



# QUANTIFYING THE DIFFERENCE BETWEEN PLANNING AND POST-TREATMENT DOSIMETRY IN YTTRIUM-90 SELECTIVE INTERNAL RADIATION THERAPY

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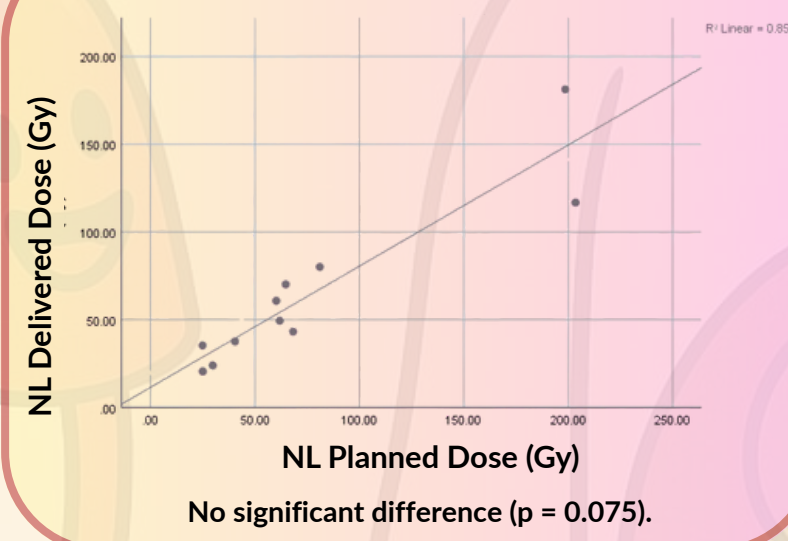
## Objectives

To compare the pre- and post- treatment dosimetry to assess the reliability of initial dose planning using Voxel-Based-Dosimetry in pre-dosimetry and Voxel S Value kernel in post-dosimetry:

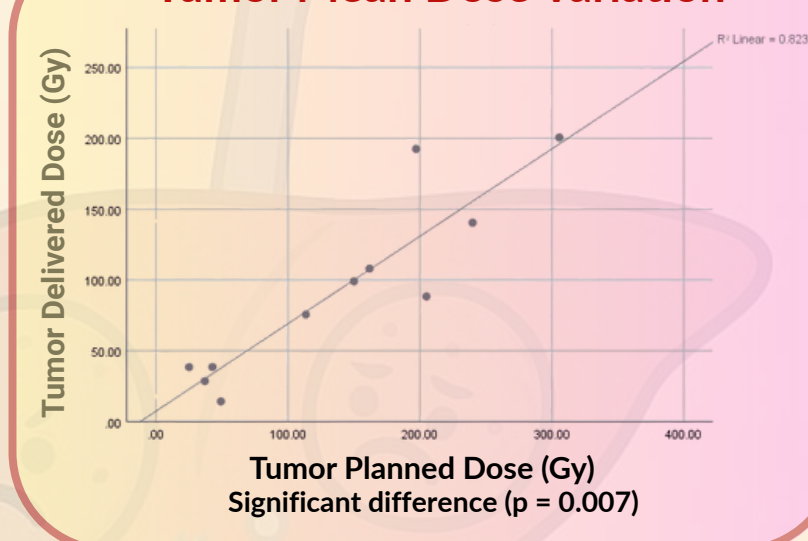
- Absorbed dose to normal liver of pre- vs post-treatment
- Absorbed dose to tumor of pre- vs post treatment

## Results & Discussion

### Normal Liver Mean Dose Variation



### Tumor Mean Dose Variation



## Conclusion

- Dosimetry via Voxel-Based reliably predicts normal liver dose but shows significant variation in tumor dose
- Post-treatment dosimetry is essential to evaluate actual tumor dose delivery; individualized treatment planning

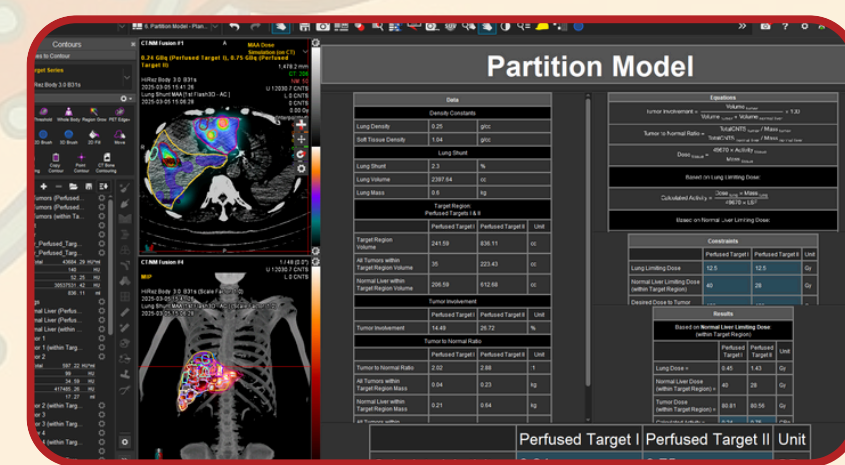
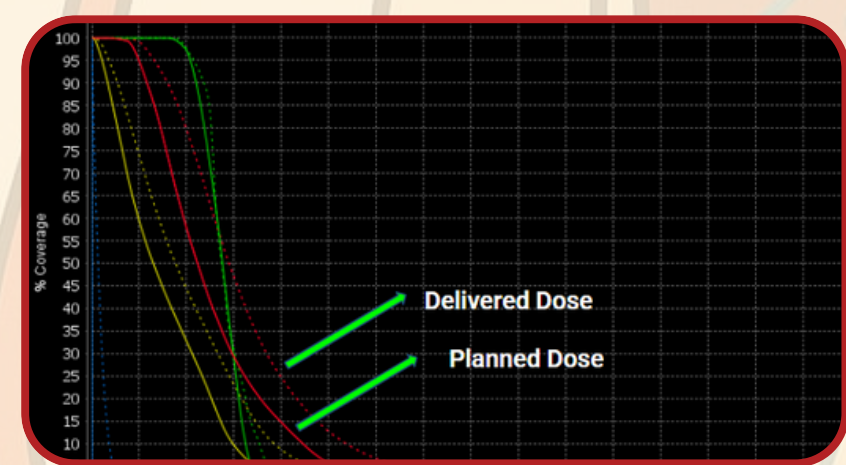
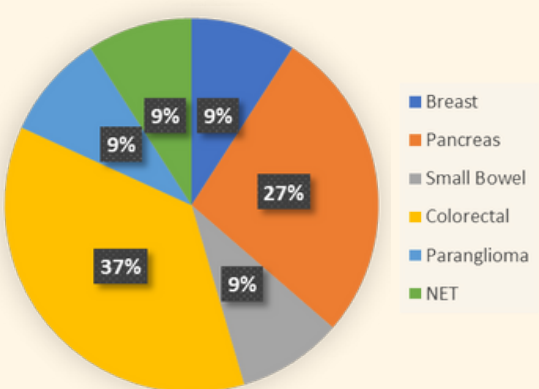
## Limitations

- Catheter position can change between planning and treatment.
- Flow, sphere amount, and tracer properties can vary.
- No standard way to measure leftover Y-90.
- Y-90 gives weak signals, making images less clear.
- Small sample size limits accuracy.
- Different cancer types may affect how dose is spread.

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### Primary Cancer Sample Population



1. Normal liver have uniform blood flow, homogenous distribution of dose
2. Large target volume, less affected by Partial Volume Effect

1. Heterogenous vascularity of tumor affect the distribution of spheres
2. Small volume tumors affected by Partial Volume Effect (dose underestimated)

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