

**DO NOT print this document. Instructions will be updated.**

**MIM Support: 866-421-2536**

1. How to save work while contouring:

**DO NOT repeatedly save RTstruct files.**

**Concept:** Save sessions for the following reasons:

- i. Site-specific setup workflows are used to automatically detect, load, register, arrange, and adjust display properties of images typically used for target and OAR delineation. The registrations of these images are then touched up by dosimetrists and receive proper QA from physics, including generation of a registration report. Saving sessions ensure all prior work on a patient from dosimetry, physics, and MDs are stored. Saving RTstructs alone fails to capture all of this information.
  - ii. If only RTstructs are saved, dosimetrists and MDs will need to redo image registrations, layouts, etc each time they open a patient.
  - iii. To avoid confusion, the only RTstruct in the list should be the final RTstruct that gets sent to the planning system.
  - iv. Contours are auto-saved to the local computer every 10 minutes for disaster recovery in the event of a network crash (see “How to restore contours after network crash” below).
- b. Save Sessions by clicking the green floppy disk icon in the top toolbar and selecting the Save Session option. **Confirm that the session is associated with planning CT (if not, select the planning CT from the drop down list).** Use the following naming convention when labeling the session:  
<MD>\_<Step/FINAL>. For example:
- i. CL\_1.0
  - ii. CL\_2.0
  - iii. CL\_3.0
  - iv. CL\_FINAL
- c. When closing sessions, always say NO to save a copy of contours.

2. Touching up normal structure contours in MIM:

**Concept:** MIM utilizes a parallelized architecture in which dosimetrists and MDs can contour simultaneously. When both MDs and dosimetrists have finalized their contours, the contour sets must be merged together before a finalized RTstruct can be generated and sent to the planning systems. To avoid confusion during the merging process, a few housekeeping steps must be utilized:

- Physicians must append their initials to any normal structure contours they touch up. For example, Bladder would be renamed Bladder\_CL.
  - Dosimetrists will need to *clean* physician contours before merging to eliminate duplicate normal contours. That is, normal structure contours that have *not* been touched up by MDs.
- a. Click on the contours and append the label with your initials. For example, change “Bladder” to “Bladder\_CL”.
  - b. It is ok to use all available images as *references* for normal structure contouring. However, **confirm the contours make sense on the planning CT**. Motion can cause slight registration differences between planning CT and additional images for contouring (for example, non-contrast and contrast abdominal CT images). Contours must be accurate on planning CT anatomy for the following reasons:
    - i. Dose calculation and plan evaluation
    - ii. References for daily IGRT (therapists rely on contours for daily positioning)
  - c. Save a session as usual.
3. How to Generate Wishlists:
- Concept:** Functionality has been added to both MIM and Moniqa to generate wishlists without having to DICOM export the planning CT and RTstruct to the planning systems first. Contours associated with the planning CT in an active MIM session are passed directly into Moniqa for wishlist generation.
- a. Open a session containing finalized, merged, and approved contours, then click the Moniqa icon in the top (shortcut) toolbar. Moniqa will open; log in to Moniqa using your Mosaiq username and password. The patient name and structures will be displayed in Moniqa.
  - b. Select a wishlist template or manually place wishlist items (i.e., dose-volume constraints). Click the Save button when finished.
4. How to query and retrieve from PACS:
- Concept:** Images can be queried and retrieved from PACS when using MIM from the following locations:
- Citrix (i.e., remotely from your office or at home)
  - Monaco workstations
  - Masterplan (HDR)
  - BigMac
- a. In the MIM patient list, click the green “PACS Query” icon on the left of the screen.
  - b. Enter patient criteria to search PACS (for example, patient name, dates of scan, modality, etc)
  - c. Click the Search button.
  - d. In the query results, select the images to use for delineation.

- e. Click the green “MIM Clinic Database” button on the “Send To” tab in the lower right of the screen to retrieve the images from PACS to MIM.
5. Automatic generation of breast “Eval”, CTV, and PTV contours:
- Concept:** A workflow has been constructed to automate generation of eval, CTV, and PTV contours for breast patients. The prerequisite for this process is diseased breast and lumpectomy contours.
- a. Within a session, draw diseased breast and lumpectomy contours.
  - b. Click the yellow hard hat in the top toolbar, select the workflow “FH Generate PTV Lumpectomy”, and click OK.
  - c. At the first prompt, select the diseased breast contour in the Contour tab and click the Resume Workflow button.
  - d. At the second prompt, select the lumpectomy contour in the Contour tab and click the Resume Workflow button.
  - e. Rename the Eval contour once the workflow finishes.
6. Auto-ITV generation from 4DCT/4DMRI data:
- Concept:** Gated or non-gated ITVs can be generated automatically in MIM using deformable propagation of GTV contours across 4DCT phases. This procedure can also be used to generate avoidance volumes for adjacent critical structures.
- a. **Setup workflows must be run before the auto-ITV process can be run.**
  - b. Open saved session created by setup workflow.
  - c. Create a new structure and contour the GTV. The structure can have any label.
  - d. Use the left/right arrow keys to switch to a page containing planning CT and 4DCT/4DMRI images.
  - e. Click the yellow hard hat in the top toolbar and run the “FH Auto-ITV from 4D” workflow.
  - f. When prompted, select the GTV that was drawn previously.
  - g. Click the Resume Workflow button to continue. The GTV contour will be deformably propagated across 4DCT/4DMRI phases
  - h. If desired, touch up the “4DPropagatedContour” structure on each 4D phase. Then click the Resume Workflow button to continue.
  - i. The 4DPropagatedContour will be collapsed into an ITV.
  - j. Review the ITV while viewing a cine movie loop of the 4DCT/4DMRI images and touch up if necessary.
  - k. If there are multiple targets, run the “FH Auto-ITV from 4D” workflow for each target, renaming the GTV and ITV contours to reflect each target.
7. How to recover contours after network crash:
- Concept:** Contours are auto-saved every 10 minutes for disaster recovery. To save more frequently, click the blue floppy disc icon in Contour tab and select “Quick Save Contours” option. Only the ten most recent “Quick Saves” will be stored and they will be stored on the local computer (not the MIM server).

- a. To recover contours, go to the workstation that contouring was being performed on during the network crash.
  - b. Open the saved session for a patient, right-click on Settings (top toolbar) and select "Recover Autosaved Contours".
  - c. Select the appropriate contour from the list based on time stamp and patient
8. How to create "Eval" contours:
- Concept:** A workflow, rather than contouring tool, is used in MIM to create Eval contours. The margin of the Eval contour cannot be set dynamically, so there are workflows built with two margins (0.3cm and 0.5cm).
- a. Within a session, click the yellow hard hat in the top toolbar. Select the workflow "FH Generate 0.3cm Eval Contour" or "FH Generate 0.5cm Eval Contour", and click OK.
  - b. At the prompt, select the contour you wish to create an eval contour for in the Contour tab. Then click the Resume Workflow button.
  - c. Rename the Eval contour once the workflow finishes.
9. Append PET to saved session from setup workflow:
- Concept:** Not all patients have PET scans. For those that do, a workflow is available to append the PET and PETCT images to saved session created by setup workflows.
- a. Query PET and PETCT from PACS and transfer to MIM Clinic Database
  - b. Open saved session (created from setup workflow) containing planning CT image.
  - c. Go back to MIM patient list, select the PET and PETCT, and click the Open button (lower right).
  - d. Back inside the session, click the yellow hat in the top toolbar and launch the "FH Append PET" workflow.
  - e. Press the left or right arrows keys on your keyboard and navigate to RegQA page. Verify the automated image registration and touch up if necessary:
    - i. Note – the registrations are "live"; making changes in the RegQA pages will alter registrations on the delineation pages.
  - f. Have physicist perform QA of image registration and generate registration report before proceeding with target and OAR delineation.
10. Auto-segmentation of DeltaT1 Images (Brain):
- Concept:
- a.