

## AbstractID: 14513 Title: Epidemiologic Evidence of Late Effects from Radiation Therapy

Owing to advances in diagnostic imaging, chemotherapy, and radiation therapy (RT), the survival rate for many types of cancer has greatly improved in recent years. Considering this increased survival rate, many of these patients will face late complications in the years following treatment. In particular, long-term survivors are at a substantially increased risk for radiation related late effects such as second cancers and cardiovascular disease. Research in late effects includes population based epidemiological studies that quantify the relationship between excess risk and radiation dose. An additional aspect of late effects research aims to reduce dose to radiosensitive organs and tissues associated with excess risk for late effects, while maintaining equivalent or improved local control. The quantification of radiation-induced late effects and the use of modern delivery techniques to reduce such effects is an important and growing area of research in medical physics, as evidenced by a recent surge in publications.

The objective of this symposium is to provide an overview of related late effects following diagnostic imaging and radiation therapy. Within the context of the symposium objectives, the first presentation in the session will provide context for the symposium by providing an overview of National Cancer Institute and European Cancer Registries epidemiological studies for radiation related second cancers, cardiovascular disease, and other late effects. Specifically, the presentation will focus on epidemiological data and dose response relationships for second cancers and will discuss the need for additional studies to better establish dose response relationships for cardiovascular disease for various cardiac toxicity endpoints.

### Learning Objectives:

1. Understand sources of epidemiological data for radiation related late effects.
2. Understand limitations of epidemiological data for radiation related late effects.
3. Understand dose response relationships for specific late effects.