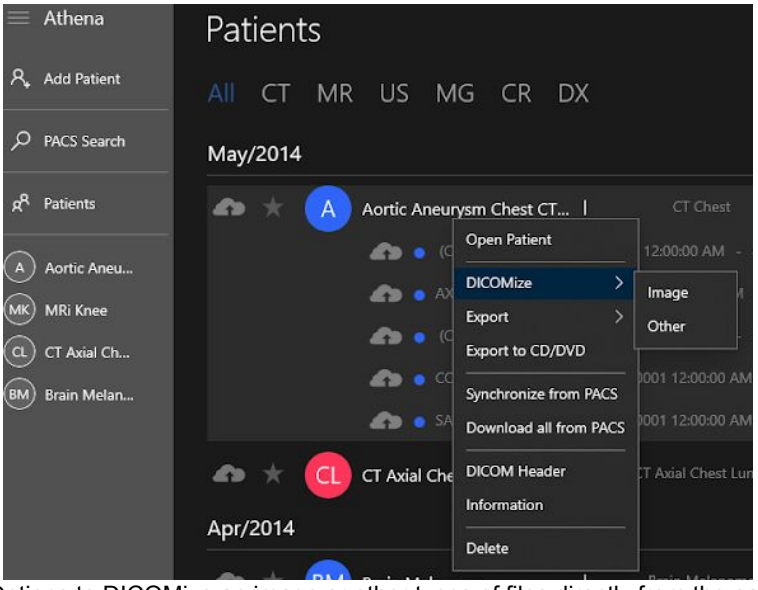


Image 31 - Options to DICOMize an image or other types of files directly from the patients screen

4. PACS Server

The DICOM Viewer can be connected to any PACS server that follows the DICOM specifications, and can also be conImaged to several other servers. **Athena DICOM Essential can be connected up to two PACS servers**, while **Athena DICOM Expert has unlimited connections to servers.** To improve security during scanning and transfer, Athena can use encryption on all its transmission layers (if the PACS is compatible). It is also possible to use the new DICOMweb standards to receive images with the WADO protocol (Web Access to DICOM Object), available in Athena DICOM Expert and that allows the transfer of images up to 10 times faster than the common DICOM protocol. In addition to that, you can use the standard and widely used transmission modes (server-client) such as C-MOVE and C-GET.

4.1 PACS Configurations

Athena supports multiple configurations of PACS servers. They are listed in the "PACS Search" panel and can be added, edited or removed through the "PACS" tab in Settings. To see the description, simply place your mouse over the text box of each configuration item (Image 32).

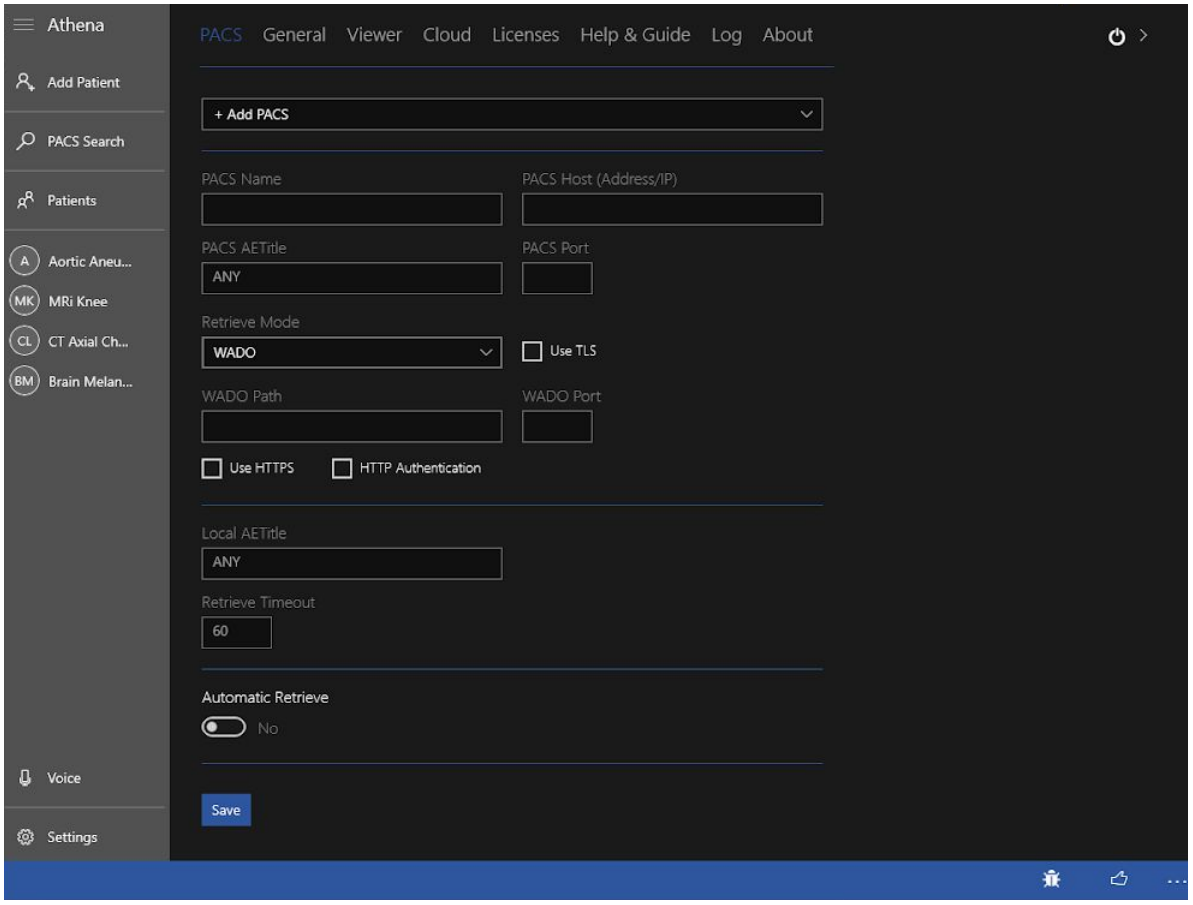


Image 32 -Access to PACS server configuration .

4.1.1 Add PACS

To add a PACS server, select the + Add PACS option in the check box and enter the required settings (Image 33). If you have any questions about adding the setting of the PACS server, consult the specialist in your Hospital/Clinic.

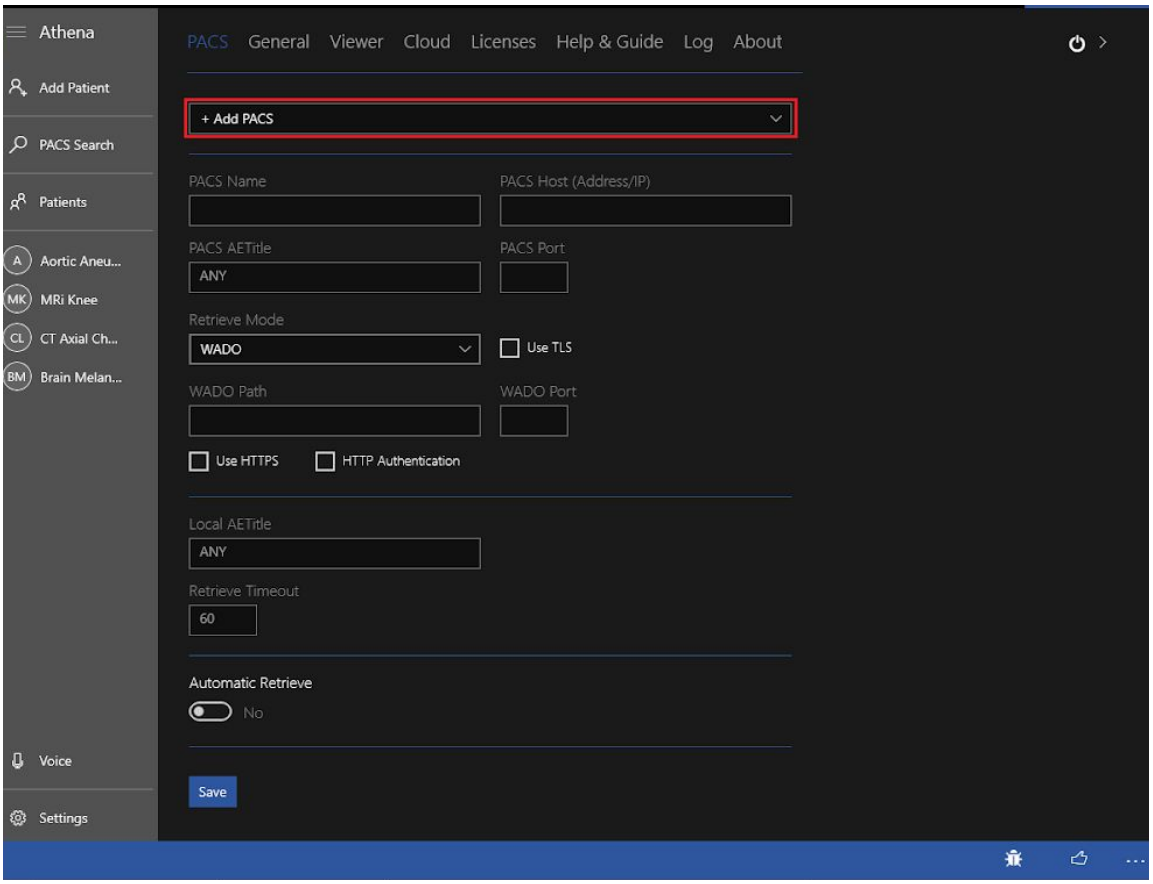


Image 33 - Option to add a PACS server.

After entering the information, Athena will display a message telling you if the PACS settings are correct, or if there is an error. In the case of WADO recovery mode, Athena will not check if the path is correct during setup, only during image recovery the software will display a message on the screen informing you if there was an error during the scan.

Athena supports WADO and TLS. You can also change the time of request of the solicitation, in case the conImaged PACS requires 60 seconds or more to respond.

4.1.1.1 C-GET

The C-GET recovery mode is a type of operation for transmitting DICOM files (server-client). To select the C-GET mode, select "GET" in the "Recovery Mode" checkbox (Image 34).

4.1.1.2 C-MOVE

C-MOVE recovery mode is a type of operation for transmitting DICOM (server-client) files widely supported by most PACS. In this operation, the receiver will not always be the same individual that requested the transmission.

To select the C-MOVE mode, select "MOVE" in the "Recovery Mode" checkbox (Image 34). The transfer will follow the standard DICOM protocol. For this mode to work, the workstation must be previously registered on the PACS server.

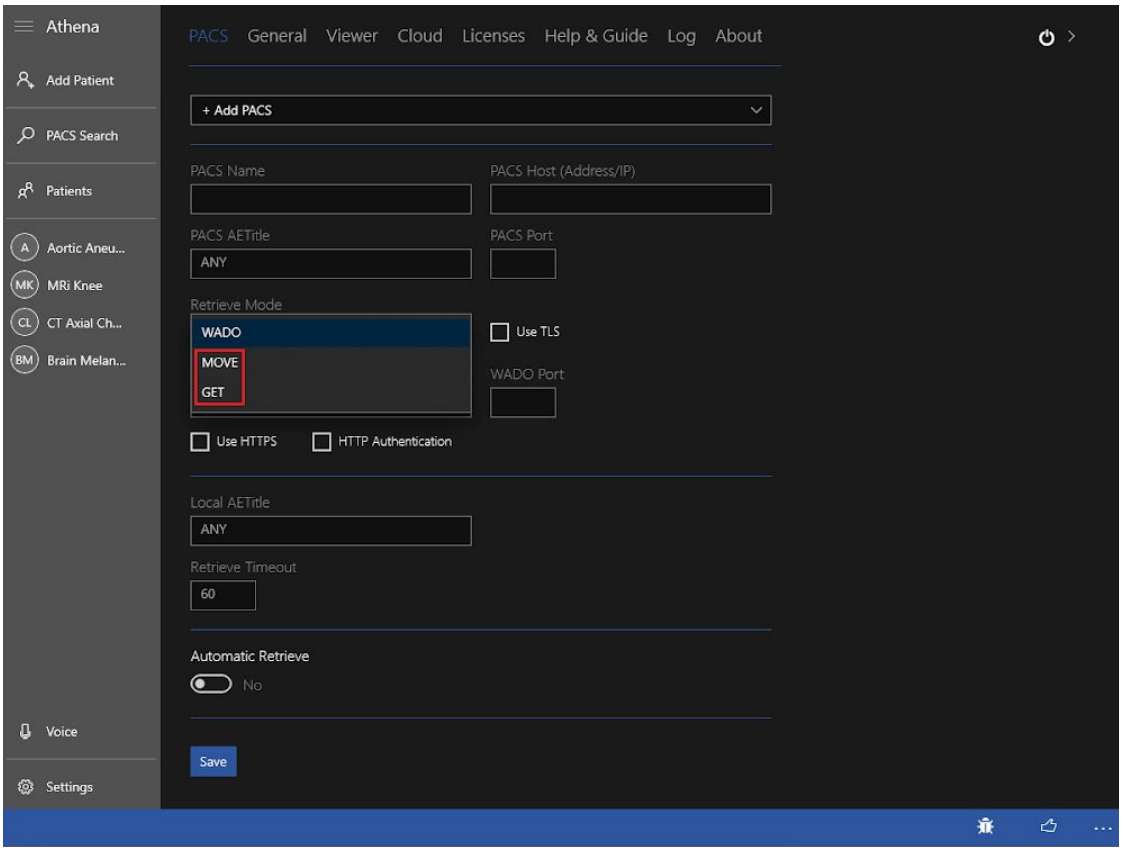


Image 34 - C-MOVE configuration for a PACS server

4.1.1.3 WADO

To select, choose "WADO" in "Recovery Mode" (Image 35). The image transfer process will follow the WADO protocol. The process can reach 10 times faster than C-MOVE, and does not require registration on the PACS server. In this mode, HTTP and HTTPS security checks can be made.

"Wado directory" is the partial path of the server's WADO directory, this field may be empty, but most PACS servers use "wado". The "Wado Port" is the directory access port, it may also be empty, however the most commonly used port is "8080". Image 36.

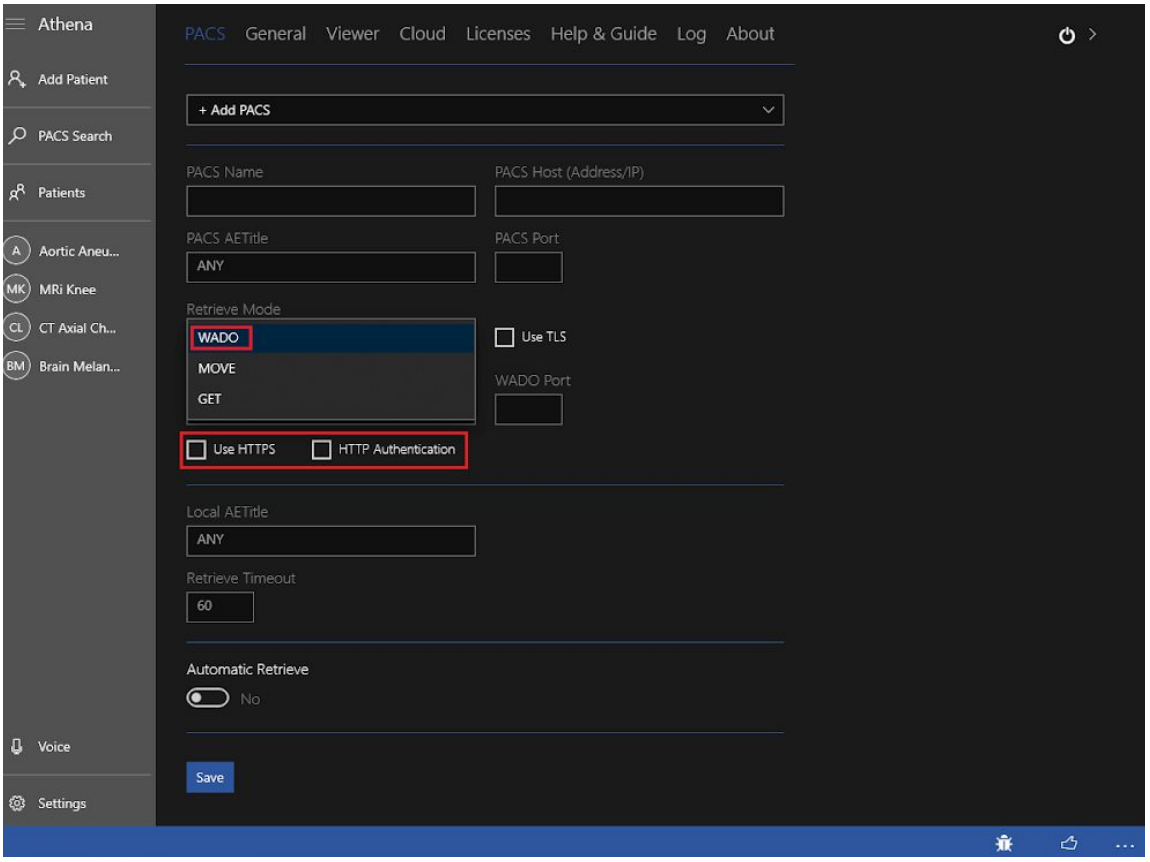


Image 36 - WADO directory configuration and WADO door for PACS server

4.1.2 Removing PACS

To remove a PACS, you need to click in the button Delete next to the button Save.

4.1.3 Standby Mode

Athena can also receive images while on standby. The DICOM files must be sent through a 'C-STORE' operation of some PACS to Athena, and these will be imported automatically.

4.2 PACS Search

PACS Search allows to make a search with a diversity of criterias, such as patient name, date, ID number, access number, study, modalities, among others. Athena provides some shortcuts with the most commonly used data such as AM, PM, Today, Yesterday, Last 2 Days, Last 7 Days, and Last Month to aid in quick searches.

To access, click the icon PACS Search and select the desired PACS. It is also possible to search for information from "Local" (studies already in the patient list) or from the *" Medical Harbor Knowledge Base"* (Image 37).

You must select the desired PACS from the combo box and the search criteria, which can be seen in image 37.

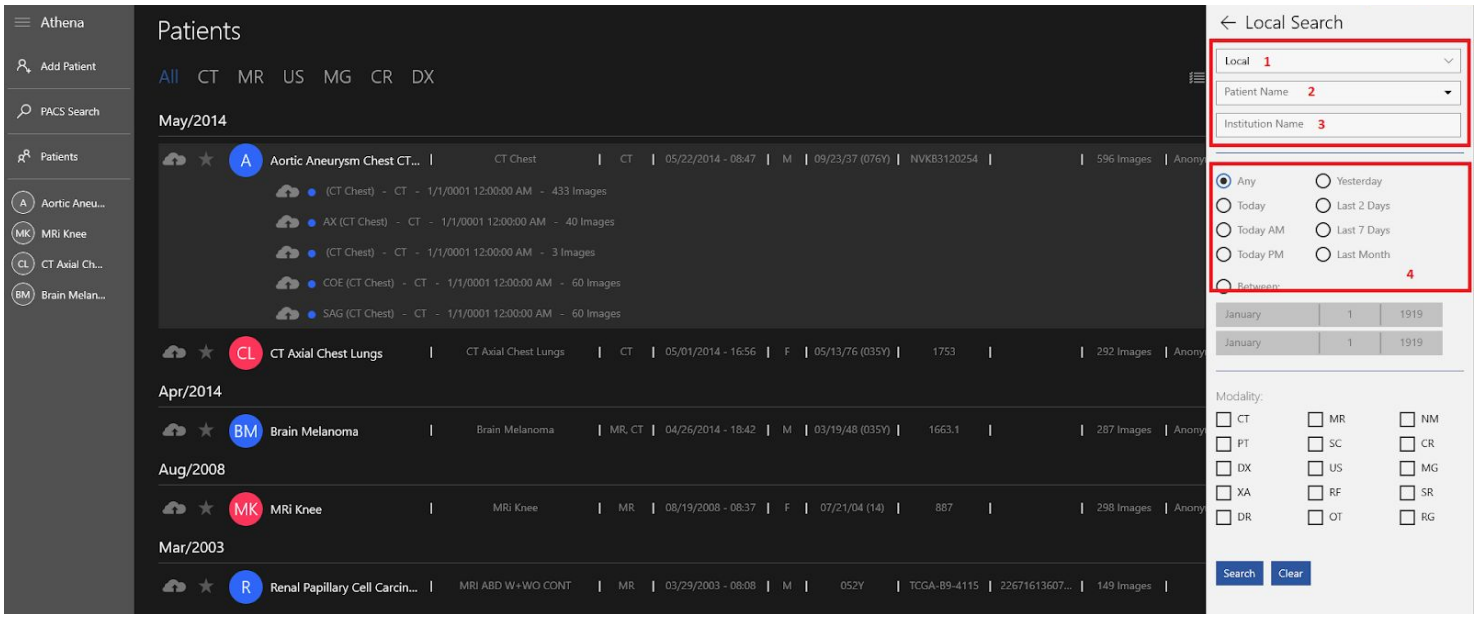


Image 37 - (1) Selection of PACS or MHKB /(2) Patients name/(3) Institutions name/(4) Search criteria

4.3 Synchronization

Synchronization is a feature that allows you to check out new and old studies of an imported patient. You can quickly view the description of existing studies without downloading it. This function allows the updating of existing patients who had exams performed on different dates. To access, simply right-click on the patient and select Synchronize from PACS (Image 38).

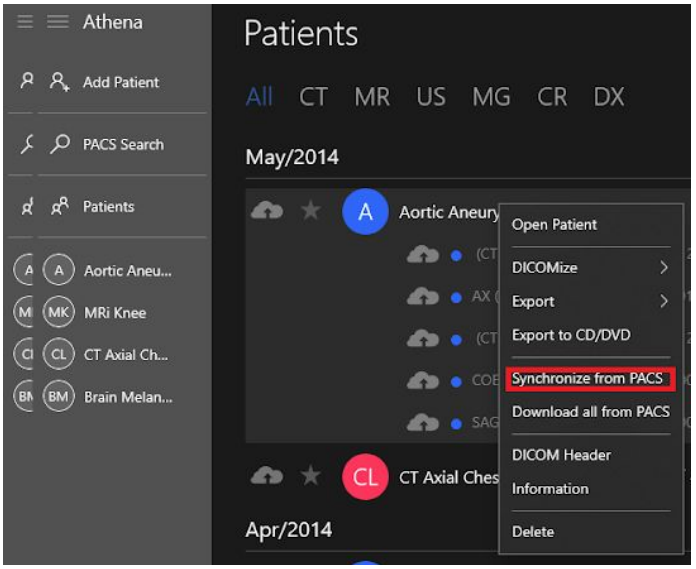


Image 38 -Option to synchronize PACS in Athena

4.4 Import from PACS

To import a study from the PACS server, simply click on the study you want to import and Athena will automatically download the study from this patient (Image 39). The download progress can be monitored from the patient tab or from the “list of series "(Image 40) and when finalized will appear like this (Image 41).

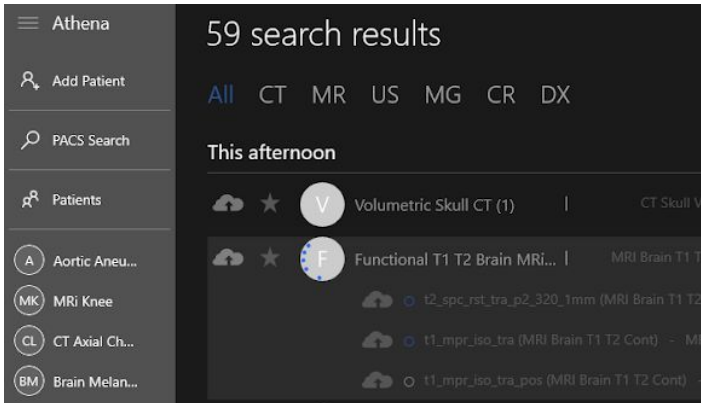


Image 39 - Importing a series from a PACS in Athena.

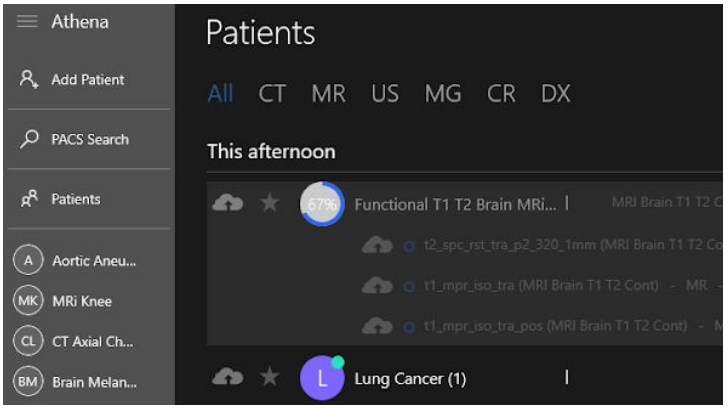


Image 40 - Download of images from a patient in the patients screen

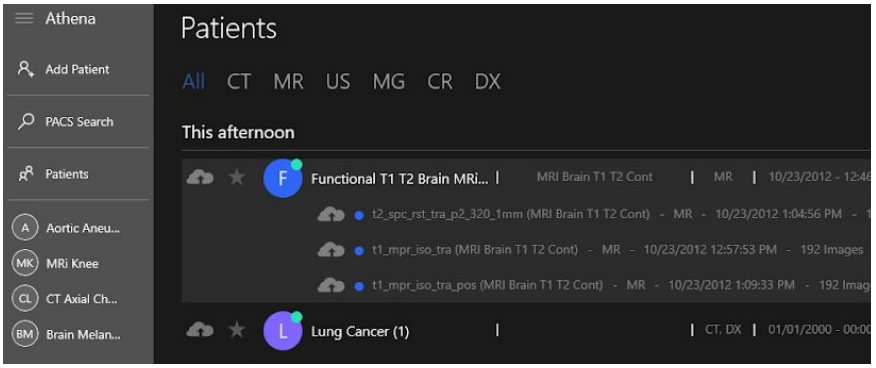


Image 41 - Complete download of a series

You can also download all images and series from a PACS by clicking with the right button into the patient of interest and selecting Download all from PACS (image 42).

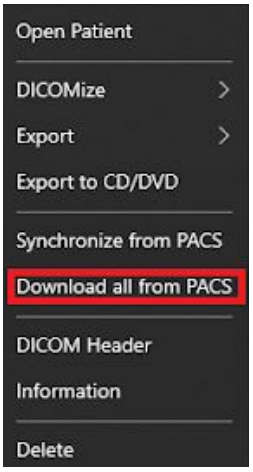


Image 42 - Option to download all images from a patient in a PACS

4.5 Export to PACS

If there is a PACS server added to Athena, it will be possible to export any previously imported patient/study to the desired PACS. You can also export a patient from a PACS A to a PACS B, or from a USB drive to the PACS, among others.

To do this, simply have an imported patient in Athena (either a PACS or local server), right-click on the patient, select the "Export to PACS" option and then select the desired PACS to send the images to (Image 43).

You can also send a specific series to the PACS server. To do this, it's necessary to open the patient, right click on the series, then select "PACS", choose the "Export to PACS" option and select the desired PACS to send the images. The loading progress can be monitored from the Patient Screen or selecting the list of series of said patient (Image 44).

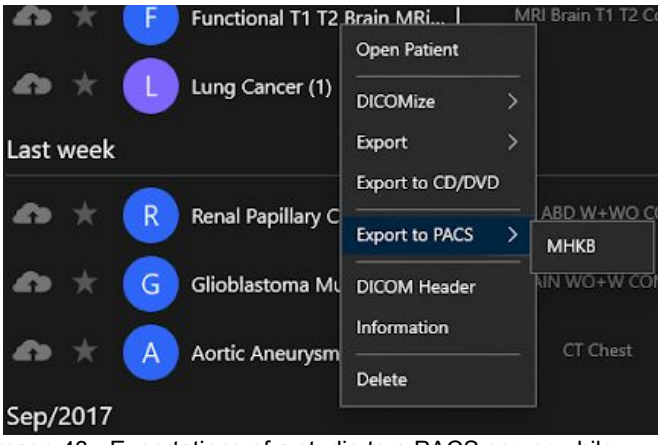


Image 43 - Exportations of a studie to a PACS server while in the patient screen

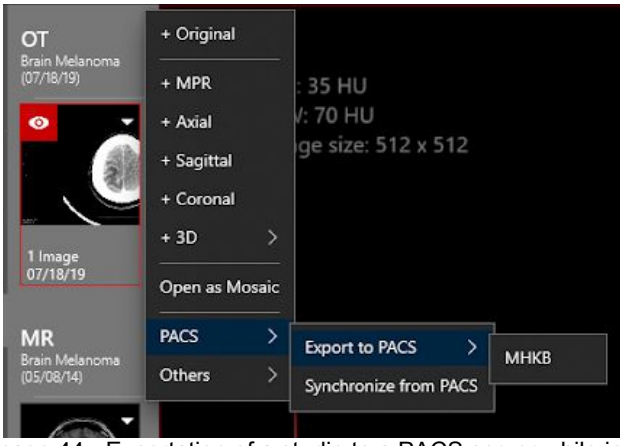


Image 44 - Exportation of a studie to a PACS server while in the viewer screen

4.6 API Integration

The API integration is a feature **available** on **Athena Corporate** , that consists of the integration with RIS systems and PACS servers. It enables fast integration using URI and supports all DICOM protocols, including DICOM extensions and DICOMweb standards for image transfer using HTTP. In addition, Athena Corporate also allows access to any remote PACS.

With Athena integration, in addition to retrieving PACS images, it's possible to create radiological templates using RTF files, dynamically conImage user settings and have a list of PACS already preconImaged.

To learn more about Athena Corporate and its benefits, please contact us and receive the API documentation which includes:

- Simple, compelling and fast integration using URI
- Local Import
- Supported protocols: C-FIND; C-MOVE; DICOMweb (WADO; QIDO-RS; WADO-RS)

5. Viewer

The Athena DICOM viewer is designed to be an advanced, dynamic, robust and easy-to-use tool. It allows high productivity, helping and resulting in fast and accurate diagnostics.

In the platform there are several features and tools that make up the viewer, such as different view modes, basic tools, advanced tools, annotations, among others. Athena has four main viewing modes: Original, MPR, 3D and Mosaic. These modes allows you to view the original image, make a multi-planar reconstruction (MPR), have a 3D view, and also allows you to have multi-views of custom slices. In addition, Athena has tools that can be valuable, such as synchronization between series/views and reference lines.

The viewer allows the comparison between any type of view (original, axial, sagittal, coronal, 3D) of any series/studies simultaneously, with reference lines and colors. You can synchronize a point of interest with axial, sagittal, coronal views in a few moves, apply color palettes with a click, and use keyboard shortcuts to facilitate access to tools and features. Besides that, the software has several tools like: custom magnifying glass, ROI (ellipse, rectangle, polyline), calculation of angles, Hounsfield value measurements, among others.

Some tools mentioned above are part of the features belonging to Athena DICOM Expert, and will be outlined in the following sections, as well as in the summary.

5.1 Original

This is the default viewer of the Athena DICOM. The Original image viewer displays the original DICOM images without any kind of interference. This mode can be accessed with a left mouse click on the series, or by right-clicking on it and selecting the 

option (Image 45).
If no series are open in the viewer, you can open all series of a selected patient by clicking the button 

in the lower right corner of the viewer screen (Image 46). Athena allows the original series to be opened more than once at the same time (Image 47).

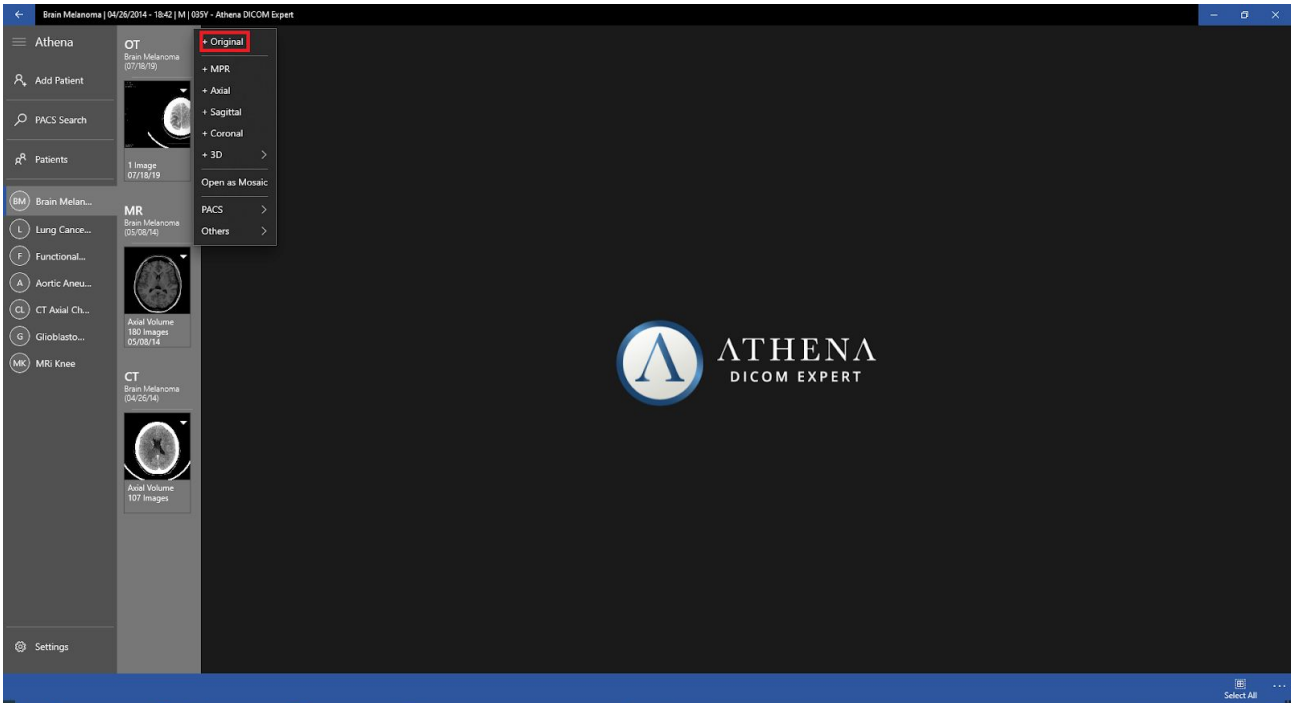


Image 46 - Location of the +Original button and the Select All function

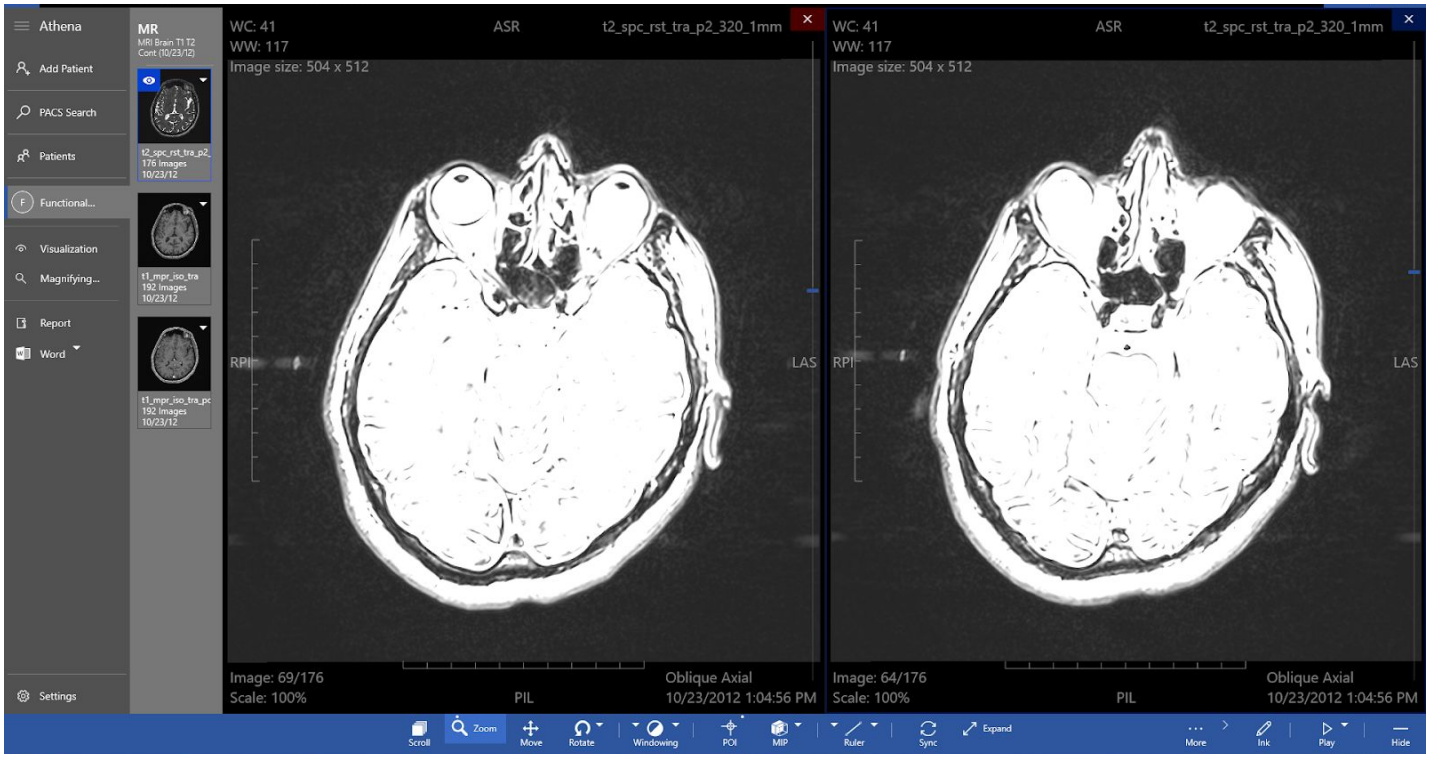


Image 47 - Simultaneos visualization of the original mode in Athena.

5.1.1 Multi-Series

Athena allows the viewing of several series simultaneously. It is possible to compare all the original series, compare them in original, axial, sagittal, coronal, volume, mip, x-ray and isosurface modes of the same or other series. This flexibility is very useful for making a contrast between different series, with different modes and properties presented in parallel way (Image 48). For **Athena DICOM Essential**, only the comparison between series in the **original mode** is available.

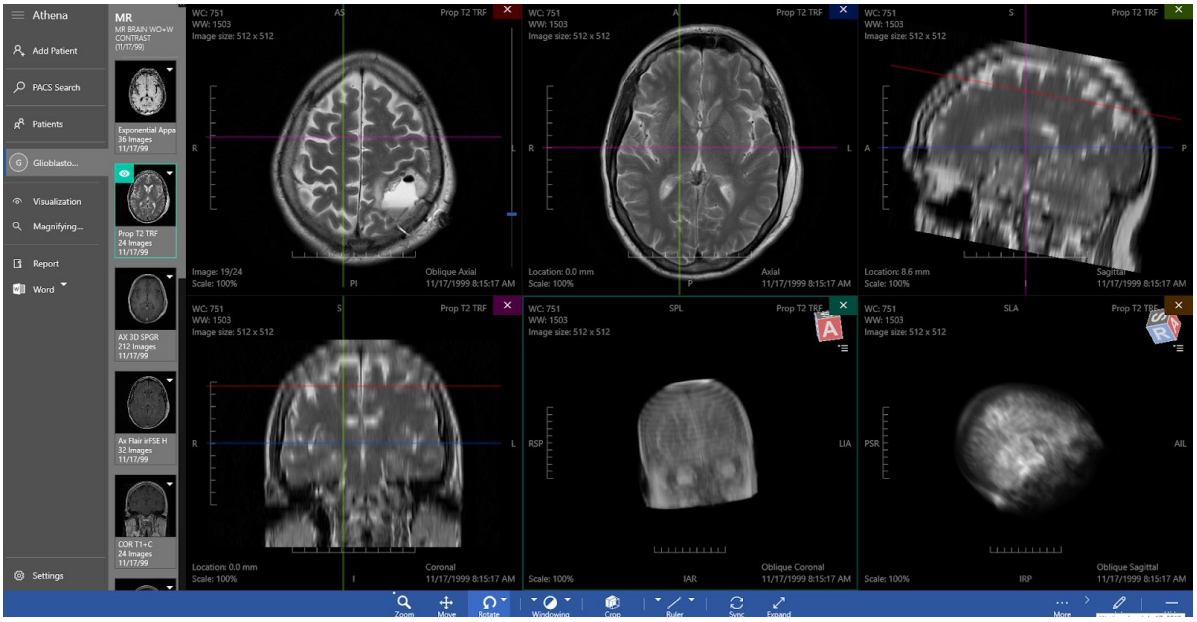


Image 48: Multiple simultaneous visualizations of different modes in Athena

5.2 MPR (Multiplanar Reconstruction) *

Multiplanar Reconstruction can be viewed in orthogonal modes (axial, sagittal, coronal or custom non-orthogonal angles) The Athena DICOM Viewer allows you to add the MPR mode in the viewer with the + MPR button or open individually as + Axial, + Sagittal or + Coronal, even though its original acquisition was carried out in a different orientation. To access the function, just right click on the series and select the desired mode (Image 49).

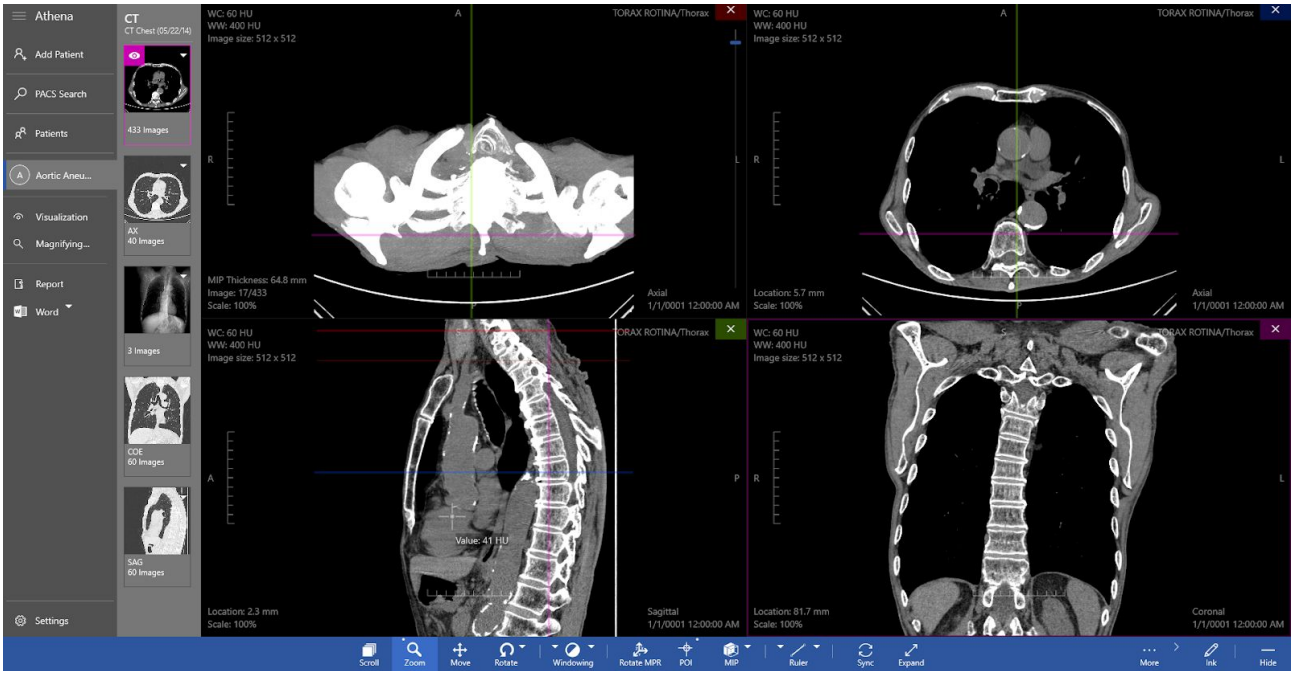


Image 49 - MPR visualization mode in Athena

Items that start with the sign "+" will include the selection in the display, unlike Open as Mosaic

Tip: Pressing CTRL and clicking the series, will automatically open the image in MPR mode.

5.2.1 Axial Mode *

To view a series in the axial mode, you'll need to right-click on the series and choose the "+ Axial" option (Image 50).

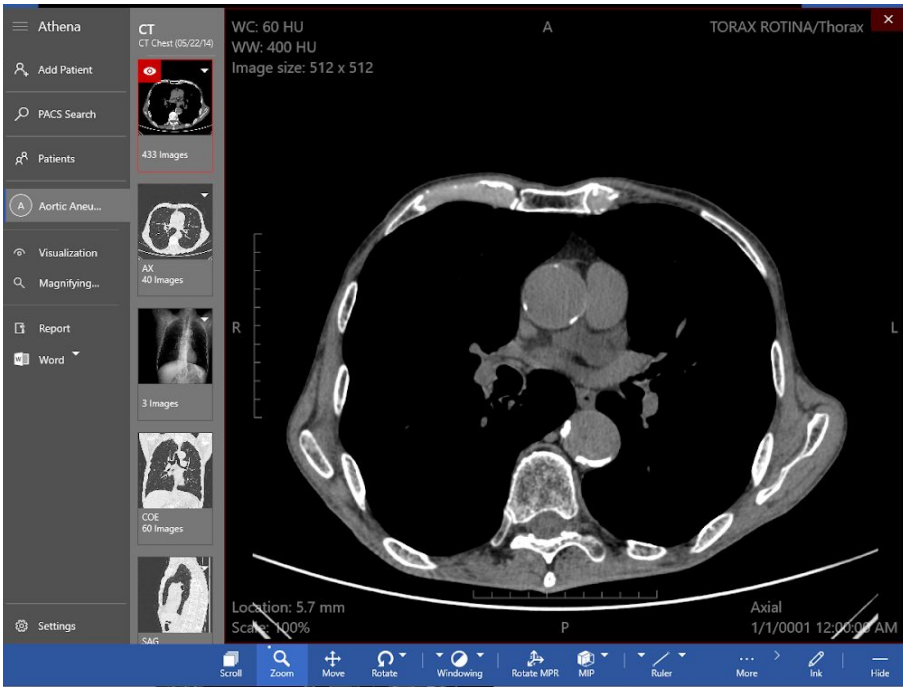


Image 50 - Visualizations of a series in Axial mode

5.2.2 Sagittal Mode *

To view a series in sagittal mode, you'll need to right-click on the series and choose the "+ Sagittal" option (Image 51).

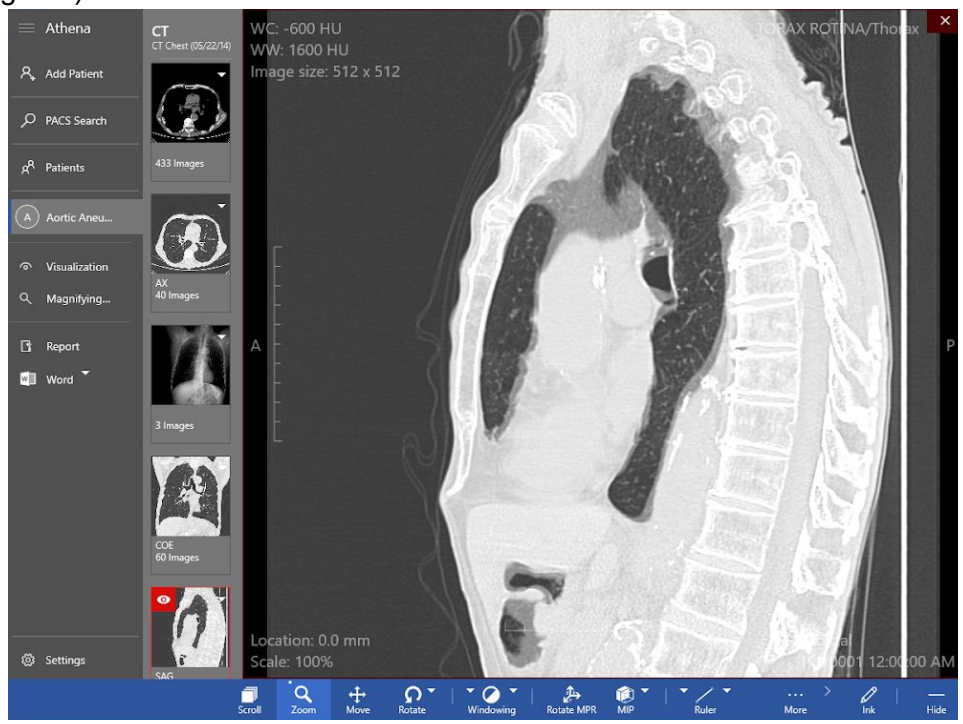


Image 51 -Visualization of a series in sagittal mode

5.2.3 Coronal Mode *

To view a series in the axial mode, you'll need to right-click on the series and choose the "+ Axial" option (Image 52).

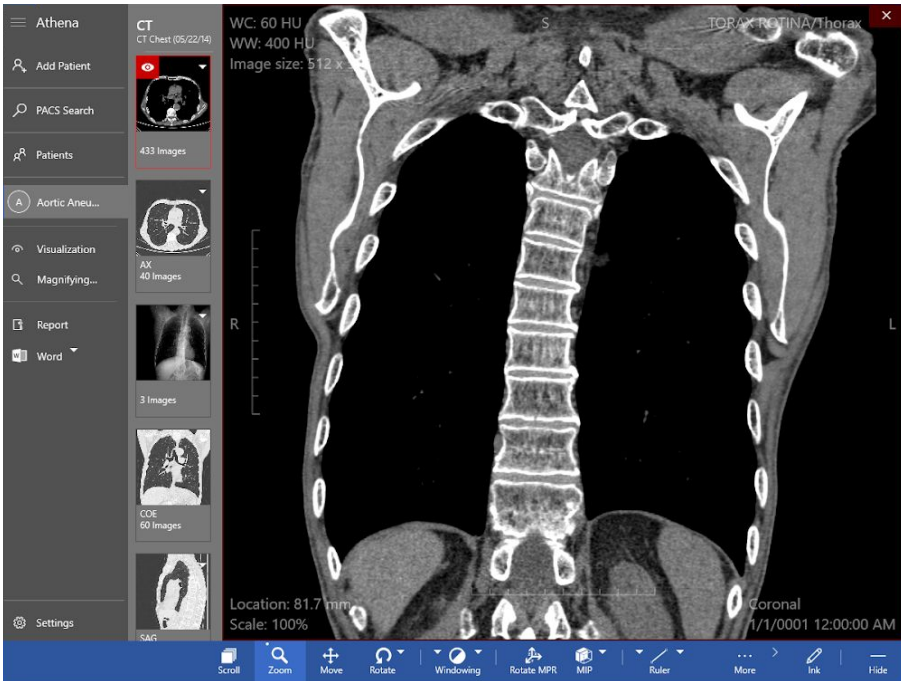
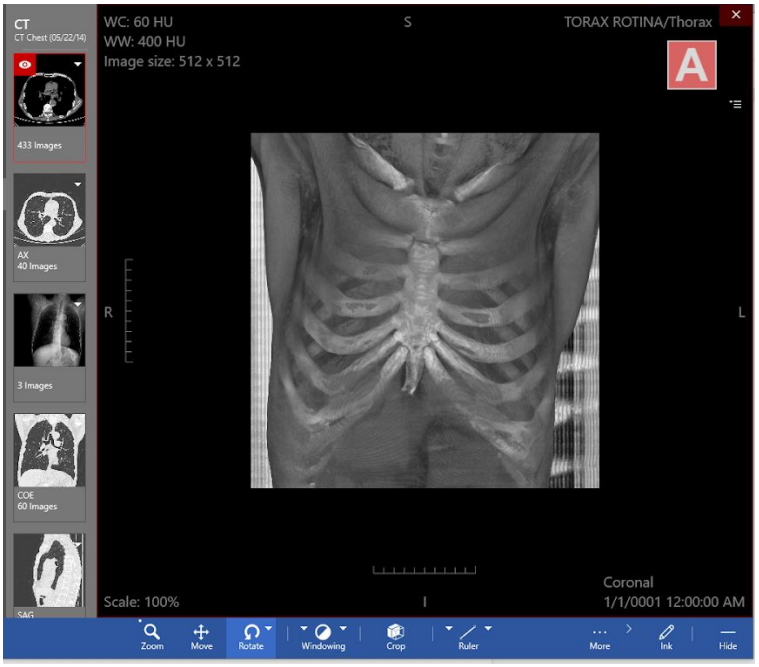


Image 52 - Visualization of a series in coronal mode.

5.3 3D Mode *

In Athena it is possible to reconstruct some series in 3D and display the reconstruction in four modes: Volume (default) (Image 53), MIP (Image 54), XRay (Image 55) and Isosurfaces (Image 56). To access this function, you must right click on the series, select the "+ 3D" option and choose the desired 3D mode.

Tip: If you press Alt and click on the series, Athena will automatically open the "Volume" mode in the viewer.



53 - Visualization of a series in volume 3D reconstruction

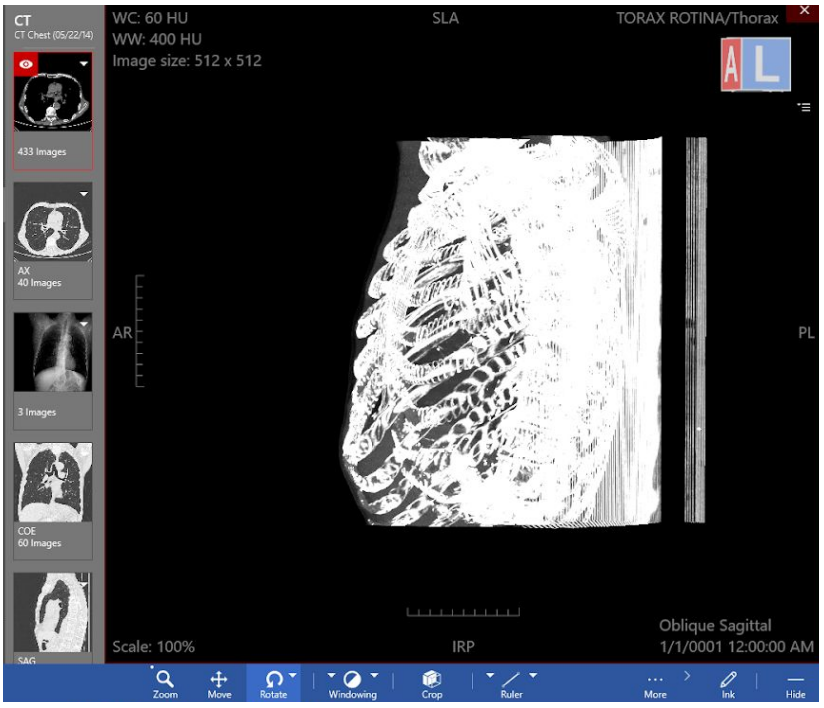


Image 54 - Visualization of 3D reconstruction in MIP mode

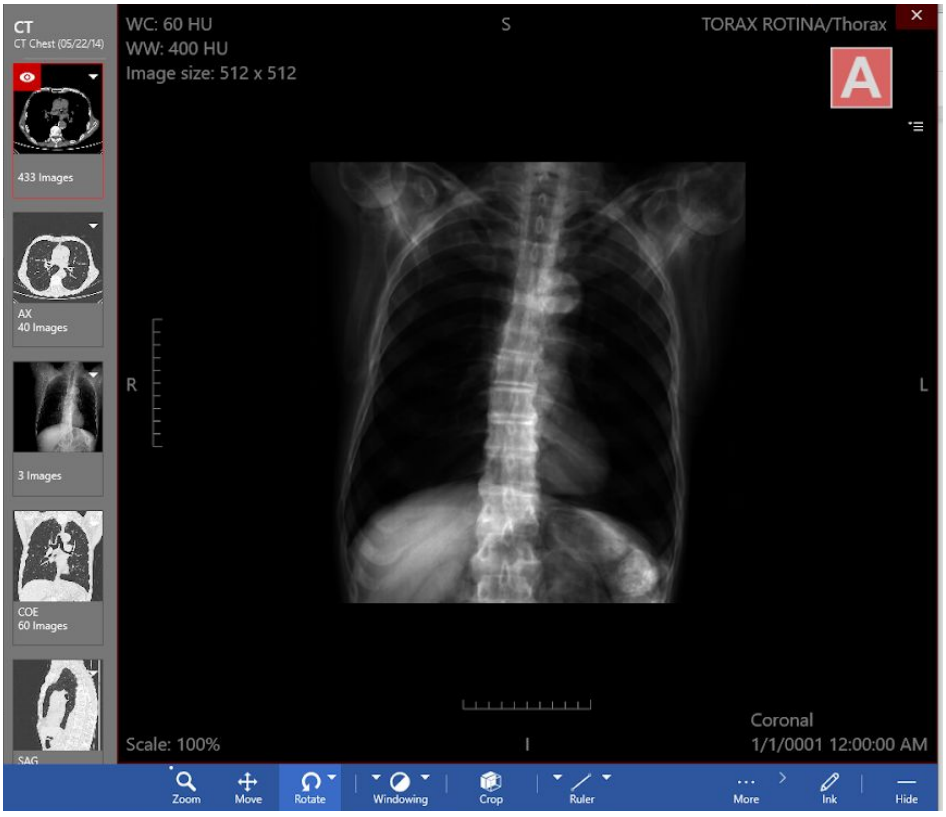


Image 55 - Visualization of reconstruction in XRay 3Dmode.

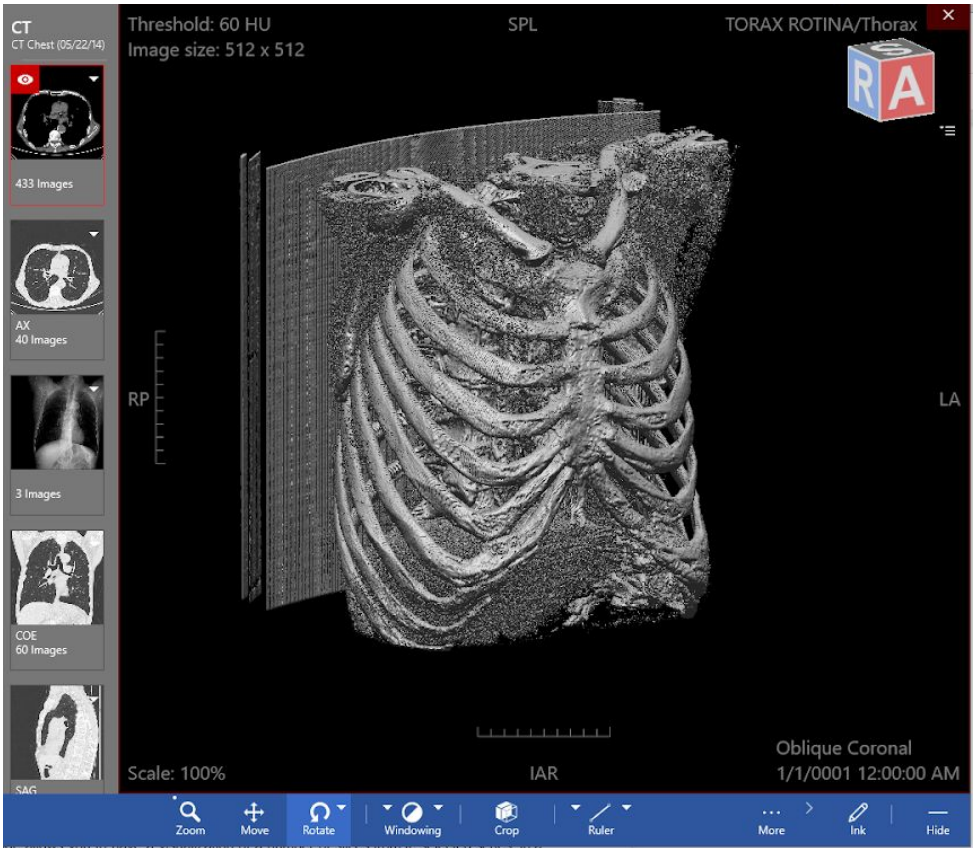


Image 56 - Visualization of 3D reconstruction in isosurface mode.

5.4 Mosaic Mode

Mosaic mode allows you to have a visualization of a number of slices from te selected series, in a personalized layout. To select it, click with the right-button on the series and select Open as Mosaic .Just choose the desired image slices, and the matrix you want to view at the screen (rows x columns) image 57. You can select each image you want by checking the boxes, typing the range or index of the images.image58

Image 57 - Image selection in mosaic mode

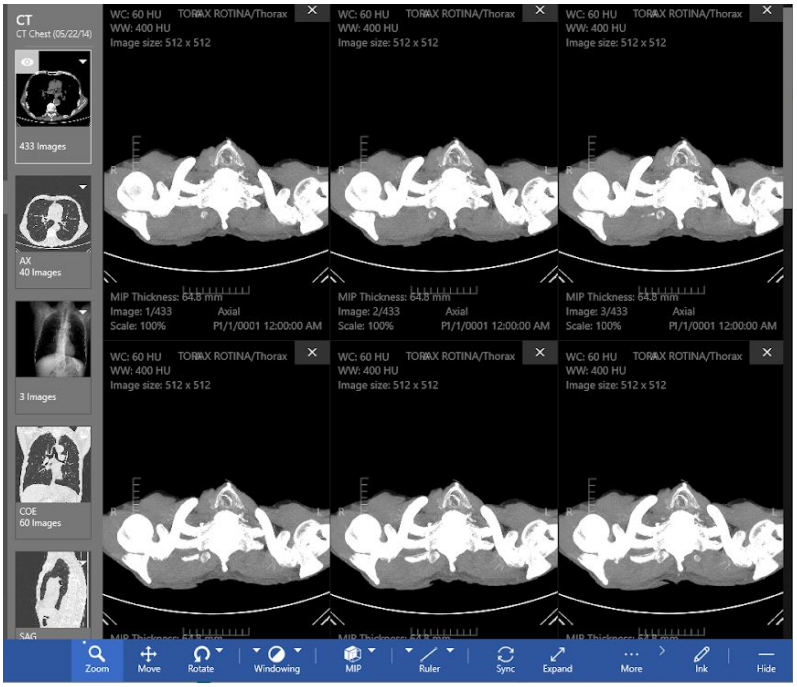


Imagem 58 - Mosaic mode after image selection

5.4.1 DICOM Print

The DICOM print feature allows you to view images in a radiological film. With Athena DICOM it's possible to create a custom layout for the need of each user. In this way, images can be chosen, annotated, manipulated, and then sent to a DICOM printer (Image 59). To access DICOM printing it's necessary to open the Mosaic mode, select the desired images and layout, and then click in the "DICOM Print" button on the left side bar (Image 60).

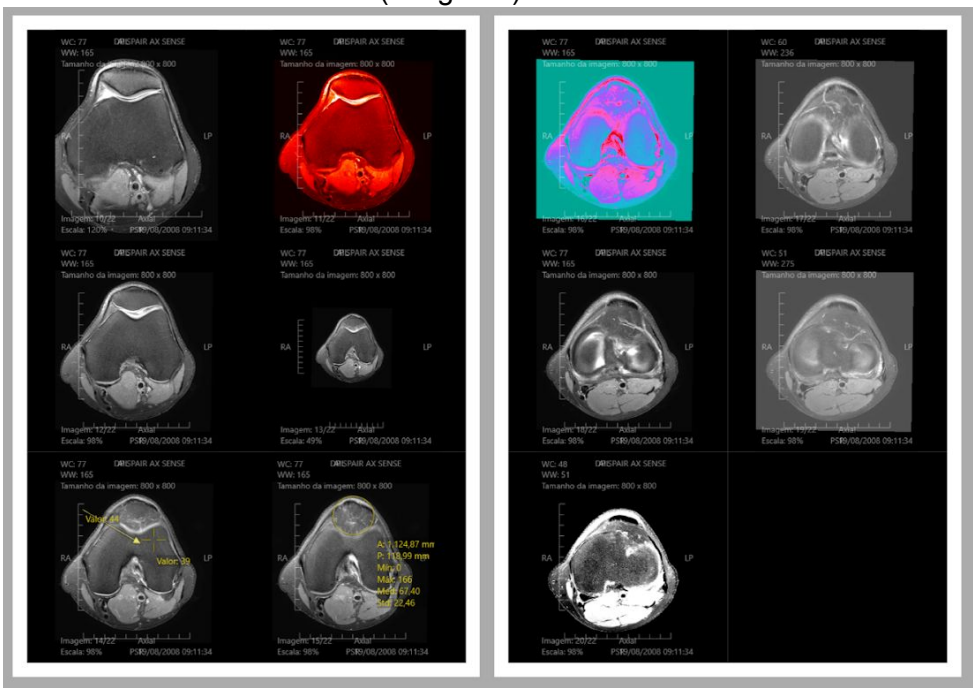


Image 59 - Personalized layout in DICOM print

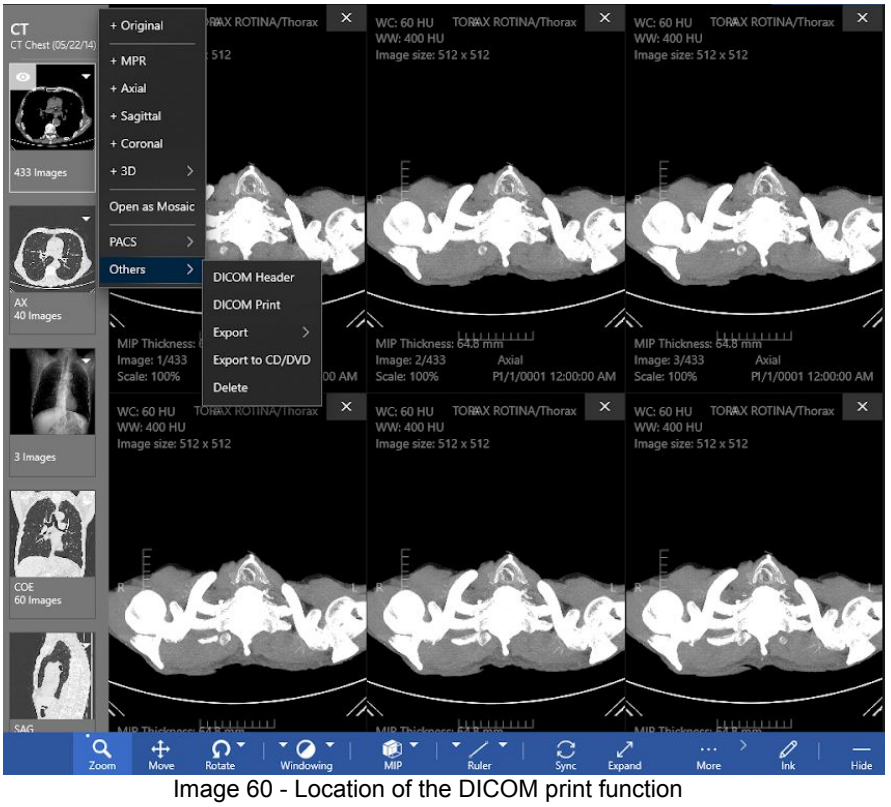


Image 60 - Location of the DICOM print function

To send the images to the DICOM Printer, you must setup the printer with the following information(Image 60):

Host - Host or IP of the DICOM Printer
Door - DICOM Printer Port
AE Title Printer - AE Title of your DICOM Printer
AE Title Local - AE Title of your PC

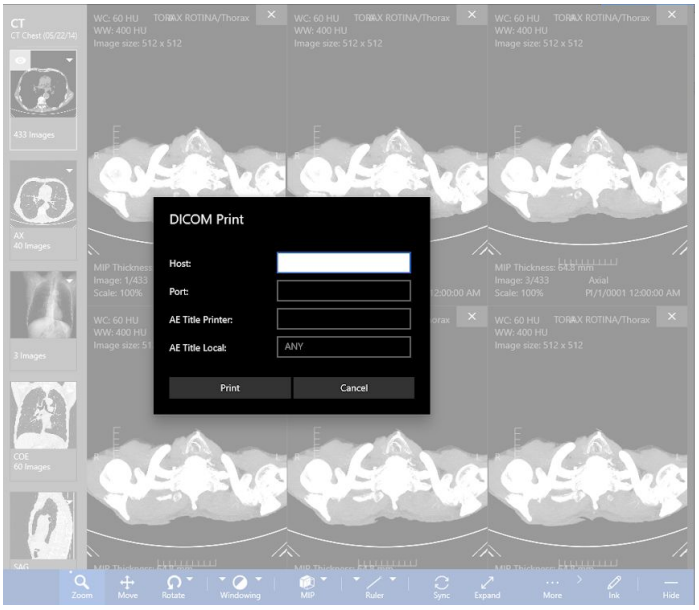


Image 61 - Configuration screen of the DICOM printer

5.5 Reference Lines

Whenever possible in MPR mode, the Athena DICOM will show reference lines, if there is more than one image open. The reference lines work with several combinations of views such as: original, axial, sagittal, non-orthogonal coronal and with different studies and modalities (Image 63).

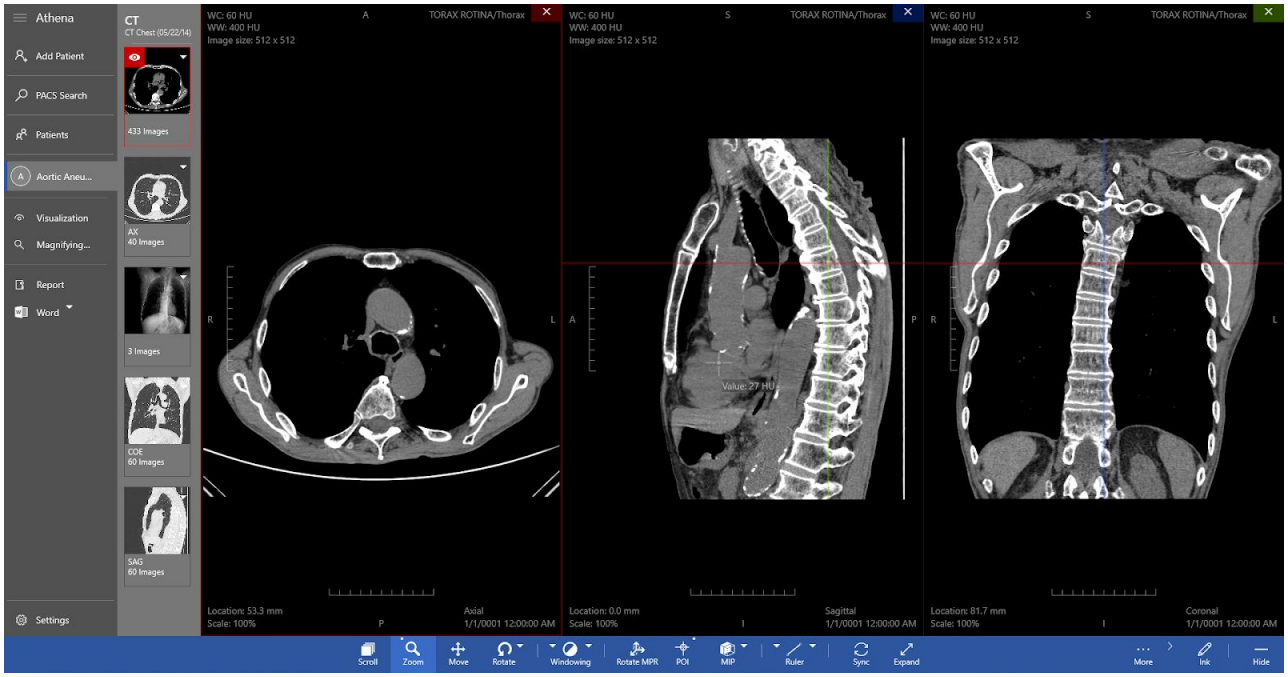


Image 62 - Reference lines in Athena .

6. Tools

Athena DICOM has several basic and advanced tools like POI, windowing presets, color palettes (CLUT), synchronization, magnifying glass, rotate multiplanar reconstruction (MPR), cut, undo, redo, redefine, among others. To facilitate the use of the tools, any kind of alteration to the image can be made with the help of a mouse or with the hands, in cases where the software is used in touchscreen devices.

6.1 Cine

Cine is a feature that allows you to automatically scroll all the images of a series. The performance can be pause or continued in the Original mode. To activate cine mode, you must click the "Play" button 

in the toolbar.

6.2 Windowing Presets

Athena provides some windowing presets for Computed Tomography (CT) images to aid in diagnosis. You can refine the windowing after a preset has been applied. For images from a CT, Athena provides specific Hounsfield value presets. The function can be easily accessed from the arrow locate on the right of the button 

.

You can also add a custom preset according to the users need. To do this, simply apply the desired window, then click on "New Custom Preset" to add it (Image 68 and 69).

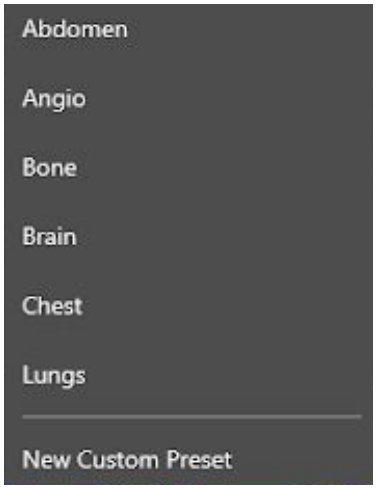


Image 62 - Windowing presets setted in Athena

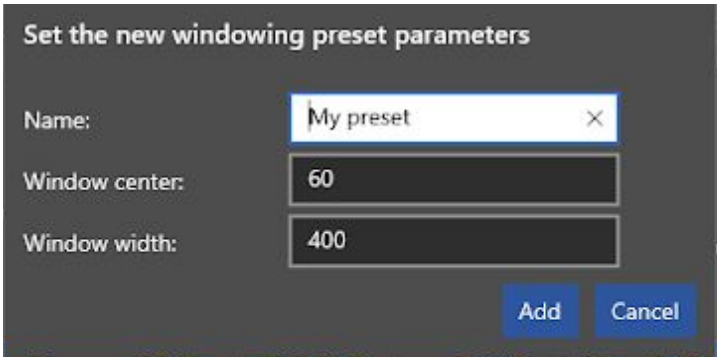


Image 63 - New definitions for new windowing presets in Athena

6.3. Magnifying Glass

To make it easier to see an image, you can use the magnifying glass tool, which displays a region with more details (it is not necessary to enable the function in each view). You can also customize many aspects of this tool, such as size, shape, and zoom (Image 77).

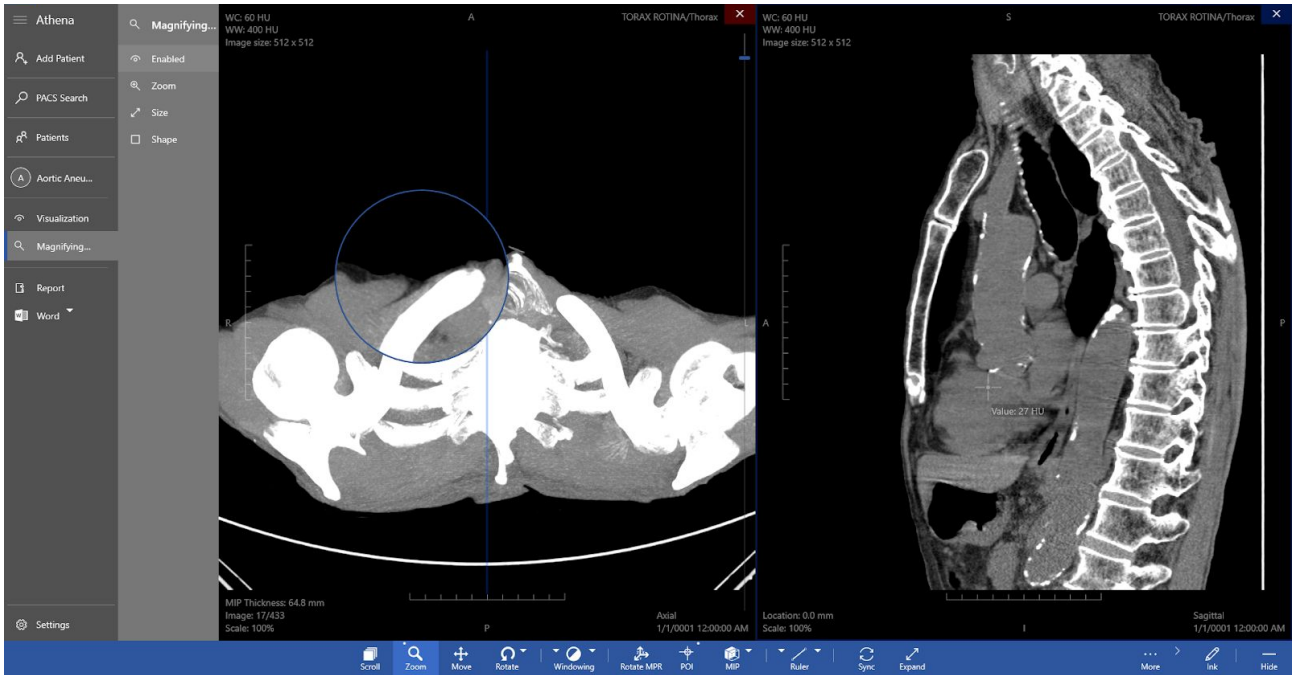


Image 64 - Magnifying glass tool enabled in Athena

To access the magnifying glass tool just click Magnifying... on the left side menu of Athena. To activate the magnifying glass, simply select the Enabled button.

Tip: To modify the amplification of the magnifying glass simply move the mouse wheel on the viewer screen.

6.3.1 Amplification

To change the amplification of the magnifying glass, click the Zoom button and choose between 100%, 200%, 400% or 800%. You can also change the amplification by moving the mouse wheel on the inside of the magnifying glass.

6.3.2 Size and Format

To change the magnifying glass size, click the Size button and choose between Small Medium or Large.

To change the format of the magnifying glass, click the Shape button and choose between Square or Circle.

6.4 Undo and Reset

Athena provides the "Undo" and "Reset" features to easily recover from any equivocate action. To access the features, simply click on More in the toolbar and select the function of interest, you can also use the "CTRL + Z" shortcut to "Undo" (Image 76).

Image 65 - Location of the Undo and Reset button in Athena.

6.5 Key Images

The Key Image feature is ideal for saving annotations, measurements and comments of regions of interest, such as images in a new series within the imported patient. The created images are added to the current patient as OT (others) and shown in the series list (Image 78).

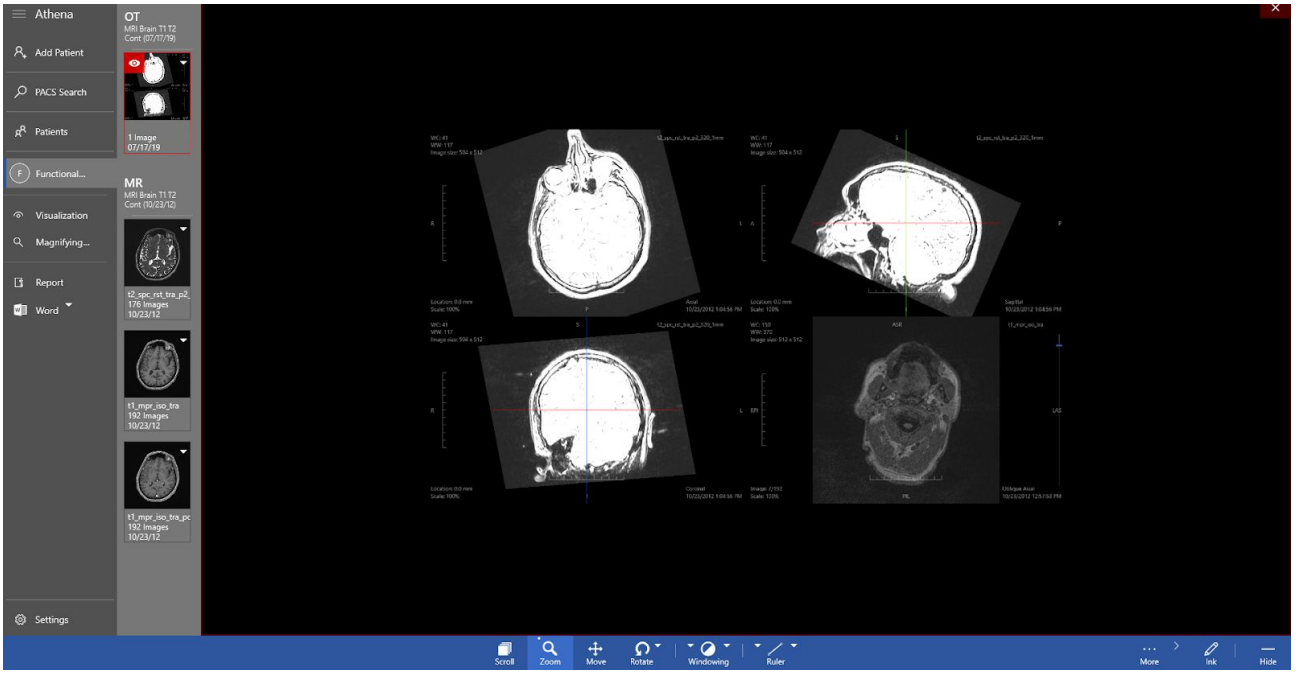


Image 66 - Key Image saved in the patients series list

6.6 Copy to Clipboard

In Athena it is possible to copy the current image from a view to the clipboard by just clicking with the right button on the image and selecting Copy to clipboard. In this way, you can paste the copied image into Word or any other desired document.

6.7 Basic Tools

Athena basic tools include: scrolling, magnifying, moving, rotating, and windowing. These can be easily accessed through the bottom viewer bar.
You can customize the type of click for each of the tools. For example: the scroll tool will be activated with the left mouse button, while the magnify tool will be selected with the right button. This configuration can be customized according to the user preference and to change it, just right-click or left-click on the tool in question. The sphere above the tool icon indicates the mouse button that is conImaged for each tool. Therefore, the sphere on the left indicates the left button, the sphere on the middle indicates the middle mouse button and the sphere on the right indicates the right button (Image 66).

Image 67 - Basic tools in Athena. The position of the white sphere on top of them indicates the mouse button that can use the tool.

6.7.1 Scroll

Image scrolling is available in the Original or MPR modes. You can scroll up or down using the left and right keyboard arrows or by using the middle mouse button. You can also select the button 

in the bottom menu, click and drag up or down on the viewer screen. This function can be selected using the shortcut key "1".

6.7.2 Zoom

The zoom option 

is available in all modes, including 3D. You can zoom in or out using the mouse button, or by selecting "Zoom in" from the bottom menu, clicking and dragging up and down on the viewer screen. You can also zoom using the on screen tweezer gesture when using in touchscreens. This tool can be selected with the shortcut "2".

6.7.3 Move

The 

tool is available in all modes, including 3D. To use it is possible to select the option present in the lower menu of the tool, click and drag in any direction. It is also possible to apply the tool using a two-finger touch and moving, if your screen is touch sensitive. This tool can be selected with the shortcut "3".

6.7.4 Rotate

Rotate is also available in all modes, including 3D. You can access this function by selecting 

, in the lower menu, clicking and dragging in any direction. You can also "Rotate" by touching with

two fingers and rotating, in case your screen is touch sensitive. The behavior of this tool is different between 2D mode and 3D mode.

It is also possible to change the mode of this tool by clicking the arrow on the right side and selecting between "Rotate", "Rotate 90 °" and "Flip" (only in case of reconstruction) (Image 67).

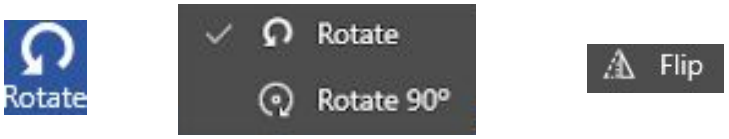


Image 68 - Rotation Option in Athena

6.7.5 Windowing

Windowing is available in all modes, including 3D. To apply this function is necessary to select the button 

present in the lower menu (or using the shortcut key "4"), click and drag in any direction. The width of the window (WW) is applied using the left-right direction and the center of the window (WC) using the up and down direction.

6.7.6 Color Palettes (CLUT)

Athena provides a list of Color Palettes (CLUT) that can be applied to 2D or 3D display modes. To access them, simply click on the left arrow of the button 

and choose the desired filter (Image 71). It will apply to the selected view, or to all views if the sync feature is active.

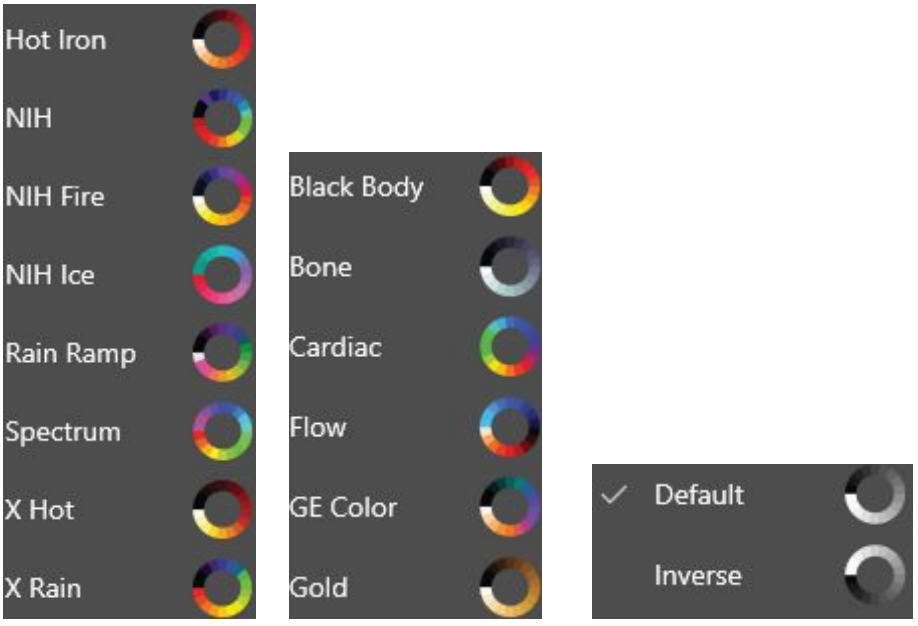


Image 69 - Color Palettes available

6.8 Advanced Tools *

6.8.1 Sync *

Synchronization is a feature that lets you apply the zoom, scroll, move, rotate, window, and palette tools to all open views. This functionality allows you to replicate the procedure to all views. This option can be easily turned on or off by selecting 

or using the "S" shortcut.

6.8.2 Point of Interest (POI) *

The POI tool allows you to reach a specific area or point of interest. This feature automatically syncs open views to the specified point of interest. To use this tool you need to have more than one view open in different views (Original or MPR), select the "POI" button 

, click and drag to some point. The setting can be applied to how many pictures the user wants (Image 70).

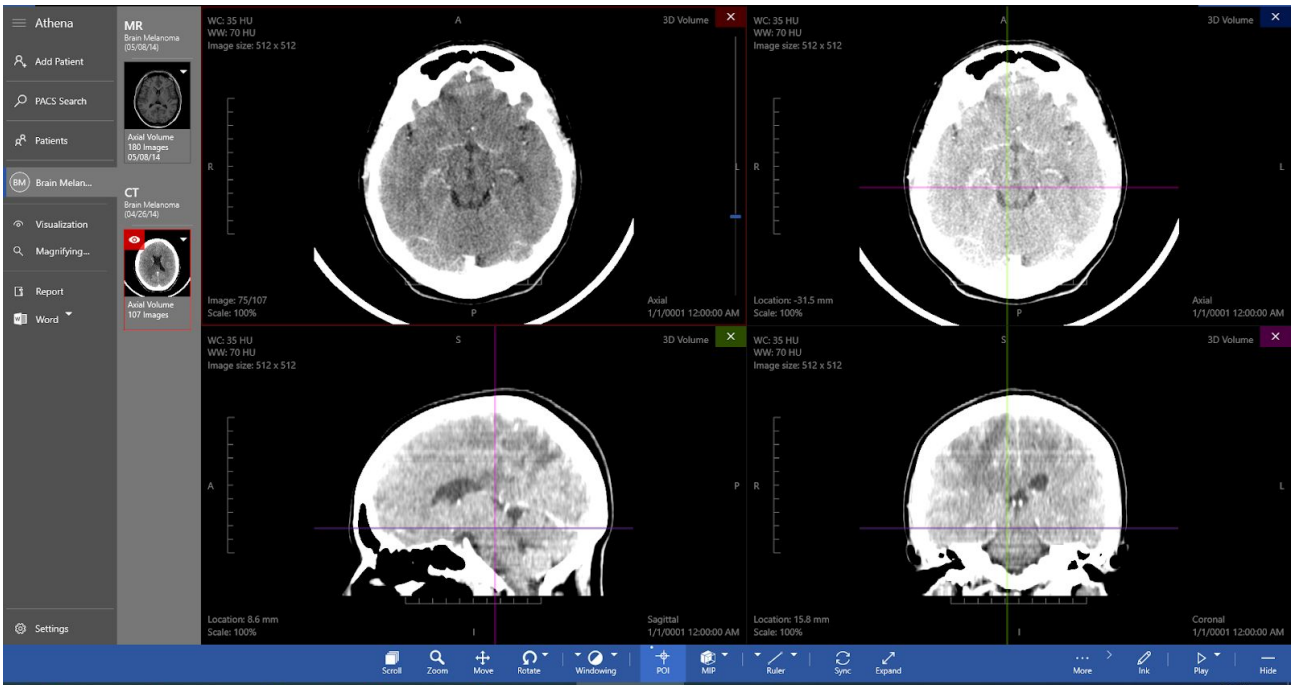


Image 70 - POI tool of Athena

6.8.3 Crop (Cut 3D) *

The cutting tool allows visualizing internal structures of reconstructed volumes during 3D manipulation (Volume, MIP, XRay, Isosurface). This tool allows you to cut from top, bottom, left or right of any 3D view, allowing the analys from outside and inside at same time. To use this tool simply select the button 

, click and drag the control button on the center of the face in the desired direction (Image 71).

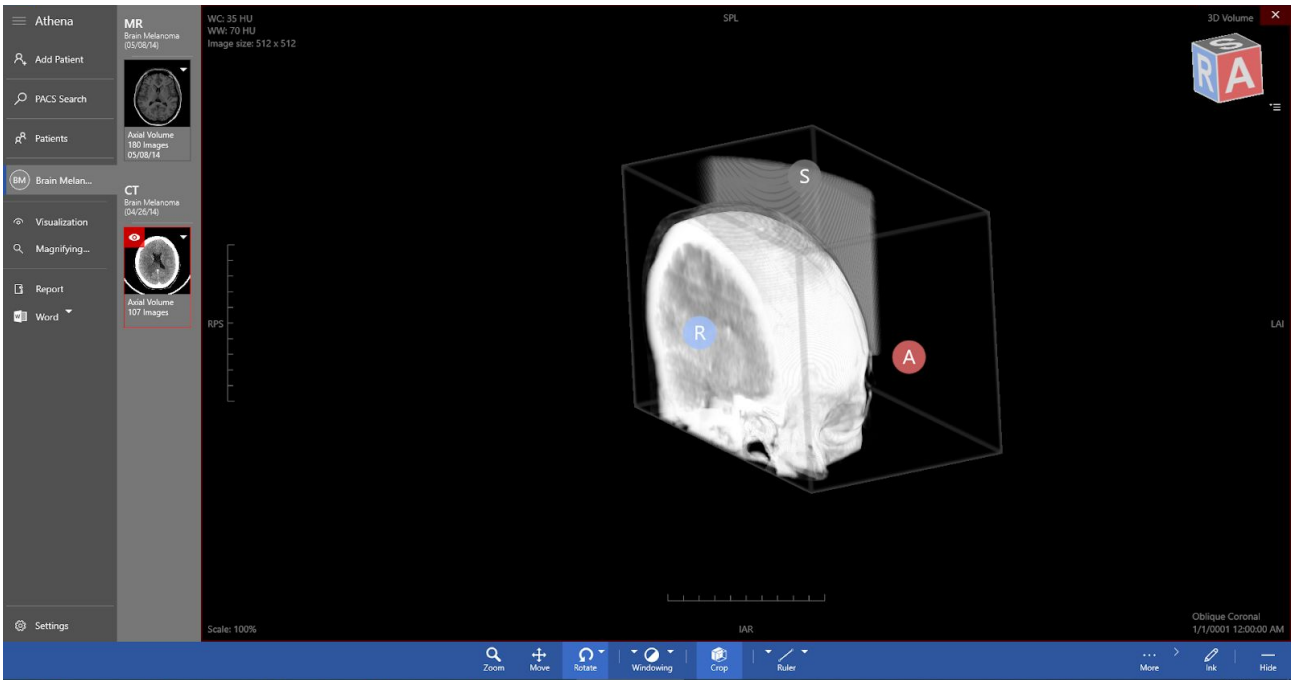


Image 71 - Crop tool of Athena

6.8.4 Non-Orthogonal MPR *

Non-orthogonal MPR is a tool that allows the manipulation of the angulation of the 2D image series. This tool is useful for viewing regions that require different angles or positions.

To use this tool simply select the button 

and manipulate the reference lines.

In Athena you can use the "Rotate MPR" tool in three different ways: drag horizontally or vertically using the white circle in the center of the line, rotate the reference lines using the white circle located at the ends of the reference lines or click and drag on desired direction and change in the direction you want to rotate (Image 72).

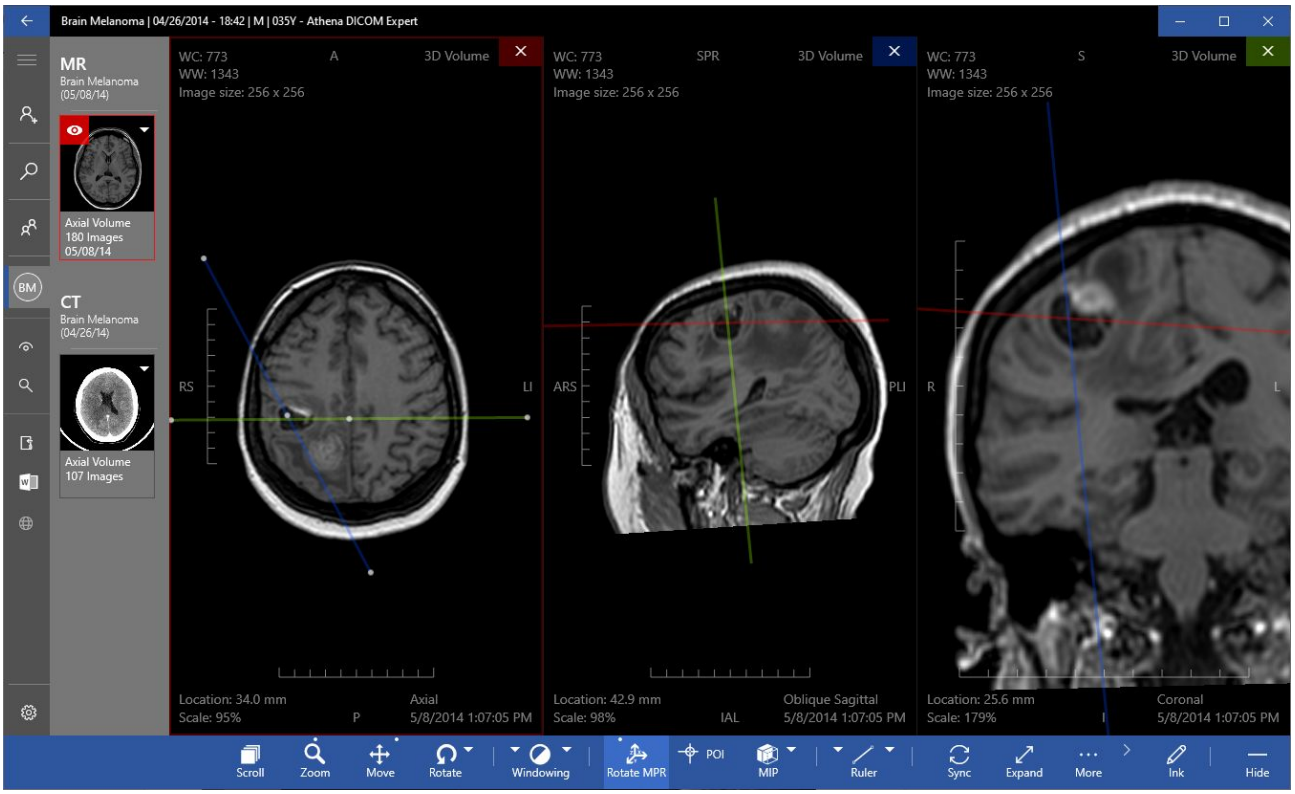


Image 72: Rotate MPR tools with non-orthogonal inclination

6.8.5 Maximum Intensity Projection (MIP) *

MIP is a feature that consists in highlighting the voxel with the highest attenuation value at all viewings and full volume for a 2D image. With MIP, it is possible to find all hyperdensing structures in a volume, from a chosen range. This method tends to exhibit contrasting bone structures, as well as hiding structures of lower attenuation.

One of the major clinical applications of MIP is to improve the detection of pulmonary nodules and to assess their profusion. This feature also helps to identify the distribution of small nodules. In addition, MIP is excellent for determine the size and location of vessels, including the pulmonary arteries and veins.

To use this feature simply select 

, click and drag to select the desired range, which can be checked in the value of "MIP Thickness" and using the reference lines (Image 73).

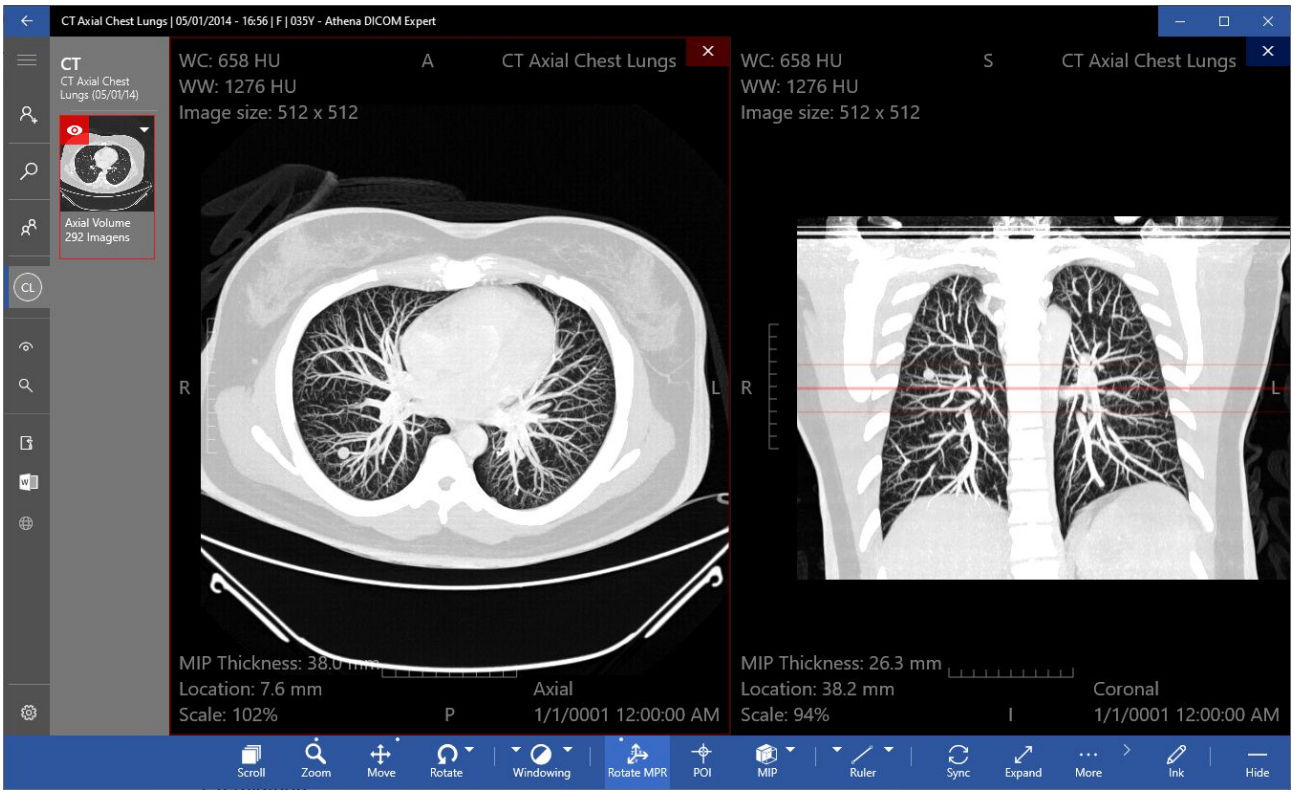


Image 73 - MIP tool enabled in Athena

6.8.6 Minimum Intensity Projection (MinIP) *

The process of the MinIP is very similar to the MIP, but instead of showing voxels with the highest attenuation, shows the ones of less attenuation. With MinIP only the hypodense structures of the volume are represented, therefore, it is the ideal tool for the detection, localization and quantification of ground-glass and linear attenuation patterns in chest scans.

MinIP is particularly useful for analysing the bile tree and the pancreatic duct, which are hypodense when compared with the surrounding tissue, especially in the pancreatic fase. To access this feature click on the button on the right arrow of the "MIP" button and select "MinIP" (Image 74).

6.8.7 Average Intensity Projection (AIP) *

AIP operates in a similar way to the other modes of intensity projection, but instead of showing voxels with the highest/lowest attenuation, shows the average attenuation. This tool may be useful for identify the internal structures of a solid organ or the walls of hollow structures, such as the blood vessels or the intestine. To use the AIP projection mode, simply click on the right arrow of the "MIP" tool and select "AIP" (Image 74).

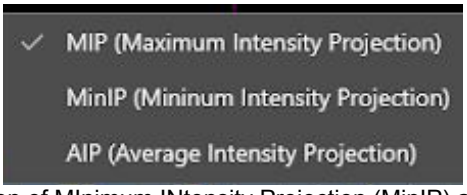


Image 74 - Selection of MInimum INtensity Projection (MinIP) and Average (AIP).

7. Shortcuts

Athena provides a list of shortcuts for quick access to some tools and features. To access this list at any time in Athena simply click the "F1" button in the viewer (Image 81).

7.1 Tools

Top to bottom	Scroll the image of the current series
Key 1	Select Scroll tool
Key 2	Select Enlarge tool
Key 3	Select Move Tool
Key 4	Select Window tool
Key S	Toggle Sync
Ctrl + Z,	Undo
Ctrl+Y	Redo

7.2 Display Modes

Left/Right	Toggle displayed series
CTRL + Tab	Switches between open views
Esc	Exit View

7.3 report

Add (+)	Add to Report
Ctrl+R	Open Scan Report

7.4 Annotations

V key	Selects Value Annotation
L key	Select Line annotation
Chat	Select Rectangle annotation

E key	Select Elipse annotation
P key	Select Hand Free Annotation
Key A	Select Annotation Angle
F key	Select Consecutive Angle annotation
G key	Select Cobb Angle
T key	Select Text annotation
H key	Hide Annotations
Delete key	Exclude annotation

7.5 Window presets

F2 to F12:	Window Presets

8. Annotations

Athena has a very useful annotation toolkit, some of which containing measurements in millimeters, Hounsfield value, area, perimeter, minimum, maximum, average, standard deviation and even angles between consecutive or separate lines. You can add, edit or remove any annotation even in 3D mode. To select an annotation type, simply click the right arrow of the annotation selection button in the toolbar. To change the color, simply click on the left arrow (Image 75).

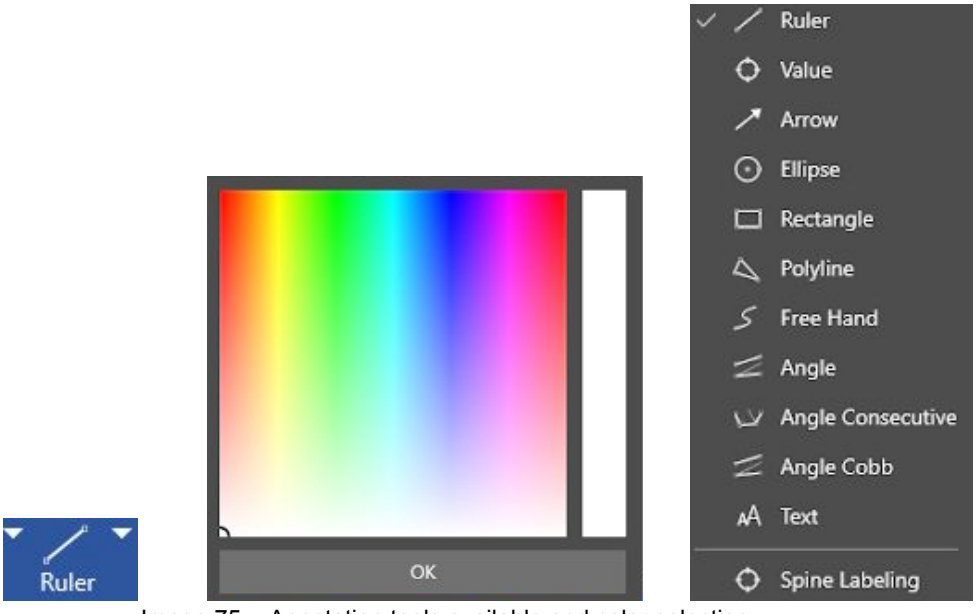


Image 75 - Annotation tools available and color selection

8.1 Value

This annotation tool displays the Hounsfield (TC) value or gross value (other modalities) of a point (Image 76). To access this tool simply click on the right arrow of the annotation selection button and select 

. To use this tool click on the region of interest of the image and a cross will be placed indicating the region, and a text box containing the value.

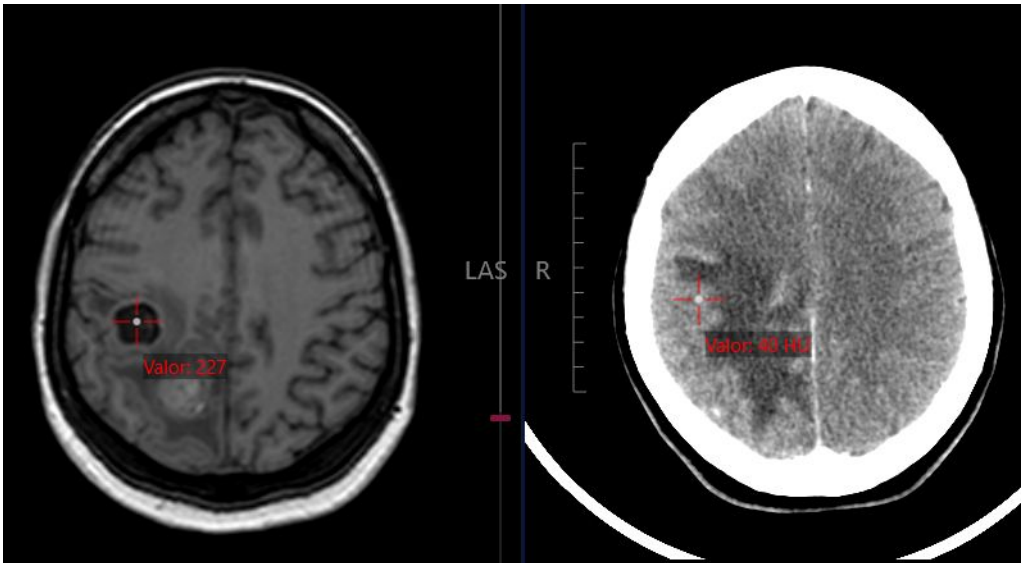


Image 76 - Value annotation tool positioned in a MR (left) and a TC (right) in Athena

8.2 Arrow

This annotation tool displays the Hounsfield value of a point with an arrow (Image 77). To access this tool simply click on the right arrow of the annotation selection button and select 

. To use this tool, simply click and drag the tool in the region of interest of the image and a value for the indication of the arrow will be displayed.

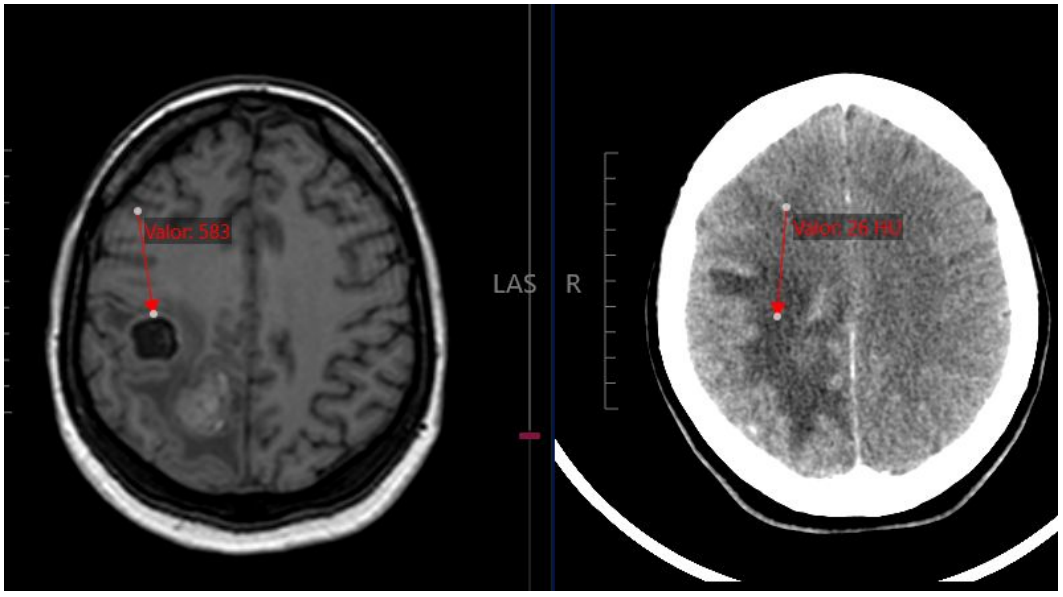


Image 77- Arrow annotation tool positioned in a MR (left) and a TC (right) in Athena

8.3 Ruler

This annotation tool shows the measurement in millimeters of a line (Image 78). To access this tool simply click on the right arrow of the annotation selection button and select 

. To use this tool simply click and drag the tool in the region of interest of the image and a line with the size value in millimeters will be displayed.

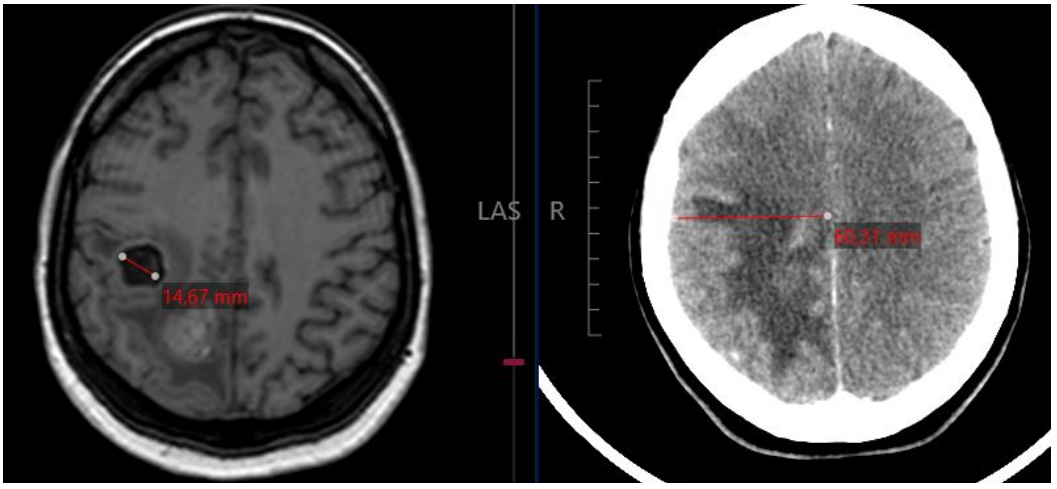


Image 78 - Ruler annotation tool positioned in a MR (left) and a TC (right) in Athena

8.4 Rectangle

This annotation tool displays a rectangle within its area, perimeter, minimum, medium and maximum value, and standard irregularity of the Hounsfield value within its boundaries (Image 79) To access this tool simply click on the right arrow of the annotation selection button and select

. To use this tool simply click and drag the tool in the region of interest of the image and a rectangle and a textbox containing the information about the region will appear.

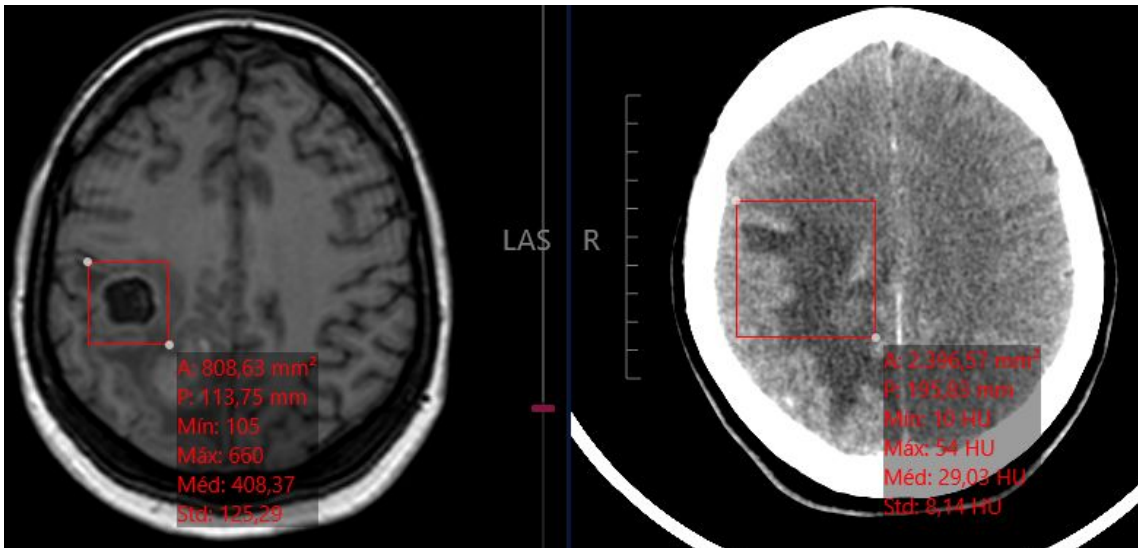


Image 79 - Rectangle annotation tool positioned in a MR (left) and a TC (right) in Athena

8.5 Ellipse

This annotation tool displays an ellipse within its area, perimeter, minimum, medium and maximum value, and standard irregularity of the Hounsfield value within its boundaries (Image 80).To access this tool simply click on the right arrow of the annotation selection button and select 

. To use this tool simply click and drag the tool in the region of interest of the image and an ellipse with a text box containing the information about the region will appear.

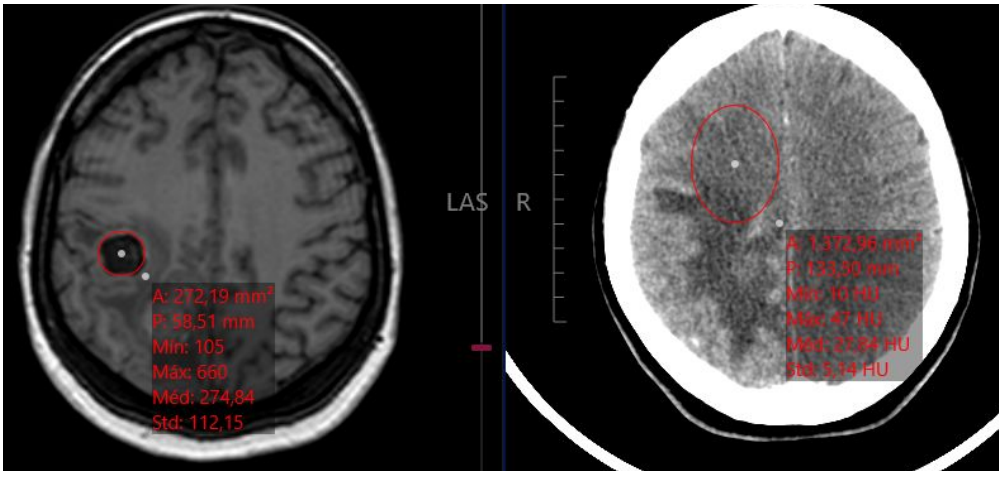


Image 80 - Ellipse annotation tool positioned in a MR (left) and a TC (right) in Athena

8.6 Polyline

This annotation tool displays an polyline within its area, parea, perimeter, minimum, medium and maximum value, and standard irregularity of the Hounsfield value within its boundaries. To access this tool simply click on the right arrow of the annotation selection button and select 

. To use this tool simply click and draw the annotation until you close the shape in a white circle. Afterwards, the drawn shape and a text box containing the information about the region will be displayed. (Image 81).

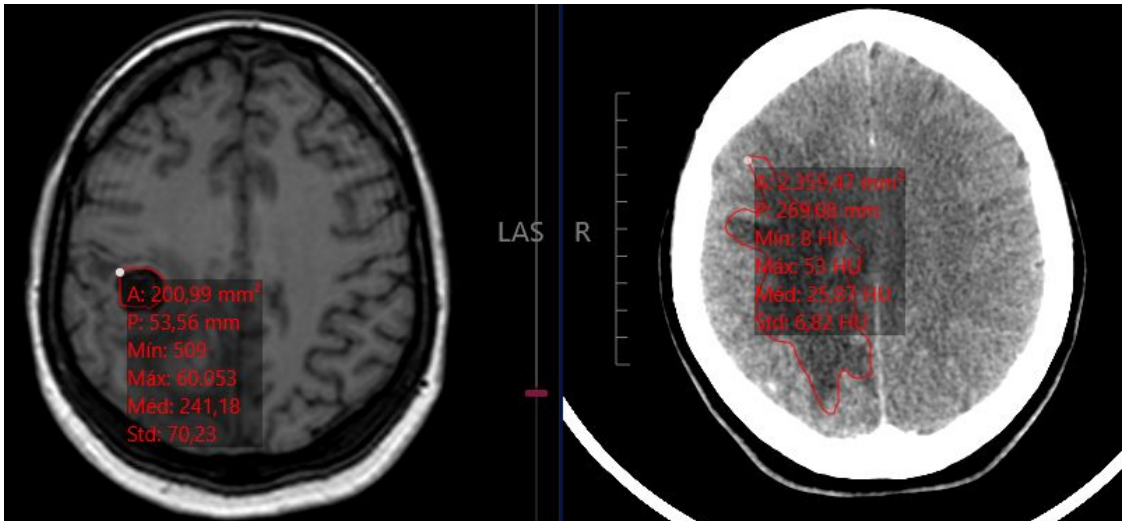


Image 81 - Polyline annotation tool positioned in a MR (left) and a TC (right) in Athena

8.7 Free Hand

This annotation tool allows you to draw any format on the screen, by hand and without displaying values (Image 82). To access this tool simply click on the right arrow of the annotation selection button and select 

. To use this tool just click and draw the desired shape.

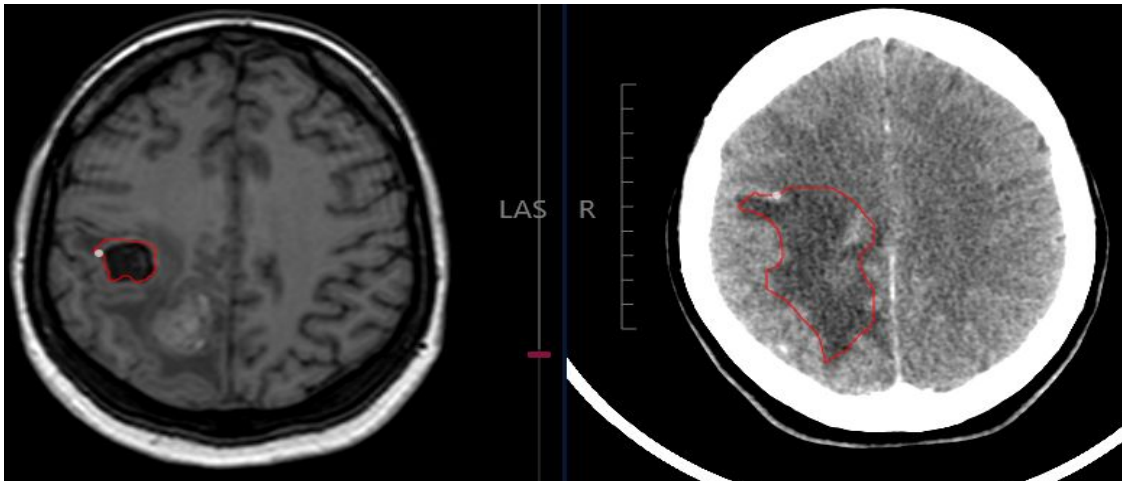


Image 82 - Free hand annotation tool positioned in a MR (left) and a TC (right) in Athena

8.8 Text

This annotation tool allows you to add a text box over the region of the image of interest (Image 83). To access this tool simply click on the right arrow of the annotation selection button and choose 

. To use this tool simply click and drag the annotation in the region of interest of the image and an text box will appear over the region. To edit the text just click inside the text box and enter the information.

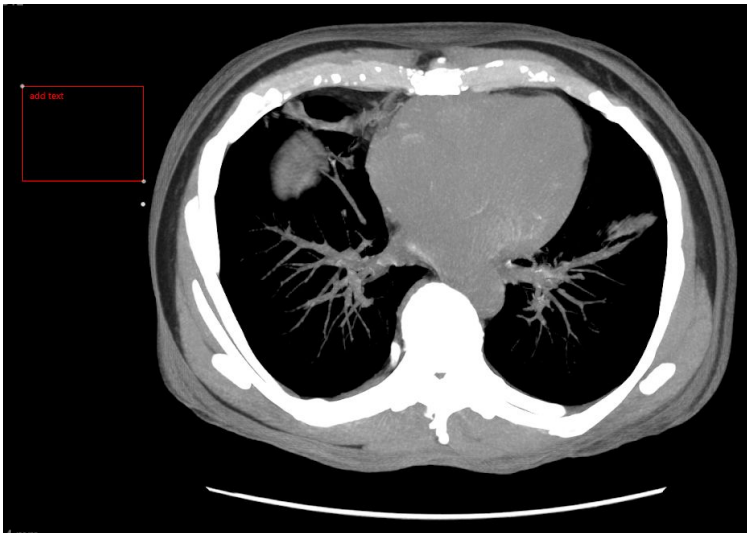


Image 83 - Text annotation tool positioned in a image in Athena

8.9 Angular Measurements

Angle measurement tools allow you to measure the angle in three different ways: angle, consecutive angle and cobb angle.

8.9.1 Angle

This annotation tool allows you to add a angle measurement between two lines formed over the region of the image of interest (Image 84). To access this tool simply click on the right arrow of the annotation selection button and select  . To use this tool simply click and drag the first line, and then click and drag the second line again, starting from the first point formed (white circle). The angle information formed between the two drawn lines will be displayed.

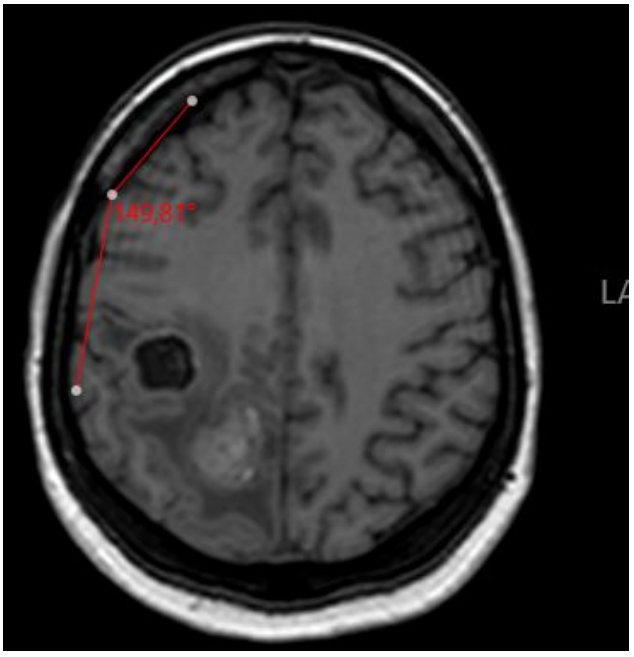


Image 84 - Angle annotation tool positioned in a image in Athena

8.9.2 Angle Consecutive

This annotation tool allows you to add a angle measurement between two lines formed over the region of the image of interest (Image 85). To access this tool simply click on the right arrow of the annotation selection button and select  . To use this tool simply click on the points of interest and after the third point is positioned, the angle information formed between the drawn lines will be displayed.

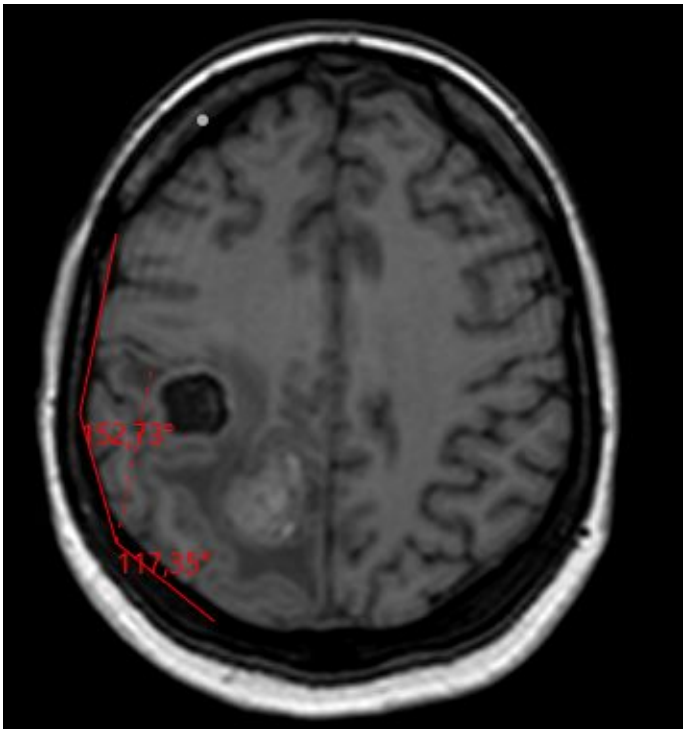


Image 85 - Consecutive Angle annotation tool positioned in a image in Athena

8.9.3 Cobb Angle

This annotation tool allows the addition of an angle measurement used to measure the deformity in the frontal plane in radiographs of the cranial and caudal plane used to classify scoliosis or to classify deformity in the sagittal plane, especially in the fixation of thoracolumbar traumatic fractures of the vertebral column (Image 86). To access this tool simply click on the right arrow of the annotation selection button and select 

. To use this tool simply click on the points of interest, and after the fifth point is positioned it will be displayed information of the angle formed between the drawn lines.

Image 86 - Angle Cobb annotation tool positioned in a image in Athena

8.9.4 Spine Labeling *

This annotation tool allows you to add markings that indicates the number of the vertebra in the region of interest in the image. This tool greatly facilitates the location of the vertebra in any view by simply marking each vertebra once and automatically markings all others in the displayed views. To access this tool simply click on the right arrow of the annotation selection button and select 

. To use this tool, simply select the initial vertebra, define whether or not the L5 sacralisation exists, define whether or not there is a lumbarisation of S1 and start marking the vertebrae (Image 87). After each click of the mouse in the region of interest, an indication will appear on the image with the number of the vertebra (Image 88 and 89).

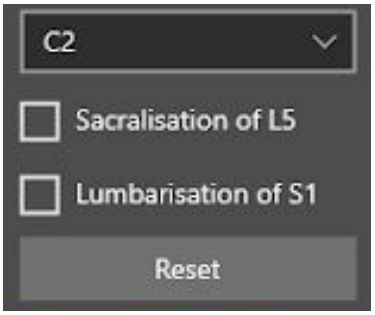


Image 87 - Consecutive Angle annotation tool positioned in a image in Athena

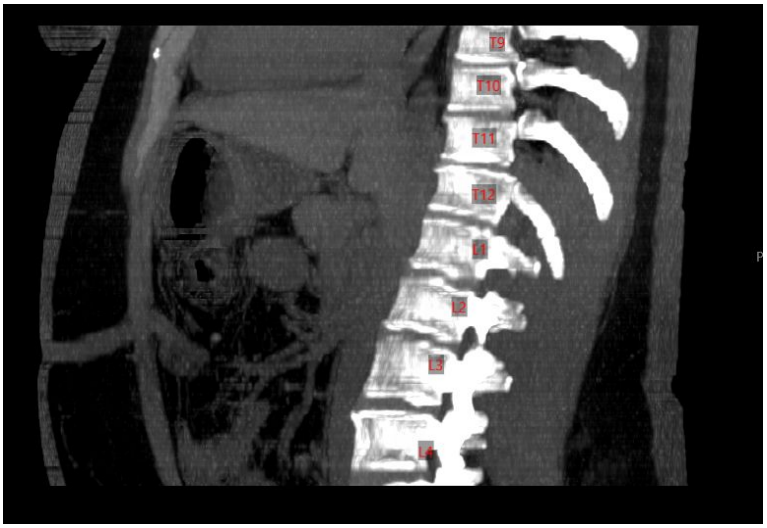


Image 88 - spine labeling tool positioned in a image in Athena

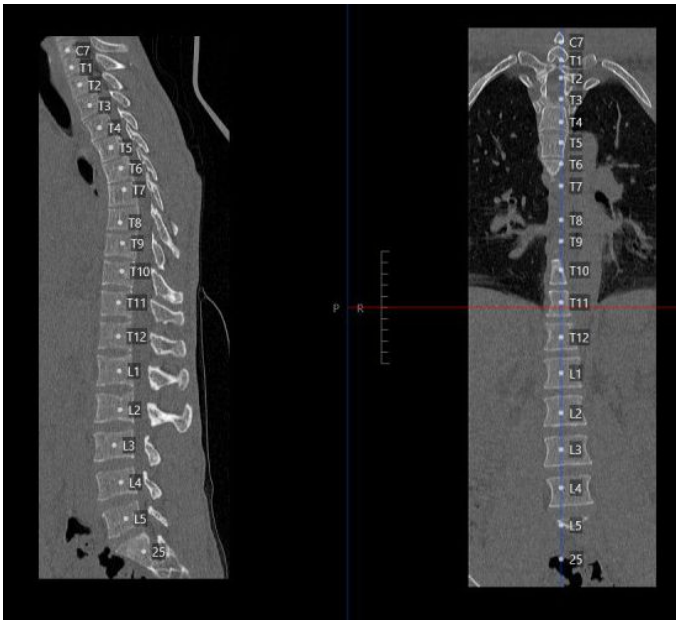


Image 89 - Ferramenta spine labeling posicionada em uma imagem no Athena.

8.10 Notes in 3D mode

Athena also allows notes to be added in 3D reconstructions (Image 90).

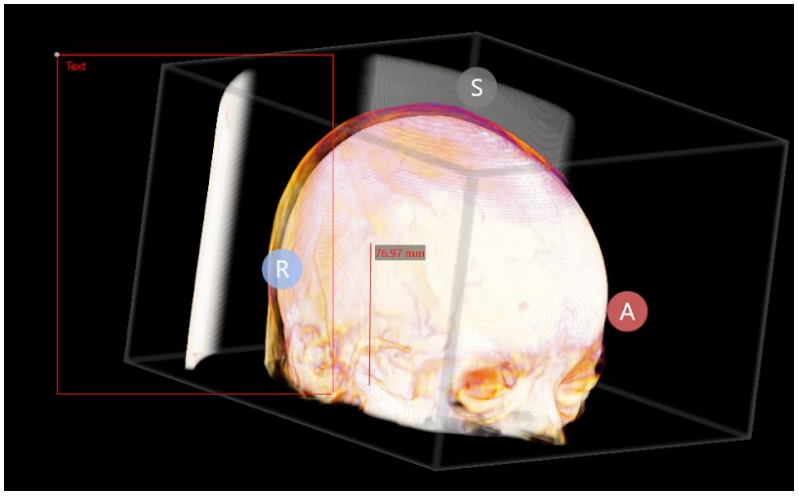


Image 90 - annotation tools positioned in 3D reconstruction mode in Athena

8.11 Calibration of Measurements

In Athena it is also possible to calibrate the measurement annotation tools if the distance information between pixels is not available in the images. To do this, simply select the "Ruler" tool, draw a line on one of the side scales, right click on the line and select the "Calibrate" option. After that, simply set the value in mm in the selection box (Image 91).

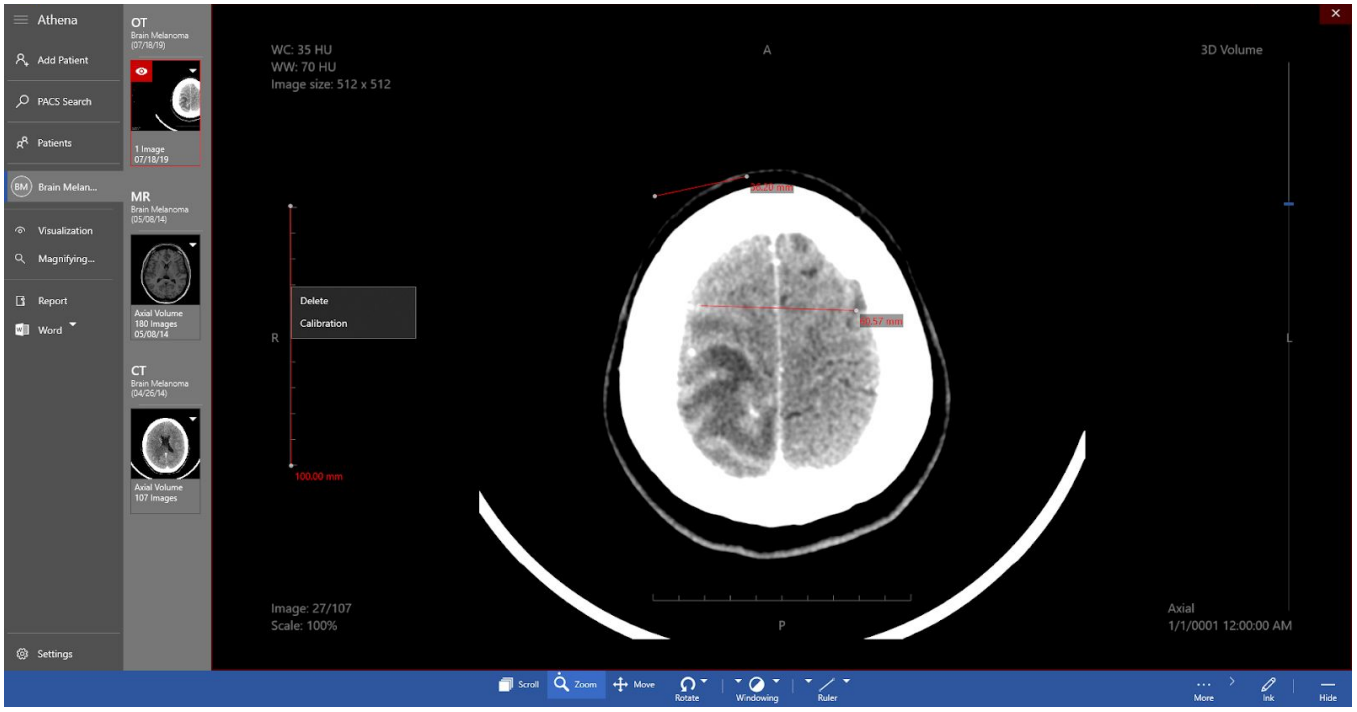


Image 91 - Calibration function in a measurement in a image in Athena

8.12 Ink

The "Ink" annotation tool 

allows you to draw and mark any image in the Athena viewer. This tool is very useful for sketching explanations directly in the images. You can use the pen  , pencil  , highlighter,  and eraser  .

9. Report

As we have seen, Athena makes it possible to apply several types of changes in the initial image. If you need to save the images with the notes used, Athena DICOM allows you to add those images to a report. You can also add patient information in the report such as: name, date of birth, and so on.

There are 2 main Athena report modes: full report and images only. The complete report consists of: editable header, added images and a space to write comments(Image 92). To open a report, go to the left side menu and click on 

.

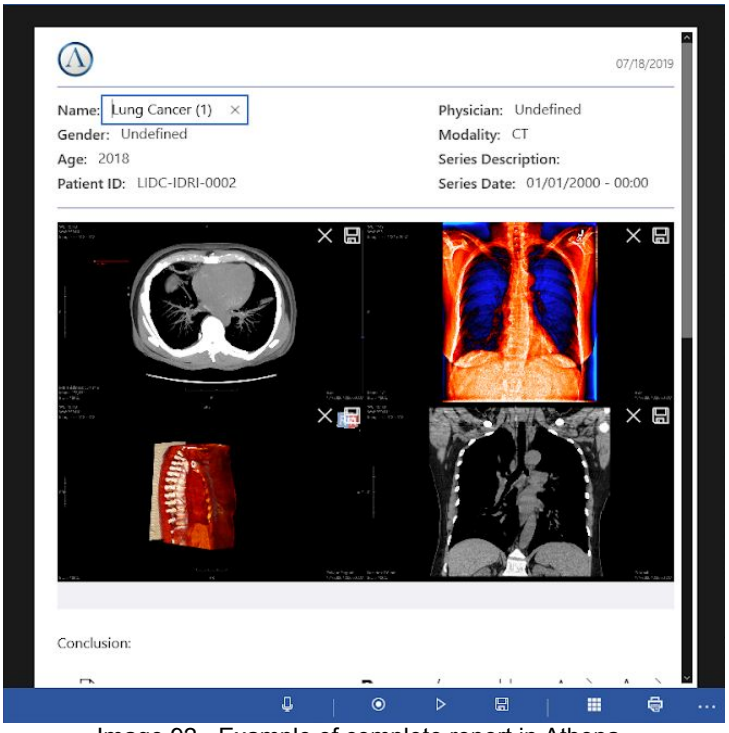


Image 92 - Example of complete report in Athena

In the report formed only by images, the additional information does not appear which allows the wide viewing of images in the document (Image 93). To acess it, select the  icon inside the report and choose, “only image” (image 94).

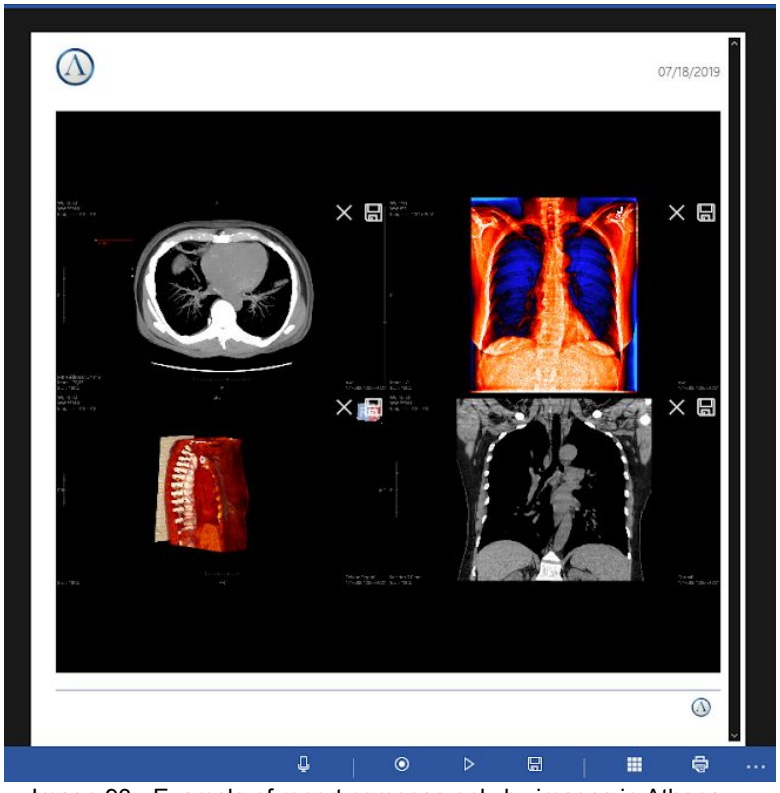


Image 93 - Example of report compose only by images in Athena

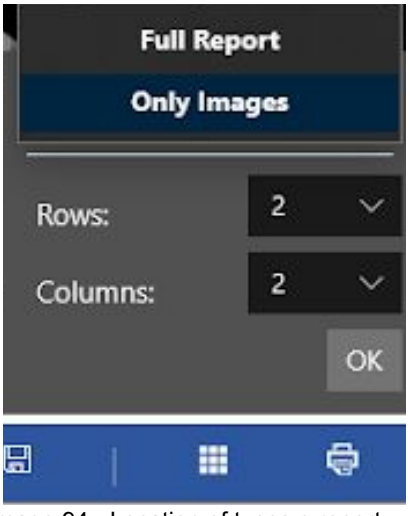


Image 94 - Location of types o report

9.1 Add Image

To add images to the report, simply right-click the image and select Add to Report. You can add multiple images to a single report (Image 95).

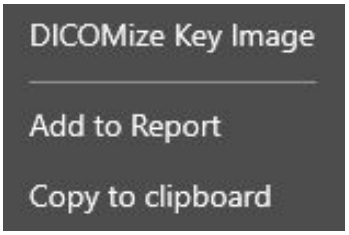


Image 95: Option to add an image of interest in a report

9.2 Report Header

The report header is fully editable and contains the following data: Patient Name, Gender, Age, Patient ID, Physician, Mode, Series Description, and Series Date. (Image 96)

Image 96: Report header in Athena

9.3 Removing Images

To remove the images in a report, simply click the "X" button in the upper right corner of said image. (image 97).

9.4 Saving Pictures

To save (export to local) any image added to a report, simply click the "Save" icon in the upper right of the report image (Image 97). Athena will export the images using the JPEG format.

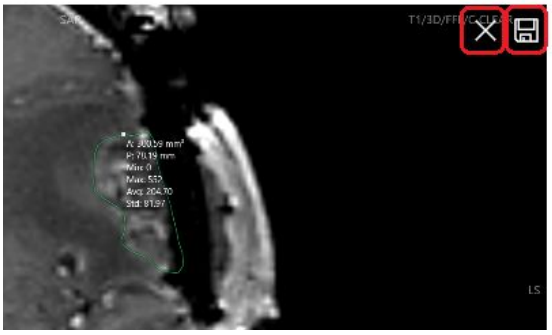


Image 97: Removing and Saving options in a report

9.5 Audio Report

Athena lets you record, play and export an audio report. The audio file will be saved together with the study, but can also be saved separately. This feature will use the computers default microphone setting to record audio. To record an audio just click the button. To play the recorded audio just click the button. And to save it, just click the button.

Important: All records will be replaced by the last record.

9.6 Voice Recognition

While filling in the report you can dictate short phrases to Athena, and the audio will be automatically converted to text.

To use this feature, it is necessary to select where the text will be inserted, click on the icon at the bottom of the screen, dictate and Athena will automatically transform the voice into text. To change the speech language you need to change the Language in Settings and, if necessary, change the language of "Speech" in the configuration of the Operating System by accessing: Settings - Time & Language - Speech.

9.7 Definition of Image Matrix

This feature allows you to choose the number of images per line or column that will be displayed on each page. In this way, the report can be customized according to the user needs (Image 98).

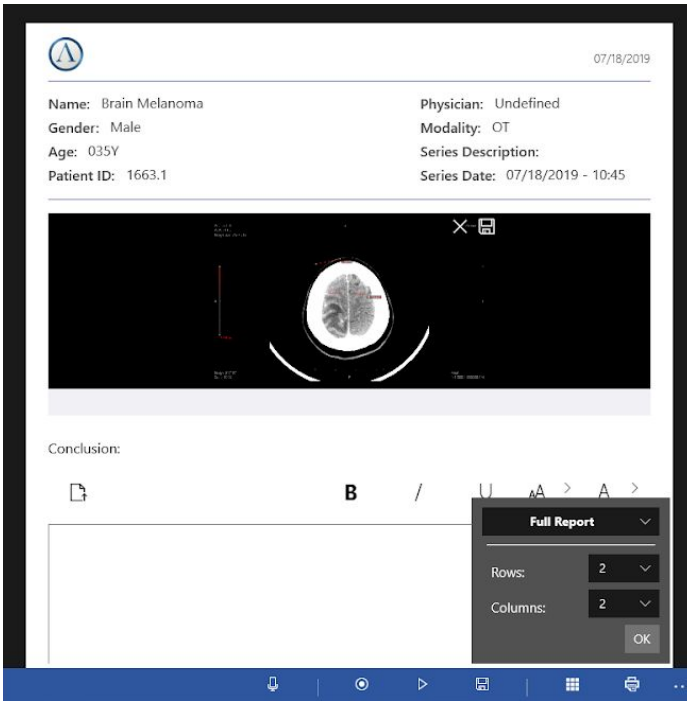


Image 98 - Configuration of rows and columns in the report

9.8 Printing

Athena allows the report to be printed to any available printer installed. You can also export the report to a PDF file. To do this, simply select the  button in the report window and a window with the print settings will be displayed (Image 99).

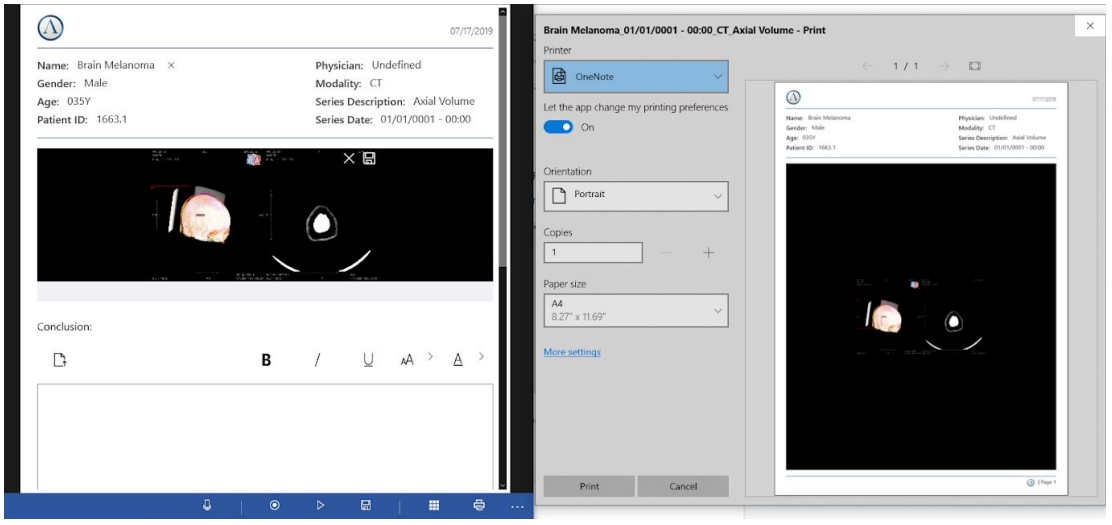


Image 99 - Configuration of printing a report in Athena

10. Word Report

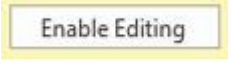
With Athena you can use Word documents (* .doc) to make a report and customize the template according to your needs. You can choose the fields and customize the position, header, footer, etc.

The report will be filled with some standard information such as: Patient Name, Gender, Age, Mode, Study Date, Access Number, Referring Physician, Executor Physician, Study Description, Series Description and Print Date. You can use several Word report templates.

To access this function open a series, click the right button arrow 

and select "Word Report Template".

To create a Word report just click the button 

. A file will be generated in Word with the template defined. To edit the text simply click on 

.

You can also modify the folder where Athena saves the Word report. To do this simply access 

, 

and set the location in "Word Report Folder".

10.1 Edit Template

To edit the default template, simply access Settings, General, choose the template in "Word Report Template" and click Edit (Image 100). A file will open in Word and you can make changes. To save it just click save and close the file.

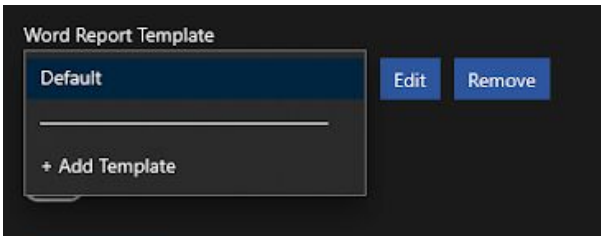


Image 100: Configuration of Word report

10.2 Create New Template

To add a new template, go to Settings, General and click + Add Template. After that, you will need to set the template name and click Add. A file will open in Word allowing you to make the changes. To save changes just click save and close the file.

10.3 Remove Template

To remove some created template or to reset the default template, simply access Settings, General select the desired template and click the button Remove (Image 101).

10.4 DICOMizing Word Reports

Athena also allows reports of the Word format to be DICOMized for the DICOM format. To do this, go to the right arrow Word on the button on the left side menu and then select the "DICOMize Word Report" option (Image 99). This option is active only when a created Word report is available.

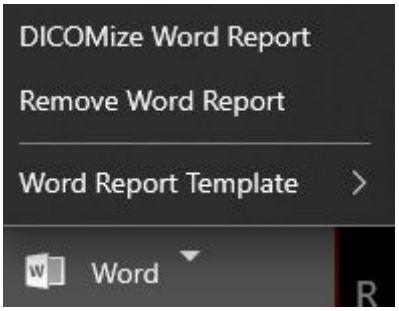


Image 101: Option to DICOMize Word report