



MASSACHUSETTS
GENERAL HOSPITAL

RADIATION ONCOLOGY



*National
Alliance for
Medical Image
Computing*

DBP: Head and Neck Cancer

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NA-MIC AHM January 12, 2012

Head & neck cancer: Statistics

- Between 4-6% of all new cancer cases
- About 60,000 new cases per year
- 60% present with advanced disease
- 5 year survival: 57%
- Multimodal treatment

Head & neck cancer sites

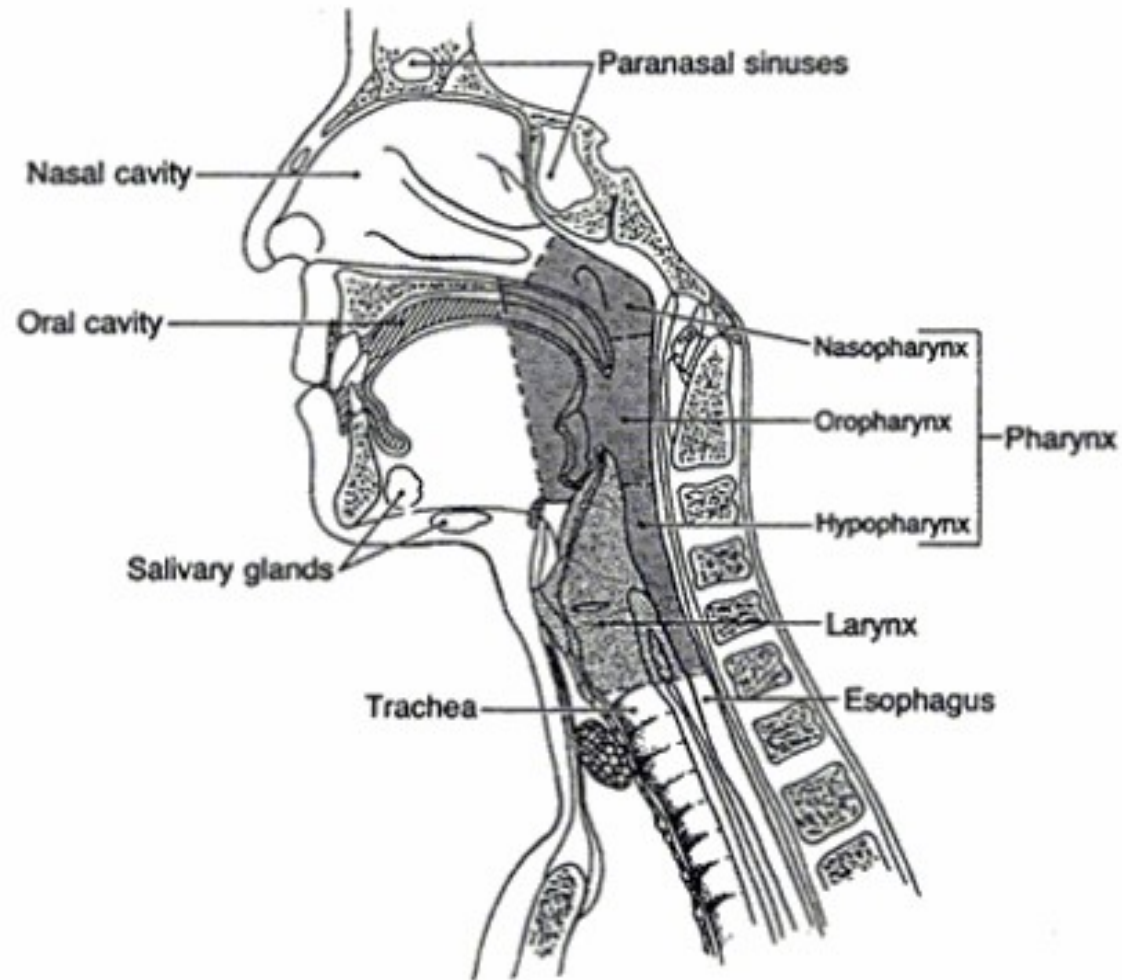
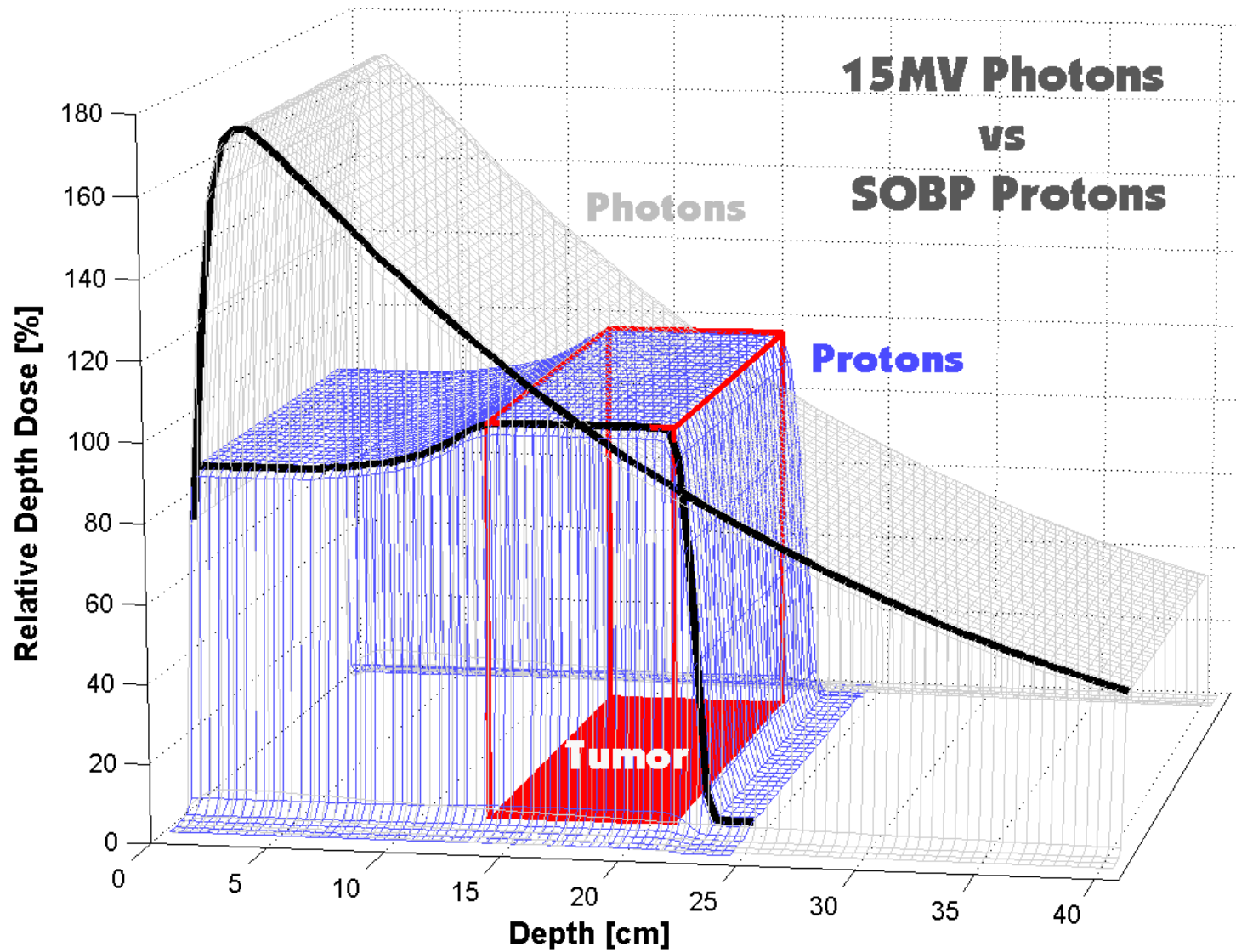
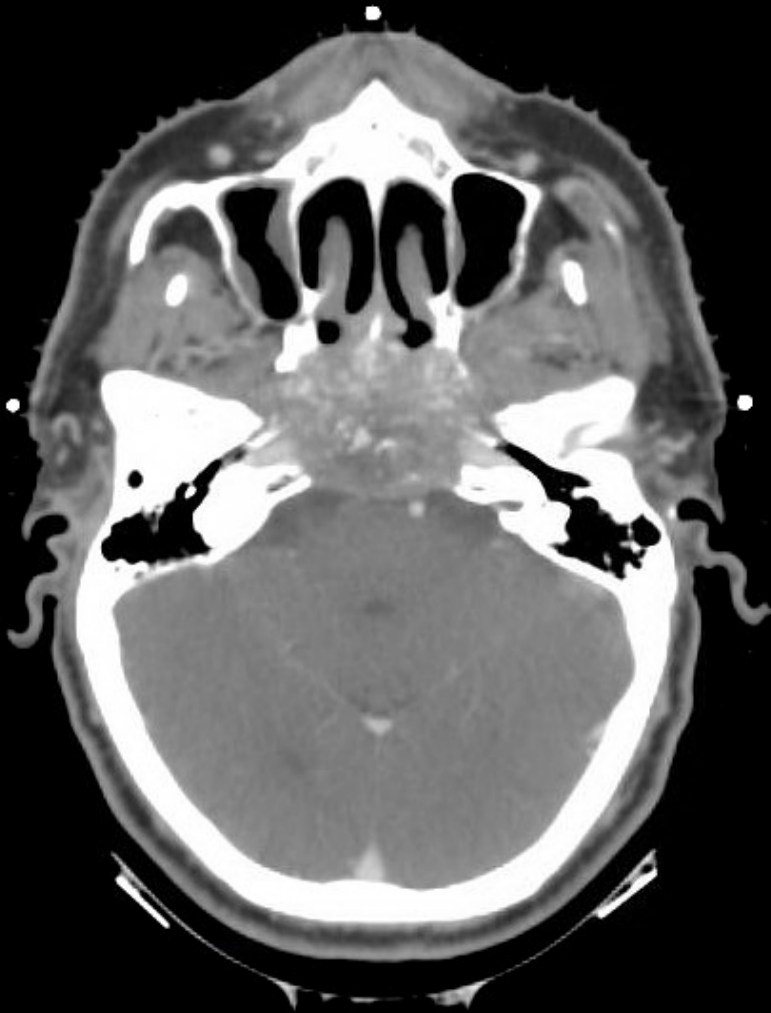


Image credit: American Cancer Society (www.cancer.org)

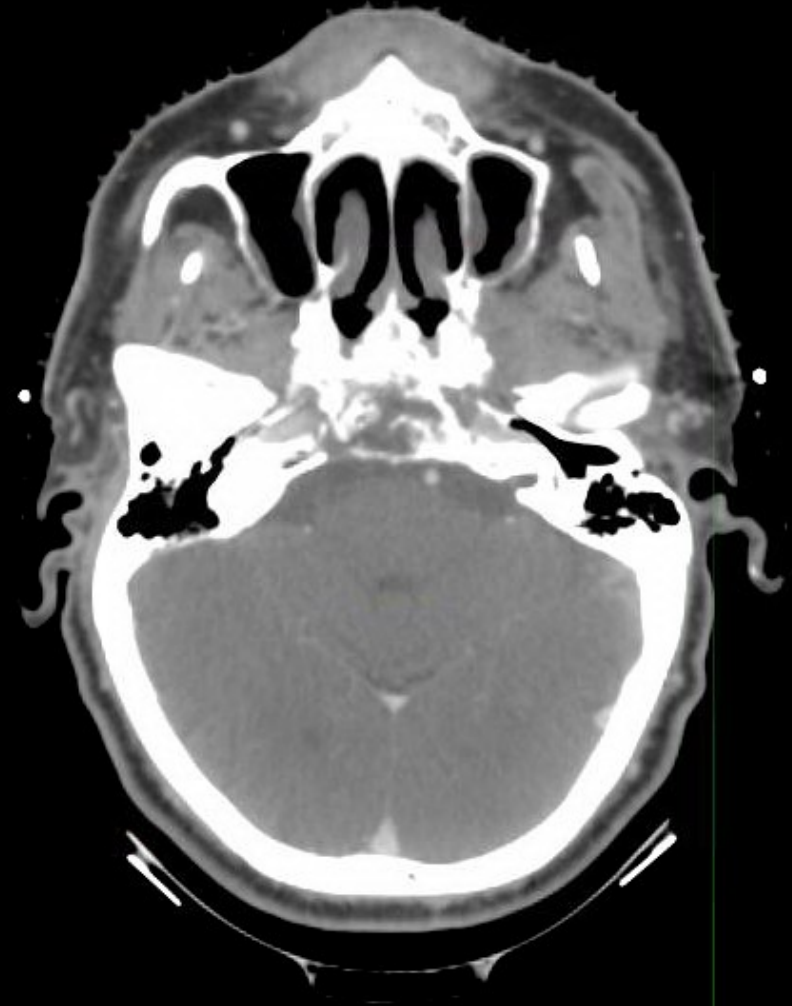
Proton therapy



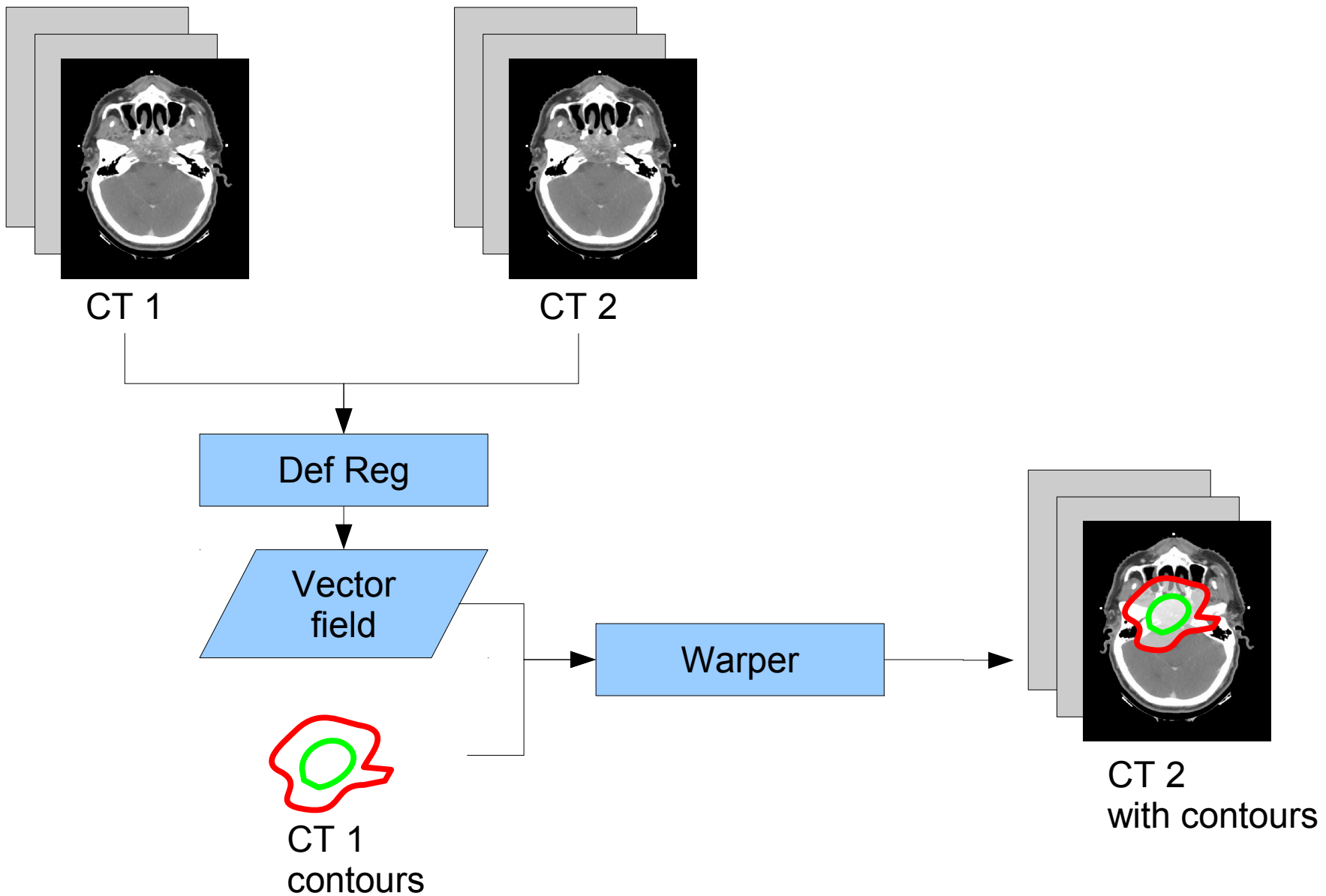
Anatomic change



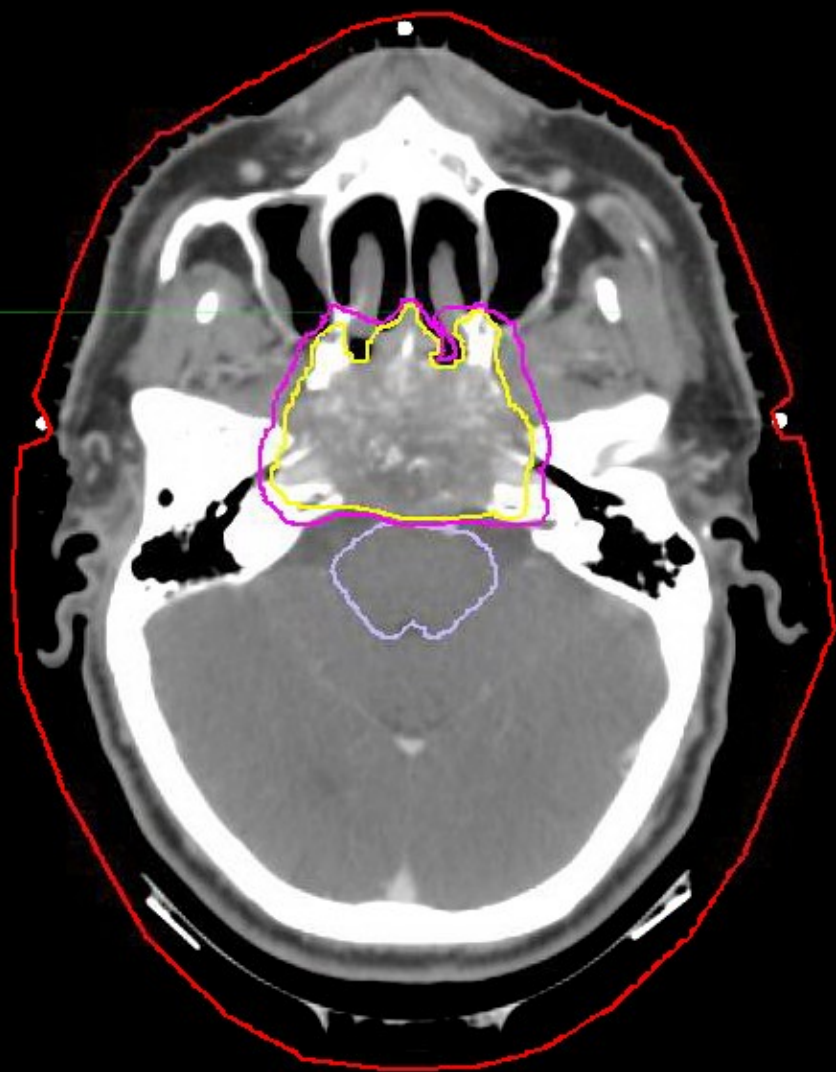
L R



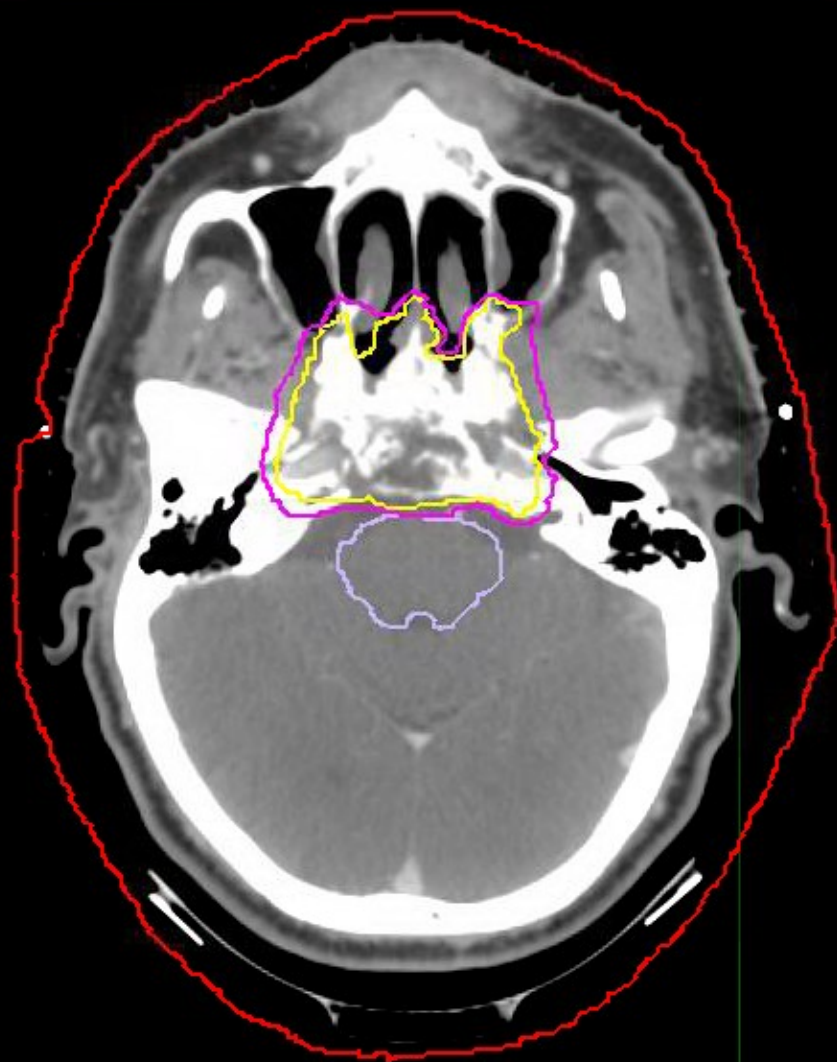
Recontouring



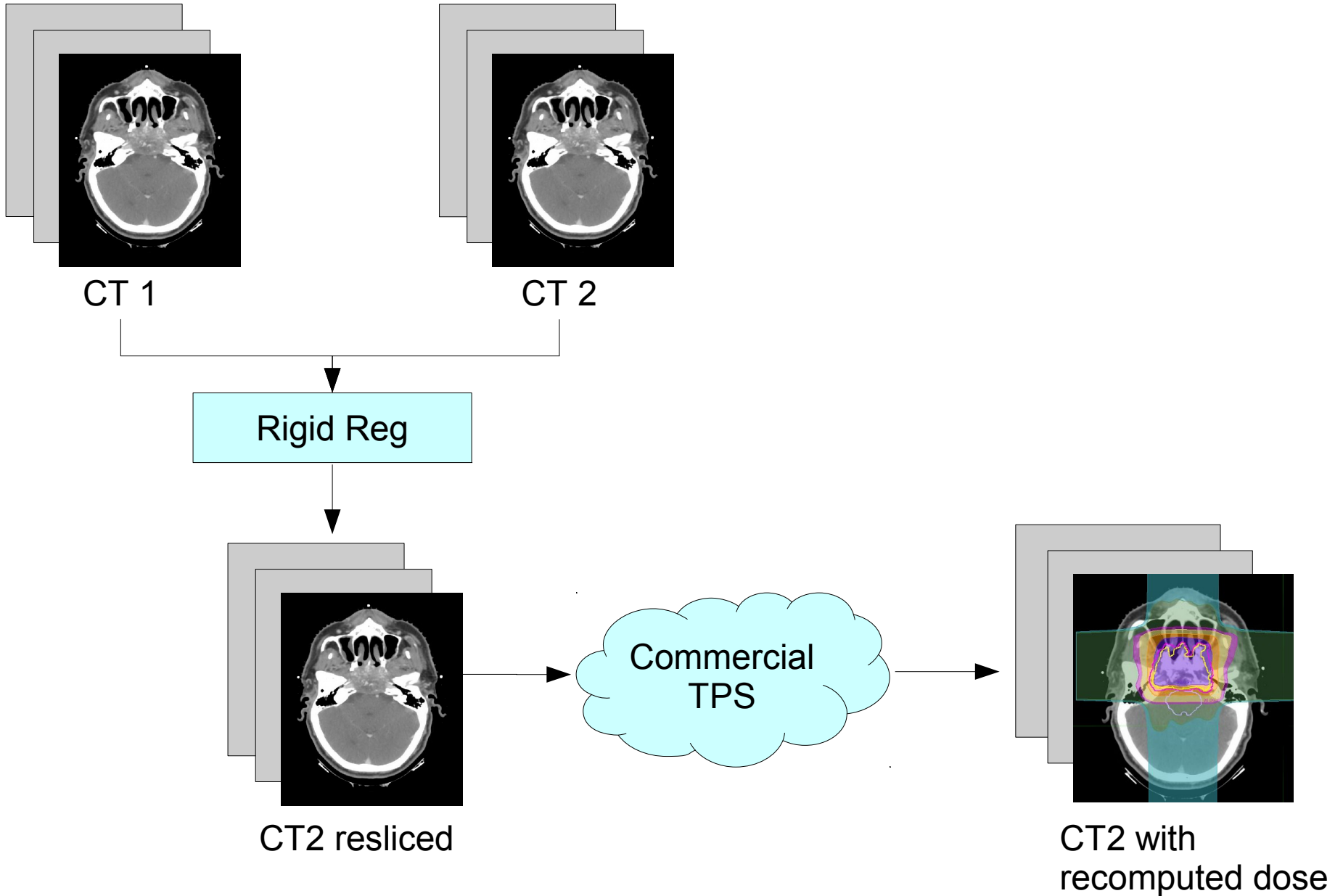
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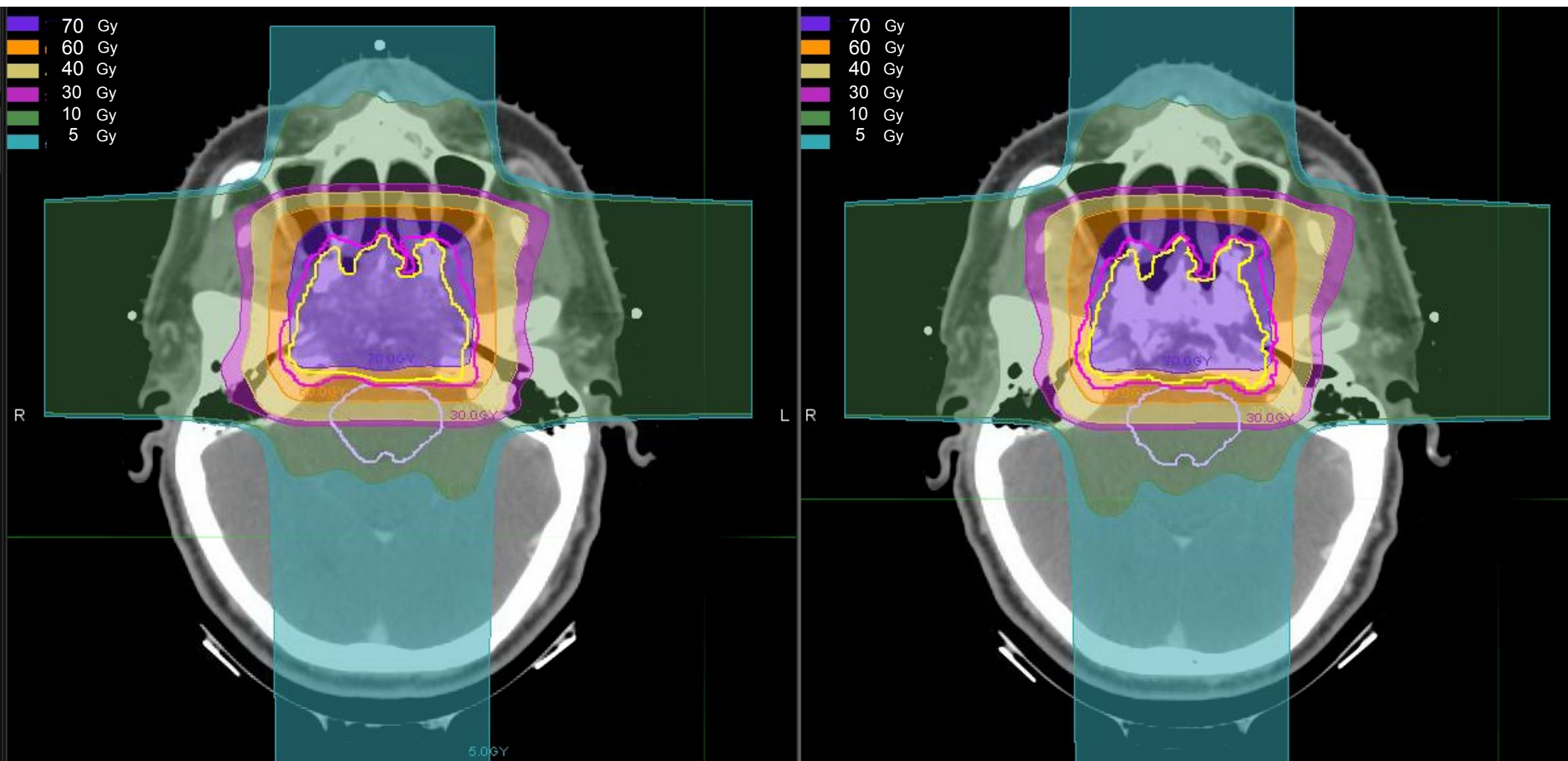
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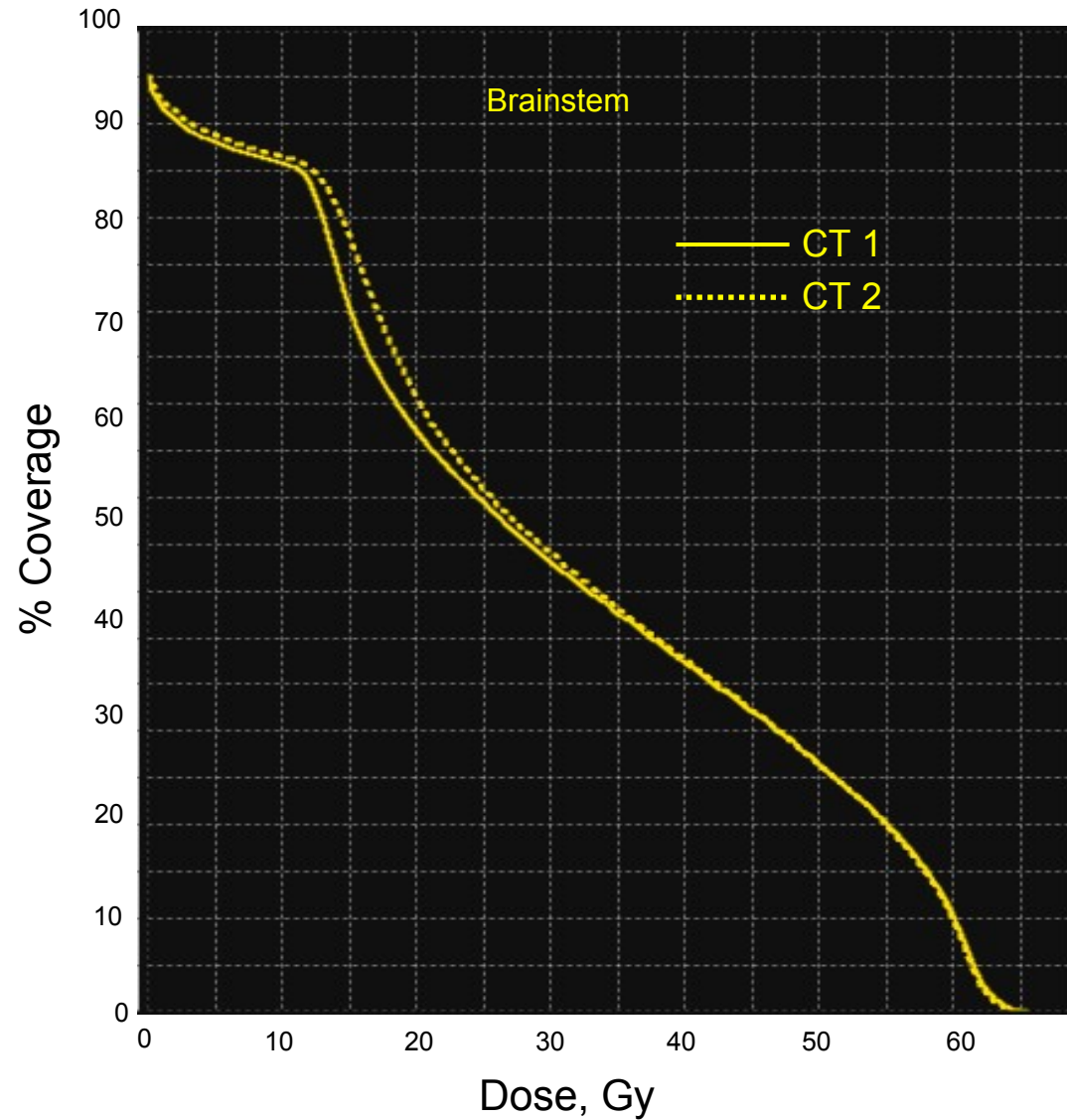
Beam placement



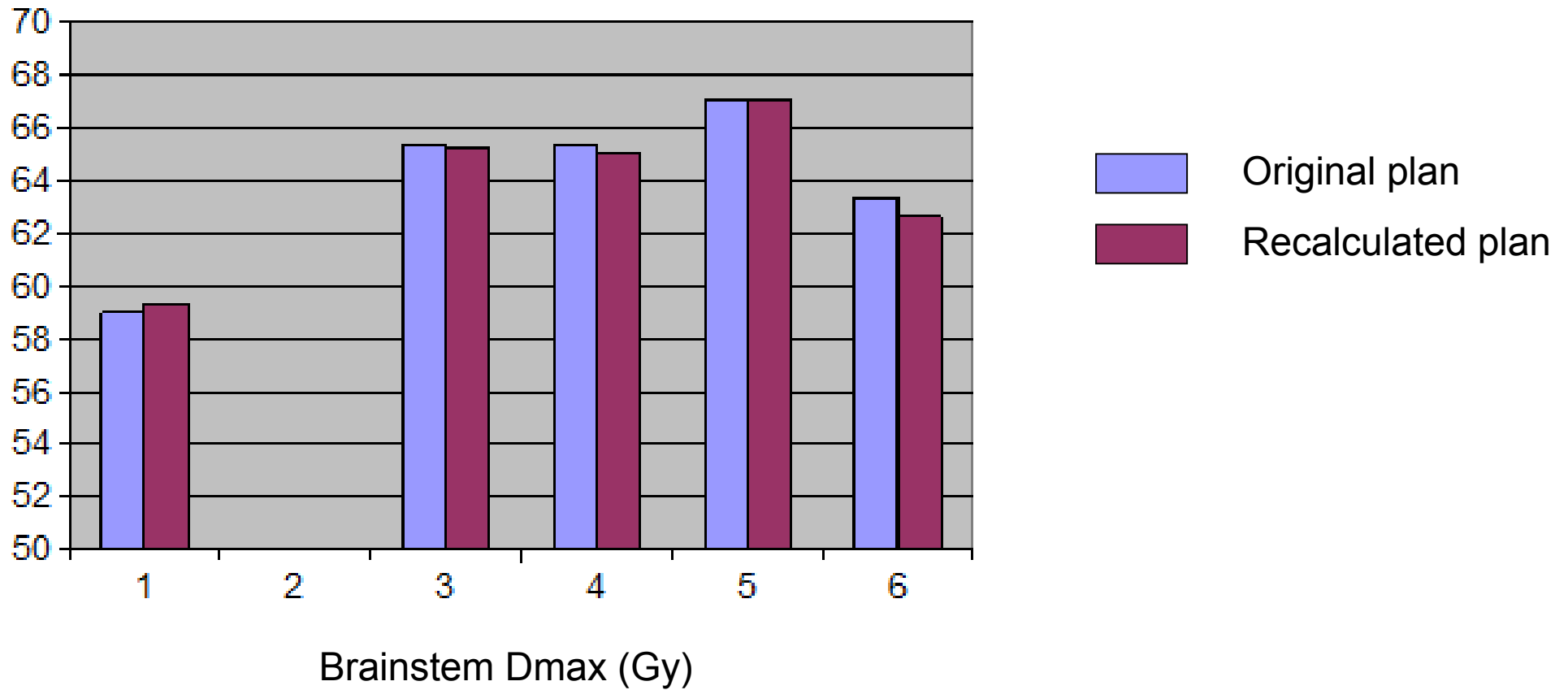
Dose recalculation



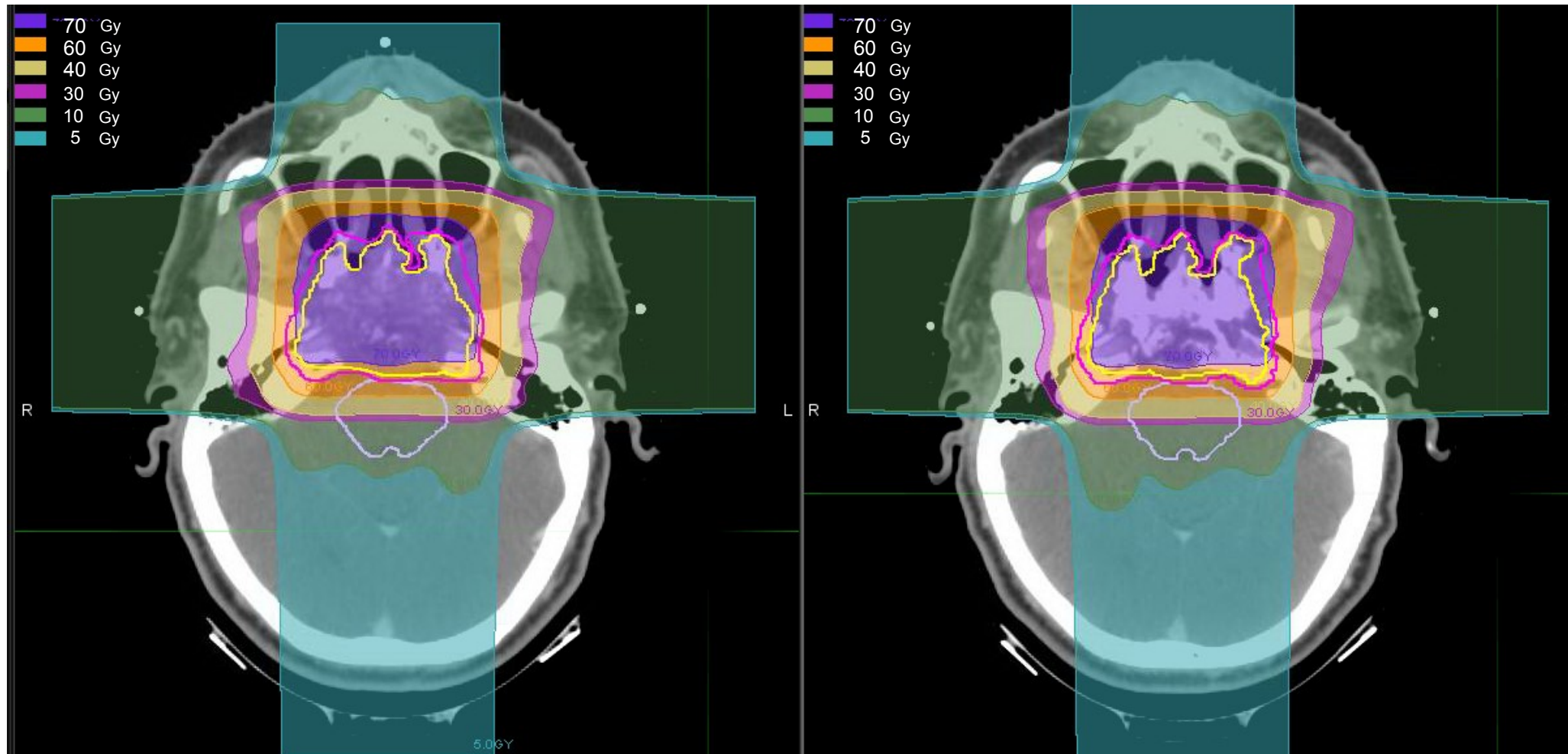
Dose recalculation



Dose recalculation



Dose recalculation

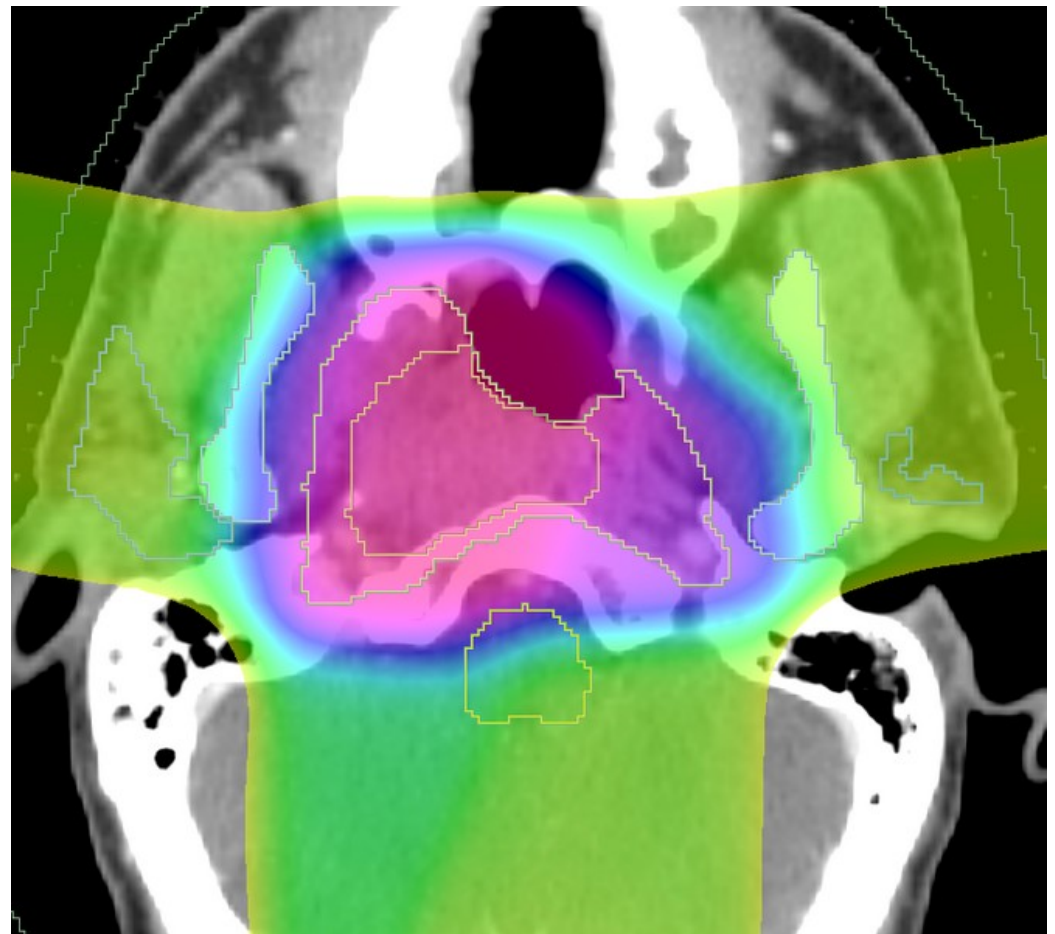


Engineering plan

- Support for adaptive radiotherapy in NA-MIC
- Four goals
 - DICOM-RT interchange
 - Structure and dose warping
 - Interactive deformable registration
 - Plan review

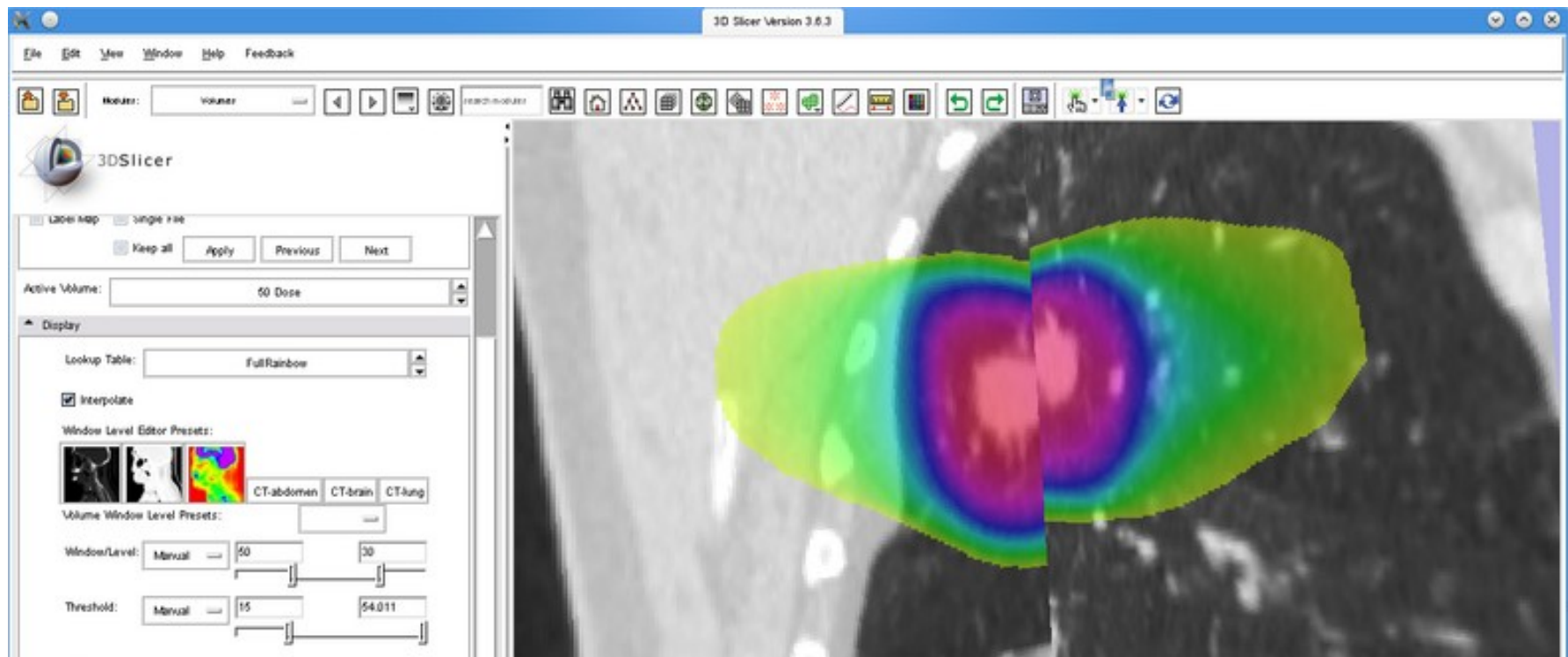
DICOM-RT interchange

- Current Status
 - Two CLP modules
 - NA-MIC tutorial
- Outstanding Issues
 - Points of interest
 - RT Plan support
 - Nested structures
 - Structure names
 - others...



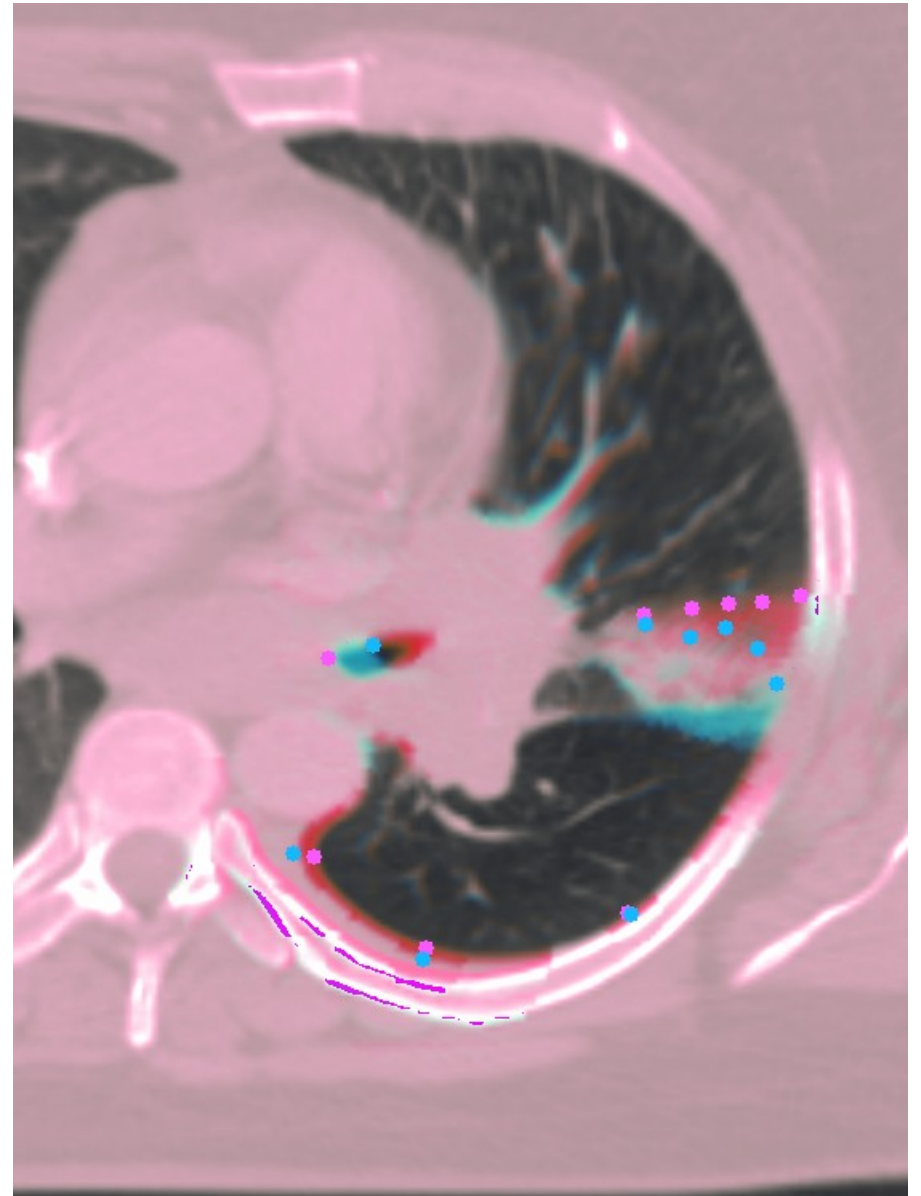
Structure set and dose warping

- Current status
 - Command line module
 - NA-MIC tutorial
 - B-spline or Vector field
 - Compatible with DICOM-RT import/export



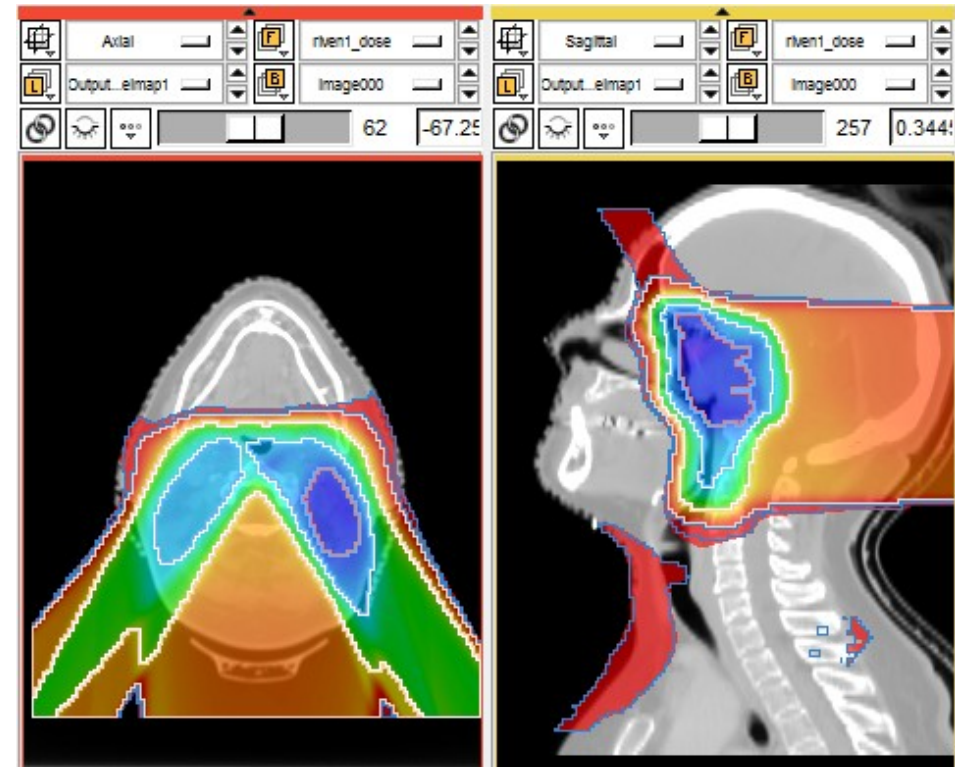
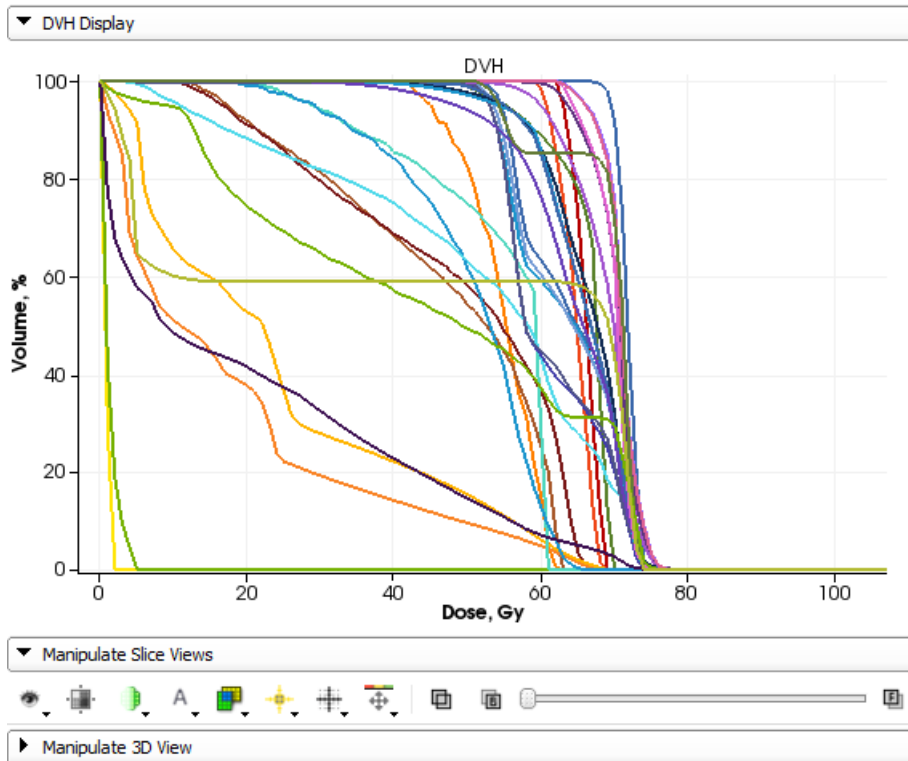
Interactive deformable registration

- Current status
 - Command line module
 - NA-MIC tutorial
 - Three RBF types
 - Regularization
 - Vector field export



Plan review

- Current status (WIP)
 - Dose volume histogram module (Pinter)
 - Dose comparison/isodose module (Shusharina)



An aerial, black and white photograph of a city, likely Cambridge, Massachusetts. In the foreground, a large, light-colored classical building with a prominent portico of four columns is visible. The city is densely packed with buildings, and a wide river flows through the middle ground. In the background, a large, domed building sits atop a hill. The overall scene is captured from a high angle, looking down on the city.

Thank you from the DBP team

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