CT has been used as a tool for determining blood perfusion to a diverse group of organ systems including the kidney, the lungs, the myocardium and the brain. Improvements in CT scanner design have improved and expanded capabilities for perfusion assessment, for example, faster scan times have enabled shorter sample duration and increased the number of samples that can be acquired per unit time. Greater x-ray beam width in the Z-axis and more rapid and controlled table movement have increased the coverage area. Gating techniques have reduced patient motion problems in some organs. However, perfusion studies remain challenging in many organs and in many patients. Artifacts, including beam hardening and streaking, and inherent limitations, including noise and partial volume effects, can limit the accuracy of measurements.

In this talk, methods for CT perfusion measurements will be reviewed. Developments in CT that have improved perfusion measurements will be discussed and sources of error will be described.

Learning Objectives:
1. Understand the principles of perfusion measurement with CT
2. Review the sources for error in perfusion measurements with CT