AbstractID: 7499 Title: Assessment of Mesothelioma Tumor Response: Correlation of Tumor Thickness and Tumor Area

PURPOSE: The quantification of pleural mesothelioma tumor extent is required to evaluate the efficacy of clinical trials. The manual acquisition of up to three linear tumor thickness measurements on each of three sections across a series of computed tomography (CT) scans is the current standard for tumor response assessment. The purpose of this study was to determine the correlation of response based on linear tumor thickness measurements and response based on tumor area.

METHOD/MATERIALS: Two CT scans from each of 22 mesothelioma patients were collected. Using a computer interface, a radiologist acquired linear tumor thickness measurements on three sections of each patient's baseline scan and on the corresponding sections of each patient's follow-up scan in accordance with our clinical protocol. These linear measurements across 132 CT sections (3 sections per scan, 2 scans per patient, 22 patients) provided the standard for comparison of area measurements. Another radiologist used a computer interface to delineate the tumor border in the same 132 CT sections to obtain tumor area and the changes in tumor area between the baseline and follow-up scans of each patient.

RESULTS: A comparison of the sum of tumor thickness measurements and tumor area yielded a correlation coefficient of 0.59 across the 132 sections. With regard to tumor response, a comparison of change in the sum of tumor thickness measurements and change in the total tumor area between the baseline and follow-up scans of the 22 patients yielded a correlation coefficient of 0.83. This relatively high correlation, however, does not capture the extent of variability in the data. For example, among patients with RECIST-based "stable disease," change in tumor area ranged from a decrease of 58% to an increase of 89%.

CONCLUSIONS: Although measurements of tumor thickness and tumor area demonstrated moderate correlation, variability in this association requires further investigation.