

Supplemental Material

[Uploading DICOM Images from MIM to PACS](#)
README

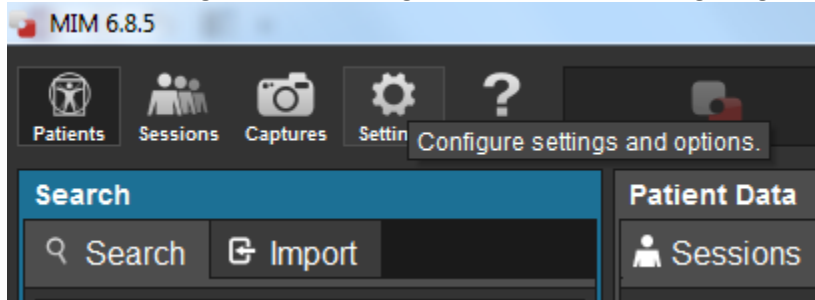
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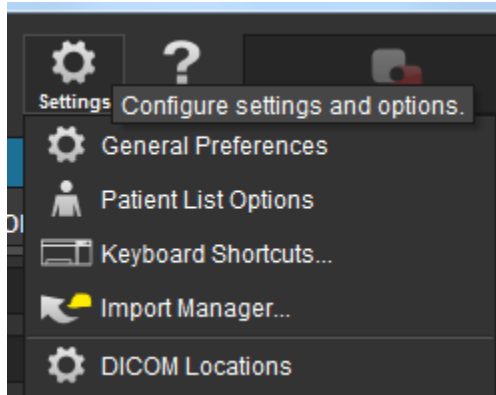
Configuring Settings in MIM

There are a few settings in MIM to change in order to enable uploading data from MIM to PACS in a reliable and consistent fashion. Many of these settings are configurable for individual user accounts of MIM, so anyone wanting to upload DICOM images onto PACS will need to change these settings in their individual accounts once logged in. Note that these are settings in a personal MIM account, and the actual uploading to PACS must be done from designated departmental computers.

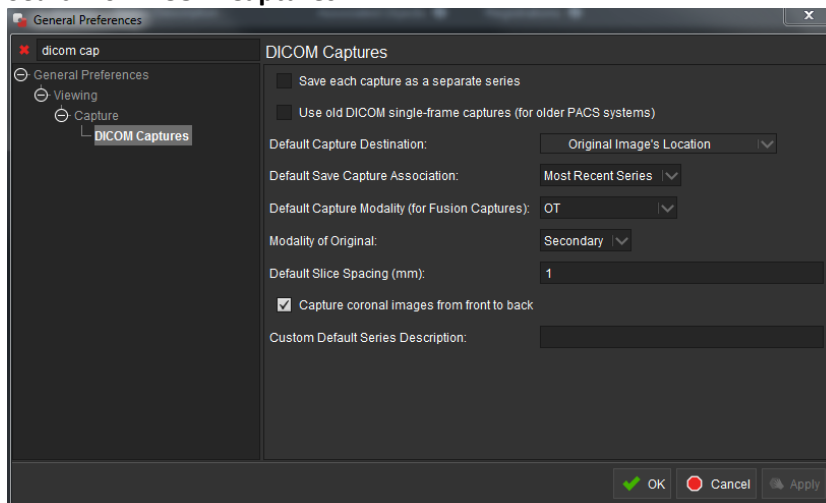
In order to configure these settings, first access the Settings Cog in the top left corner:



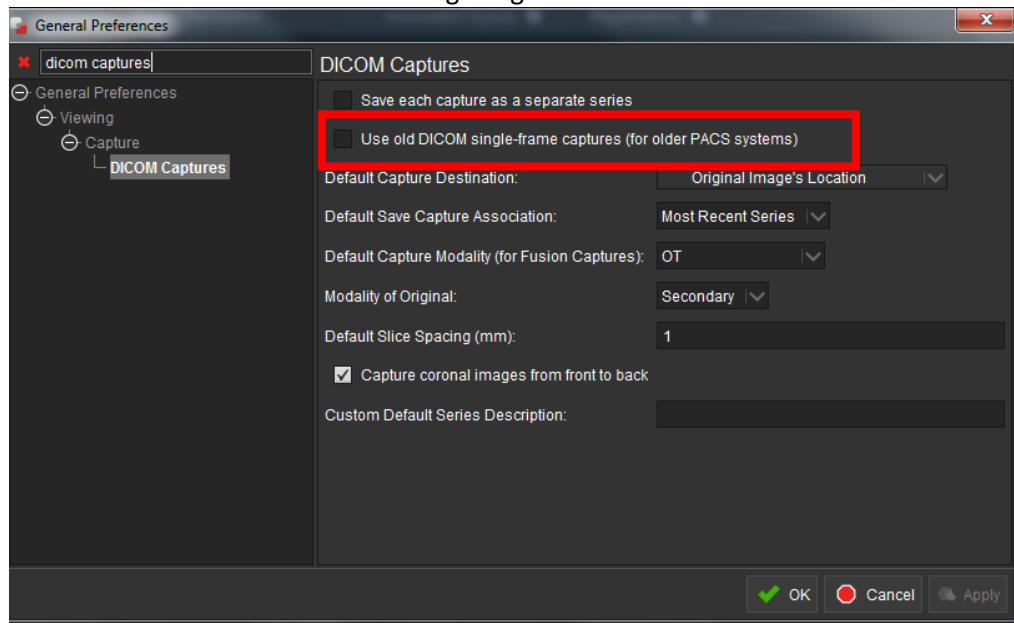
- I. Click on **General Preferences**



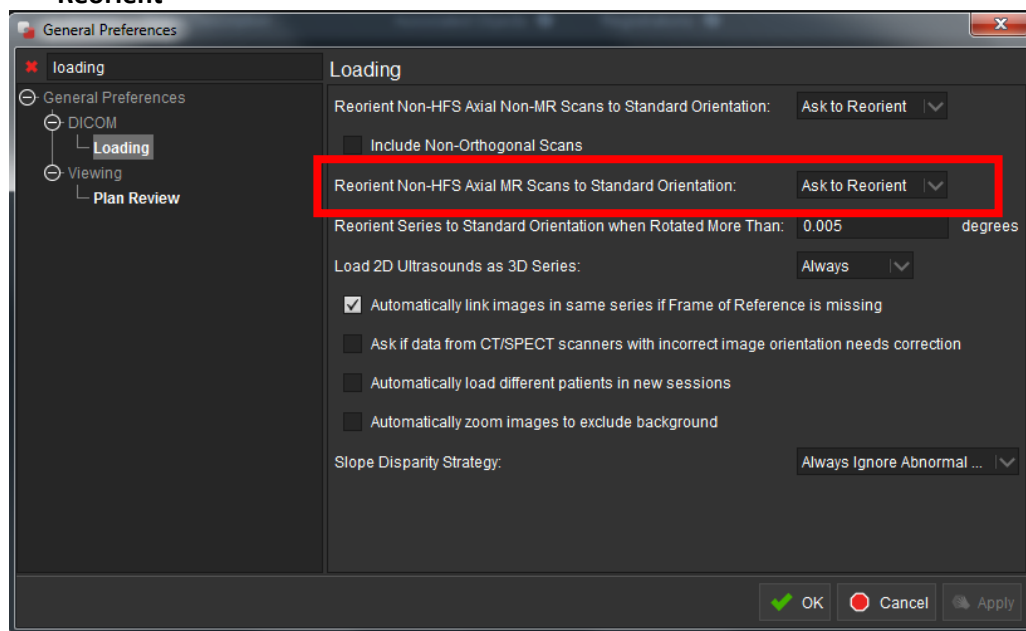
- II. Search for **DICOM Captures**



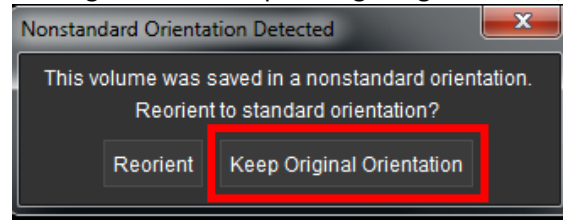
- III. Ensure that **Use old DICOM single-frame captures (for older PACS systems)** is NOT selected
- a. This ensures that transferring DICOMs to PACS sends a single DICOM file (rather than several files for each slice), which makes for a better viewing experience, as demonstrated later when viewing images in PACS.



- IV. Now search **Loading**
- a. The default settings in MIM will re-orient MRI images to a standard orientation. However, this is NOT desired. Instead, the MRI should be uploaded from MIM to PACS to match the original MRI.
- b. To do this, change **Reorient Non-HFS Axial MR Scans to Standard Orientation** to **Ask to Reorient**



- c. This will prompt when loading an MRI image whether to reorient the image. When loading the MRI for uploading images to PACS, select **Keep Original** when prompted.



DICOM Locations

Next, find the department's computer(s) that are configured to download images from PACS. A discussion with the IT department and the Hospital PACS team will be necessary to configure these computers to upload images onto PACS. Typically, this will include giving permission of the department computer's DICOM node on the hospital PACS server. Here is a generic example of a computer with the information needed to share with the IT and/or PACS team.

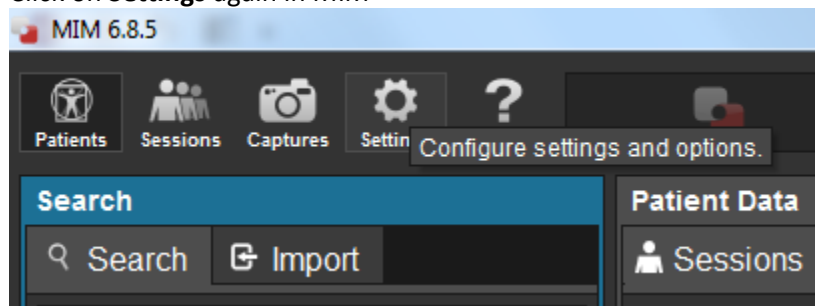
- I. **COMPUTER NAME**
 - a. **Static IP:** *[insert static IP address]*
 - b. **AE Title:** *[insert AE title]*
 - c. **Port:** *[insert PORT #]*

In some cases, the environment may be configured such that the local MIM server is where patient cases are saved. If so, share this information with the PACS team, as well.

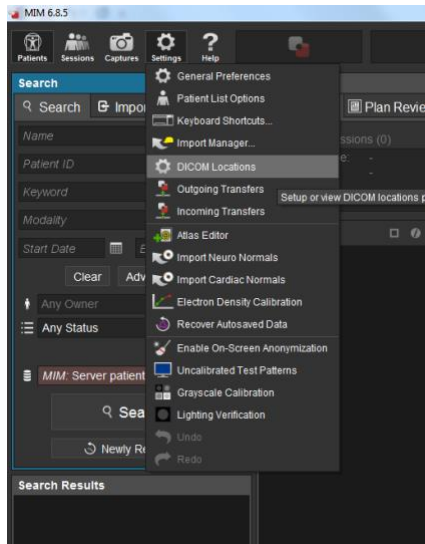
- II. **MIM SERVER NAME**
 - a. **Static IP:** *[insert static IP address]*
 - b. **AE Title:** *[insert AE title]*
 - c. **Port:** *[insert PORT #]*

Next, ensure that the locations of the PACS server and PACS backup server are configured in MIM. Note, this only needs to be done once for the given computer, and if another user has already configured this, this step can be bypassed.

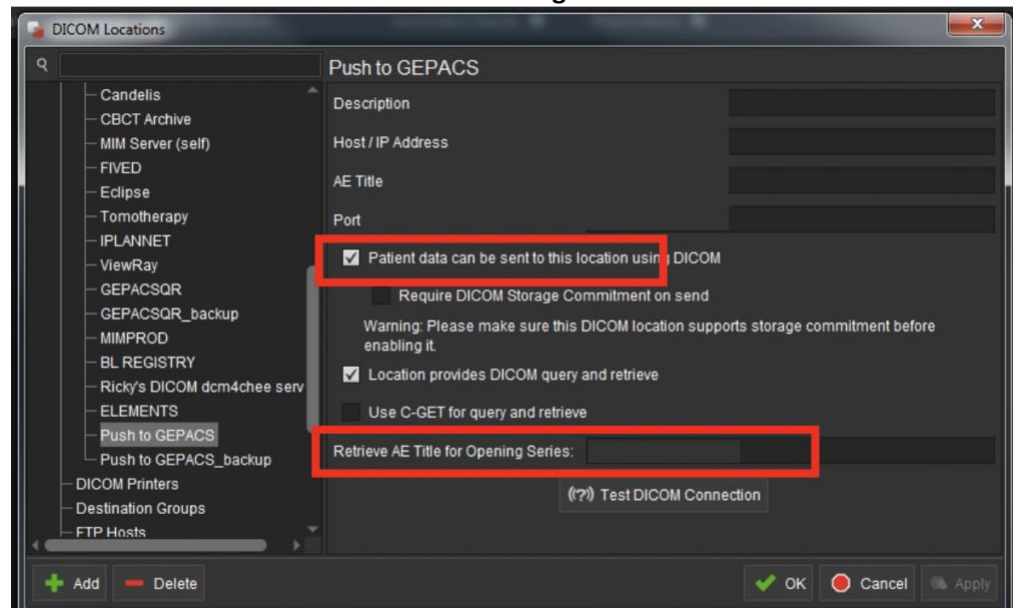
- III. Click on **Settings** again in MIM



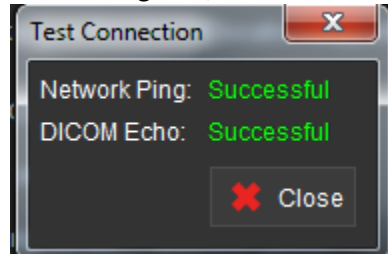
IV. Click on **DICOM locations**



- V. Configure the main GEPACS location for the hospital PACS system (request this information from the hospital PACS team)
- Description:** Push to GEPACS (*this is what is displayed in MIM, can be called anything*)
 - Host/IP Address:** [*insert static IP address*]
 - AE Title:** [*insert AE Title*]
 - Port:** [*insert PORT #*]
 - Retrieve AE Title for Opening Series:** [*insert the MIM Server AE title or the location of where the images are saved the department's environment*]
 - Now make sure the follow settings are checked
 - Patient data can be sent to this location using DICOM**



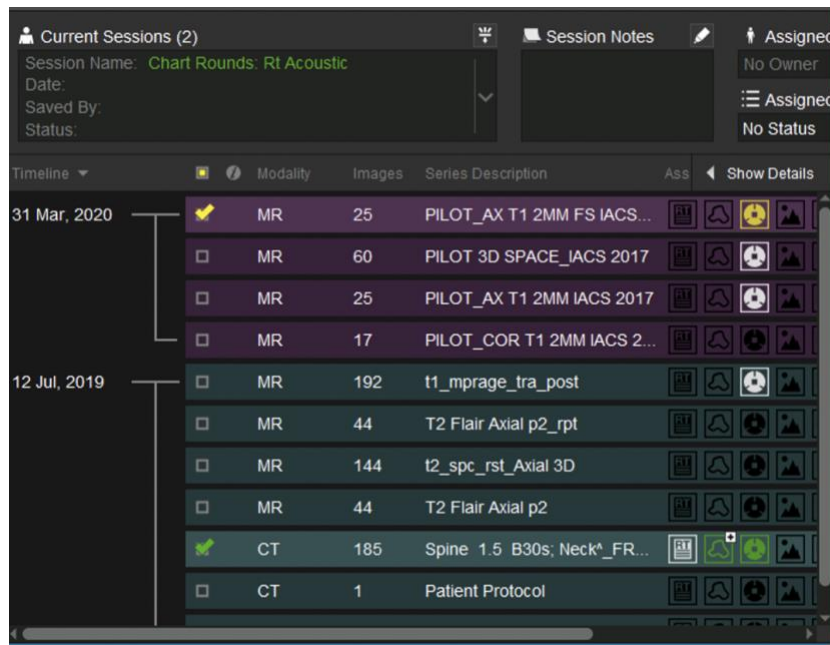
- d. Once configured, click **Test DICOM Connection** and make sure connection is successful



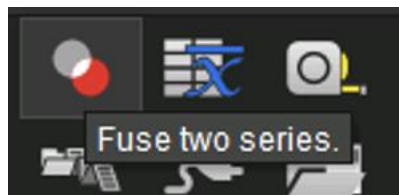
Transferring DICOM data from MIM to PACS

In this example, a metastatic brain lesion with the dose distribution overlaid onto the MRI brain will be pushed from MIM into PACS.

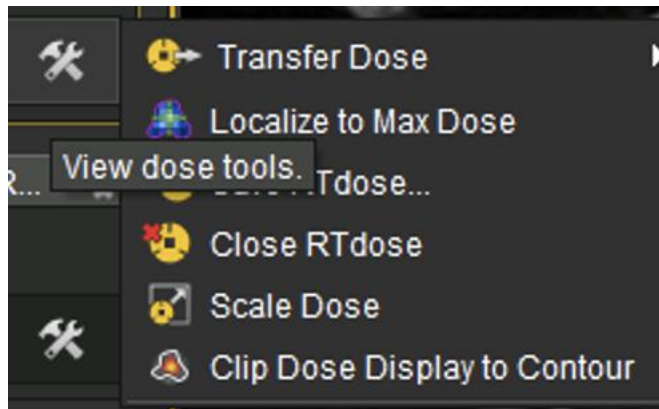
- I. Load session in MIM. It usually makes most sense to load the **Chart Rounds** session that has the dose information loaded on it.
- II. Many times, the MRI brain is not loaded in the chart rounds session. If so, it will need to be brought in with a few additional steps.
 - a. Load in the MRI Brain



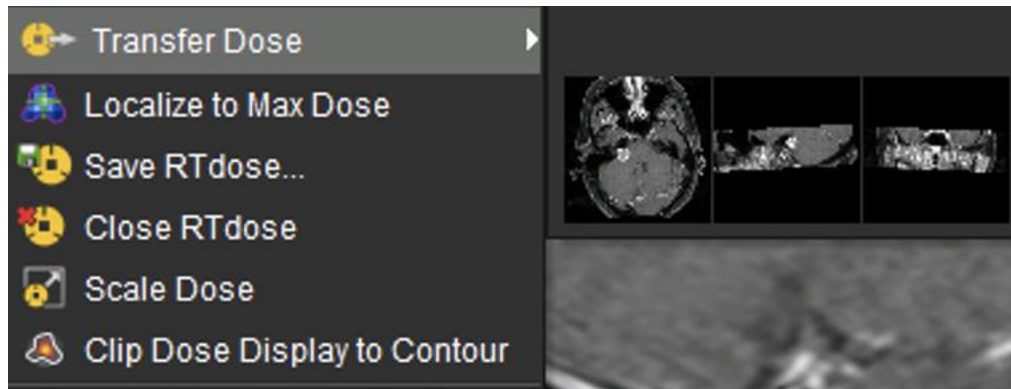
- b. Then fuse the CT Sim with the MRI



- c. Transfer for the dose from the CT Simulation to the MRI in the Dose tab
 - i. Click on the tool icon associated with the dose for the CT Sim



ii. Click Transfer Dose and select the MRI that was just brought in

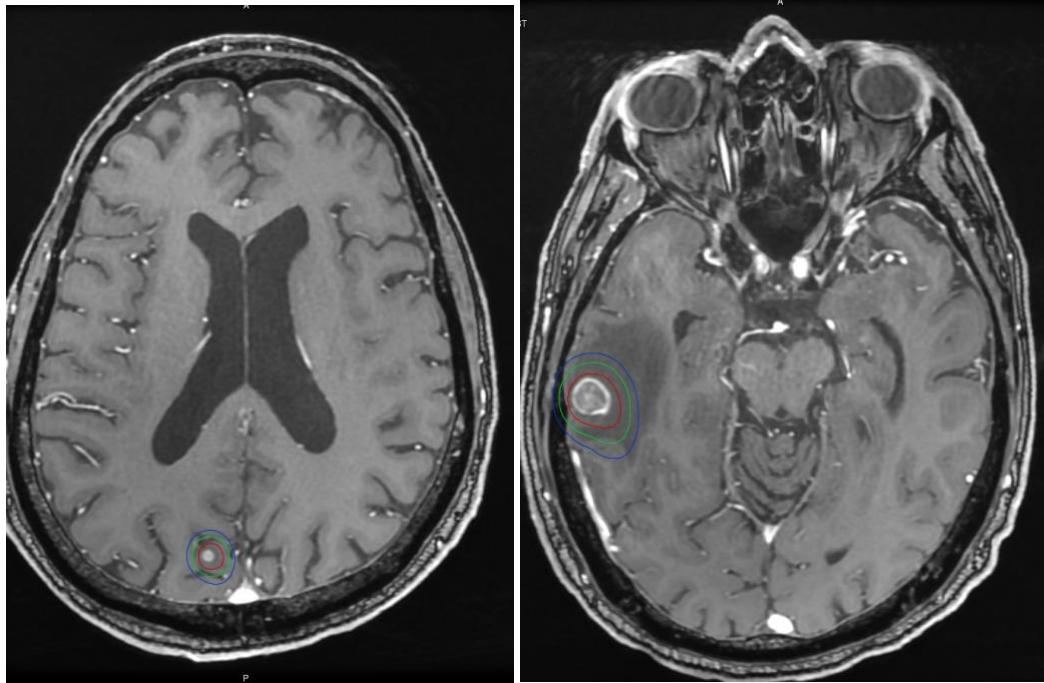


d. The dose can now be seen overlaid on the MRI

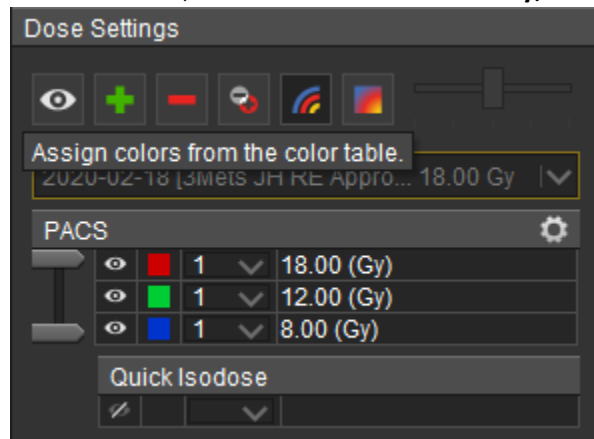


III. Turn off all the contours

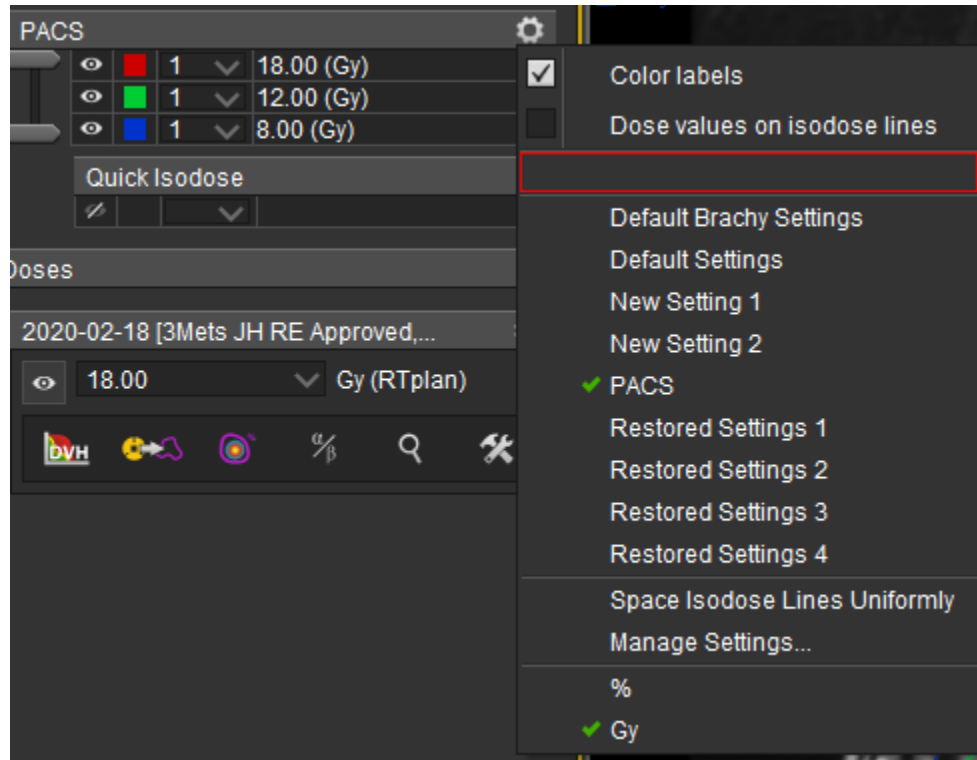
- IV. Here there are two metastatic brain lesions both treated with SRS 18 Gy x 1 Fx



- V. Configure Dose Distribution options for optimal viewing
- a. For brain mets, it's useful to show the **18 Gy, 12 Gy, and 8 Gy** isodose lines



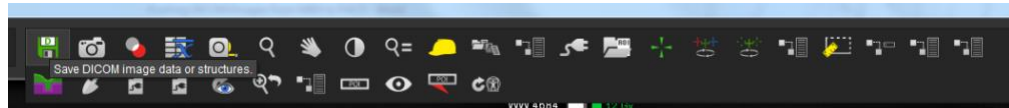
- b. Show a separate color legend instead of values on the lines to avoid cluttering the image
- c. Use units of Gy (instead of %) to help the radiologist know the actual dose



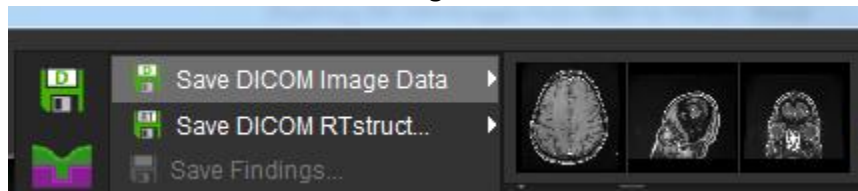
- d. Use a consistent color scheme
 - i. **Red** – 18 Gy
 - ii. **Green** – 12 Gy
 - iii. **Blue** – 8 Gy
- e. Save these settings as a scheme an **Isodose Setting**. Here, it is called **PACS**.

VI. Now ready to initiate the transfer. What is shown on the screen is similar to how it will look in PACS, so double check it looks as desired. Make sure contours are turned off.

- a. Click on **Save DICOM image data or structures**



- b. Then hover over **Save DICOM image data**



- c. And select the MRI scan (HPI of the patient is hidden here).

- d. Configure the following options
- i. **Destination:** Push to GEPACS
 - ii. **Modality:** Secondary Capture (Slice by Slice) – OT
 - iii. Save in Each Plane: Axial (only)
 - iv. Series Description: **RT_Dose_DateCompleted** (e.g., RT_18_20192020)
 - v. Uncheck the **Apply viewing Rotation** box
 - vi. Leave the other parameters unchanged (HPI info of the patient is grayed out)

Notifications

DICOM Save

Save DICOM Image Data

Destination: Push to GEPACS

Modality: Secondary Capture (Slice by Slice) - OT

Save in Each Plane: ☒ Axial ☐ Sagittal ☐ Coronal

Prepend Plane to Series Description ☐

Patient Name: [Grayed out]

Patient ID: [Grayed out]

Study ID: [Grayed out]

Accession #: [Grayed out]

Ref. Physician Last: [Grayed out]

Ref. Physician First: [Grayed out]

Study Description: MR BRAIN EXTERNAL IMAGE IMPORT

Series Description: RT_18_02192020

Slice Thickness (OT only, in mm): 0.6

Square Voxels in Plane: ☐

Apply Viewing Rotation: ☐

Save as Orthogonal: ☐

Keep Association: ☒

Reset OK Cancel

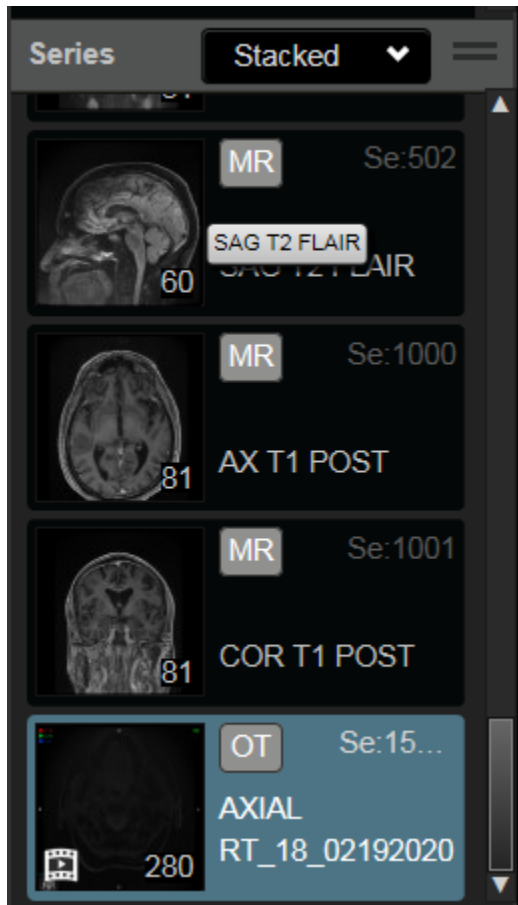
- vii. Click OK
- viii. Once successfully transferred, a notification like this will appear.



Viewing Images on PACS

Now view the volume on PACS that were just uploaded from MIM. Open the patient in either directly from PACS Viewer or from CareConnect first.

- I. Load the original MRI Brain
- II. Notice now that there is an additional series at the bottom of the series stack

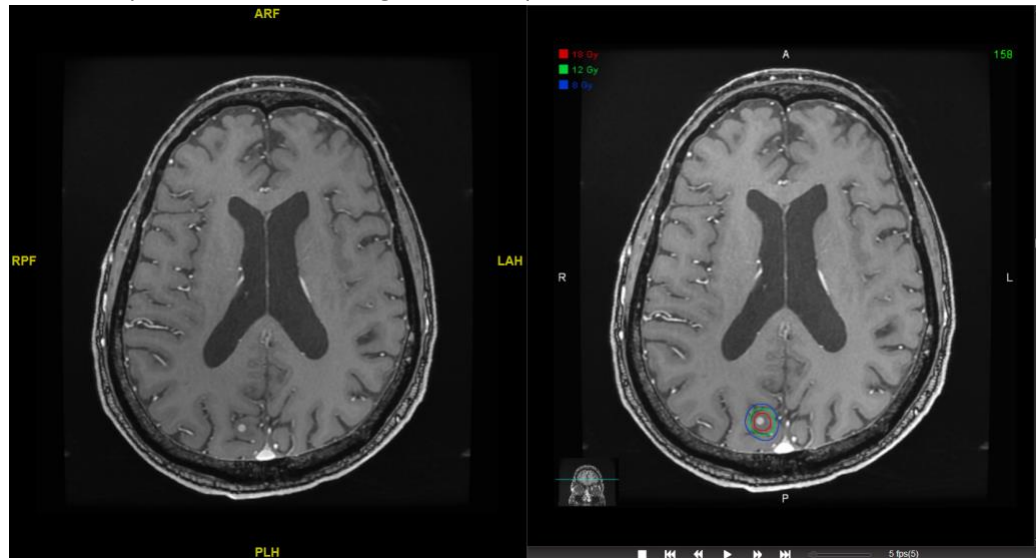


- III. Load that image. It will play as a movie that scrolls through slices, but just pause it, then scroll through slices manually. Scroll until the lesion is seen. Notice now that the dose distribution can now be seen right from PACS.

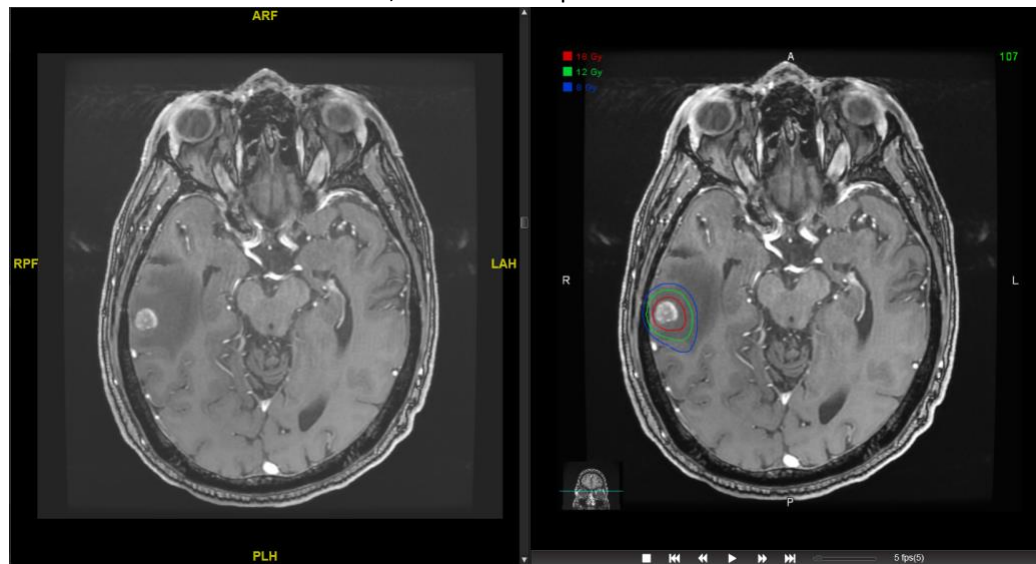


- The color legend of the 18 Gy, 12 Gy, and 8 Gy are show in the top left, just like in MIM
- The slice number is now also seen in the right in Green
- And there is a coronal slice in the bottom left to show which axial slice is cross-referenced to.

- IV. Now, compare this with the original MR sequence to see that it matches.



- V. Let's also check the other lesion, which is also present.



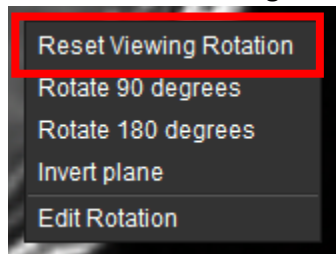
Troubleshooting Issues

Here are some issues that have come up with some ways to correct them.

- I. The brain image is rotated in the current view on MIM. How can this be fixed?
 - a. In MIM, right click on the **Rotation View** tool:



- b. Click on **Reset Viewing Rotation**



- c. This will undo any rotation that was applied automatically to the view or if a user adjusted the rotation. This will NOT affect the registration, only the viewing.