

Monday, March 28th at noon, HX303
Department of Radiology Conference Room

**Protocol Optimization in Computed Tomography:
Improving Image Quality and Reducing Patient Radiation Dose --
Misconceptions and Recommendations**

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In the last 20 years Computed Tomography imaging has made enormous strides in image acquisition and reconstruction: single slice to multislice detectors, step and shoot to helical/ spiral data acquisition, manual to automatic exposure control, and iterative reconstruction techniques to reduce patient dose. These advances have greatly expanded the applications of CT in diagnostic medicine and provided the opportunities for dramatically improved image quality. However they have also increased the possibilities of substantially increased radiation dose to patients. In some ways, CT scanners have become so complicated that they are like state of the art race cars looking for good race car drivers to take full advantage of their potential. Manufacturers of the CT scanners have been at a disadvantage in providing the education needed education to their customers, partly because of a lack of experienced clinical medical physicists within their organizations. Production of CT protocols optimized for image quality and patient dose require a serious team effort between radiologists, technologists, and clinical medical physicists.

In this talk, the basics of dosimetry and image quality in CT imaging will be reviewed. Then some important basic guidelines for improving image quality and reducing patient dose will be discussed. Additionally some of the erroneous recommendations and other pitfalls that may be encountered in CT imaging will be discussed.