

## CT-MRI Fusion Requirements

### Approach to CT-MRI Fusion

- MRI:
  - Three-dimensional spoiled gradient (3D-SPGR) axial MRI scan of the head with standard axial and coronal FLAIR, axial T2-weighted and gadolinium contrast-enhanced T1-weighted sequence acquisitions.
  - **MRI with slice thickness of 1.25mm is preferred** to contour the hippocampus accurately. Slice thickness of 1.5mm or less is permitted.
  - Obtain in supine position; immobilization devices used for CT simulation and daily radiation treatments not necessary.
- CT Simulation:
  - Non-contrast treatment-planning CT scan of the entire head region.
  - **CT with slice thickness of 1.25-1.5mm is preferred** for accurate hippocampal sparing planning. Slice thickness of 2.5mm or less is permitted.
  - Immobilize patient in supine position using an immobilization device such as an Aquaplast mask over the head. Treat patients in the immobilization device.
- MRI-CT Fusion:
  - Semi-automatically fuse the 3D-SPGR MRI and the treatment-planning CT

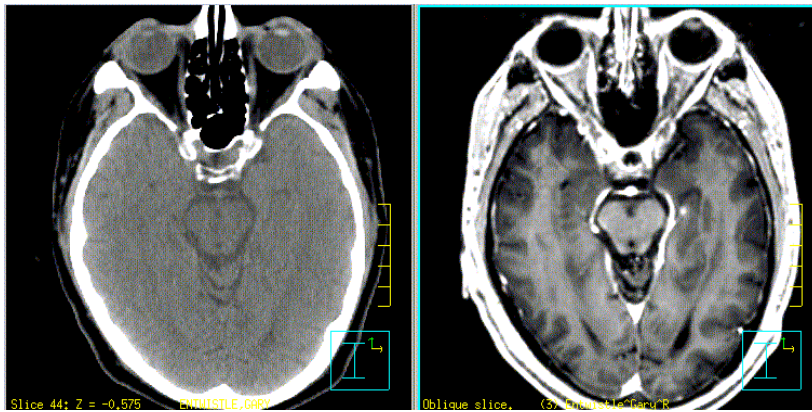
### Submission of CT-MRI Fusion for Central Review

CT-MRI fusion will be reproduced at RTOG Headquarters to permit central review of hippocampal contours and IMRT dosimetry.

However, central review will also involve verification of institutional CT-MRI fusion using the following representative JPEG images to be submitted by the institution through the Image-Guided Therapy Center (ITC) website at <http://atc.wustl.edu>.

- 1) 3 separate axial images through the hippocampus
- 2) 1 sagittal image through the hippocampus
- 3) 1 coronal image through the hippocampus.

Each representative JPEG image should contain visualization of the CT next to the fused MRI. A sample of such a JPEG image is provided below.



### Submitted Data Sets required for Central Review

As summarized in the protocol, the following data sets must be submitted for central review. Central review will **not** be initiated until all data sets are received by the ITC.

- 1) RT Plan
- 2) RT Structures
- 3) RT Dose
- 4) RT spatial registration (if available)
- 5) DICOM Image (both CT & MRI)
- 6) JPEG images of CT-MRI fusion (as described above)

For further questions, please contact Dr. Wolfgang Tomé (608-263-8510 or via email: [tome@humonc.wisc.edu](mailto:tome@humonc.wisc.edu))