

Regardless of the degree to which positioning is maintained later in treatment, the critical step in the radiation therapy process involves definition of the initial patient model. Many factors influence this process, most notably the sources of differential contrast in images used, the knowledge and experience of the users defining both normal tissue as well as targeted structures, and distracting factors such as organ movement and imaging artifacts. Significant attention has recently focused on the inter-observer variation in target definition, with differences observed that exceed the gains expected through in-room target localization and potentially through gating/tracking. While Radiation Oncology departments are consumers of advanced imaging information, we have yet to find ways to truly optimize imaging to aid in consistent definition of targeted and avoidance tissues.

The objectives of this talk are to:

- Review the process of initial definition of target and avoidance tissues
- Discuss observed variances in target definition
- Describe the impact of motion and advances such as 4DCT in the process
- Suggest potential areas for improving consistency in these processes