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HEALTH SCIENCES CENTRE

BENEFIT FROM MAMMOGRAPHIC SCREENING MUCH GREATER THAN RADIATION RISK
Study is the first to compare benefit and risk to women over a lifetime of regular screening for radiation doses typical of modern mammography.

November 17, 2010 (Toronto, ON) For the average woman exposed to a typical radiation dose in breast mammography during a lifetime of regular screening, odds are about 50 times greater of a life saved through earlier detection through screening, over a life lost due to radiation-induced breast cancer, says a Sunnybrook-led study published online in the journal, Radiology.

"Women may ask themselves, 'Is my regular mammogram doing me more harm than good?' The goal of our study was to provide a relevant comparison of lives saved due to earlier detection and the risks of radiation-induced cancer from the exposure in mammography," says Dr. Martin Yaffe, lead investigator, and a senior scientist in imaging research at Sunnybrook Research Institute.

"We also wanted to offer an even more relevant comparison by looking at the number of woman-years of life potentially gained due to the cumulative benefits of routine mammograms," says Dr. Yaffe, who is also a professor in the departments of Medical Biophysics and Medical Imaging at the University of Toronto. "This takes into account the importance of preventing a breast cancer death in a middle-aged woman who may have active family responsibilities or a productive member of the workforce."

The researchers used an "absolute risk" model rather than the relative risk model used in some previous studies and applied the model to a hypothetical group of 100,000 women exposed over a lifetime series of mammograms with a typical radiation dose each of 3.7 millgrays (mGy) to both breasts, with the standard two-view per breast examination. Risk models were developed by other researchers who studied groups of women historically exposed to radiation such as Japanese atomic bomb survivors. When applied to other populations such as women receiving mammography, the absolute risk model is considered as being more stable than the relative risk.

The hypothetical group of 100,000 women each had a lifetime of regular breast mammography screening, defined as in both breasts during annual screening from ages 40 to 55 years and biennially after to the age of 74.

Study findings indicate for this group, 497 lives would be saved due to earlier detection, 46.8 times greater than the expected mortality of 11 deaths due to radiation-induced breast cancer. The number of woman-years of lives saved of 10,670 compared to the number of woman-years of lives lost of 136.38, resulting in 78.2 greater benefit than risk.

The researchers defined woman-years of life as the number of years potentially gained or lost compared to a woman's expected years of life at a particular age.

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