AbstractID: 8717 Title: Accurate determination of dynamic perfusion CT point doses in a Rando phantom: the importance of the proper orientation and location of the TLD chips in the axial segments.

Purpose: As the patient table does not move during a cerebral perfusion CT study, the CTDI is not a true representation of dose to specific points in the scan volume and point dose methods are more appropriate. Our goal was to investigate the dose profile across both the width and length of the anthropomorphic phantom slices and to investigate the dependency of location and direction of the TLD chips. **Methods and Materials:** A total of 78 LiF TLDs measuring 3x3x0.8 mm were placed in the middle holes in the anterior, posterior and middle of the 2nd and 3rd slices of the Alderson-Rando head phantom. They were each filled with 10 TLDs placed parallel to the phantom slices with a 1.3 mm gap between them. Additionally, TLDs were loaded in two orientations in the location of the orbits in the 3rd slice: parallel and perpendicular to the phantom slice. **Results:** There was up to a 61% difference in dose readings from the TLDs placed at the top and those placed at the bottom of the phantom's 25 mm slice containing the orbits. Rando slices 2 and 3 which were exposed during the perfusion study exhibited variations of .24%-533% between the anterior and posterior parts. The dose gradients for both slices will be presented. In addition, there was a statistically significant difference between how the TLDs were oriented in the phantom holes. Those placed in an axial direction exhibited higher doses than those placed in a sagittal or coronal direction. **Conclusions:** There is considerable difference in dose between the anterior and posterior of each phantom slice examined as well as between the top and bottom location. Reports of perfusion or interventional CT dose studies using TLDs in anthropomorphic phantoms should clearly specify the location and orientation of the TLD chips.