

Health Risks Associated with Low Dose Diagnostic or Therapeutic Radiation Exposures

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Abstract:

The health risks to humans associated with exposure to low doses of ionizing radiation have been extrapolated from effects observed at high doses, dose rates, and mixed radiation qualities using a linear no threshold model. Based on this approach, it has been argued that human exposure to low doses of diagnostics X-rays and gamma-rays increase an individual's risk of developing cancer throughout their life-time. Also, repeated medical diagnostic procedures involving low dose exposures will have an additive effect and consequently further increase health risk. The specific aim of this seminar will be to address the relative risk associated with diagnostic X-rays from CT scans and gamma-rays from positron emission tomography (PET) scans. Objectives of the talk will include: 1) Defining low dose exposures at a cellular level and relate that to diagnostic or therapeutic exposures, 2) Describing modern tools in molecular cytogenetics to estimate radiation exposure and assess radiation risk, 3) Identifying the different cellular mechanisms that influence radiation risk at high and low dose exposures and relate that to individual radiation risk.