Supported by Research Institute for Radiation Biology and Medicine (RIRBM)

HIROSHIMA UNIVERSITY

The 210th RIRBM Seminar

The 14th Phoenix Leader Education Program Seminar

Review of dosimetry and risk model analysis on the atomic bomb survivors

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Mr. Harry M.Cullings, Ph.D.

(Head of Statistics Department, Radiation Effects Research Foundation

16:00– 17:00 Thursday 19 April, 2018

RIRBM Seminar Room

(3F, RIRBM Building, Kasumi Campus, Hiroshima University)

Though more than 70 years have passed, efforts to reduce the uncertainties of the estimated doses and related health risks of the atomic bomb survivors are still going on by incorporating new data and improving dose estimates and statistical models for risk regression. In addition, follow-up data on the cohort continues to accumulate, with about 37% of survivors still alive at the end of the last available follow-up, and currently-accumulating data relating to the health experience in late life at ages prone to cancer and cardiovascular disease, for survivors exposed at young ages. The current dosimetry system published in 2002, DS02, was recently updated with greatly improved terrain data to calculate the shielding effects of terrain (landform), as well as improved location data obtained from original survey records by new methods involving collation and selection of the best data from multiple records, use of a geographical information system to correct inaccuracies in old maps, etc. Currently, a binational working group is evaluating the DS86/DS02 calculation of organ doses, i.e., self-shielding of various organs by overlying tissues in the survivor's body, using new computational phantoms, including a full pediatric series of six ages vs. the three ages in DS86/02, all 56 organs and tissues in contemporary ICRP phantoms instead of the 15 organs in DS86/02, and a pregnant-woman-and-fetus phantom being developed by outside experts instead of the current practice of using the dose to the uterus of a non-pregnant woman as a crude surrogate for doses of survivors who were exposed in utero. New models for dose-response continue to be explored, with a large recent paper on incidence of all solid cancer that revealed a sex-specific curvature in the dose-response, and a series of site-specific cancer incidence papers currently in progress.

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IIS 5pts (for subject students (3rd to 5th students of Phoenix Leader Education Program))