RADINCON
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QUALITY PRODUCT - RELIABLE SERVICE - HONEST ADVICE
SPECIALIST IMAGING SUPPLIERS

19/176 South Creek Road Dee Why NSW
PO Box 5142 Wheeler Heights NSW 2097
PH 1300 721 734 FAX 02 9972 1734
Email: radsupport@radincon.com.au

RAD-X®

DR System

NE Quick Hints Manual

RAD-X® DR Quick Hints

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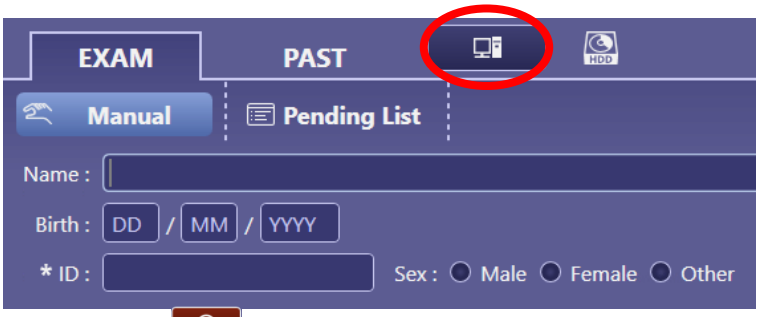
RAD-X DR Quick Hints

Start Up

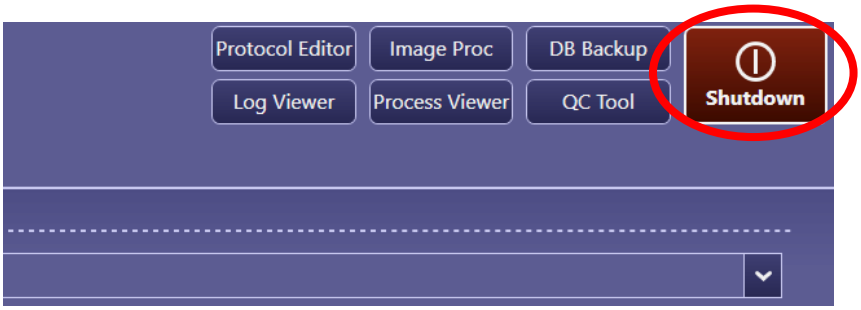
1. Turn the system on.
    - For RAD-X DR X1A Hard Case Systems, ensure the power cable is plugged in, power and network cables plugged into the back of the laptop, turn the system power on (back right corner of the box) and turn the laptop on.
    - For RAD-X DR X1A Soft Case Systems, ensure the power cable is plugged in (right-hand pocket), power and network cables plugged into the back of the laptop, and turn the laptop on.
    - For RAD-X DR CX1A and CX3A Systems, turn the console on by pressing the power button (right-hand side behind the monitor).
    - For RAD-X DR CX4A Systems, turn on the console by pressing the power button (bottom right-hand corner of display).
2. Once the NE software has started the sensor panel may be turned on, ensuring a battery has been inserted.

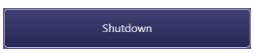
Shut Down

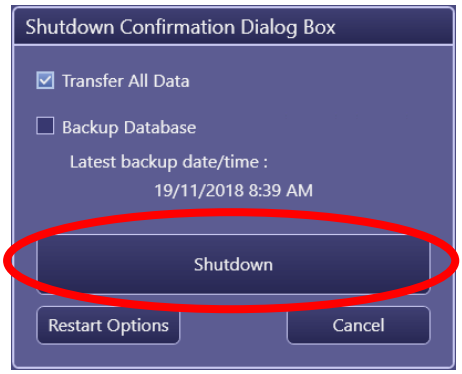
1. Click  at the top of the screen



2. Click  at the top right of the screen



3. Once the Shutdown Confirmation Dialogue Box appears, click 

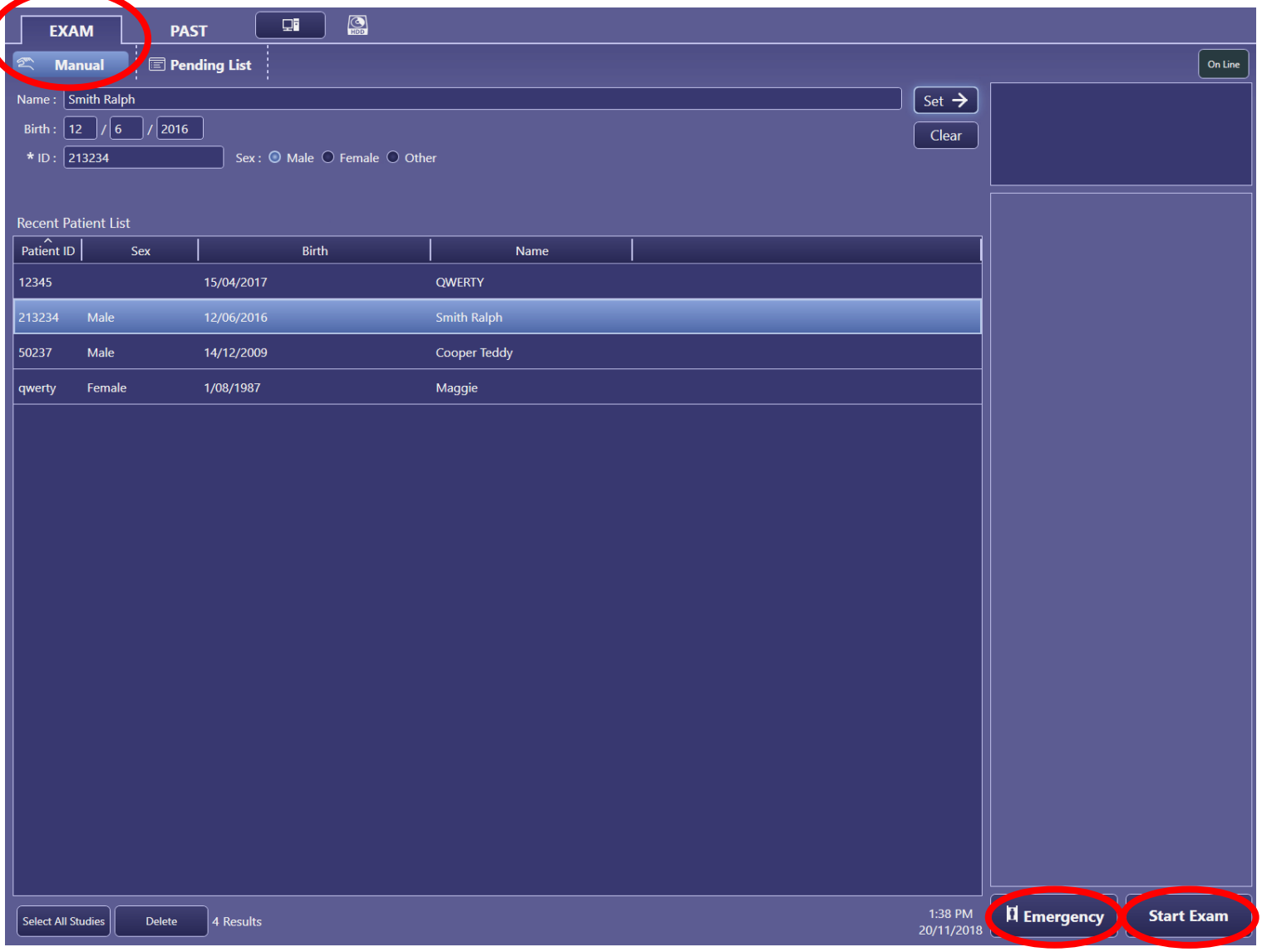


RAD-X® DR Quick Hints

Patient Registration

Before exposures can be performed, a study/exam must be created. The first step in creating a study is registering the patient details.

1. Navigate to the Manual Tab (under Exam).



Registration Screen

2. Enter the Patient ID and Name (DOB and Sex are optional)
    - The Patient ID must be unique to the animal, an ID is usually assigned by Practice Management Software
    - Ensure a consistent naming protocol (including word order, capital letters, spaces, use of commas etc.) is used. This ensures that studies are easily located in DICOM viewing software.
    - The Date of Birth must be entered Day/Month/Year
3. A list of recently registered patients is also displayed. Rather than entering the details again, the user may select the patient details from the Recent Patient List.
4. Once Patient Details have been entered, click the Start Exam button in the bottom right of the display
5. In the event of an emergency, patient registration can be bypassed by pressing the Emergency button, allowing the user to select bodyparts and then perform exposures. Patient information can be added after exposures are performed.

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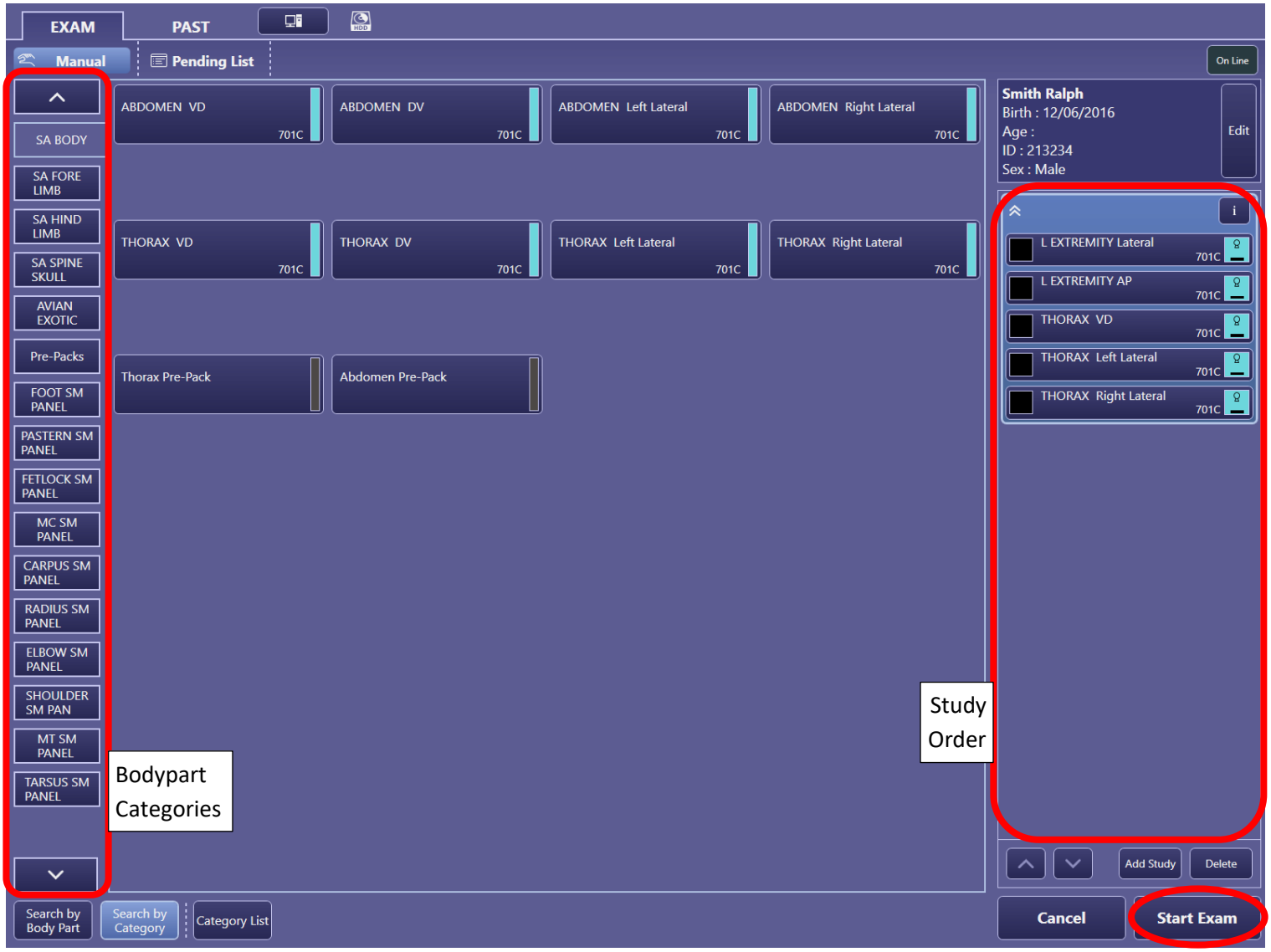
Bodypart Selection

Bodypart categories are displayed as tabs down the left side of the display, additional categories may be accessed using the up and down arrows. Each contains a unique set of bodypart protocols corresponding to their category. On the right side of the display, patient details are displayed, under which the list of selected bodypart protocols to be used (study order) is located.

Bodypart protocols may be added to the study order by selecting each bodypart protocol individually, bodypart protocols from different bodypart categories may be added to the same study order.

Pre-Packs may also be utilised. A Pre-Pack is a set (up to 30) of bodypart protocols arranged within one button. Pre-Packs are commonly used for standard examinations of a particular anatomical area and pre-purchase examinations for horses.



Bodypart Selection Screen

Once the required bodypart protocols have been selected, click Start Exam

Additional Study Information

After selecting the required bodypart protocols and clicking Start Exam, a window will appear with additional Study Information fields. These fields are generally configured to be optional. Accession Number, Referring Physician and Study Description can be searched and sorted in DICOM viewers, enabling the user to display a list of all studies performed for a certain Referring Physician, or a list of all Skull studies performed.

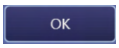
Accession Number is not commonly used.

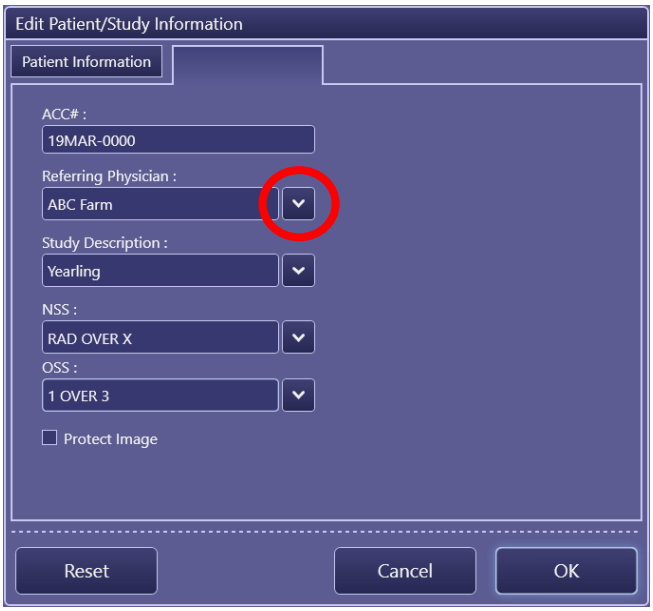
Referring Physician is used when the patient was referred by another clinic. It is also commonly used if the patient belongs to a particular stud or farm.

Study Description is used to identify what sort of examination is being performed.

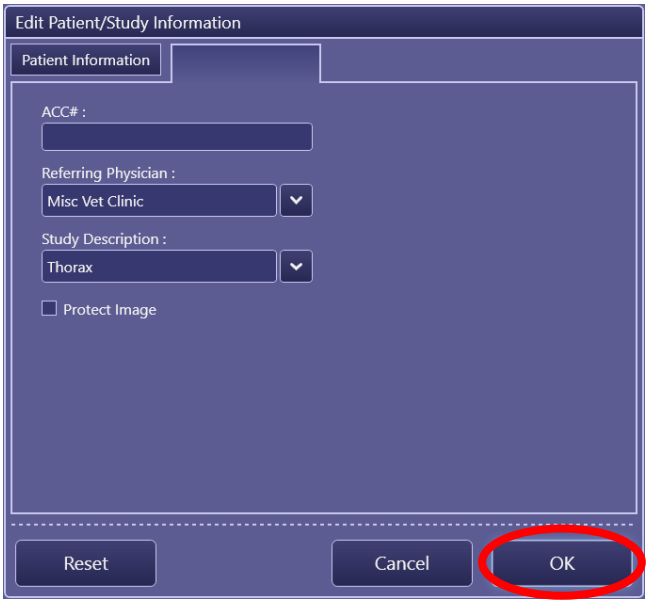
The Near Side Shoulder (NSS) and Off Side Shoulder (OSS) fields are typically only enabled for equine and mixed practices.

All fields (except Accession Number) may have a list of pre-set items to choose from.

Once the required additional study information has been entered, click 



Additional Study Information Example - Equine

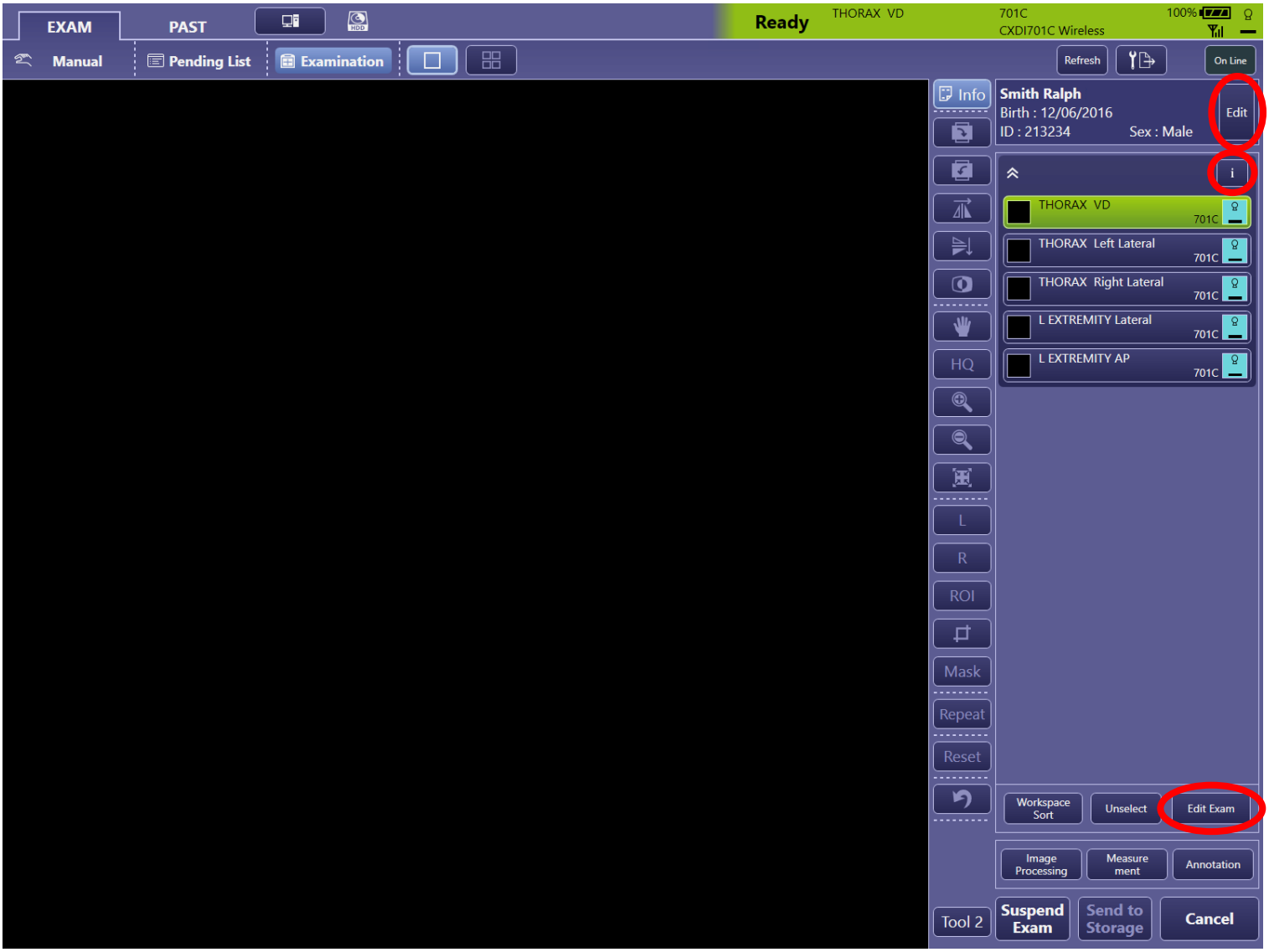


Additional Study Information Example – Small Animal

RAD-X® DR Quick Hints

Performing Exposures

Once the patient has been registered, bodypart protocols selected, and any additional study information entered, the Examination screen appears. Exposures may be performed once the status indicator in the top right changes to Ready. The status indicator also displays battery level and signal strength for wireless sensor panels.



Examination Screen

Bodypart protocols may be selected from the list by clicking on them.

To add additional Bodypart protocols, click Edit Exam and select the required additional bodypart exposures to the list, then click OK

To modify patient information, click the Edit button in the top right of the screen next to the patient details, make any required changes and click OK.

To modify additional study information, click i located underneath the patient details, click Edit to make the required changes and click OK.

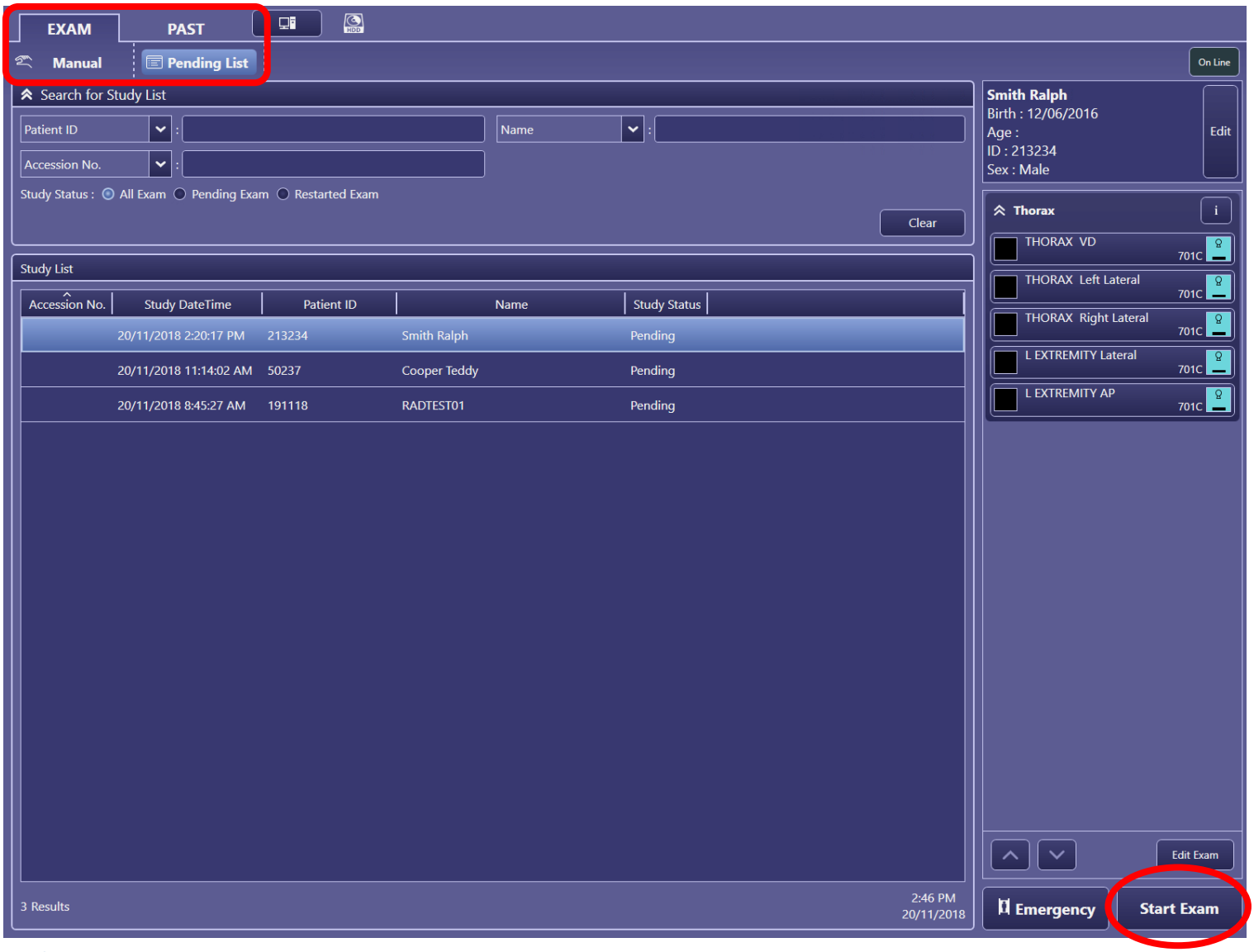
RAD-X® DR Quick Hints

Suspending a Study

At any point while performing a study, including before and after exposures are performed, the study may be suspended. This saves the current state of the study and adds it to the Pending List.

This function is useful when an emergency study must be performed while a routine study is being performed, the routine study may be suspended, the emergency study performed, and the routine study resumed. It is also useful for contrast studies, allowing the study to be suspended multiple times over a course of time. The Suspend Exam function may also be used to enter a list of studies to be performed ahead of time.

Other studies may be performed, and the system may be shut down while studies are suspended. Multiple studies may be suspended at one time.



Pending List Studies in the Pending List may be reopened by selecting them and clicking Start Exam

RAD-X DR Quick Hints

Quality Assurance

Rotating and Flipping Images

Click to rotate the image 90 degrees clockwise

Click to rotate the image 90 degrees anticlockwise

Click to flip the image on the vertical axis, the button is highlighted after clicking to indicate the image has been flipped

Click to flip the image on the horizontal axis, the button is highlighted after clicking to indicate the image has been flipped

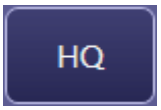
Inverting an Image

Click to invert a negative image to a positive image, the button is highlighted after clicking to indicate the image has been inverted. Click the highlighted button to revert the image to its original state

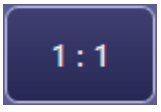
Panning and Zooming Images

Click to display the Panning and Zooming Menu, when selected, the image may be panned by clicking and dragging the image

Click to enlarge the image through 4 levels of zoom, once at the 4th level of zoom, the button changes to the 1:1 button



Click after zooming to review the image in high resolution

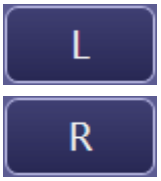


Click to enable pixel-to-pixel mode

Click to zoom out

Click to restore the default magnification and image position

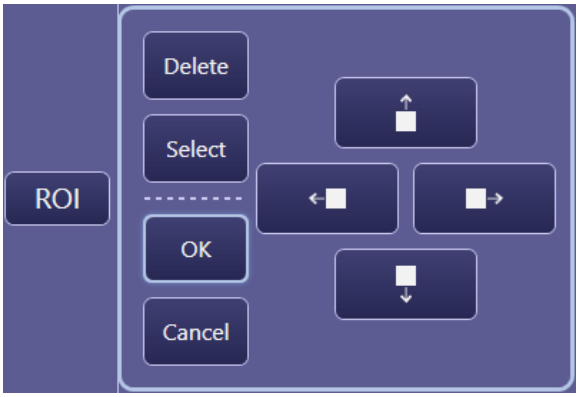
Adding and Moving Laterality Markers



Click to add laterality markers, the button is highlighted to indicate the laterality marker has been added to the image. Certain bodypart protocols have laterality markers automatically appear. To move the marker, click once to display the orange boundary, then click once in the desired location.

Region of Interest (ROI)

- Click ROI to display the ROI Menu
- This function allows the user to specify region of interest and force the software to perform image processing for the entire image based on the data within the specified ROI. Click once in the top left and once again in the bottom right corners of the required area to apply the ROI



ROI Menu

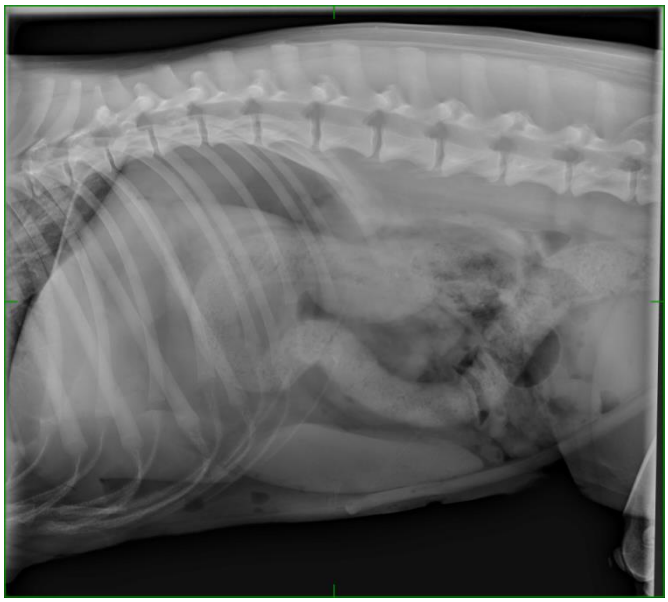


Image before Region of Interest is applied

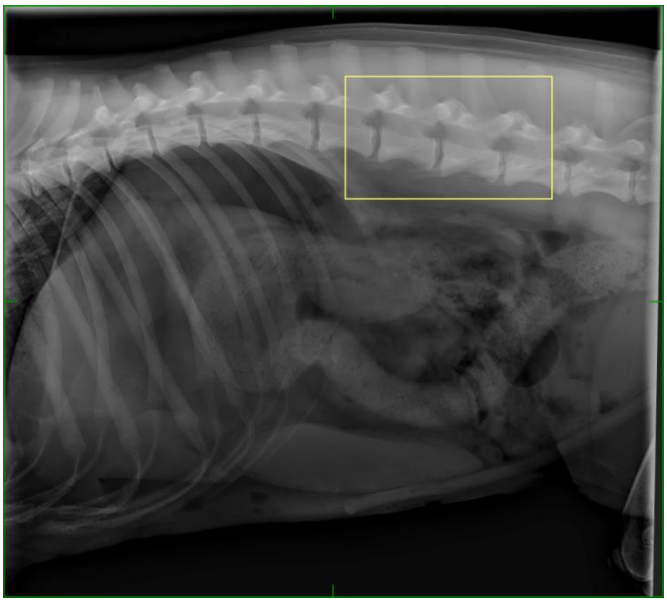
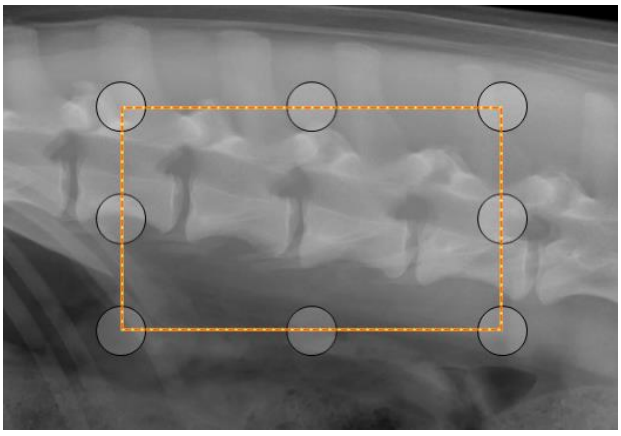


Image with Region of Interest applied

- To finely adjust the ROI position, click the arrow buttons
- Click Select to adjust the specified ROI. The ROI may be moved by clicking along the orange and yellow dotted frame. The ROI may be resized by clicking and dragging the handles (circles at each corner and at the middle of each edge).
- Click Delete to discard any adjustments and exit the ROI Menu
- Click Cancel to remove the specified ROI
- Click OK to confirm the specified ROI



ROI Frame

RAD-X® DR Quick Hints

Cropping and Masking Images

Each bodypart protocol is set to automatically crop and mask images to the collimator. Sometimes it may be necessary to manually adjust the cropped and masked areas.

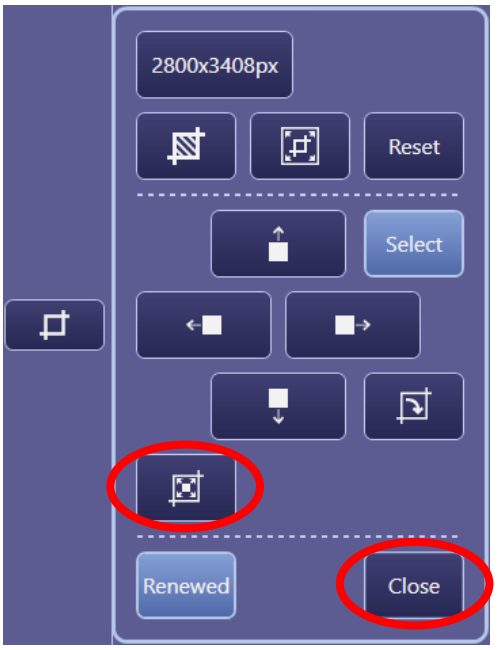
Cropping Images

Cropping allows the user to control the area to be transferred to PACS or DICOM viewing software. Any information outside the cropped area will not be transferred. The cropped area is indicated by the green frame on the image. The cropped area is always a rectangle aligned with the sensor panel.

- Click  to open the Crop Menu
- The green frame is replaced by a orange and yellow dotted frame with handles (circles at each corner and at the middle of each edge)
- The cropped area may be moved by clicking along the orange and yellow dotted frame and dragging it across the image
- The cropped area may be resized by clicking and dragging one of the handles
- It may be useful to toggle the display of the storage annotation using the 

button to avoid having annotation cover important diagnostic information
- A new cropped area may be specified by clicking once in the top left of the required area and once in the bottom right of the required area. It is also possible to specify the cropped area by clicking and dragging from corner to corner
- To finely adjust the cropped area position, click the arrow buttons 
- Click  to mask outside the specified cropped area
- Click 

to confirm any changes and close the Crop Menu



Crop Menu

Image before manual cropping is performed, note the green frame indicating the currently cropped area

Once the Crop Menu is opened, the green frame changes to orange and yellow with handles

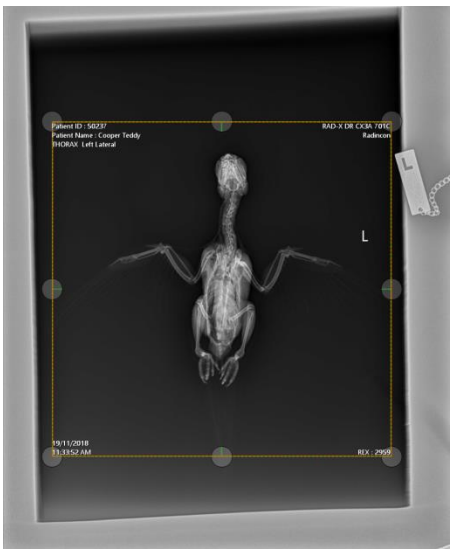


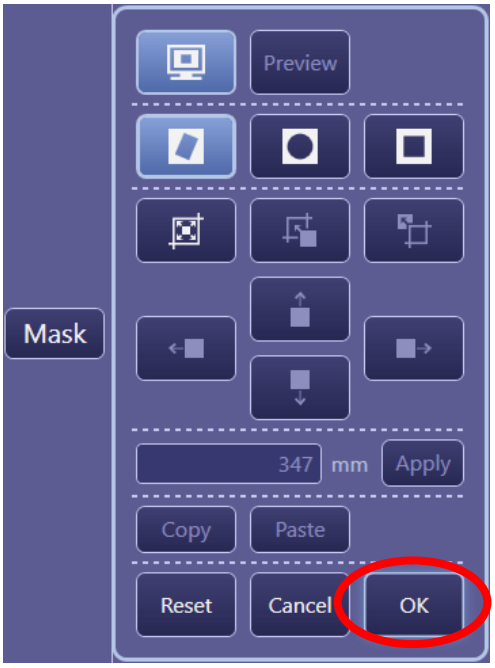
Image after the cropped area has been modified

Image after the cropped area has been modified

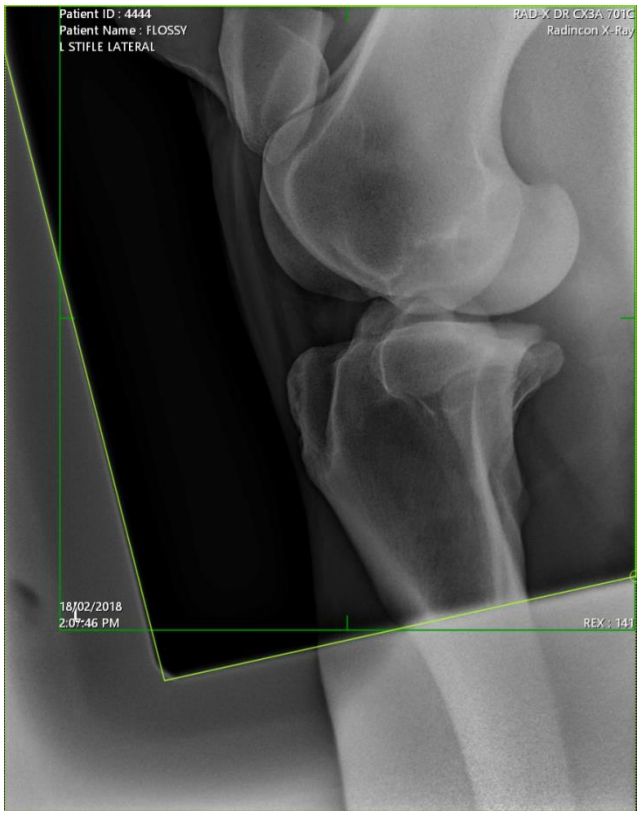
Masking Images

Masking allows the user to specify an area, outside which any information is masked (appears black when sent to PACS or DICOM viewing software). The Masked area can be specified within and outside the Cropped area.

- Click Mask to open the Mask Menu
- Polygonal, circular and rectangular masked areas may be specified, the following information pertains to polygonal masked areas
- The Masked area is specified by clicking multiple times on the image to create boundary points or corners for the area. Up to 12 points may be created, the last point must join the original point (the 12th point will automatically join the original point)
- Once the correct masked area has been specified, click OK



Mask Menu



The Masked area is indicated by the yellow line, the boundary points are circled in red for demonstration

Image after Cropped area and Masked area have been modified. Note that information outside the Masked area appear black when transferred to PACS or DICOM Viewing Software rather than grey. Information within the Masked area but outside the Cropped area will not be transferred.

RAD-X® DR Quick Hints

Rejecting and Recapturing Images

If a captured image is not acceptable, it may be rejected and the exposure performed again using the same bodypart protocol.

Reject — Click to prevent the currently selected image from transferring to PACS or DICOM Viewing Software. A red X appears over the image thumbnail.

Repeat — Click to duplicate the bodypart protocol of the currently selected image, no images are rejected

Restore — Click to remove the Reject condition from an image. This function is only available when a rejected image is selected

Retake — Click to reject the currently selected image and duplicate its bodypart protocol to be recaptured. If the original image is restored, the 'retaken' image is automatically rejected

Workflow when Reject function is used

Workflow when Repeat function is used

Workflow when Restore function is used on image that has had the Reject function used

Workflow when Retake function is used

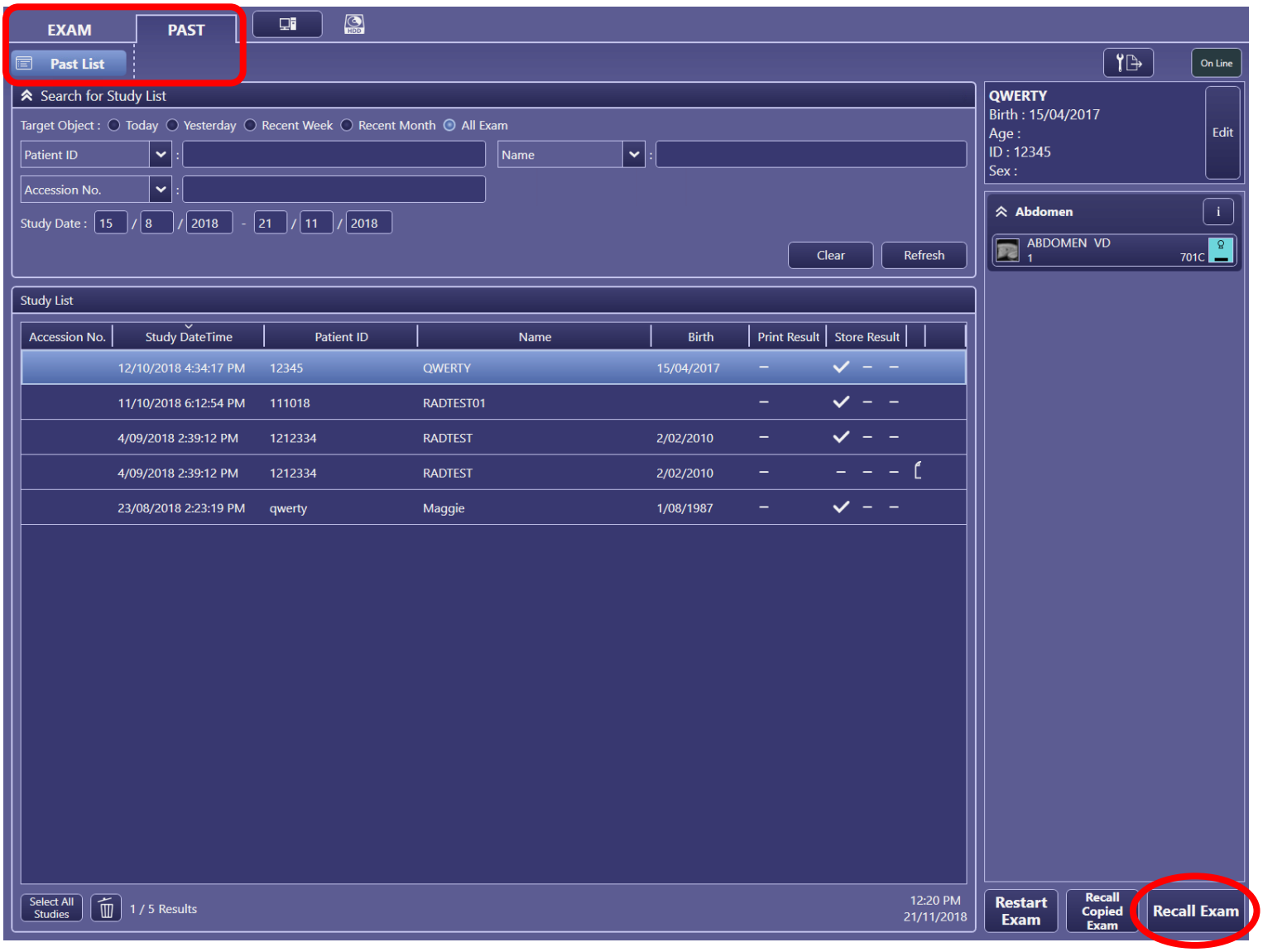
Workflow when Restore function is used on image that has had the Retake function used

Restarting and Reviewing Studies

Restarting a Study that was accidentally ended before Quality Assurance and sufficient images were captured

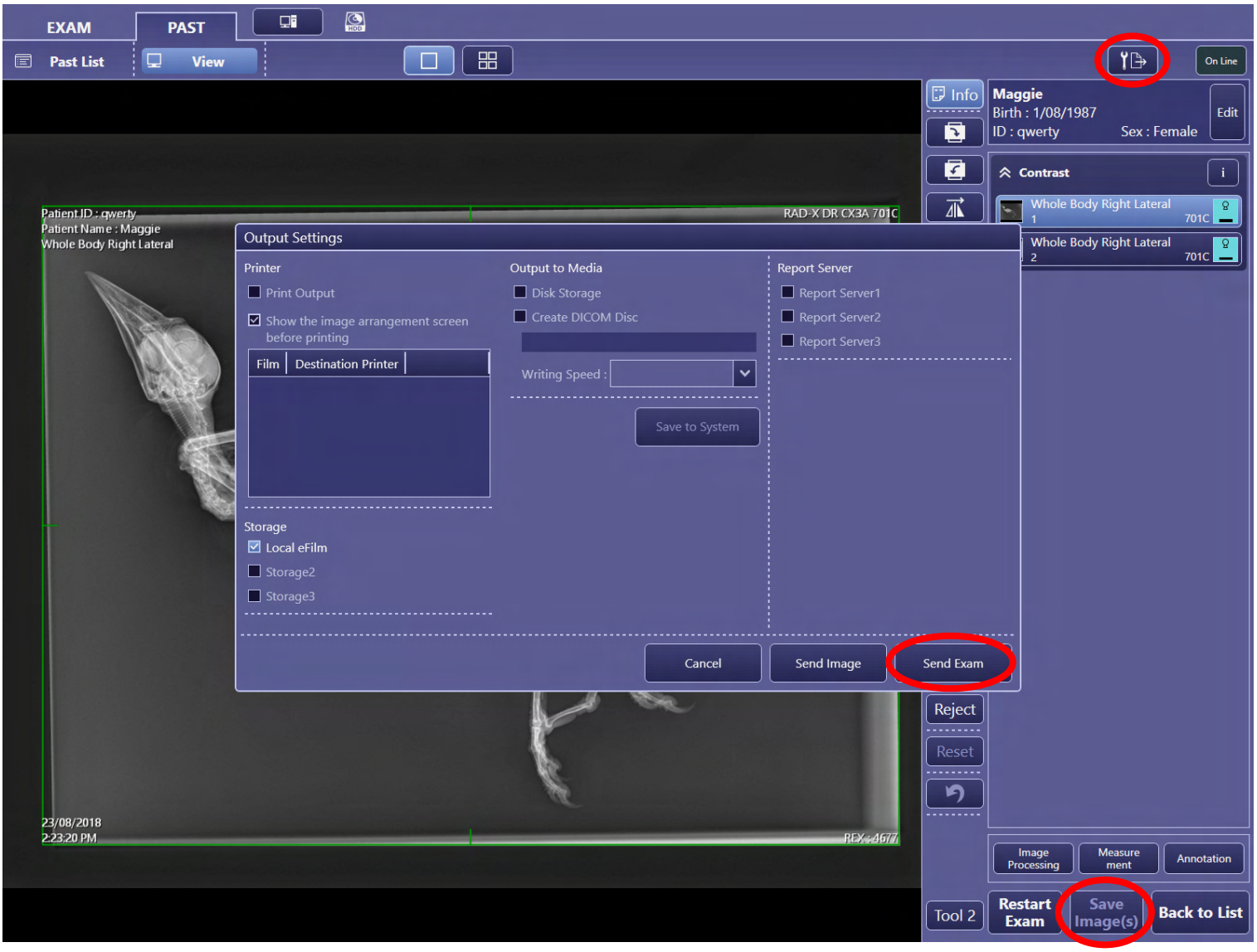
If a study was ended before images were adjusted and all required exposures were performed, the study must first be removed from the PACS or DICOM Viewing Software (eFilm is used as the example below) before images may be resent.

1. Create a backup of the study in eFilm by creating a package (see section on Creating DICOM Packages on page 20 for instructions on how to do so from eFilm)
2. Delete the study from eFilm by selecting the correct study, right clicking, clicking Delete, then clicking Yes in the confirmation window



Past List

3. In the NE software, navigate to the Past List, find and highlight the required study
4. Select **Recall Exam** located in the bottom right of the display to perform required adjustments



Review Screen

5. Once required adjustments have been performed, click Save Image(s) located in the bottom right of the display to save the changes made, then click the Output Settings icon to open the Output Settings window
6. Leave the settings at default and click Send Exam to transfer the adjusted images to eFilm
7. Click Restart Exam located in the bottom right and click OK on the confirmation window that will pop up.
8. Navigate to the Pending List (under the Exam tab), the study will appear in the list with the status Restarted, highlight the study and click Start Exam
9. Add any required bodypart protocols by clicking Edit Exam located under the list of protocols, selecting the required protocols and clicking OK
10. Perform the exposures, adjust images as required and end the study as normal, the additional images will transfer to eFilm
11. Note that the original set of images can't be adjusted once the study has been restarted

Restarting a Study to add additional images

If additional images must be added to a study that has been ended, it can be restarted, additional exposures performed, and those exposures sent to eFilm. Adding images to a study that has been ended should only be done when the additional images are actually part of that study.

1. Navigate to the Past List, find and highlight the required study
2. Click Restart Exam located in the bottom right and click OK on the confirmation window that will pop up.
3. Navigate to the Pending List (under the Exam tab), the study will appear in the list with the status Restarted, highlight the study and click Start Exam
4. Add any required bodypart protocols by clicking Edit Exam located under the list of protocols, selecting the required protocols and clicking OK
5. Perform the exposures, adjust images as required and end the study as normal, the additional images will transfer to eFilm
6. Note that the original set of images can't be adjusted once the study has been restarted

Reviewing a Study to perform Quality Assurance on images and resend to eFilm

If a study was ended before required adjustments were made to images, the study may be recalled, adjustments made, and the images resent to eFilm.

1. Create a backup of the study in eFilm by creating a package (see section on Creating DICOM Packages on page 20 for instructions on how to do so from eFilm)
2. Delete the study from eFilm by selecting the correct study, right clicking, clicking Delete, then clicking Yes in the confirmation window
3. In the NE software, navigate to the Past List, find and highlight the required study
4. Select Recall Exam located in the bottom right of the display to perform required adjustments
5. Once required adjustments have been performed, click Save Image(s) located in the bottom right of the display to save the changes made, then click to open the Output Settings window
6. Leave the settings at default and click Send Exam to transfer the adjusted images to eFilm
7. Click Back to List to return to the Past List

Modifying patient information and additional study information and resending to eFilm

If a study was ended and it was later found that incorrect patient information or additional study information was entered, it is possible to remove amend the details and resend the study to eFilm.

1. Create a backup of the study in eFilm by creating a package (see section on Creating DICOM Packages on page 20 for instructions on how to do so from eFilm)
2. Delete the study from eFilm by selecting the correct study, right clicking, clicking Delete, then clicking Yes in the confirmation window
3. In the NE software, navigate to the Past List, find and highlight the required study
4. To modify patient information, click the Edit button in the top right of the screen next to the patient details, make any required changes and click OK.
5. To modify additional study information, click 

located underneath the patient details, click 

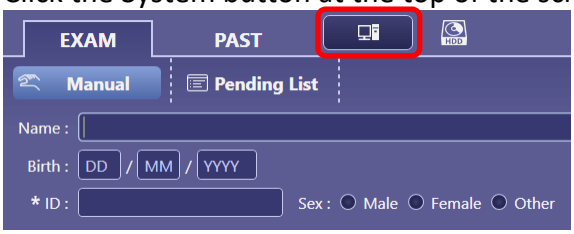
to make the required changes and click OK.
6. Click  to open the Output Settings window
7. Leave the settings at default and click 

to transfer the adjusted images to eFilm

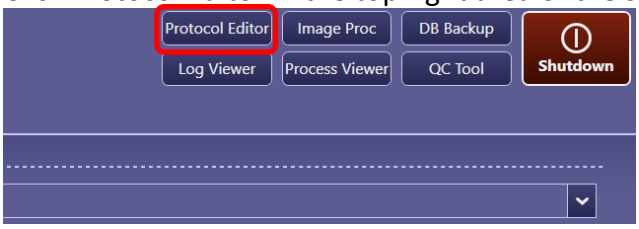
Creating PrePacks

PrePacks allow multiple bodyparts to be packaged into one button. For standard procedures with a predetermined set of view to be taken, this ensures consistency and saves time.

1. Click the System button at the top of the screen

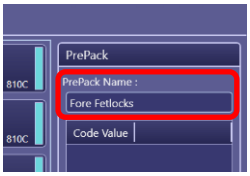


2. Click Protocol Editor in the top right area of the screen

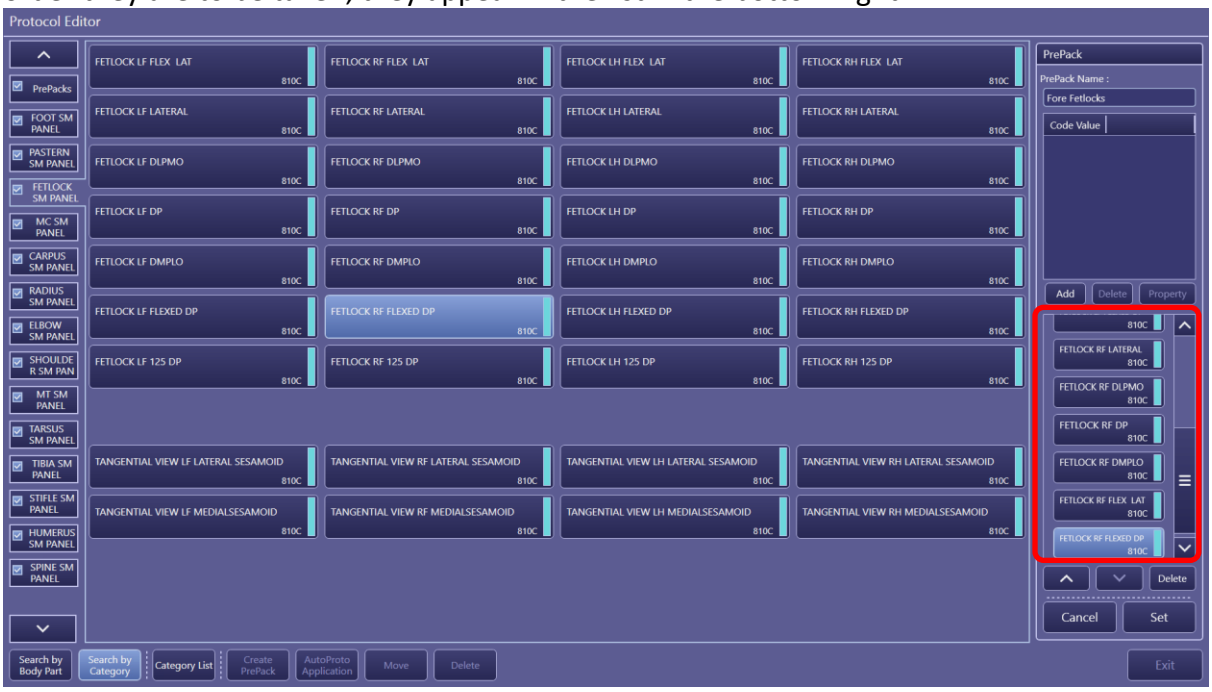


3. Click Create PrePack in the bottom left area of the screen

4. Enter a PrePack Name in the top right

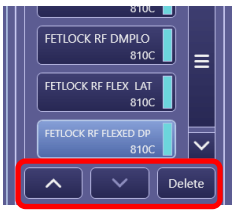


5. Navigate to the correct bodypart category and select the required bodyparts, in the order they are to be taken, they appear in the list in the bottom right

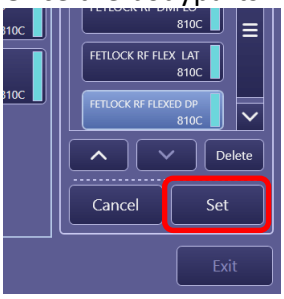


A maximum of 30 bodyparts may be added to a PrePack, if more are required, create a second PrePack. When selecting bodyparts for a study, multiple PrePacks may be selected

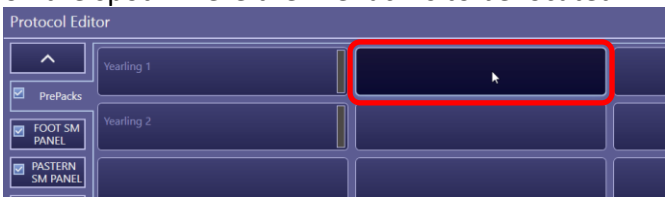
6. The order of bodyparts within a PrePack may be altered by selecting the bodypart within the PrePack and using the Up and Down arrows, or removed using the Delete button



7. Once the bodyparts have been added in the required order, click Set

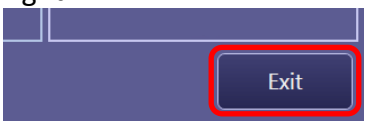


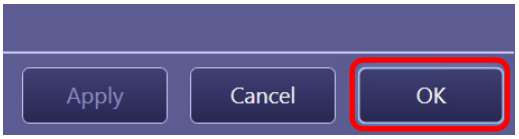
8. Navigate to the correct bodypart category (usually, the PrePacks category) and click on the spot where the PrePack is to be located



9. To modify a PrePack after setting it, select the PrePack and click Edit, in the top right. Bodyparts may be added, and the order modified

10. To return to the main screen, click Exit in the bottom right, then OK, in the bottom right





eFilm Workstation

Opening a Study

1. Open eFilm by pressing the Windows Key (on the keyboard, bottom left between Ctrl and Alt) and clicking on the eFilm Workstation shortcut. Click OK on the login screen.
2. Find the study you wish to view by either sorting or searching
    a. To sort the studies, click the top of the column you wish to sort the studies by. Clicking it again will sort the studies in reverse order.
    b. To search for studies, first click Clear Filter to remove any previous search criteria that may have been entered. Now enter specific criteria into the fields at the top of the study manager. This may include Patient ID, Name, Description or a range of dates. Once the data has been entered, click Search.
3. To open a study, double click on it.

Viewing a Study

The mouse has three default functions. Holding down the right mouse button and moving it forwards and backwards allows you to zoom in and out of the image. Holding the left mouse button down lets you pan (move) the image. Using the mouse wheel as a button by pushing down on it and holding down lets you adjust the window and level (brightness and contrast).

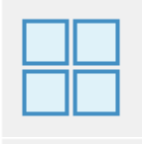
Toolbar

The toolbar allows you to choose different tools to use. Remember that the small R or L in the top of each tool denotes which mouse button is to be used.

The Search button opens the study manager without closing the current study. This may be used to open multiple studies simultaneously.

The Close button closes the study and returns and displays the study manager.

The Create Scrapbook button saves the selected image as it appears as a JPEG and append it to the study. This allows annotation to be preserved for future reference. To select an image highlight the box in the bottom right corner of the image.



The Screen Layout button allows customisation of the layout of the series panes. Use the buttons on the left and click Apply.

Clicking the Toilet People switches the current series pane layout to single pane. To select an image, click on it, a green, dotted outline should appear around it.

The Previous and Next Study buttons change the currently displayed study to either the previous or next study currently displayed in the Study Manager.

The Previous and Next Series buttons scroll the currently selected series pane to the previous and next series within the current study.

RAD-X DR Quick Hints

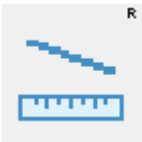
The Select Series button selects all of the currently visible series. The Select Image button selects all of the currently visible images within those series. These buttons are useful when selecting large numbers of images for export.

The Pan button is selected by default. It enables the image to be moved by clicking and holding the left mouse button and dragging it.

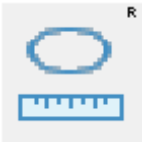
The Zoom button is also selected by default. It enables the zoom function by clicking and holding the right mouse button and moving it forwards and backwards.

The Add Annotation button adds a string of text onto the image by clicking on the required location on the image then typing and pressing enter when finished.

The Arrow button allows an arrow to be drawn to draw attention to a certain part of an image. Using the right mouse button, click and hold from the source of the arrow and drag the cursor to the arrow head. Release the right mouse button, the arrow is drawn and the option of adding annotation is presented, similar to the manner in which it is added by the Add Annotation button.



The Line button draws a measured line. Using the right mouse button, click and hold from one end of the line to the other and releaseTo move one of the ends of the line, use the left mouse button to click and hold over one of the ends of the line and drag it to the required location. The entire line can be moved by using the left mouse button to click and hold over the middle of the line and dragging and releasing. The measurement will not be accurate until the image is calibrated.



The Ellipse button draws an ellipse over the image. Using the right mouse button, click and drag from one corner of the ellipse to the opposite corner. The ellipse may be adjusted in a similar manner to the line.

The Show Angles button reveals the angles created by lines that intersect.

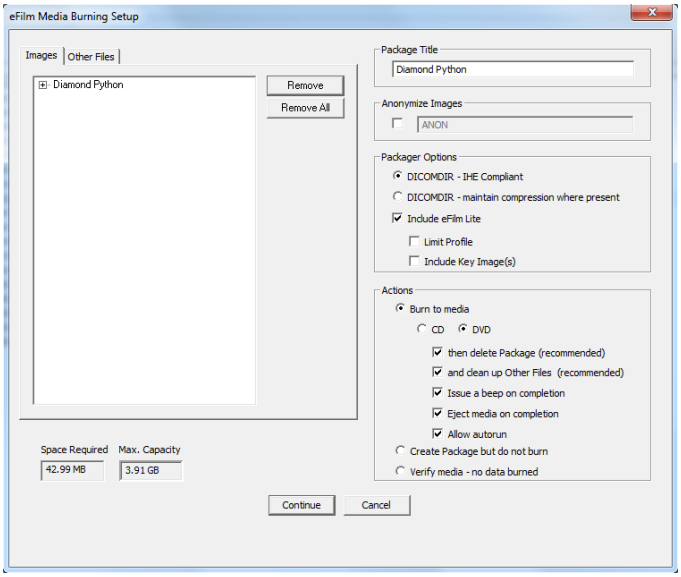
The Calibrate Measurements button allows calibrates the distance values of the image. Draw a line over an object in the image of known length, and in the same plane as the object to be measured. Highlight this line by, with the left mouse button, clicking in the middle of the line, and click the Calibrate Measurements button. Click Yes and enter the actual length of the line and click OK. This adjusts all the measurements to ensure they are correct.

The Clear Measurement Tools button clears all of the measurements and annotations added to the image. To delete individual annotations, right click on it and click delete. To save annotation, use the Create Scrapbook button.

The Invert button inverts the image.

Creating DICOM Packages

1. Place a blank CD or DVD in your writable CD/DVD-ROM drive (skip if only creating the DICOM package.
2. Highlight the required study or studies in the Study Manager
3. Select Burn to Media (left side of the Study Manager. The eFilm Media Burning Setup window appears.
4. Expand the packages listed in the left pane to view and remove individual images from the study or studies.
5. Enter a title for the DICOM package in the field provided.
6. Select DICOMDIR - IHE Compliant
7. Select Include eFilm Lite to include a copy of eFilm Lite on the media and specify additional options by selecting their check boxes.
8. Select Burn to Media then specify media type on which to burn the images. Selecting Create Package but do not burn will create a folder in the ANIMAL_CD folder containing the DICOM images and a copy of eFilm Lite (if that option was selected
9. Click Continue. When notified that the process is complete, click OK.



Exporting Images as Graphic Files (JPEG)

Images can be exported in any of three formats: JPEG (.jpg), bitmap (.bmp), or TIFF (.tif). These files can be viewed using any standard image viewer or web browser.

To export images as graphic files

1. Select the images that you want to export by clicking the image marker  in the lower right corner of each image you wish to export.
2. On the File, Export menu, click as Image(s). The *Save As* dialog box appears.
3. Select a file format from the Save as type drop-down list.
4. Select the Windows directory in which to save the images and enter a filename. If multiple images are selected, the series and image number will be appended to the filename of each image file.
5. Click Save.