

AbstractID: 14433 Title: Quantitative Molecular Imaging Using PET/CT to Assess Response to Therapy

Recent publications have established quantitative measures of tracer uptake used in positron emission tomography (PET) imaging as a predictor of patient outcome including pathologic response, disease-free survival and overall survival in single institution imaging and therapy trials. There is increasing interest in using PET as a biomarker to evaluate response to therapy and possibly as an endpoint for cancer therapeutic response in multi-center trials. However, several sources of variance and inherent in quantifying PET tracer uptake should be understood and determined in order to ascertain the significance of differences in serial measurements and aid estimation of expected variances during clinical trial design.

In this presentation we will review the major sources of bias and variability from the patient, imaging protocol, data processing, and image analysis. We will also briefly discuss artifacts from PET and PET/CT imaging.

The presentation will conclude with a review of efforts to address complexities that arise from combining quantitative PET/CT data from multiple patients at multiple sites. Research partially supported by NIH grant U01-CA148131 and NCI Contract 24XS036-004 (RIDER).