Stereotactic Body Radiation Therapy (SBRT) has emerged as an important form of cancer therapy with broad application across a spectrum of tumor types in the primary and metastatic settings. The capability of safely administering a very high dose of therapeutic radiation to discrete extracranial tumor sites has raised new questions about the radiobiology of high dose per fraction treatment. Accumulating clinical experiences are yielding new insights into practical aspects of tumor and normal tissue responses to high dose per fraction treatment.

The current practice of SBRT has evolved to some extent from knowledge gained from principles learned from the practice of cranial stereotactic radiosurgery (SRS), and this presentation will begin with discussion of the use of SBRT for sites where the extracranial nervous system (spinal cord, cauda equina) is the major dose-limiting structure. Some recent preclinical studies of spinal cord tolerance to high dose therapy will be presented, as well as the results of recent clinical trials involving spine SBRT from various centers. Next, the discussion will focus on other major extracranial sites where SBRT has been applied, with emphasis on SBRT for tumors in the liver and lung in particular, again with inclusion of theoretical and pre-clinical studies as well as reported clinical outcomes.

Educational Objectives:

1. Review and understand the major issues related to the use SBRT for tumors in the spine or paraspinous region, including key clinical observations

2. Review and understand the common clinically observed normal tissue responses to SBRT and the inferences to be drawn regarding the practical radiobiology of high dose per fraction therapy

3. Explore and highlight the major issues related to clinical application of SBRT for tumors in the lung and liver, including key clinical observations