Calculating organ dose from fluoroscopy procedures has been of interest to radiology and cardiology communities for many years. Published work in this area includes those that employed Monte Carlo methods to calculate organ doses from fluoroscopy procedures in phantom and those that extrapolated the organ doses from skin dose or exposure measurements.

Another tool which could potentially be used to compute organ doses from fluoroscopy is a treatment planning system routinely used for creating radiation therapy treatment plans. Although a treatment planning system is designed to compute dose distribution in the megavoltage energy range, its use in the diagnostic energy range is a possibility, at least for one commercial system. This requires knowledge of certain fluoroscopic beam data which can be obtained by measurements or by relying on available published data, and a CT scan of the patient. This tool, once validated, can provide detailed dose distribution within any organ exposed to radiation.

This lecture provides details of the use of a radiation therapy treatment planning system for dose calculation in diagnostic energies with examples of dose distribution from fluoroscopic procedures in adults and children.

Learning Objectives:

1. Learn about the methods of organ dose computation from fluoroscopy
2. Learn the details of using a treatment planning system for fluoroscopic dose calculation
3. Learn the magnitude of typical organ doses encountered in fluoroscopy