

# Zed Link v3 User Guide

VERSION 3.6

ZED TECHNOLOGIES PTY. LTD. 2018

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## NOTICES

### TRADEMARKS

Zed Technologies and the Zed Technologies logo, Zed Doctor, Zed Patient, My Film Bag, Zed Link, Zed Link Patient Portal and Zed Link Referrer Portal are registered trademarks or trademarks of Zed Technologies Pty Ltd.

### THIRD-PARTY TRADEMARKS

Microsoft, Windows, Windows Server, SQL Server, Internet Explorer, .NET and .NET Framework are registered trademarks or trademarks of Microsoft Corporation.

All other brand names, product names and trademarks belong to their respective holders.

### INDICATIONS FOR USE

Zed Link™, is an image management system whose intended use is to provide scalable DICOM compatible PACS solutions for hospitals and related institutions and sites, which will archive, distribute, retrieve and display images and data from all image modalities (such as CR, CT, DR, MR, and other devices) and information systems. This also includes the display of structured reports and mammography images that have been created according to DICOM "For Presentation" and will include standard features and other tools for analysing mammography images. Only pre-processed DICOM for presentation images can be interpreted for primary image diagnosis in mammography. Lossy compressed mammographic images and digitized film screen images must not be reviewed for primary image interpretations. Mammographic images may only be interpreted using a monitor that meets technical specification identified by FDA. Zed Link is not intended for diagnostic image review on mobile devices. Typical users of this system are doctors and health care professionals.

**CAUTION: USA FEDERAL LAW RESTRICTS THIS DEVICE TO SALE BY OR ON THE ORDER OF A PHYSICIAN.**

# DISCLAIMERS

## ZED LINK INSTALLATION USED

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The installation this technical documentation is based off what is called a “standard installation” whereby default configurations are used.

## EXAMPLE IMAGES USED

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Images contained within this documentation are copyright © Zed Technologies Pty. Ltd. The images used may not reflect any customisations made to the Zed Link installation.

# HISTORY

The history of this document is below:

Version	Author	Date
1.0	Derrick Lau	12/02/2016
1.5	Ronald Li	10/12/2016
2.0	Ronald Li	29/03/2017
3.0	Ronald Li	01/08/2017
3.1	Ronald Li	08/10/2017
3.2	Ronald Li	19/01/2018
3.3	Ronald Li	16/03/2018
3.4	Ronald Li	20/03/2018
3.5	Ronald Li	04/04/2018
3.6	Ronald Li	04/04/2018

# SYSTEM REQUIREMENTS

## HARDWARE

### RECOMMENDED FOR CLINICAL DISPLAY

- Mac 10.10 + and Microsoft Windows 7 / 8 / 10 (64bit)
- Intel Core i5 / 8GB RAM or more
- 10 GB free hard disk space or more
- Gigabit network card
- 32-bit colour display
- Screen resolution of 1280 x 1024
- Network Requirements
  - Maximum latency of 100ms from source to destination
  - Minimum downstream throughput of 5 Mbps
  - Minimum upstream throughput of 750 kbps

### RECOMMENDED FOR DIAGNOSTIC DISPLAY

- Mac 10.10 + and Microsoft Windows 7 / 8 / 10 (64bit)
- Intel Core i7 / 16GB RAM or more
- 30 GB free hard disk space or more
- Gigabit network card
- High-resolution grayscale graphics board
- High-resolution grayscale monitor
- Network Requirements
  - Maximum latency of 100ms from source to destination
  - Minimum downstream throughput of 5 Mbps
  - Minimum upstream throughput of 1 Mbps

### RECOMMENDED FOR DIAGNOSTIC DISPLAY (MAMMO: BREAST TOMOSYNTHESIS VIEW)

- Mac 10.10 + and Microsoft Windows 7 / 8 / 10 (64bit)
- Intel Core i7 / 16GB RAM or more
- 100 GB free hard disk space or more
- Gigabit network card
- High-resolution grayscale graphics board
- High-resolution grayscale monitor
- Network Requirements
  - Maximum latency of 50ms from source to destination
  - Minimum downstream throughput of 20 Mbps
  - Minimum upstream throughput of 2 Mbps

# AUTHENTICATION

This section will describe the steps and processes involved in accessing Zed Link.

All pages contained with Zed Link require the user to be **authenticated** and **authorised** as per cybersecurity requirements.

## CYBER SECURITY

Active credentials are required to access data in the system. All users must either enter a correct password or access via a secure encrypted link in order to see data.

Invalid links and/or passwords are logged and recorded in the system.

Users who have accessed the system via an authorised account will be logged off automatically if they are inactive for longer than the configured time. Passwords have a minimum combination and must satisfy requirements. The combination is configurable depending on the client.

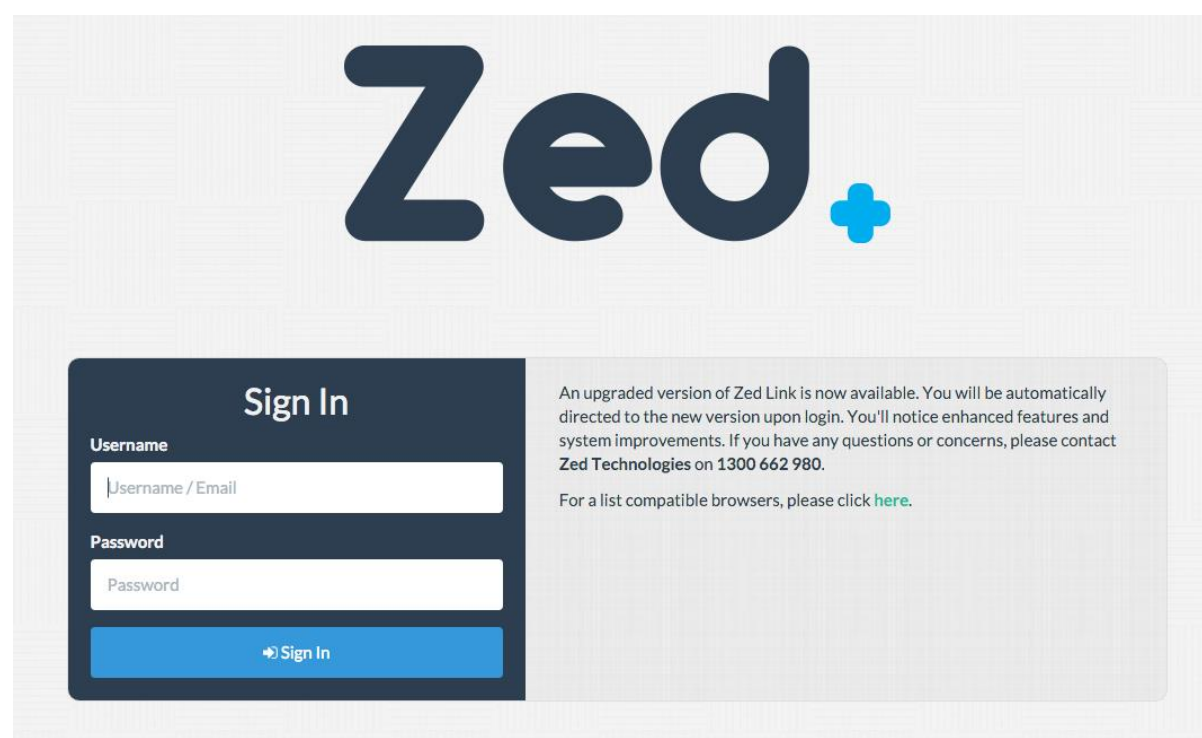
Users can only access studies they are authorised too.

The system is web based which means end-users will always have access to the latest version immediately after an upgrade is loaded. This is important in particular when critical updates are loaded.

## SIGN IN

When you initially visit the Zed Link website, you will be presented with a sign in page.

Due to cybersecurity reasons, signing in requires you to have a valid and enabled account. The Administrator is responsible for managing user accounts.

The image shows a screenshot of the Zed Link sign-in page. At the top, the 'Zed.' logo is displayed in a large, dark blue font. Below the logo, there is a sign-in form with a dark blue header 'Sign In'. The form contains two input fields: 'Username' with a placeholder 'Username / Email' and 'Password' with a placeholder 'Password'. Below these fields is a blue button with a white right-pointing arrow and the text 'Sign In'. To the right of the form, there is a light gray text box containing the following information: 'An upgraded version of Zed Link is now available. You will be automatically directed to the new version upon login. You'll notice enhanced features and system improvements. If you have any questions or concerns, please contact Zed Technologies on 1300 662 980.' and 'For a list compatible browsers, please click [here](#).'.



## SIGN IN ERRORS

Occasionally, the following errors may be encountered when a user signs in to Zed Link.

**The requested user account was not found, or the password was incorrect.**

This error implies that the account details were not found. The user should ensure the user name or email address and password were entered correctly. If the issue persists, the user should contact the site Administrator for further assistance.

**The requested account is currently locked. You can try again in X minute(s).**

The user has incorrectly entered their username and password combination more than the permitted number of times.

The maximum number of sign in attempts and 'lockout period' are configured by the Administrator.

## SIGN OUT

If you are using a shared workstation/computer, you should always ensure you correctly sign out of Zed Link.

To sign out of Zed Link, move your cursor to the top right of the page. Simply click on "**Sign Out**" (shown below) and your session will end. You will be taken back to the sign in page.

Powered by Zed.  EN   Your Account  Sign Out

# STUDY SEARCHING

This section will outline the study search functionality.

## SEARCH FIELDS

Below is a list of available search fields that comes with a standard Zed Link installation.

Field	Format	Example Value
Patient name	The patient name format is <b>SURNAME, FIRST NAME</b>	Appleseed, John
Patient ID	An alphanumeric string of characters.	123456
Accession Number	An alphanumeric string of characters.	2016Z0000001
Description	An alphanumeric string of characters.	MR BRAIN
Referring physician	The referring physicians name format is <b>SURNAME, FIRST NAME</b>	Appleseed, John
Study date to	The date format is <b>dd/mm/yyyy</b>	01/01/2016
Study date from	The date format is <b>dd/mm/yyyy</b>	01/01/2016
Modality	Checkboxes (can select multiple values)	CT, MR, DX

It should be noted that the standard Zed Link installation can be customised and certain search fields can be disabled or enabled. While all fields have been documented above, they may not be available.

## WILDCARD SEARCHING

Wildcard searches in Zed Link can be enabled or disabled. A standard installation will allow for wildcard searches.

The default character used to denote a 'wildcard search' is an asterisk "\*" (see examples below). The wildcard search character can be changed in Zed Link.

Searching patients name with a value of **zed, test\***

**Studies**

Search Filters  
Patients Named 'Smith'

Quick Search

Patient Name: zed, test\* Patient ID: Patient ID Accession No.: Accession No. Description: Description Referring Physician: Referring Physician Study Date From: Study Date From Study Date To: Study Date To Modality: All Modalities Page Size: 10 Clear Q Search Save

View Show Report Upload Report Attachments Share Details Add Data Access Export Move Reprocess Delete Reset Sorting

Patient Name	Patient ID	D.O.B.	Accession No.	Study Date	Study Time	Description	Series	Images	Modality	Referring Physician
ZED, TEST 9	ZEDPT9	01/01/2000	ZEDACC9	18/02/2012	13:18	MRI Spine Lumbar	5	30	MR	

1 Reset Sorting

Searching patients name with a value of **\*, \*est**

**Studies**

Search Filters  
Patients Named 'Smith'

Quick Search

Patient Name: \*, \*est Patient ID: Patient ID Accession No.: Accession No. Description: Description Referring Physician: Referring Physician Study Date From: Study Date From Study Date To: Study Date To Modality: All Modalities Page Size: 10 Clear Q Search Save

View Show Report Upload Report Attachments Share Details Add Data Access Export Move Reprocess Delete Reset Sorting

Patient Name	Patient ID	D.O.B.	Accession No.	Study Date	Study Time	Description	Series	Images	Modality	Referring Physician
ZED, TEST 9	ZEDPT9	01/01/2000	ZEDACC9	18/02/2012	13:18	MRI Spine Lumbar	5	30	MR	

1 Reset Sorting

## SEARCH RESULTS

Study search results are presented in the table. The study search page also acts as the "homepage" for Zed Link.

**Studies**

Search Filters  
Patients Named 'Smith'

Quick Search

Patient Name	Patient ID	Accession No.	Description	Referring Physician	Study Date From	Study Date To	Modality	Page Size
zed	Patient ID	Accession No.	Description	Referring Physician	Study Date From	Study Date To	All Modalities	10

Buttons: View, Show Report, Upload Report, Attachments, Share, Details, Add Data Access, Export, Move, Reprocess, Delete

Patient Name	Patient ID	D.O.B.	Accession No.	Study Date	Study Time	Description	Series	Images	Modality	Referring Physician
ZED, Xray	ZED-XR-2	29/09/1938		12/11/2017	11:53	Empty	1	1	DX	ZED, DOCTOR
ZED, Wetlab	WETLAB	01/01/0001		21/08/2017	09:49	CANINE LAT STIFLE	2	2	CR	ZED, DOCTOR
ZED, MRI	ZED-MR-1	20/05/1975	ZED-MR-1	15/08/2017	15:54	Lower Extremity* Ankle	6	150	MR	ZED, DOCTOR
ZED, RONALD	K31842	25/08/1984	2012MH0001631	08/10/2012	16:12	CT ABDOMEN & PELVIS WITH CONTRAST	6	393	CT	Pasha, Mohamed
ZED, TEST 9	ZEDPT9	01/01/2000	ZEDACC9	18/02/2012	13:18	MRI Spine Lumbar	5	30	MR	

## SEARCH FILTERS

Users are able to create and manage search filters base on any of the available search fields.

Administrators are able to create search filters that will apply to **ALL** users. Users are not able to modify these filters.

## CREATING SEARCH FILTERS

To create a search filter, enter your values in the search fields and click on the 'save' button.

**Studies**

Search Filters  
All CT

Quick Search

Patient Name	Patient ID	Accession	Description	Ref. Physician	Study Date From	Study Date To	Modality	Page Size
zed, test	Patient ID	Accession Number	Study Description	Referring Physician	Study Date From	Study Date To	All Modalities	10

Buttons: Clear, Q Search, Save

You will then be prompted to enter a name for your filter. Enter a name and click 'OK'.

Please enter a name for your search filter

Zed Test Patients

Buttons: Cancel, OK

The search filter will be then created and activated and will be available under 'Search Filters'.

Search filter 'Zed Test Patients' created successfully. The filter is now active.

**Studies**

Search Filters  
All CT, Zed Test Patients

Quick Search

Patient Name	Patient ID	Accession	Description	Ref. Physician	Study Date From	Study Date To	Modality	Page Size
Last, First	Patient ID	Accession Number	Study Description	Referring Physician	Study Date From	Study Date To	All Modalities	10

Buttons: Clear, Q Search, Save

## MANAGING SEARCH FILTERS

Users are able to manage their search filters by going to the 'Your Account' page which can be accessed via the navigation bar.

### Your Account

Basic Details

John Appleseed

[Change Name](#)

Email

Your email address is currently jappleseed@example.com.au

[Change Email](#)

Password

[Change Password](#)

Search Filters

[Manage](#)

Click on 'Manage' under Search Filters to access the Manage Search Filter page.

## UPDATING SEARCH FILTERS

To update search filters, click on the 'Update' button.

### Manage Search Filters

[Return to Your Account](#) [+ Create / Add](#)

Type

Select ... [Clear](#) [Q Search](#)

Name	Description	Type	Actions
Zed Test Patients	Zed Test Patients	Study	<a href="#">Update</a> <a href="#">Delete</a>

Users can then edit their search fields and save the changes by click on 'Update Filter'.

### Update Study Search Filter

<p><b>Basic Details</b></p> <p><b>Name</b></p> <input type="text" value="Zed Test Patients"/> <p><b>Description</b></p> <input type="text" value="Zed Test Patients"/>	<p><b>Study Search Filter</b></p> <p><b>Patient name</b></p> <input type="text" value="Last name, first name"/> <p><b>Patient ID</b></p> <input type="text" value="Patient ID"/> <p><b>Accession Number</b></p> <input type="text" value="Accession number"/> <p><b>Study Description</b></p> <input type="text" value="Study description"/> <p><b>Referring Physician</b></p> <input type="text" value="Last name, first name"/> <p><b>Modality</b></p> <div> CR  CT  DX  ES  KO  MG  MR  NM </div> <p>Hold down <b>Ctrl</b> to select multiple modalities.</p>	<p><b>Date Filters</b></p> <p><b>Study Date From</b></p> <input type="text" value="dd/mm/yyyy"/> <p><b>Study Date To</b></p> <input type="text" value="dd/mm/yyyy"/> <p>Alternatively, you can select a predefined range filter from the list below. The dates will automatically be populated when the filter is active.</p> <p><b>Range Filter</b></p> <div> Select ... </div> <p><a href="#">Cancel</a> <a href="#">Update Filter</a></p>
------------------------------------------------------------------------------------------------------------------------------------------------------------------------	----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

## DELETING SEARCH FILTERS

To delete a search filter, click on the 'Delete' button.

## Manage Search Filters

[Return to Your Account](#) [+ Create / Add](#)

Type

Select ... [Clear](#) [Q Search](#)

Name	Description	Type	Actions
Zed Test Patients	Zed Test Patients	Study	<a href="#">Update</a> <a href="#">Delete</a>

Users will then be prompted for confirmation.

## Delete Search Filter

[Return to Your Account](#)

Are you sure you would like to delete your Zed Test Patients filter?

All search filter information will be deleted.

[Delete Zed Test Patients](#)

## ACTION BAR

The action bar is a small strip of buttons that allow the user to perform various functions.

Buttons and their functionalities are outlined below. Please note that not all users will see all available buttons unless authorised.

## STRIP STATES

There are two different states for buttons: an **enabled** state and a **disabled** state.

The **enabled** state will have vibrant colouring (show below):



The **disabled** state will have pale colouring and a 'disabled' icon will appear while hovering (shown below):



## BUTTONS

### VIEW

Clicking on this button will open the study in the HTML5 DICOM viewer in a new browser tab.

### SHOW REPORT

Clicking on this button will open the report (if available) for the study.

### BREAK GLASS (IF AVAILABLE TO THE USER)

This button will open a new page where you can gain immediate access to a study which you do not have access to. The user is required to enter certain information to gain access. Please refer to the Break Glass section for more information.

### UPLOAD REPORT (IF AVAILABLE TO THE USER)

Clicking on this button will allow the user to upload a report for the study. The supported file types are PDF, JPG and PNG.

### ATTACHMENTS (IF AVAILABLE TO THE USER)

Clicking on this button will allow the user to upload an attachment for the study. The supported file types are PDF, JPG and PNG.

### SHARE

Clicking on this button will expand a list with 3 possible options.

- Via link – generates a link to access the selected study.
- Via email - instantly share the selected study via email.
- With another user - share the study with another Zed Link user.
- Temporary account - create a temporary account that has access to the selected study.

### DETAILS

Clicking on this button will open a new browser tab with detailed study information.

### ADD DATA ACCESS

This button will open a new page where you can assign groups to have access to the selected study.

### EXPORT

This button will allow the user to export the study in DICOM format with a DICOM viewer.

### MOVE

This button will open a page where you can send a study to different destinations/devices. E.g. send back to PACS.

### REPROCESS

This button will add the selected study in the work queue to be reprocessed.

### DELETE

This button will open a page where you can delete the study.



## BREAK GLASS

If a doctor has access to a limited number of studies and is in a situation that requires urgent access to a patient who may not be their primary caring physician, the doctor can 'break glass' for immediate access. The doctor can be granted access provided they have the patient ID and a reason for accessing the patient's studies.

## ACTION BAR ITEM

If the user does not have all study access, the 'Break Glass' button will be visible<sup>1</sup>.



If break glass is **disabled**, this button will not be visible to **anyone**.

## REQUESTING ACCESS

After clicking on the break glass button, the user will be directed to the following page (shown below). The user **must** understand the conditions of being granted break glass access and accept the terms.

When the user accepts the terms, the following text box inputs will be displayed.

<sup>1</sup> If the Break Glass functionality has been enabled.

Zed.

Studies

Powered by Zed. [▲ Your Account](#) [🔑 Sign Out](#)

## Break Glass

🔔 This feature allows you to view studies for which you were not granted automatic access.

⚠️ I understand that I am about to access information for a patient for whom I am not the primary referring physician on record. I acknowledge that I am doing so only for medical reasons and for the sole benefit of the patient, and in doing so am bound to keep this information private and confidential.

I acknowledge and accept the terms of this confidentiality agreement.

☒

**Patient ID**

Please enter the patient ID ...

The patient ID must be entered in exactly as it appears.

**Please enter a reason for accessing the patient studies**

Please enter your reason ...

Access Patient Studies

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Powered by Zed.

## PATIENT ID

The user must enter the patient ID exactly as it appears.

## REASON

A reason for requesting break glass access must be specified.

## REQUESTING ACCESS - CONFIRMATION

After successfully entering patient details and a reason, the user will be prompted to confirm they have selected the correct patient.

**Break Glass**

⚠ Please confirm that the following patient details are correct.

Patient ID 83495234985  
Patients Name ANON, ANON

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## ACCESSING BREAK GLASS STUDIES

Break glass access will be granted immediately. However, the user should allow a few moments for studies to be retrieved if they are not online.

**Studies**

Quick Search

Patients Name	Patient ID	Accession	Description	Ref. Physician	Study Date From	Study Date To	Modality	Page Size
<input type="text" value="Patients Name"/>	<input type="text" value="Patient ID"/>	<input type="text" value="Accession Number"/>	<input type="text" value="Study Description"/>	<input type="text" value="Referring Physician"/>	<input type="text" value="Study Date From"/>	<input type="text" value="Study Date To"/>	<input type="button" value="All Modalities"/>	<input type="button" value="10"/>

Patient Name	Patient ID	Patient D.O.B.	Accession No.	Study Date / Time	Description	Series	Images	Modality	Referring physician
TEST, KARISMA	K21725	10/12/1988	2015C0001480	02/02/2015 09:08	HAND LEFT XRAY	4	4	DX	
ANON, ANON	83495234985	08/08/1983	324687465413	10/02/2015 16:34	TEST US	5	5	CR	
ANON, ANON	83495234985	14/01/1962	KNBJHKVUKYV	30/09/2015 12:22	CHEST CT WITH CONTRAST	17	2900	CT	
ANON, ANON	83495234985	16/07/1949	BJHBUHGUKYGKU	01/10/2015 09:32	SHOULDER LEFT INJECTION US	1	6	US	

Break glass studies will appear in the study search results.

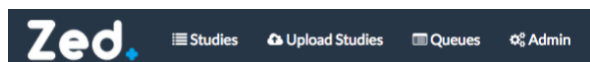
## EXPIRATION

Break glass access to patient studies expire after 24 hours by default.

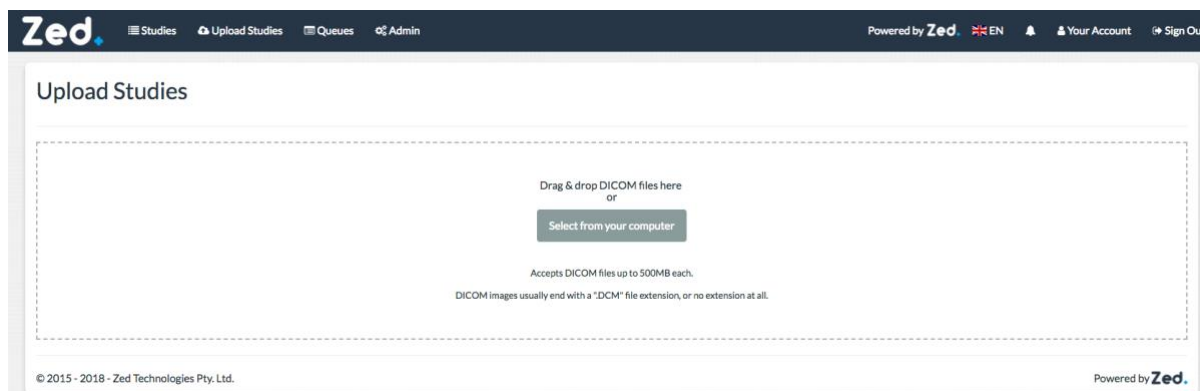
Studies will not appear in search results after the expiration period has been exceeded.

# UPLOAD STUDIES

If the Upload Studies function is enabled as part of the install and the user have this permission then they will see the “Upload Studies” link on the navigation bar.



The user will be directed to the Upload Studies page when they click on the link. The page will allow the user to drag and drop DICOM files.



# YOUR ACCOUNT

The 'Your Account' page can be accessed from the navigation bar.

This page is where the user can manage their own account. The user can change their name, email address, or password.

The screenshot shows the 'Your Account' page within the Zed application. The top navigation bar includes the Zed logo, a 'Studies' menu, and links for 'Powered by Zed.', 'Your Account', and 'Sign Out'. The main content area is titled 'Your Account' and displays the user's name 'John Appleseed' with a 'Change Name' link. Below this, the 'Email' section shows 'Your email address is currently jappleseed@example.com.au' with a 'Change Email' link. The 'Password' section has a 'Change Password' link. At the bottom, there is a copyright notice '© 2015 - Zed Technologies Pty. Ltd.' and a 'Powered by Zed.' logo.

## CHANGE NAME

A user can change their first and last name at any time in Zed Link.

When you edit your first and last name, you will see two text boxes pre-filled with your first and last name.

### Change Name

First Name

Last Name

Simply enter a new first and last name and click on '**Update Name**'.

You will then receive the following message:

✓ Your name was updated successfully.

## CHANGE EMAIL

A user can change their email at any time in Zed Link.

Simply enter a new email address and the account password and click on **'Update Email'**.

### Change Email

Email address

Please enter your new email address above.

Current Password

Please enter your **current** password above.

You will then receive the following message:

✓ Your email address was updated successfully.

## CHANGE PASSWORD

A user can change their password at any time in Zed Link.

Simply the enter the current password, new password and re-enter the new password in the 'Confirm Password' text-box and click on **'Update Password'**.

### Change Password

Current Password

Please enter your current password above.

New password

Please note the following are requirements:

Please enter your new password above.

Confirm Password

Please confirm the password by entering it again.

You will then receive the following message:









✓ Your password was updated successfully.











# HTML5 DICOM VIEWER

This section will cover the basics of using the zero-footprint HTML5 DICOM image viewer.








## TOOLS AND OPTIONS

All tools and viewer options are outlined below.

Icon	Tool / Option Name	Description
	Measure Polygonal ROI	Allows you add anchor points to measure the polygonal ROI.
	Measure Cardiothoracic Ratio	Allows you to measure the cardiothoracic ratio of the images on the screen by allowing you to draw rulers on an image.
	Measure Cobb Angle	Allows you to measure the Cobb angle of the images on the screen by allowing you to draw rulers on an image.
	Measure Angle	Allows you to measure the angle of the images on the screen by allowing you to draw rulers on an image.
	Measure Length	Allows you to measure the length of the images on the screen by allowing you to draw a ruler on an image.
	Clear Measurements	Clears the measurements on the image.
	No Split	Change the image series layout to 1 x 1.
	Split Vertically	Change the image series layout to 1 x 2.

	Split Horizontally	Change the image series layout to 2 x 1.
	Split Grid	Change the image series layout to 2 x 2.
	Window/Level	Changes the contrast of the image. You can either use the pre-set settings when you click the button or left clicking and dragging up or down on an image will also change contrast.
	Zoom Fit	Changes the contrast of the image. You can either use the pre-set settings when you click the button or left clicking and dragging up or down on an image will also change contrast.
	Split Option	Choose how multiple image series are displayed on screen. A series are grouped images (an example would be multiple images from a CT scan).
	Export/Share	Export images as a PNG file or Share scans by sending a email to the recipient. The recipient will receive a link to view the scans within the viewer.
	Flip Horizontal	Flip the image horizontally.
	Flip Vertical	Flip the image vertically.
	Invert	Inverts the colour of the current selected image.
	Panning	Allows you to move the images around by left clicking and dragging on an image.



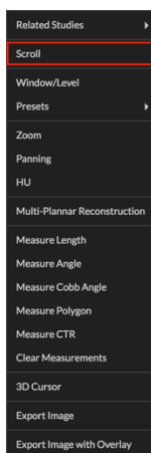
	Zoom	Allows you to zoom in and out of the images by left clicking and dragging up or down on an image.
	Reset	Removes changes that have been made to images by other tools.
	Scroll	Scroll through the images available in the image box by dragging up and down.
	Play Cine	Scrolls automatically through a selected image series.
	Show/Hide Report	Show or hide the radiologist report. Please note this button will only appear if there is a report associated with the scan.
	Show/Hide Overlay	Show or hide the technical details around the edge of images.
	3D Cursor	Allows you to locate a point in space across all image planes.

## CONTEXT MENU

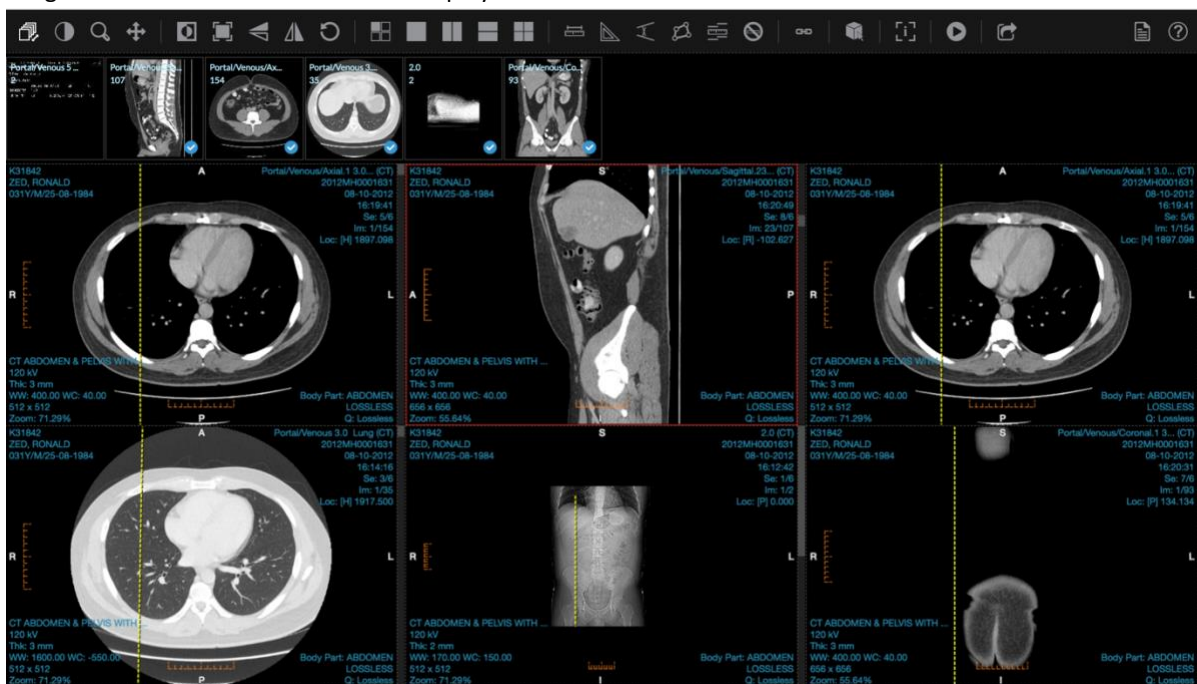
- Scroll
  - Scroll through the images available in the image box by dragging up and down.
- Window/Level
  - Changes the contrast of the image. You can either use the pre-set settings when you click the button or left clicking and dragging up or down on an image will also change contrast.
- Zoom
  - Allows you to zoom in and out of the images by left clicking and dragging up or down on an image.
- Panning
  - Allows you to move the images around by left clicking and dragging on an image.
- Hounsfield Unit
  - Displays the actual pixel value or Hounsfield Unit (HU) of where the cursor is clicked for the image in the bottom right overlay.
- Multi-Planar Reconstruction
- Measure Length
  - Allows you to measure the length of the images on the screen by allowing you to draw a ruler on an image.
- Measure Angle
  - Allows you to measure the angle of the images on the screen by allowing you to draw rulers on an image.
- Measure Cobb Angle
  - Allows you to measure the Cobb angle of the images on the screen by allowing you to draw rulers on an image.
- Measure Polygonal ROI
  - Allows you add anchor points to measure the polygonal ROI.
- Measure CTR
  - Allows you to measure the cardiothoracic ratio of the images on the screen by allowing you to draw rulers on an image.
- Clear Measurements
  - Clears the measurements on the image.
- 3D Cursor
  - Allows you to locate a point in space across all image planes.
- Export Image
  - Allows you to export the selected image.
- Export Image with Overlay
  - Allows you to export the selected image with the overlay.

## SCROLL

1. Select the “Scroll” button on the tool bar or context menu and drag up and down on the display set with the left mouse button.

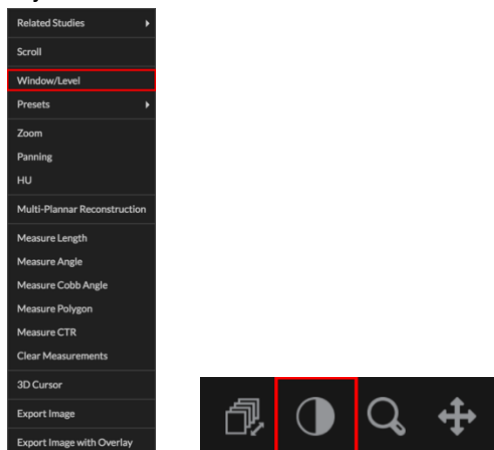


2. Scroll up and down on the display set with the mouse wheel.
3. Drag the scroll bar at the side of each display set.

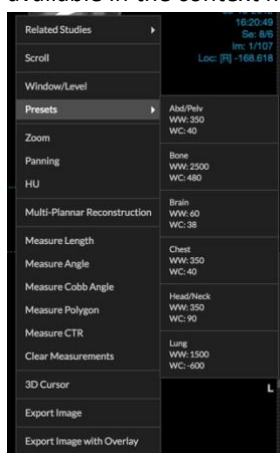


## WINDOW/LEVEL

1. Select the “Window/Level” button on the tool bar or context menu and drag around on the image. Dragging up increases the “level” (or window center), while dragging down decreases it. Dragging left reduces the window width and dragging right enlarges it. Combining both dragging motions will adjust both the window width and level simultaneously.



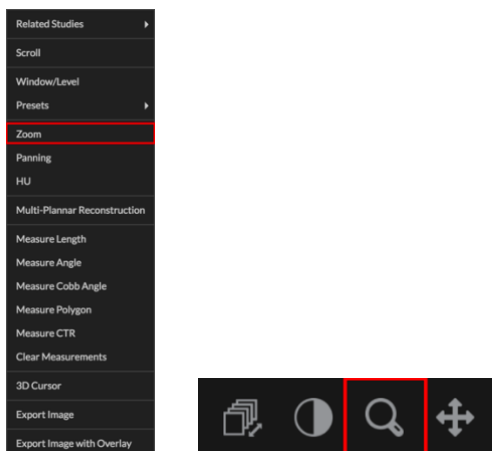
2. Presets may be available for certain image sets and if available then the presets option becomes available in the context menu.



3. Clicking on any of the available preset option will set the selected display set with the values in the selected preset.

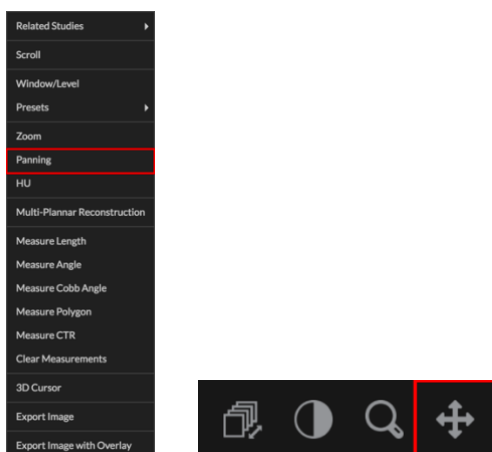
## ZOOM

1. Select the “Zoom” button on the tool bar or context menu and drag up and down on the image.



## PANNING

1. Select the “Pan” button on the tool bar or context menu and drag around the image.

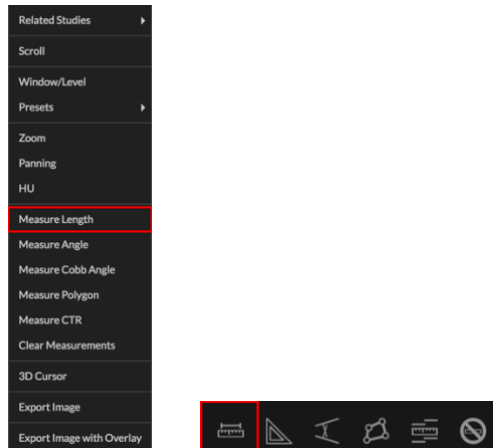


## MEASUREMENTS

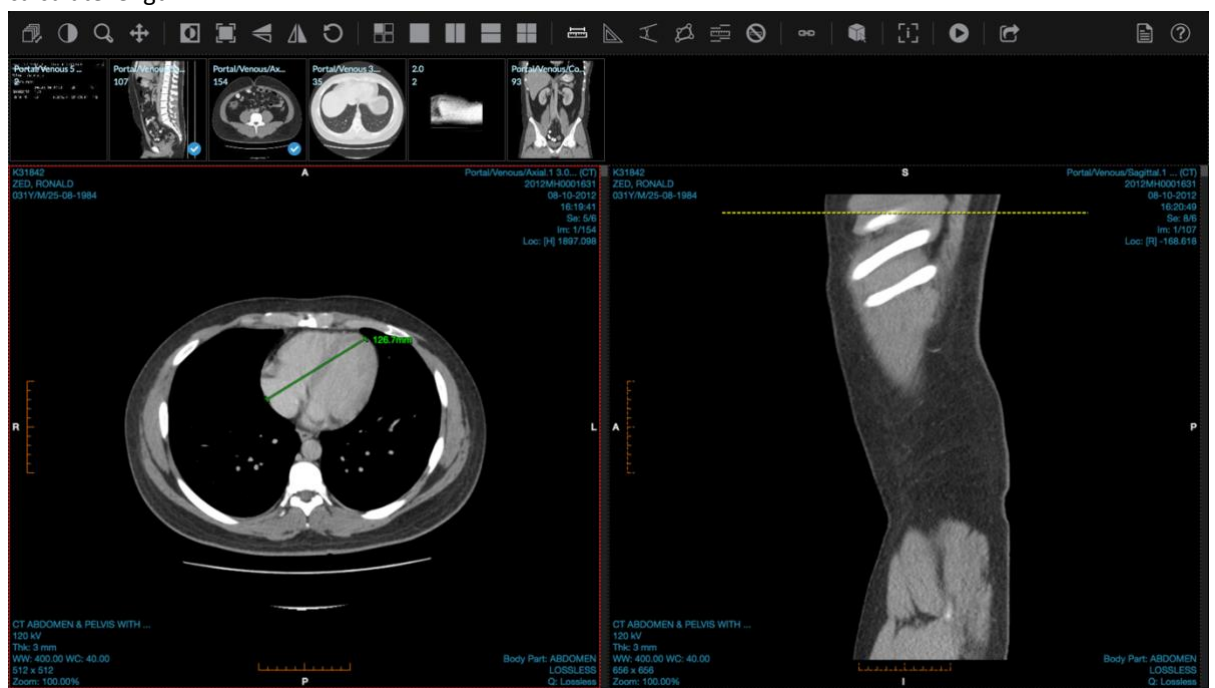
### LENGTH

#### ADDING MEASUREMENT

1. Click on the “Measure Length” button on the tool bar or context menu.

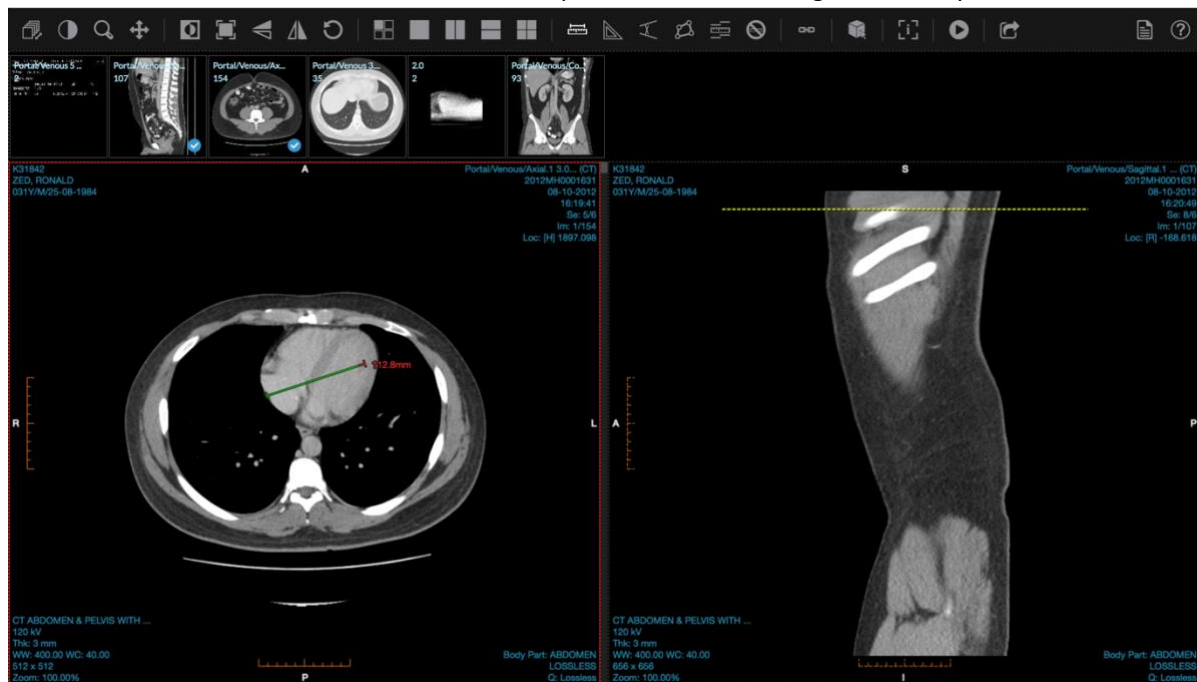


2. Click and hold on the image where you want the measurement to begin. Release when necessary to calculate length.

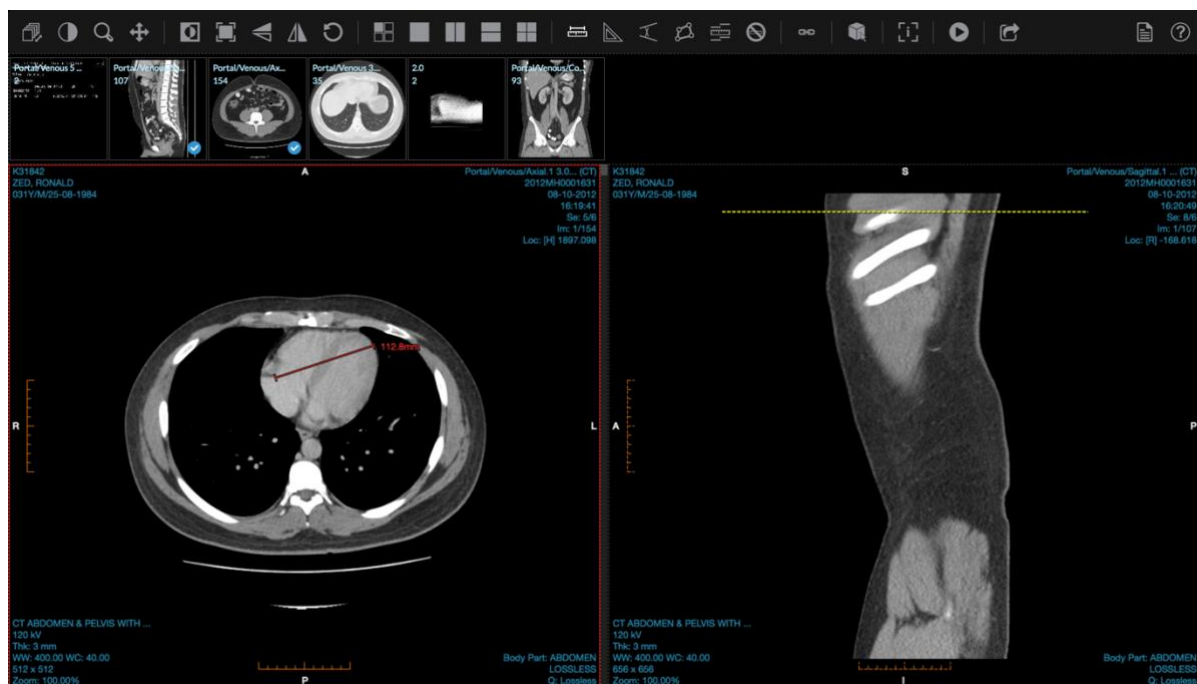


## MODIFYING MEASUREMENT

1. To resize, hover the mouse over one of the anchor points the click and drag as necessary.



2. To move, hover the mouse over one of the lines (not the anchor point), then click and drag to the new location.



3. To delete, click on one of the lines or anchor point and then press the backspace button on your keyboard or click the "Clear Measurements" option on the toolbar or context menu.

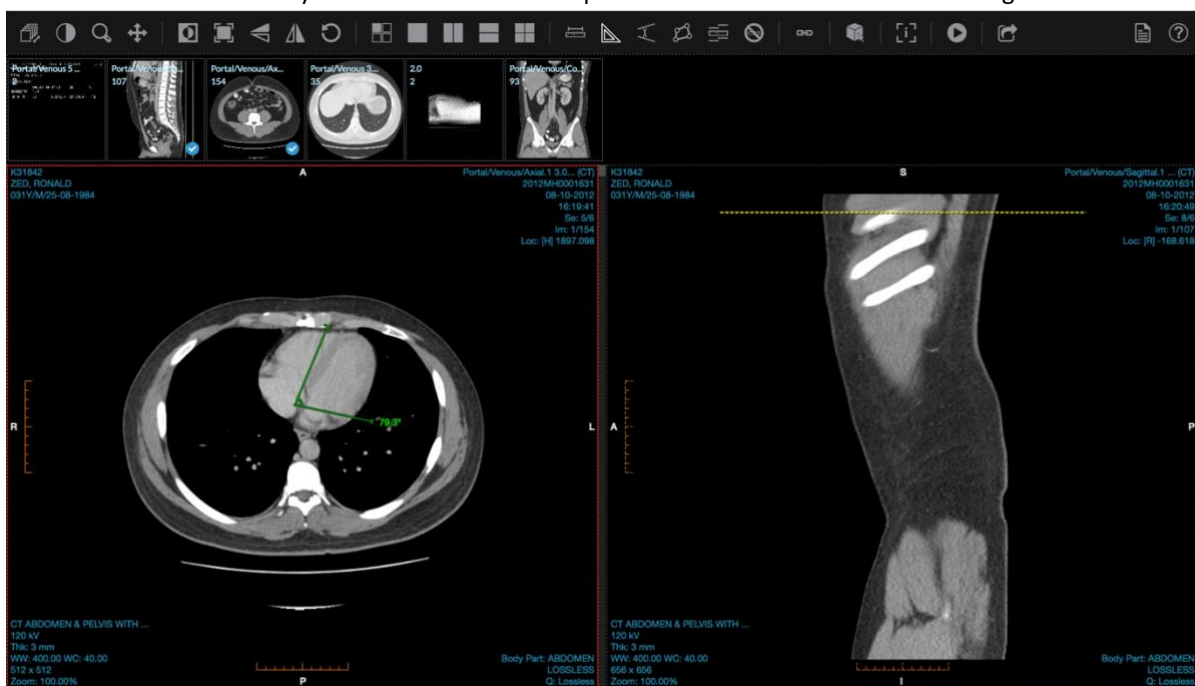
## ANGLE

## ADDING MEASUREMENT

1. Click on the “Measure Angle” button on the tool bar or context menu.



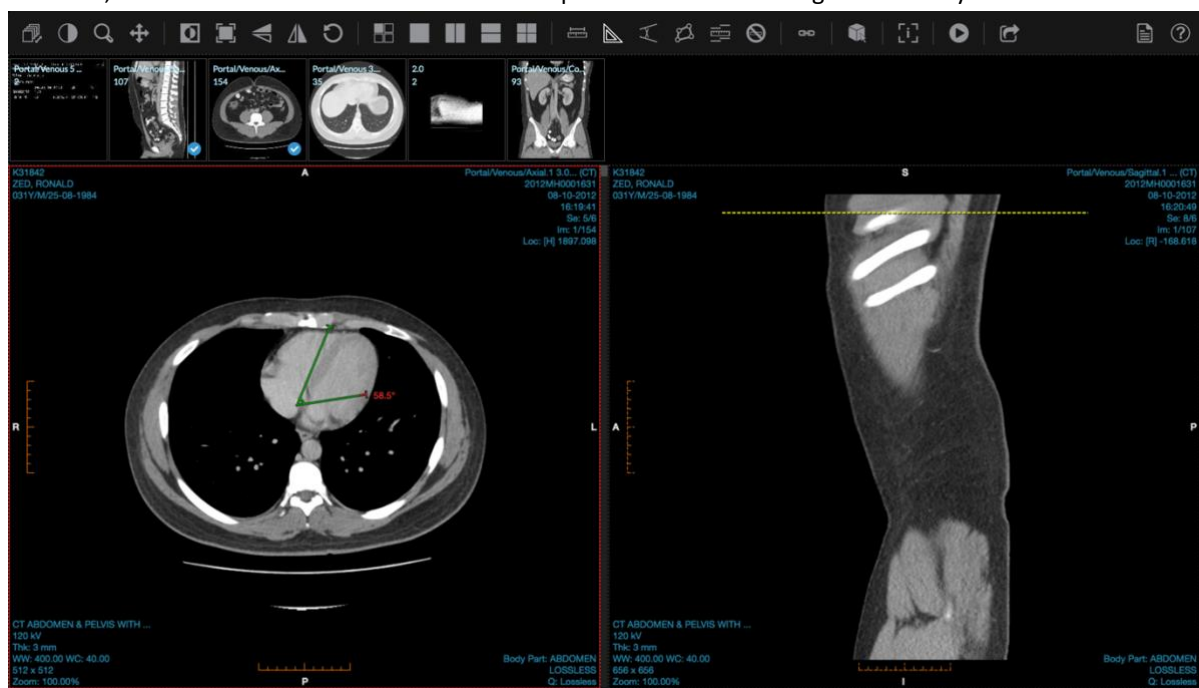
2. Click and hold on the image where you want the measurement to begin. This lays down the measurement's first anchor point. Release when necessary.
3. Move the mouse to where you want the next anchor point to be located. Click and release again.



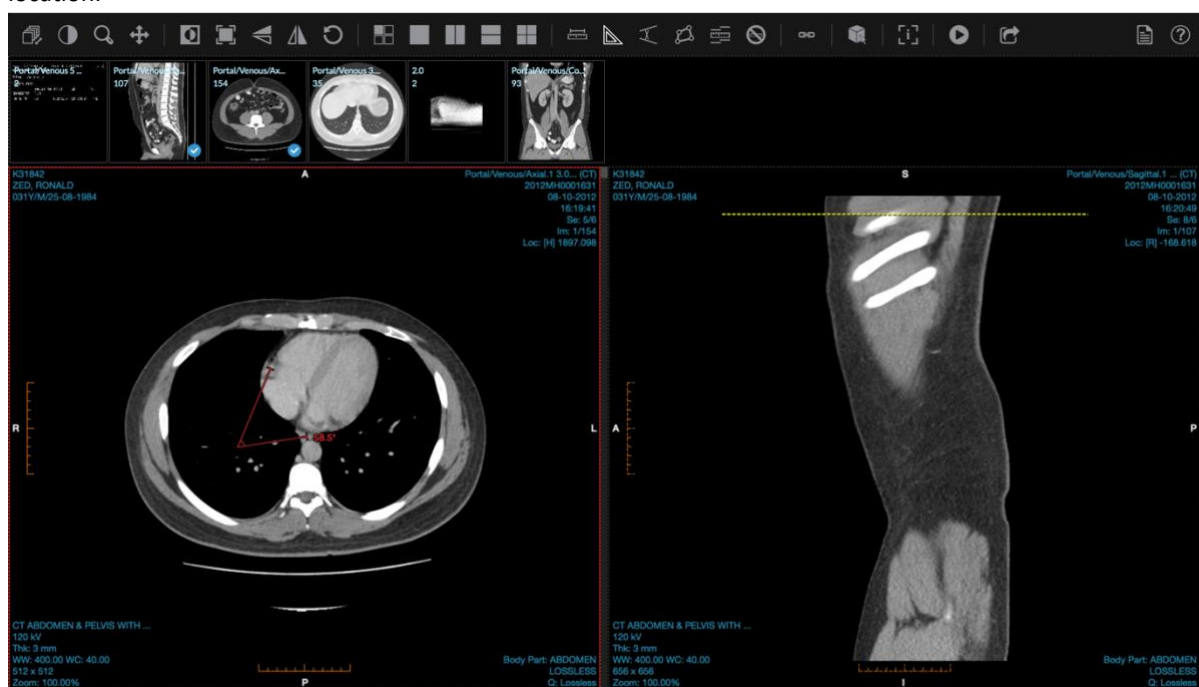


## MODIFYING MEASUREMENT

1. You cannot add/remove anchor points.
2. To resize, hover the mouse over one of the anchor points the click and drag as necessary.



3. To move, hover the mouse over one of the lines (not the anchor point), then click and drag to the new location.



4. To delete, click on one of the lines or anchor point and then press the backspace button on your keyboard or click the “Clear Measurements” option on the toolbar or context menu.

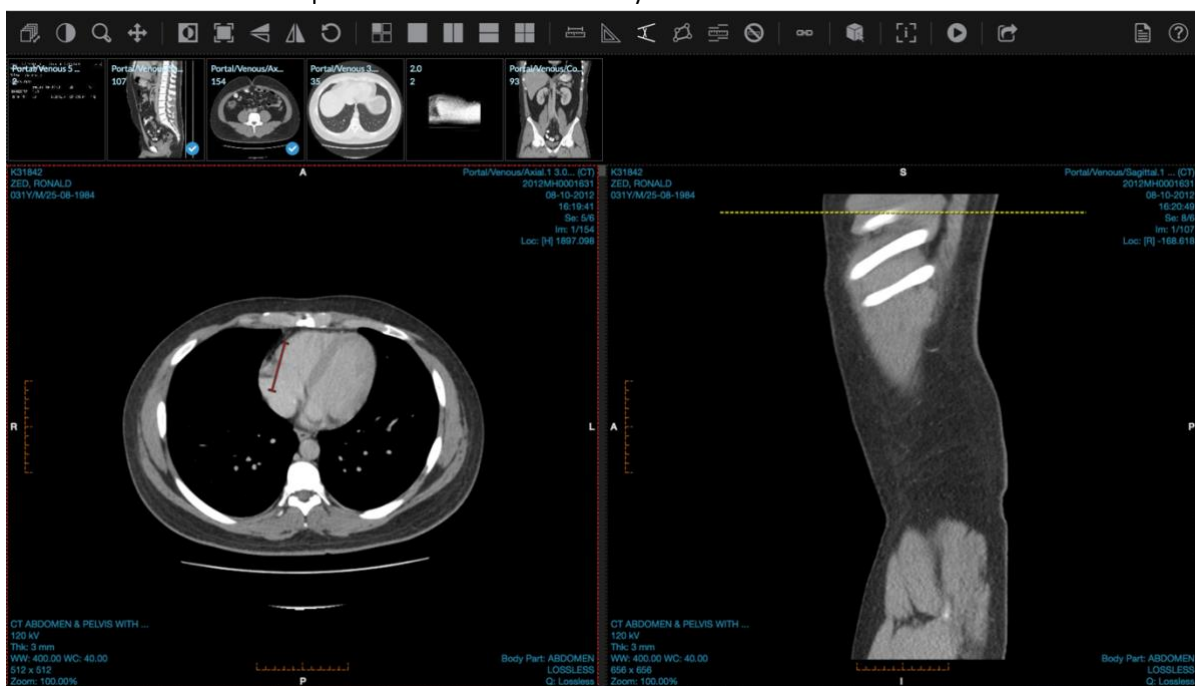
## COBB ANGLE

## ADDING MEASUREMENT

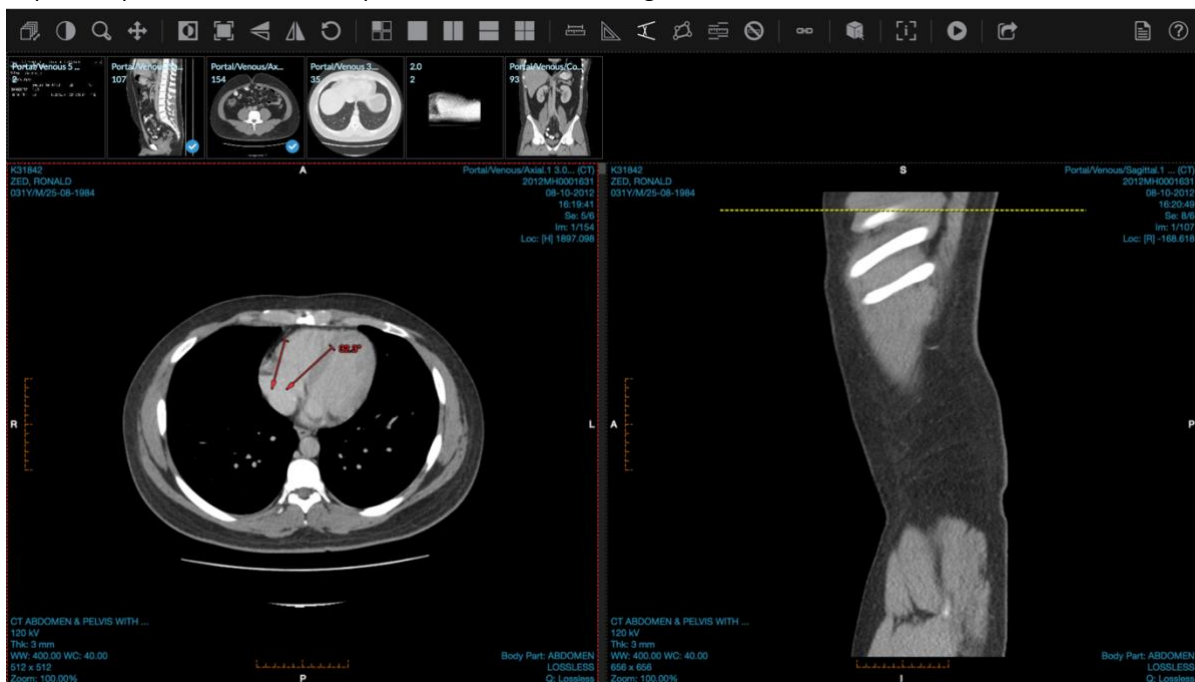
1. Click on the “Measure Cobb Angle” button on the tool bar or context menu.



2. Click and hold on the image where you want the measurement to begin. This lays down the measurement's first anchor point. Release when necessary.

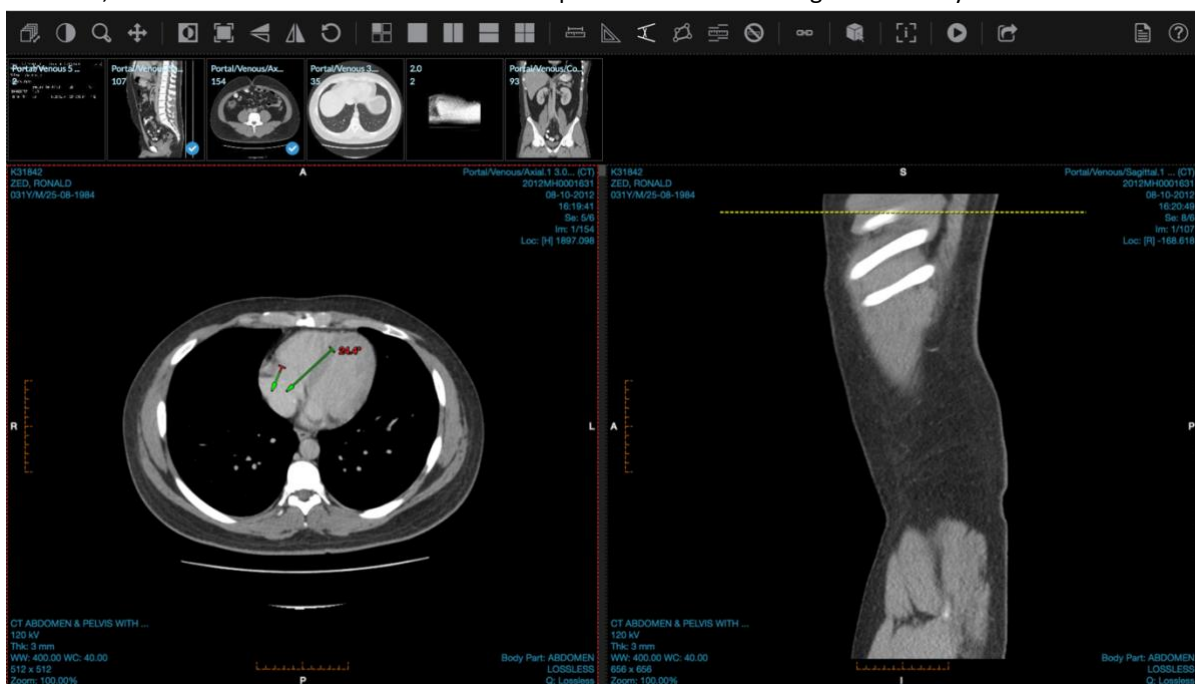


- Repeat step 2 for second anchor point to calculate cobb angle.

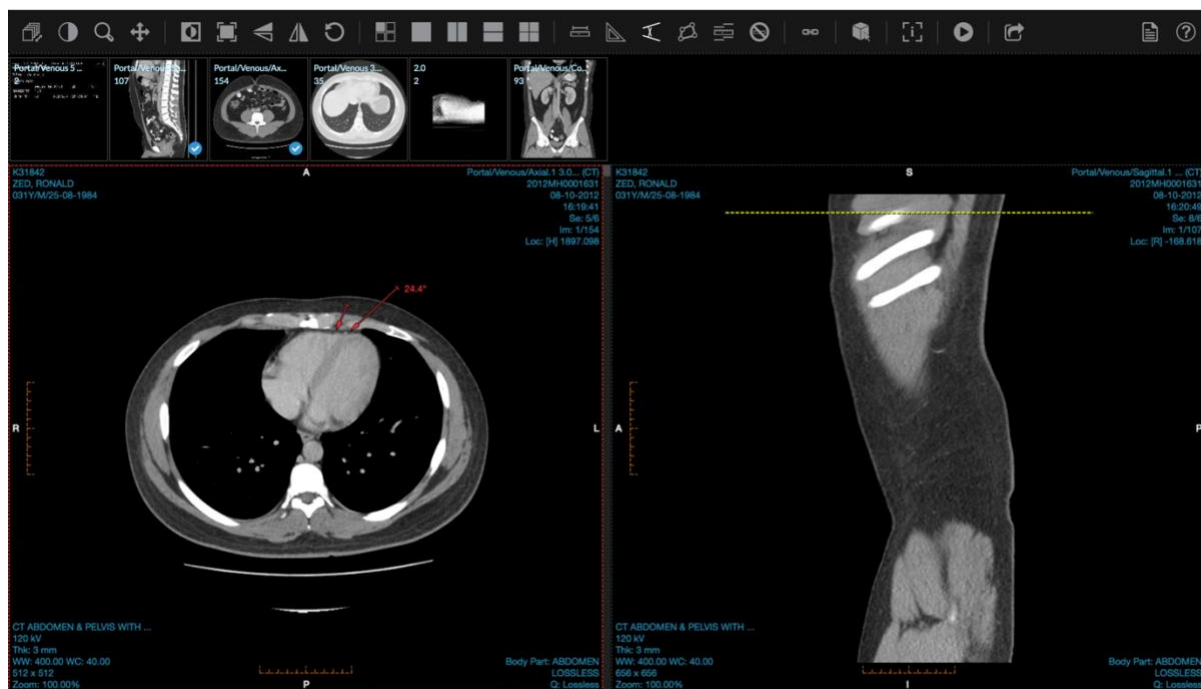


## MODIFYING MEASUREMENT

- You cannot add/remove anchor points.
- To resize, hover the mouse over one of the anchor points the click and drag as necessary.



- To move, hover the mouse over one of the lines (not the anchor point), then click and drag to the new location.



- To delete, click on one of the lines or anchor point and then press the backspace button on your keyboard or click the “Clear Measurements” option on the toolbar or context menu.

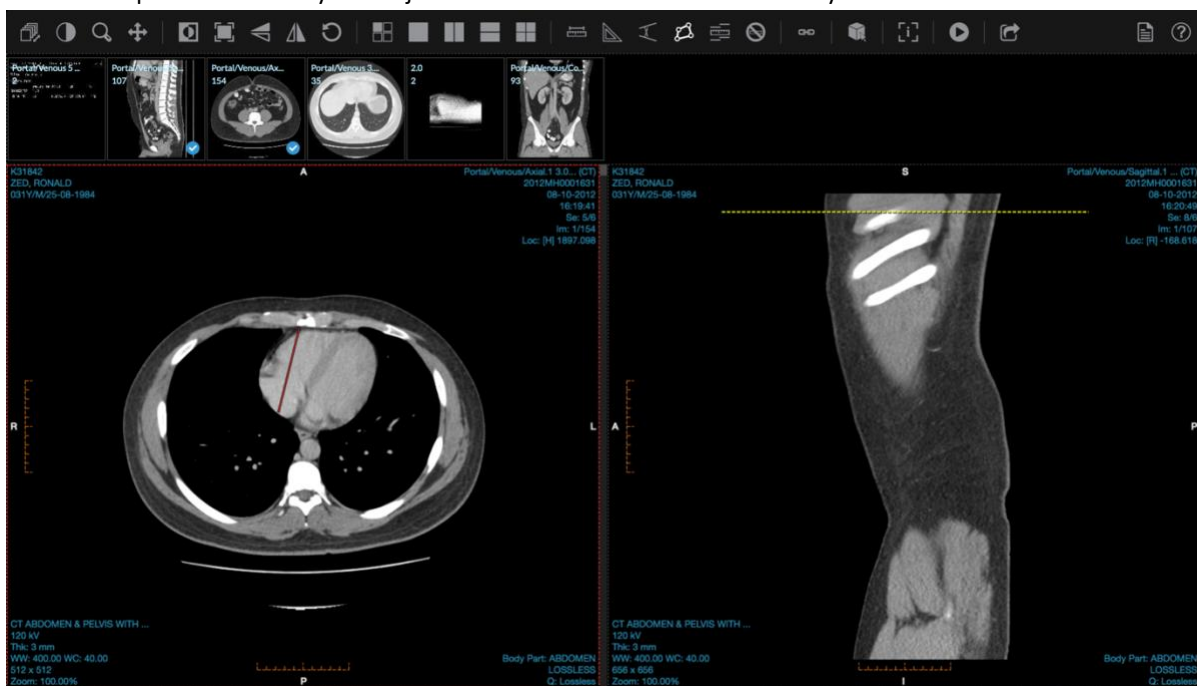
## POLYGONAL ROI

## ADDING MEASUREMENT

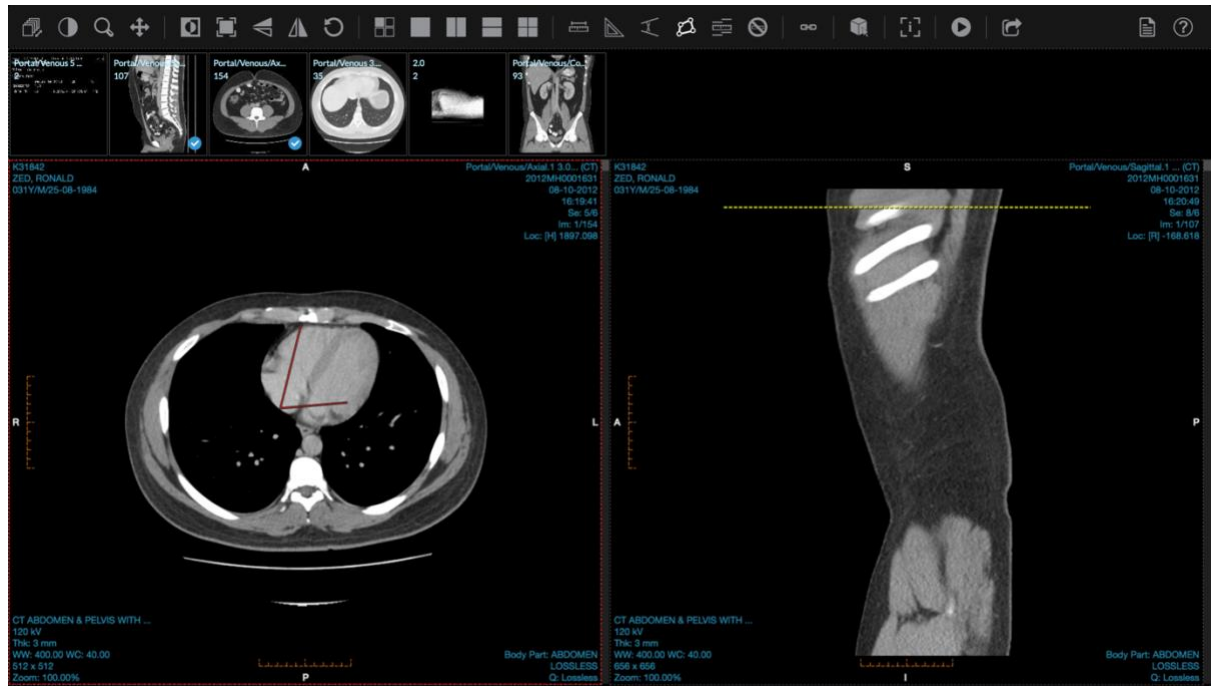
1. Click on the “Measure Polygon” button on the tool bar or context menu.



2. Click on the image where you want the measurement to begin. This lays down the measurement's first anchor point. Note that you can just click and release. It is not necessary to hold.

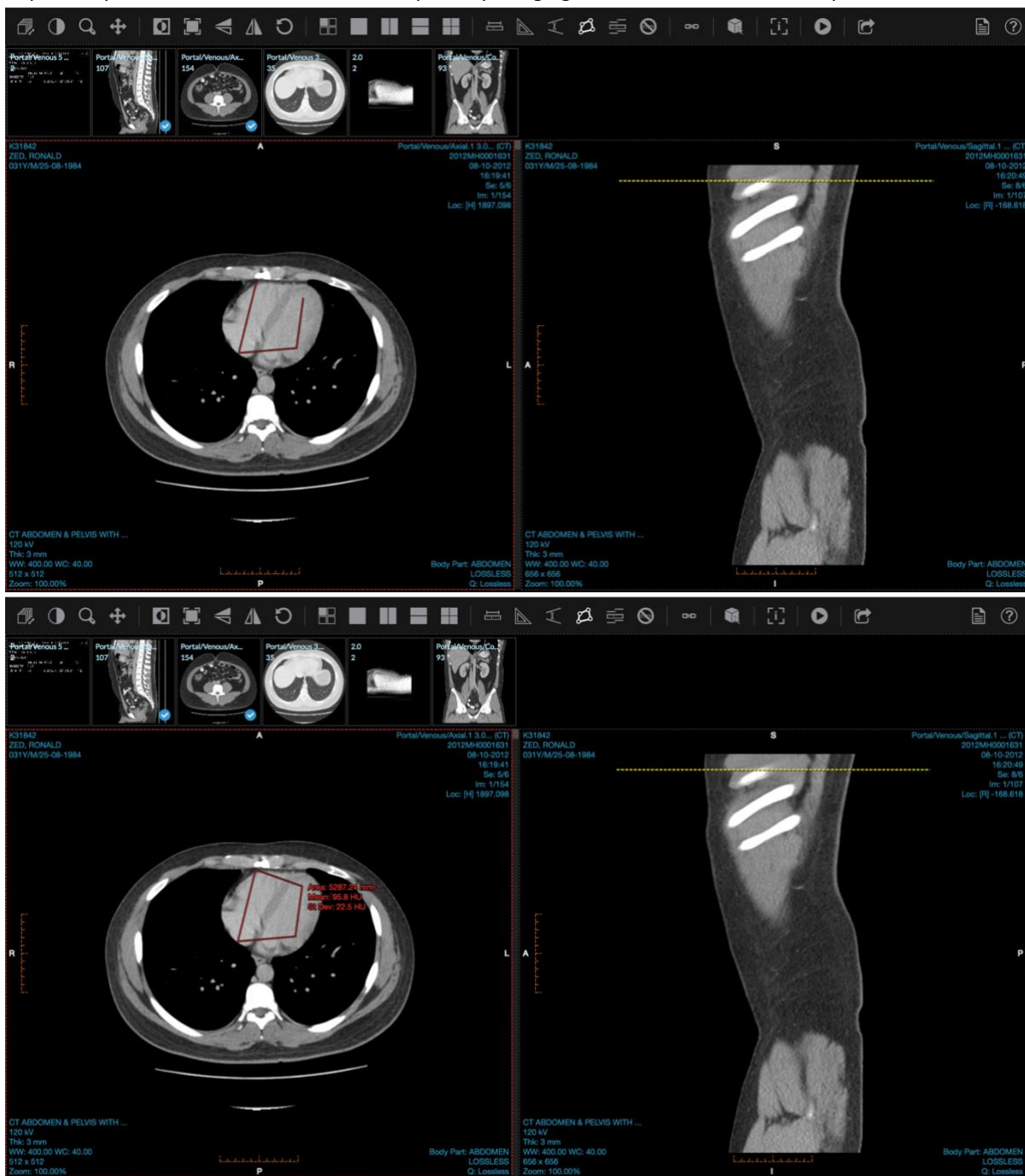


3. Move the mouse to where you want the next anchor point to be located. Click and release again.



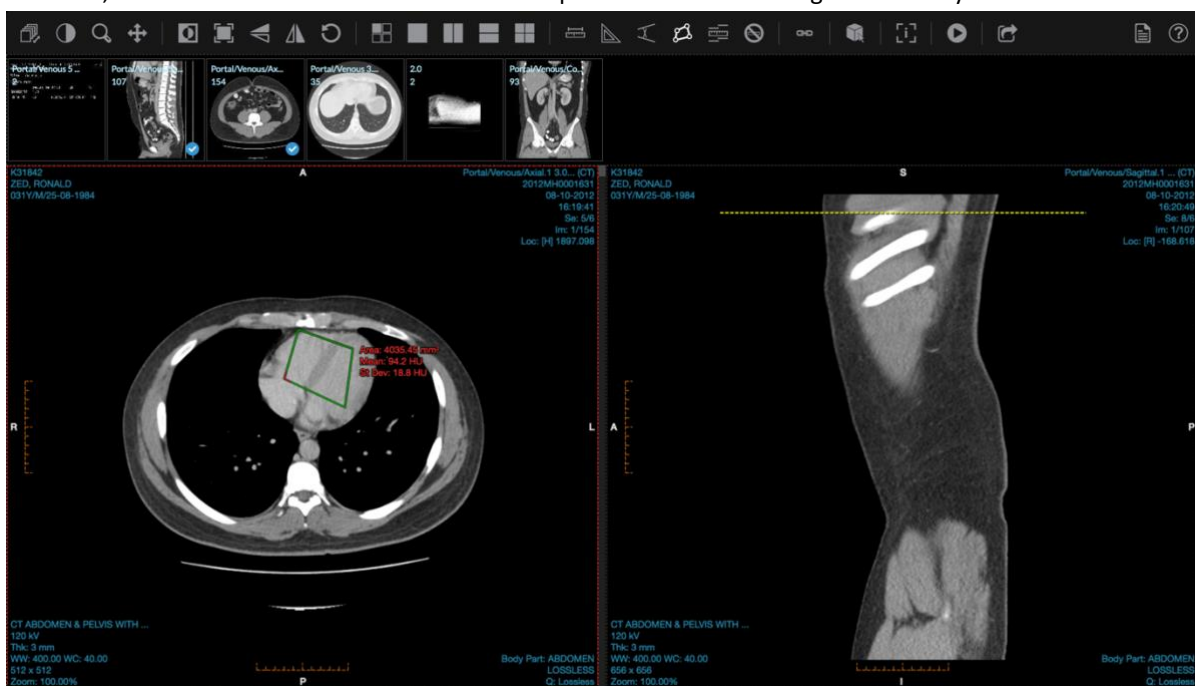


4. Repeat step 3 until the measurement is complete by bringing the mouse back to the first point.

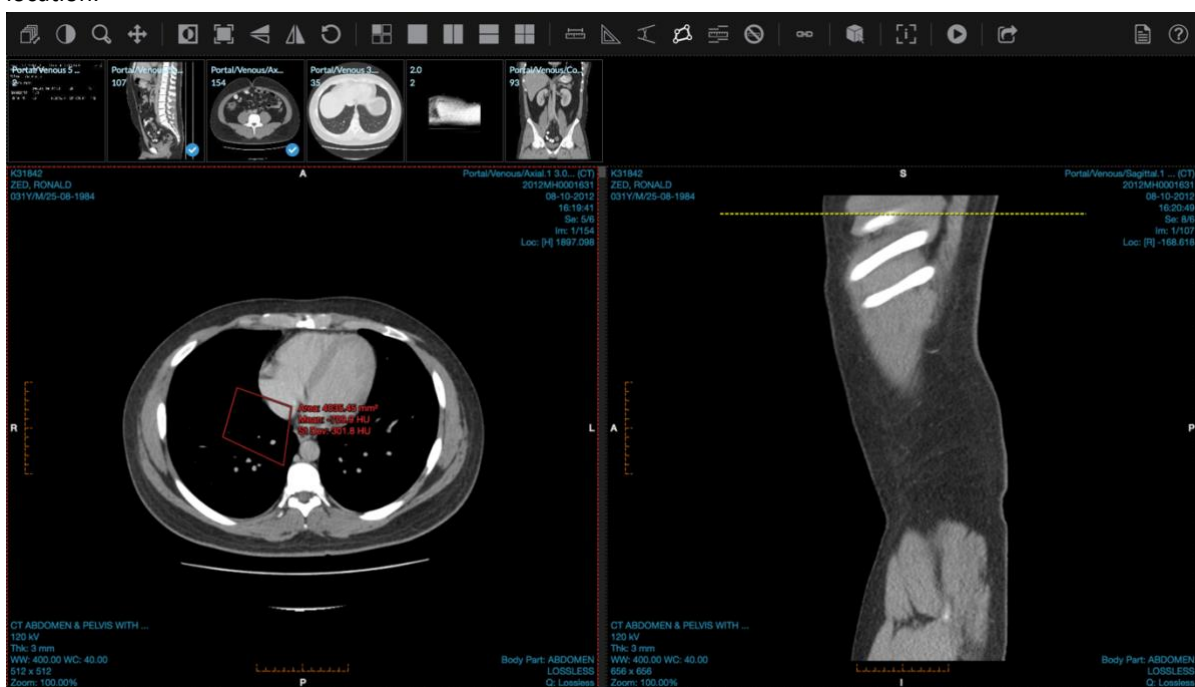


## MODIFYING MEASUREMENT

1. You cannot add/remove anchor points.
2. To resize, hover the mouse over one of the anchor points the click and drag as necessary.



3. To move, hover the mouse over one of the lines (not the anchor point), then click and drag to the new location.



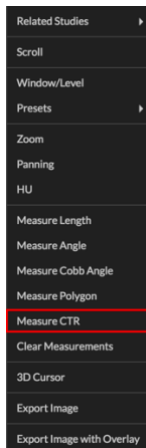
4. To delete, click on one of the lines or anchor point and then press the backspace button on your keyboard or click the "Clear Measurements" option on the toolbar or context menu.



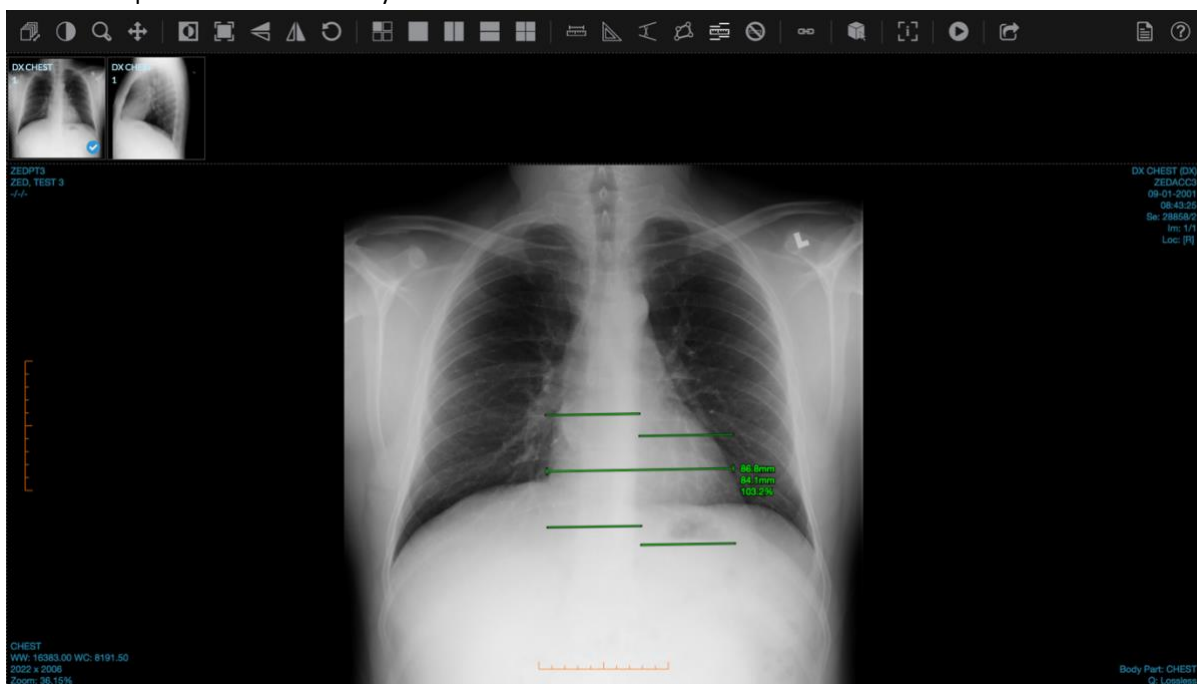
## CARDIOTHORACIC RATIO

## ADDING MEASUREMENT

1. Click on the “Measure CTR” button on the tool bar or context menu.

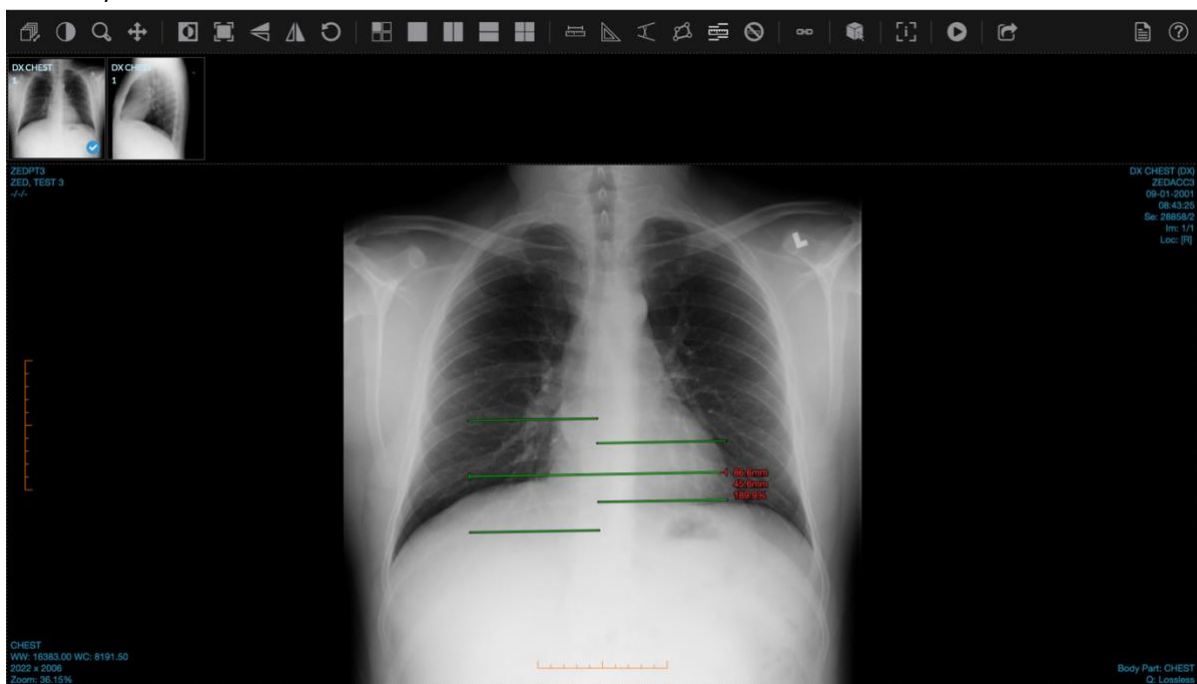


2. Click and hold on the image where you want the measurement to begin. This will create the start and end anchor points. Release where you want the measurement to end.

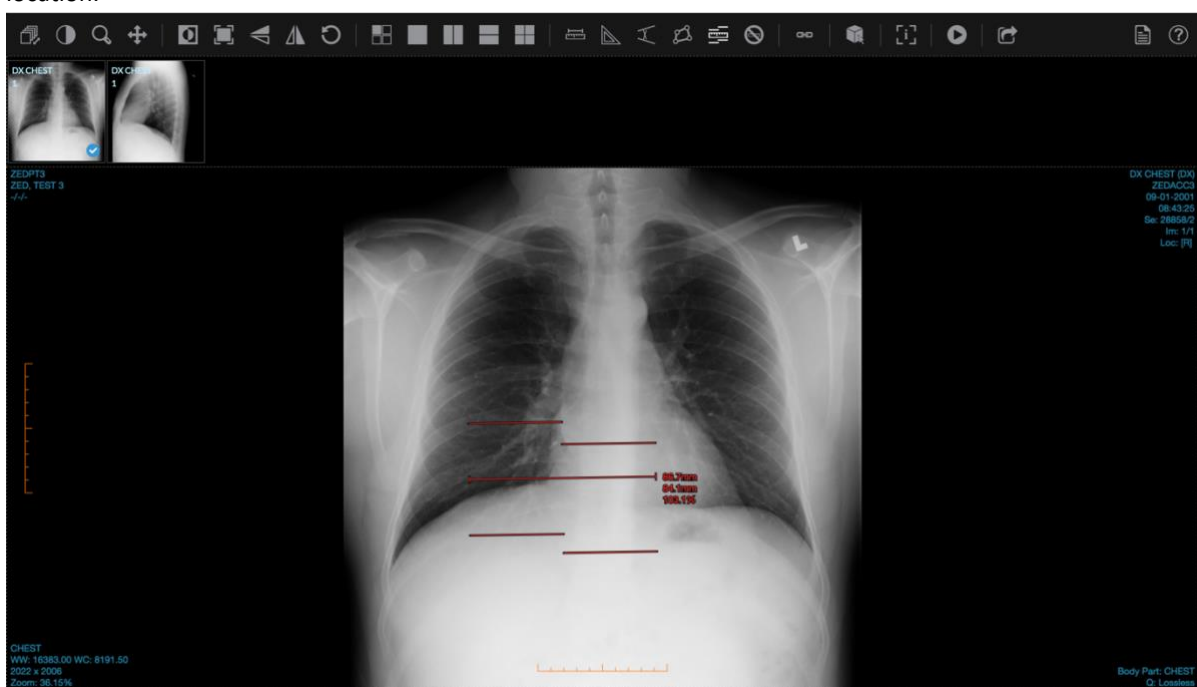


## MODIFYING MEASUREMENT

1. To resize or rotate, hover the mouse over the start or end anchor points and then click and drag as necessary.



2. To move, hover the mouse over one of the lines (not the anchor point), then click and drag to the new location.

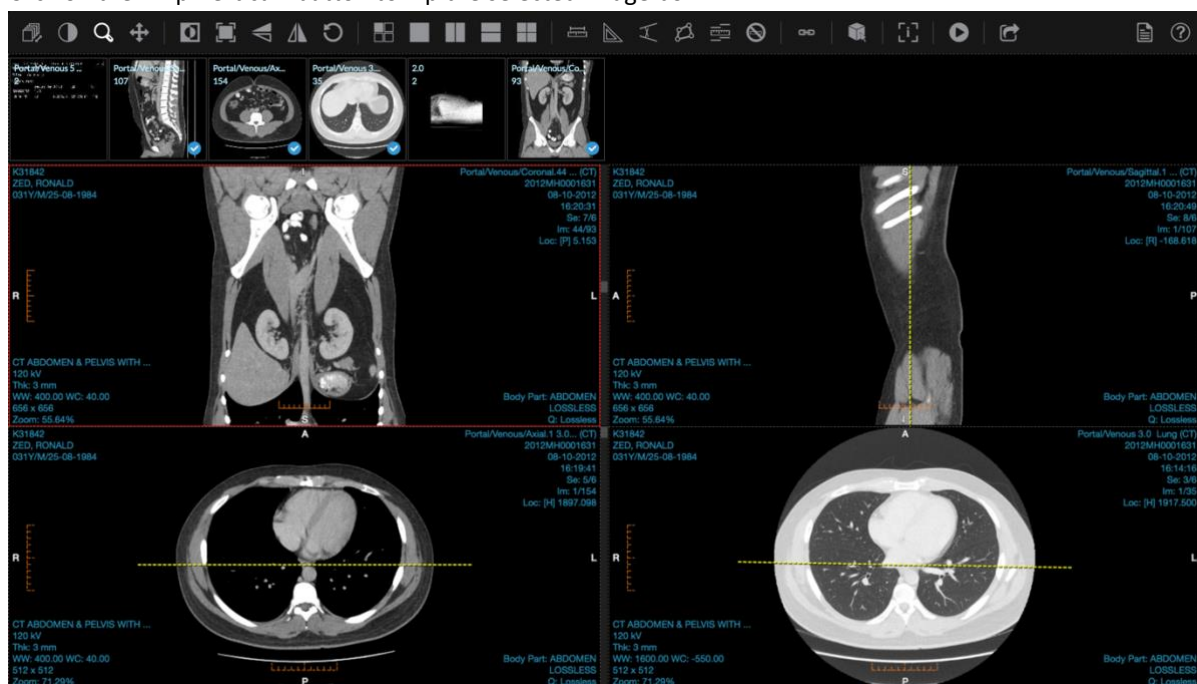


3. To delete, click on one of the lines or anchor point and then press the backspace button on your keyboard or click the "Clear Measurements" option on the toolbar or context menu.

- 
- CT ABDOMEN & PELVIS WITH...  
120 kV  
Thk: 3 mm  
WW: 400.00 WC: 40.00  
556 x 556  
Zoom: 100.00%
- CT ABDOMEN & PELVIS WITH...  
120 kV  
Thk: 3 mm  
WW: 400.00 WC: 40.00  
556 x 556  
Zoom: 100.00%

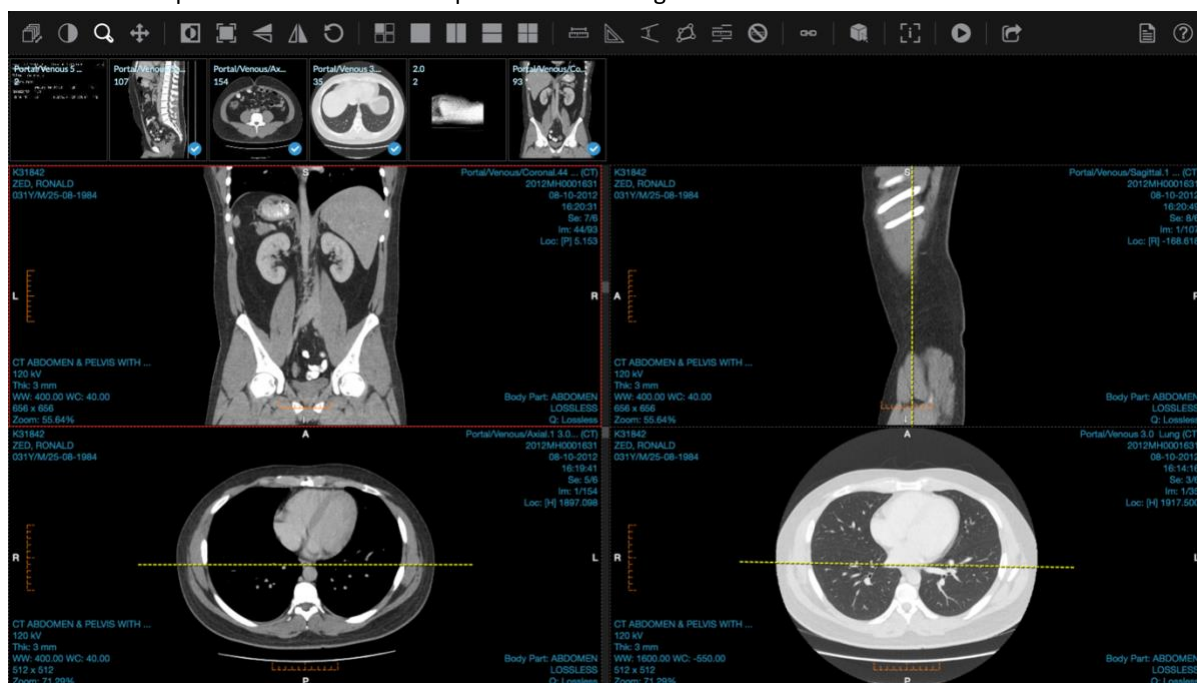
## FLIP VERTICAL

1. Click on the “Flip Vertical” button to flip the selected image box.



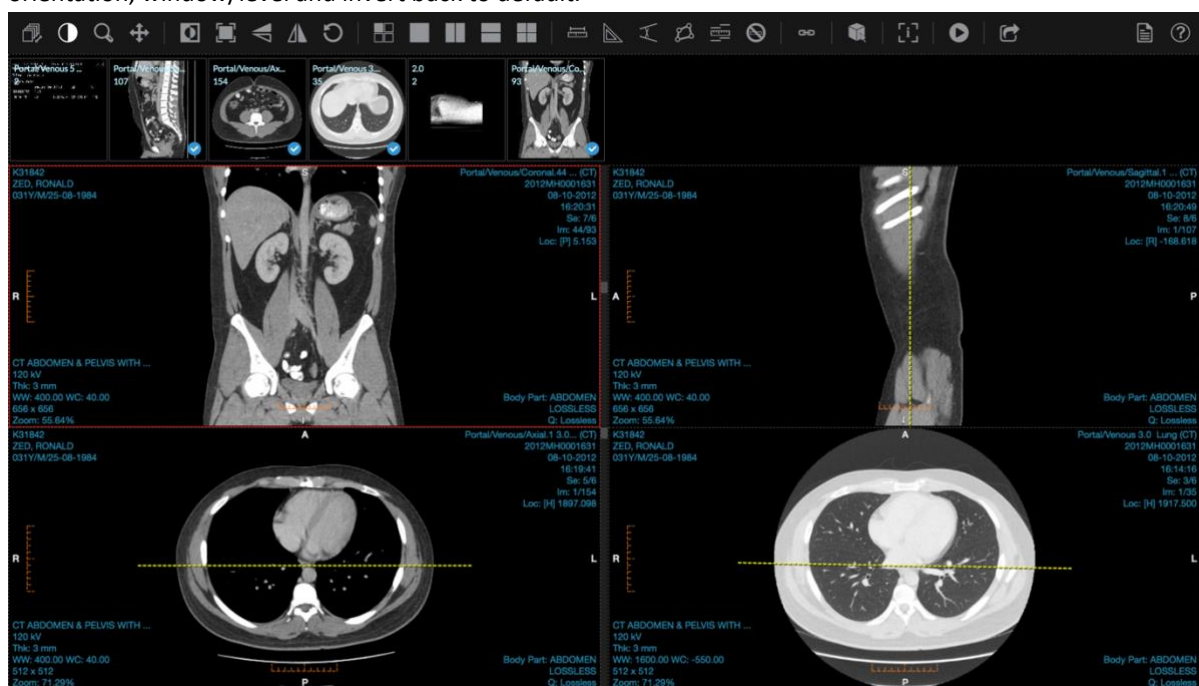
## FLIP HORIZONTAL

1. Click on the “Flip Horizontal” button to flip the selected image box.



## RESET

1. Click on the “Reset” button to reset the image back to the original zoom, position, geometric orientation, window/level and invert back to default.

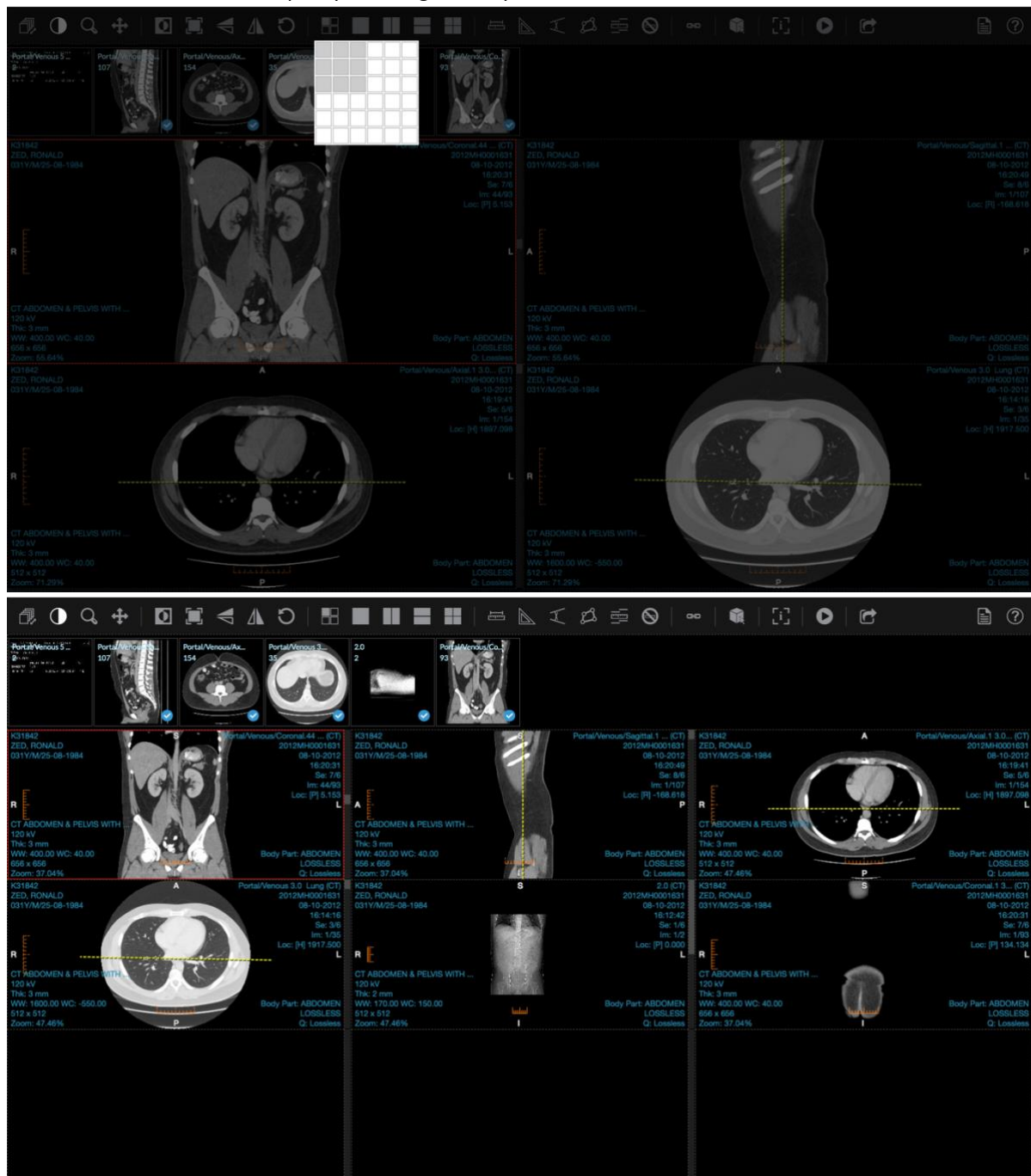




## LAYOUT

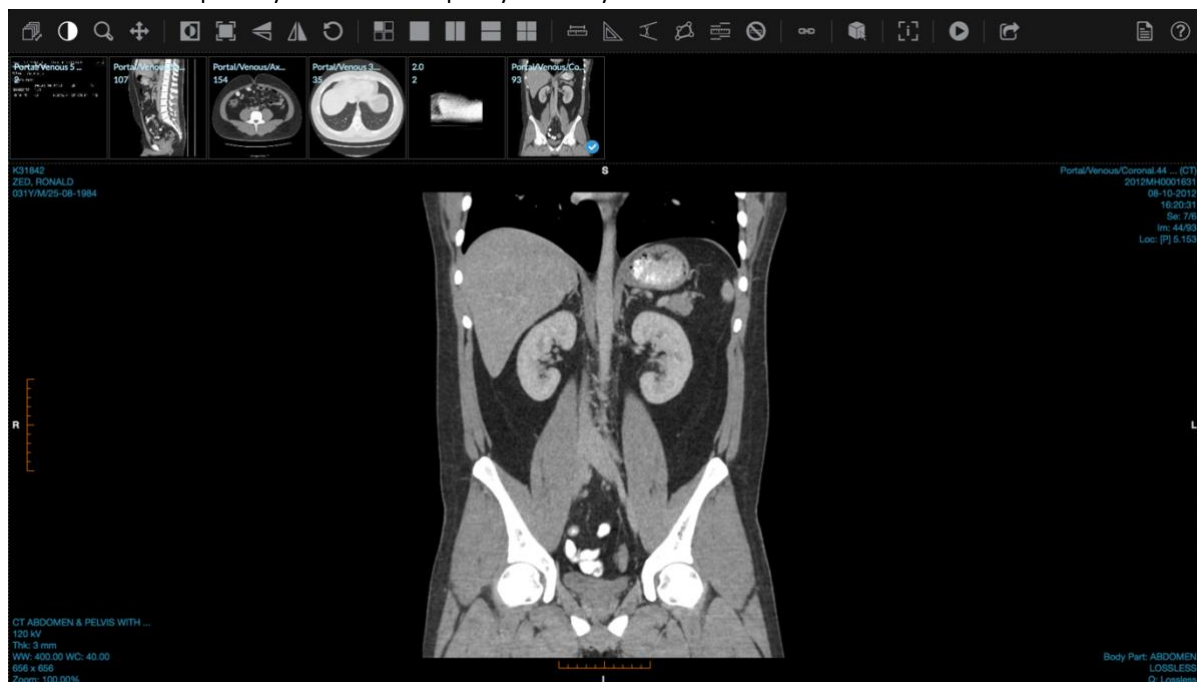
## GRID

1. Click on the “Grid” button to specify the image box layout.



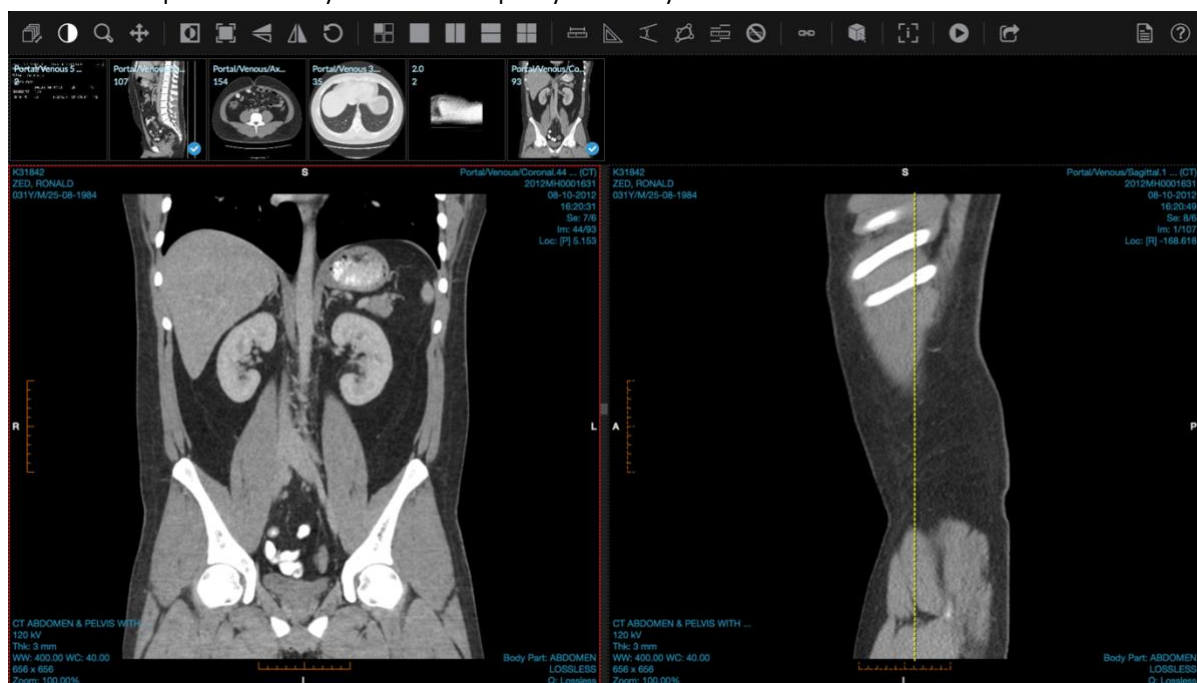
## NO SPLIT

1. Click on the “No Split” layout button to specify a 1x1 layout.



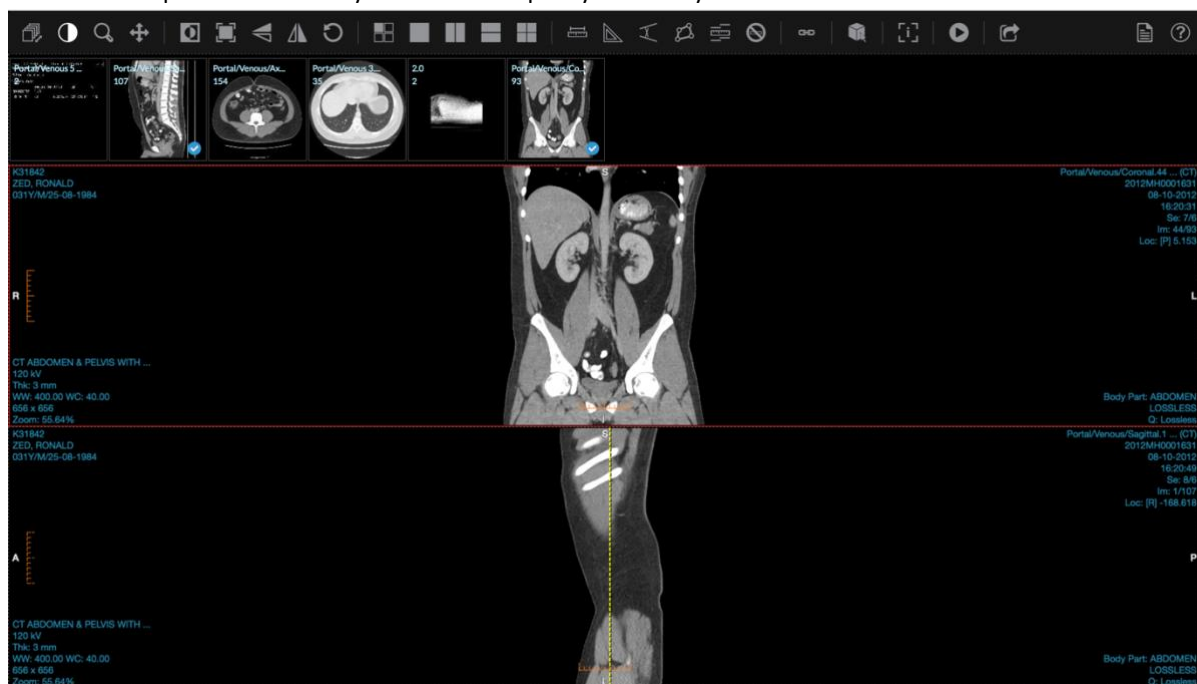
## SPLIT VERTICAL

1. Click on the “Split Vertical” layout button to specify a 1 x 2 layout.



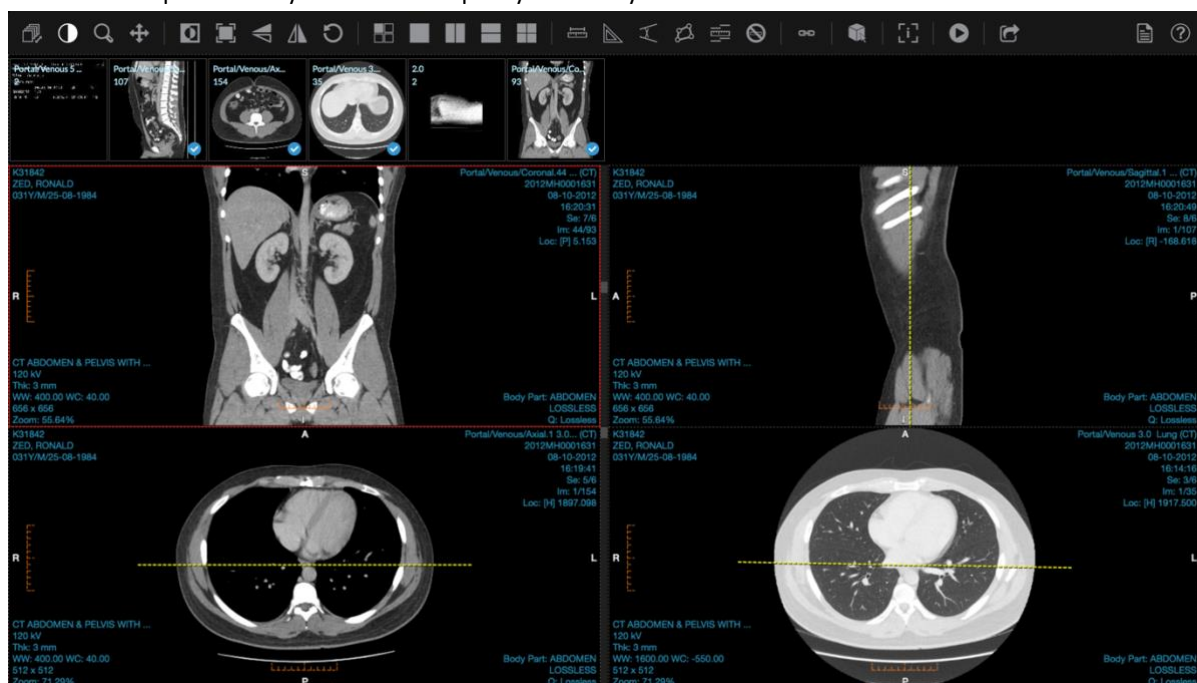
## SPLIT HORIZONTAL

1. Click on the “Split Horizontal” layout button to specify a 2 x 1 layout.



## SPLIT GRID

1. Click on the “Split Grid” layout button to specify a 2 x 2 layout.

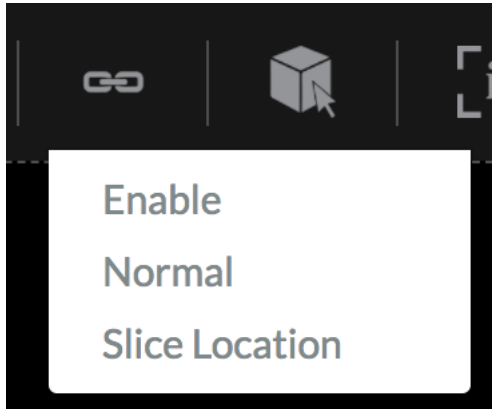




## SYNC SCROLL

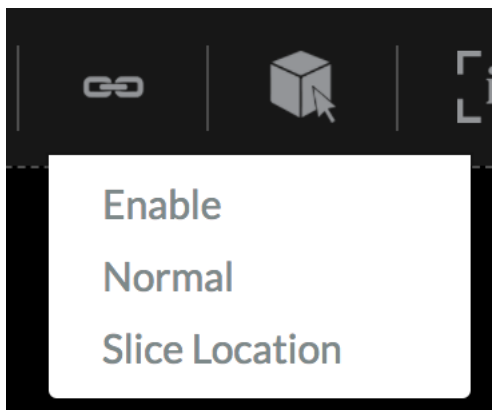
### NORMAL

1. Click on the “Sync Scroll” button on the tool bar and select “Enable” or “Normal” to activate sync scrolling based on image number.



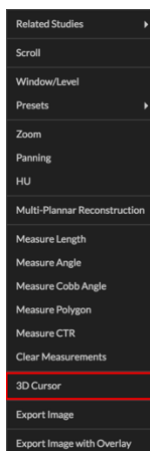
### SLICE LOCATION

1. Click on the “Sync Scroll” button on the tool bar and select “Slice Location” to activate sync scrolling based on slice location.

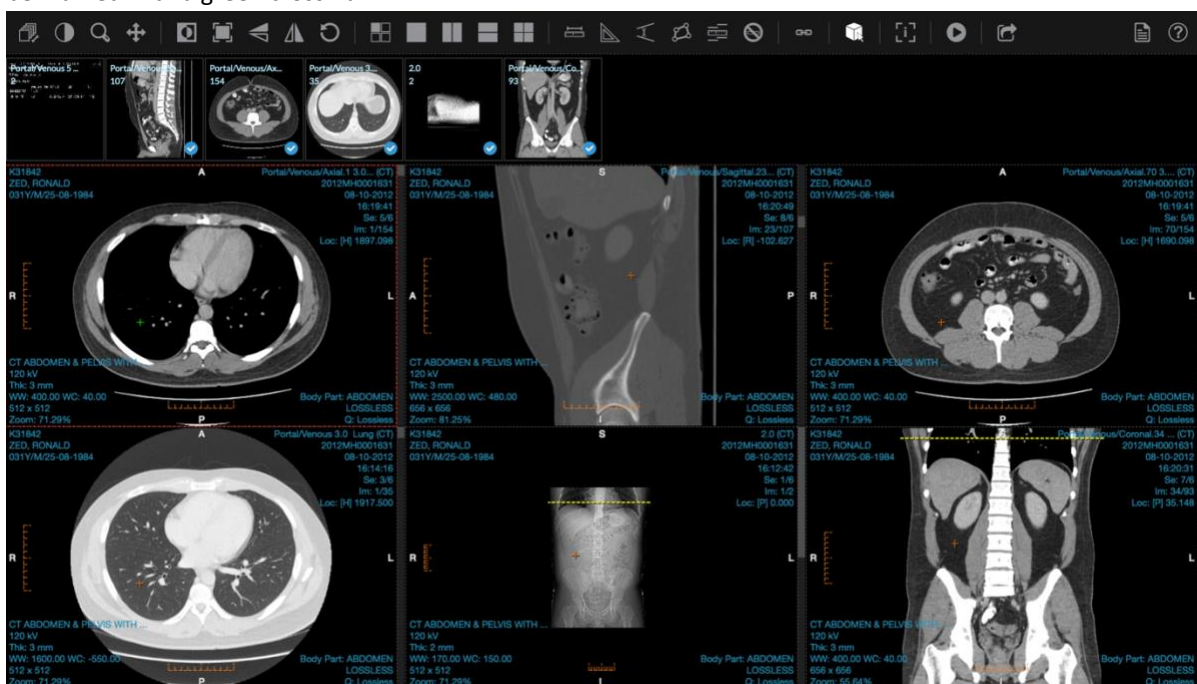


## 3D CURSOR

1. Click on the “3D Cursor” button on the tool bar or context menu.

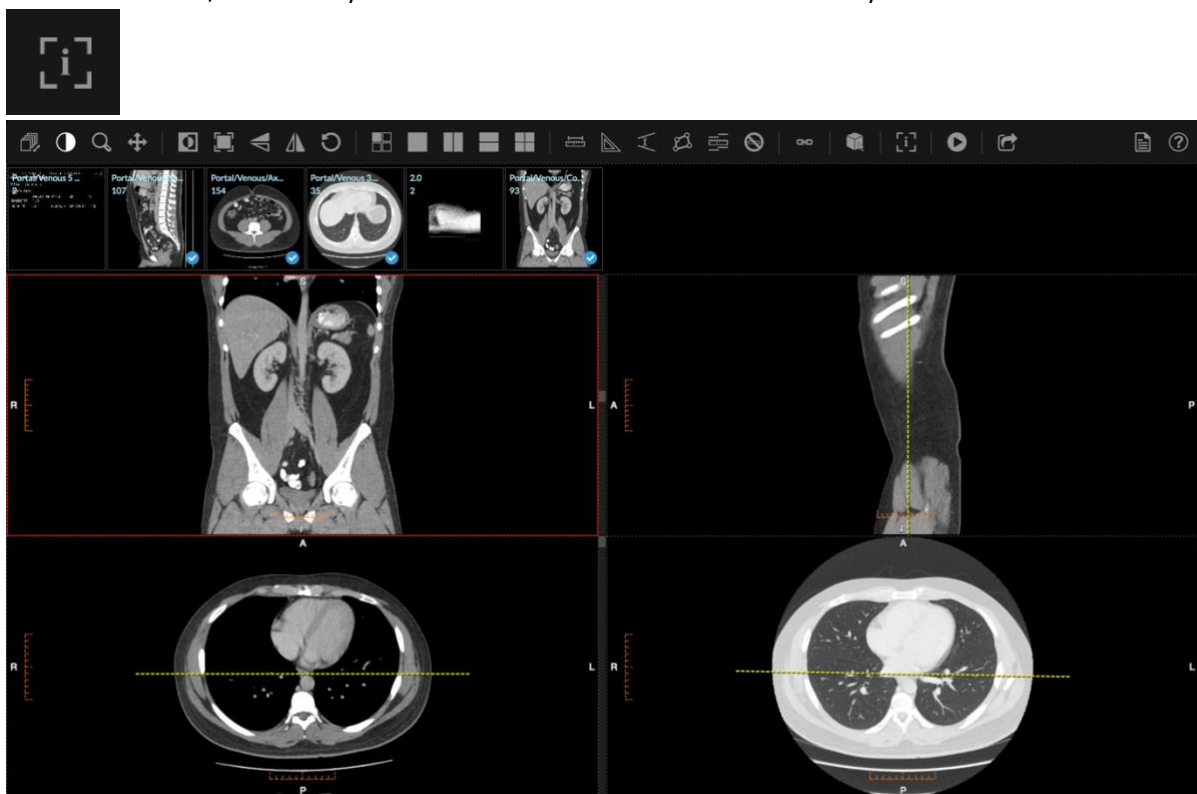


2. Click on the point of interest, the same point will then be marked in orange by a cross hair in the other series and the location will also be updated. The point of interest in the selected display set will be marked with a green cross hair.



## SHOW/HIDE OVERLAY

1. Click on the “Show/Hide Overlay” button on the tool bar to show or hide overlays.

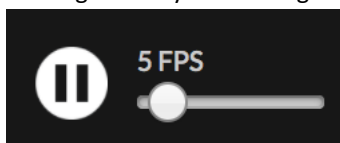


## PLAY CINE

1. Press the “Play” button to play images in a cine loop.



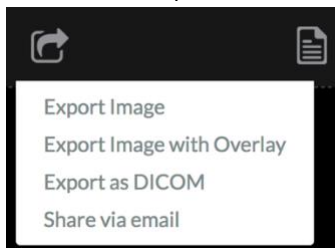
2. Clicking on “Play” will change the button to the Stop icon and will also allow you to specify the FPS.



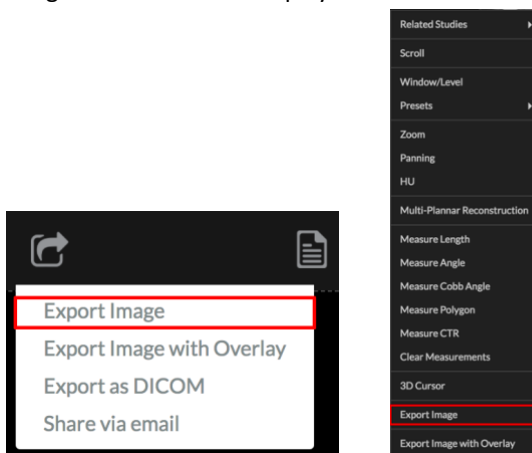
## EXPORT/SHARE

### EXPORT IMAGE

1. Click on the “Export/Share” button on the tool bar to display the Export/Share options.

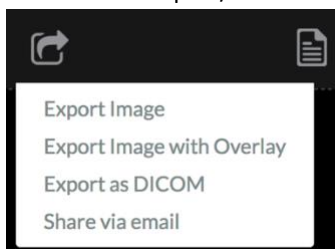


2. Click on “Export Image” from the Export/Share options or from the context menu to download the image for the selected display set as PNG.

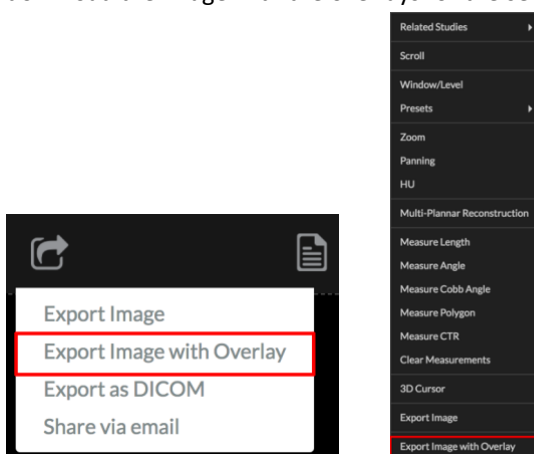


## EXPORT IMAGE WITH OVERLAY

1. Click on the “Export/Share” button on the tool bar to display the Export/Share options.

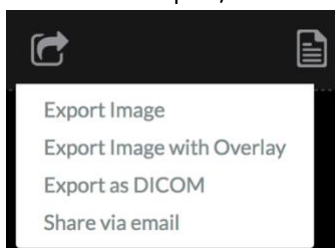


2. Click on “Export Image with Overlay” from the Export/Share options or from the context menu to download the image with the overlays for the selected display set as PNG.

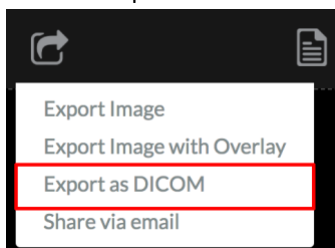


## EXPORT AS DICOM

1. Click on the “Export/Share” button on the tool bar to display the Export/Share options.



2. Click on “Export as DICOM” from the Export/Share options to export this study in DICOM.



3. Enter the email address of the recipient so they can download the exported study in DICOM.

**Zed.** Studies Upload Studies Queues Patient Portal Admin Powered by Zed. Your Account Sign Out

### Study Export

You have selected the following study to be exported:

Patients Name	Patients D.O.B.	Patient ID	Accession Number	Study Description	Study Date / Time	Referring Physician
ZED, RONALD	25/08/1984	K31842	2012MH0001631	CT ABDOMEN & PELVIS WITH CONTRAST	08/10/2012 16:12	Pasha, Mohamed

**Export Options**

**Recipient Email Address \***

The email will contain a link to download the exported study.

**Include DICOM viewer with download**

☐

When checked, a DICOM viewer will be included in the export.

[+ Show Advanced](#)

Cancel Export Study

© 2015 - 2018 - Zed Technologies Pty. Ltd. Powered by Zed.

4. Send download code to the recipient who have requested for the study export.

**Zed.** Studies Upload Studies Queues Patient Portal Admin Powered by Zed. Your Account Sign Out

### Study Export

The study you requested below is currently being exported. The recipient will receive a notification when the export is available to download.

Please provide the recipient with the following code so that they can download the study:

bdf1b832e9

You can close this page.

Patients Name	Patients D.O.B.	Patient ID	Accession Number	Study Description	Study Date / Time	Referring Physician
ZED, RONALD	25/08/1984	K31842	2012MH0001631	CT ABDOMEN & PELVIS WITH CONTRAST	08/10/2012 16:12	Pasha, Mohamed

**Windows**

A Windows compatible DICOM viewer, Weasis, can be [downloaded here](#) to open the study.

[Download the Windows Guide \[PDF\]](#)

**Mac**

A Mac compatible DICOM viewer can be downloaded and installed.

We recommend Horos which can be [downloaded here](#).

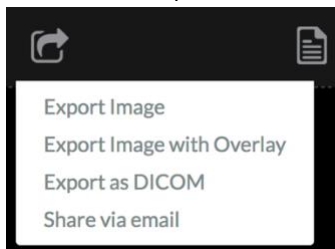
[Download the Horos Viewer Guide \[PDF\]](#)

Close

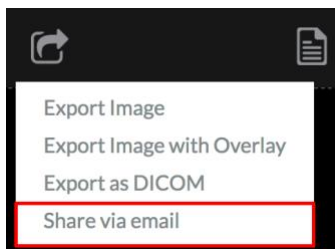
© 2015 - 2018 - Zed Technologies Pty. Ltd. Powered by Zed.

## SHARE VIA EMAIL

1. Click on the “Export/Share” button on the tool bar to display the Export/Share options.



2. Click on “Share via email” to share the study with an external user.



3. Enter the recipient’s email address. Please note that the default expiration date for the study share is 7 days.

 A screenshot of the "Share Study via Email" form in the Zed application. The form is titled "Share Study via Email" and includes a table of study details, input fields for recipient email and expiration date, and a checkbox for including a report.
 

Patients Name	Patients D.O.B.	Patient ID	Accession Number	Study Description	Study Date / Time	Referring Physician
ZED, RONALD	25/08/1984	K31842	2012MH0001631	CT ABDOMEN & PELVIS WITH CONTRAST	08/10/2012 16:12	Pasha, Mohamed

Recipient Details

Email Address

Email address

Please enter the email address of the person you would like to share the selected study with.

Set Expiration

11/04/2018

You can choose when the study share expires. You can leave it blank for a non-expiring study share.

Include Report

☒ Check the box above to include the report with the study share.

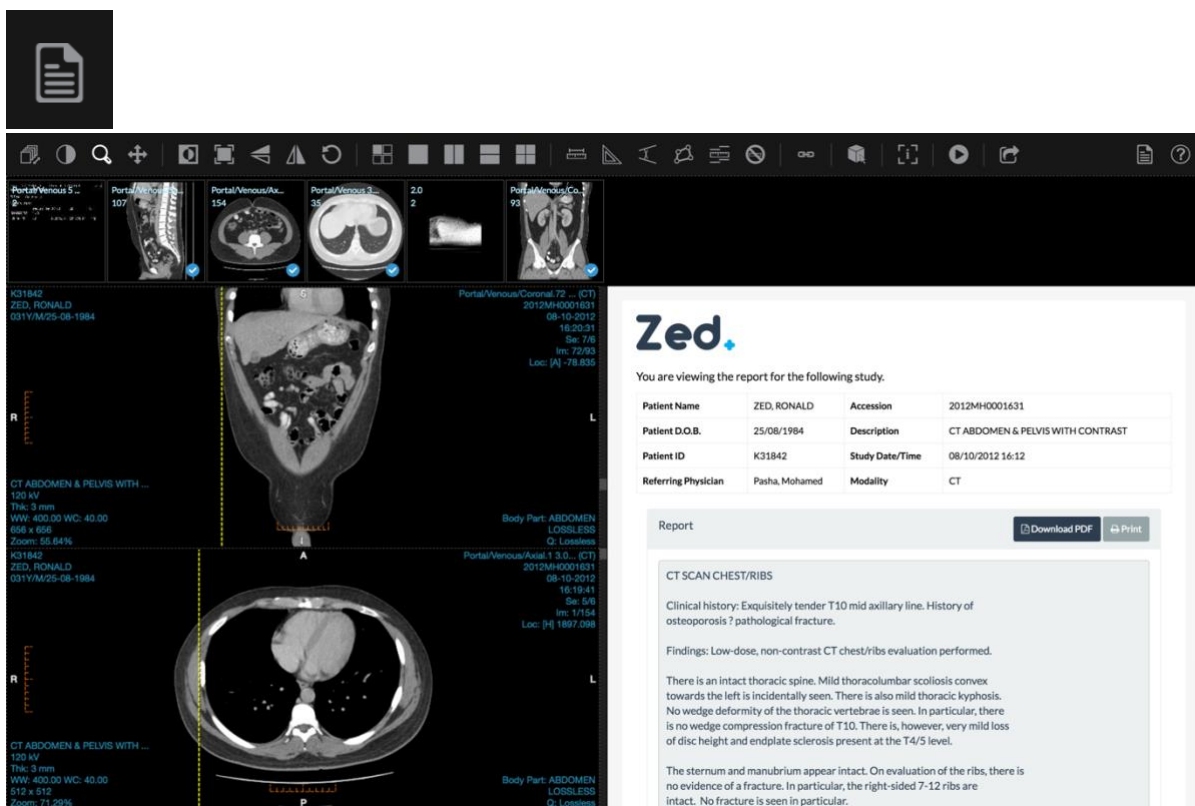
The recipient will receive an email with an encrypted link to view the selected study.

Share selected study

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## REPORT

1. Click on the "Report" button to display the report for the study. This button is only visible if a report is available.



**Zed+**

You are viewing the report for the following study.

Patient Name	ZED, RONALD	Accession	2012MH0001631
Patient D.O.B.	25/08/1984	Description	CT ABDOMEN & PELVIS WITH CONTRAST
Patient ID	K31842	Study Date/Time	08/10/2012 16:12
Referring Physician	Pasha, Mohamed	Modality	CT

**Report** [Download PDF](#) [Print](#)

**CT SCAN CHEST/RIBS**

Clinical history: Exquisitely tender T10 mid axillary line. History of osteoporosis ? pathological fracture.

Findings: Low-dose, non-contrast CT chest/ribs evaluation performed.

There is an intact thoracic spine. Mild thoracolumbar scoliosis convex towards the left is incidentally seen. There is also mild thoracic kyphosis. No wedge deformity of the thoracic vertebrae is seen. In particular, there is no wedge compression fracture of T10. There is, however, very mild loss of disc height and endplate sclerosis present at the T4/5 level.

The sternum and manubrium appear intact. On evaluation of the ribs, there is no evidence of a fracture. In particular, the right-sided 7-12 ribs are intact. No fracture is seen in particular.



## RELATED STUDIES

1. Related/prior studies can be accessed by going to the context menu and selecting “Related Studies”.

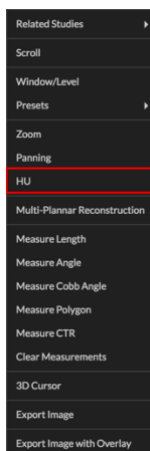


2. Clicking on any of the studies from the “Related Studies” list will open the study in a new tab.

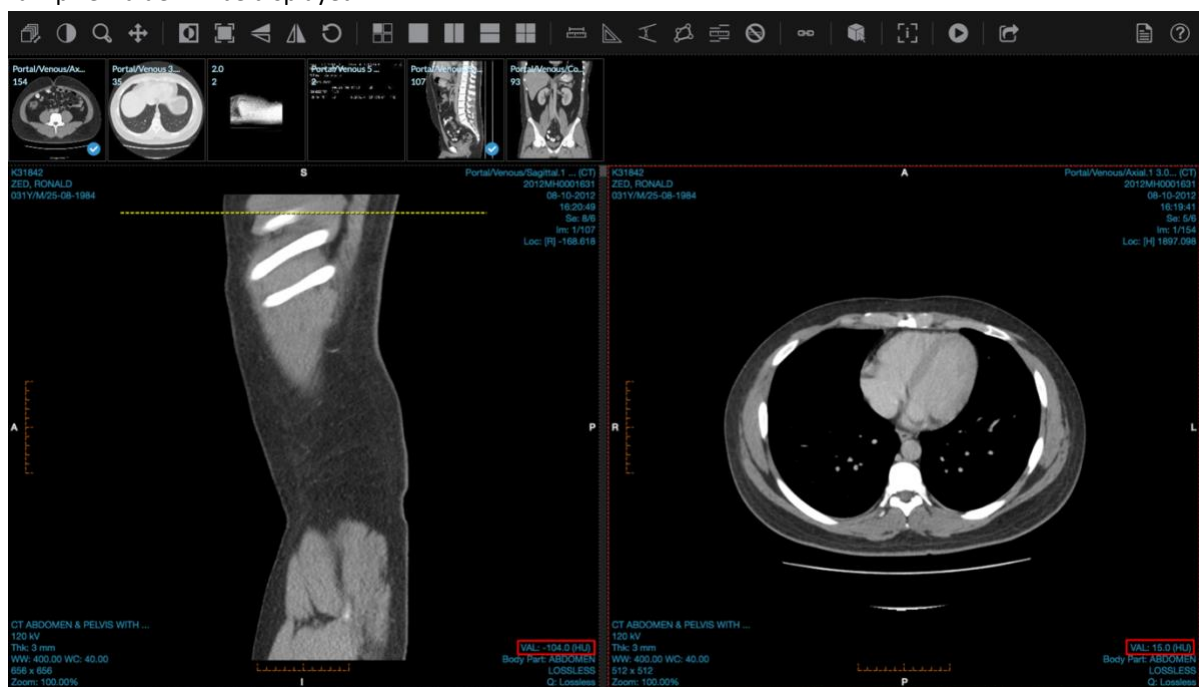


## HOUNSFIELD UNIT

1. Click on the “HU” option in the context menu.

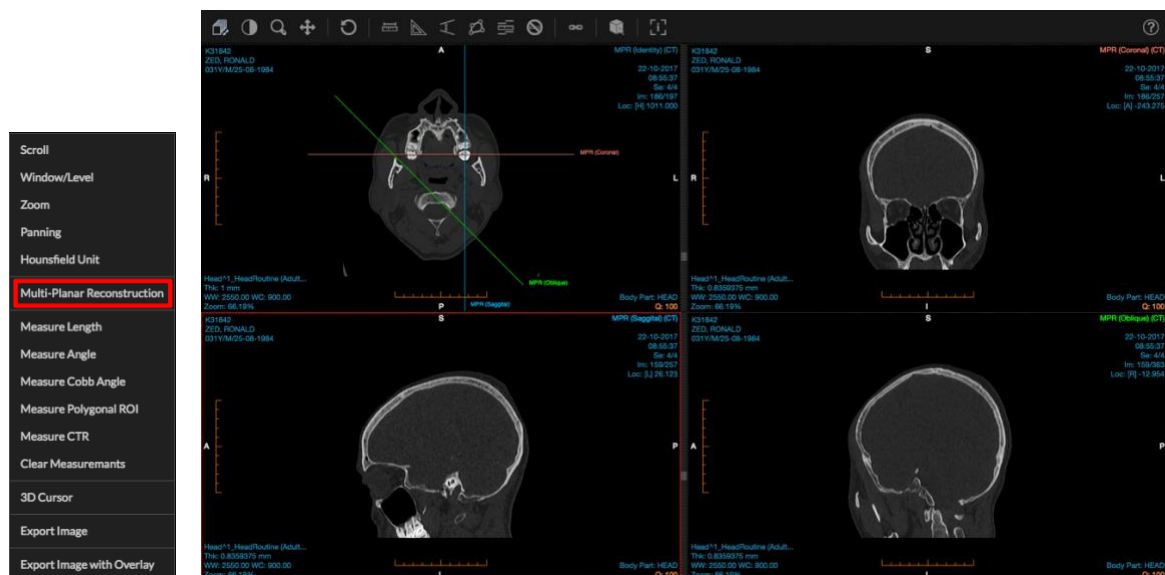


2. Click at the point on the image you wish to calculate the Hounsfield Unit. The image Hounsfield Unit is shown in the bottom right overlay. Please note that if the Hounsfield Unit is not available then the raw pixel value will be displayed.



## MULTI-PLANAR RECONSTRUCTION

The Multi-Planar Reconstruction (MPR) feature allows users to generate images from additional perspectives using a stack of source images in the same plane. To start the MPR viewer, the user will need to right click on a plane and then select “Multi-Planar Reconstruction” from the context menu.



# REPORTING A PROBLEM

If an issue is found relating to the product then please contact our support team:

Address:

105/12 Yarra St  
South Yarra VIC 3141 Australia

Phone:

+61 1300 662 980

Email:

[support@zedtechnologies.com.au](mailto:support@zedtechnologies.com.au)