DEPARTMENT OF COMMUNITY AND PREVENTIVE MEDICINE

RESEARCH PROPOSAL

Physician Awareness of Radiation Attributable Cancer risk from Diagnostic CT Scans

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Many diagnostic imaging technologies involve exposure to ionizing radiation from radioactive materials or X-rays. The primary risk associated with ionizing radiation is cancer. It is estimated that the per capita radiation dose from medical exposures in the United States has increased from about 0.67mSv/year in 1980 to more than 3mSv/year in 2008. CT (computerized tomography) scans) scans are largely responsible for this dramatic increase. From 1980 to 2005, there was a 20-fold increase in CT exams (from 3 million to 60 million). This is out of proportion to the population growth; 50% growth in the US population is accompanied by a 600% increase in medical exposure to radiation. This is alarming and a public health concern. It is estimated that approximately 1 in 1000 individuals will develop cancer from an exposure to 10 mSv which is equivalent to a radiation dose received from a commonly performed CT scan of the abdomen and pelvis. There is now general acceptance that approximately 30% of all CT scans could be avoided altogether or replaced by a different diagnostic tool. Among probable factors that contribute to over utilization of CT scans include an inadequate knowledge of the referring providers of the amount of radiation exposure from commonly performed diagnostic CT scans and unawareness of the potential risk of inducing a fatal cancer from each of the commonly performed diagnostic imaging studies. Available published literature has focused on the physician knowledge on the amount of radiation exposure associated with commonly performed CT scans and chest x-rays. There is, however, paucity of data regarding the medical providers' knowledge of the magnitude of life time radiation attributable cancer risk (LAR) from commonly performed diagnostic imaging utilizing ionizing radiation.

The purpose of this study is to investigate providers' knowledge of the LAR from commonly performed diagnostic CT scans and explore additional factors influencing providers' utilization of CT scans.

This project will address the following Specific Aims**:** 1) Determine ED providers' awareness of radiation attributable cancer risks from commonly performed diagnostic CT scans. 2) Explore referring providers' attitude toward risk benefit analysis prior to ordering a CT scan 3) Identify any additional factors that may influence providers' selection of a CT scan to diagnose and manage their patients.

The study will achieve these specific aims by deploying an original self-administered anonymous questionnaire to the ED providers at the University of Rochester Medical Center. The data will be collected and analyzed using contingency tables to evaluate counts and proportions. Descriptive Statistics including frequency analysis will be used to evaluate provider awareness of LAR by analyzing their knowledge of LAR. The Chi square ($\chi 2$) or the Fisher's exact tests will be used to evaluate the associations between the provider's awareness of LAR and attitudes toward risk/benefit analysis and the factors influencing the ordering behavior for three different clinical scenarios. A *P* value of .05 or less will be considered statistically significant.

Committee Chair:
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Monday, March 1, 2010
12:00PM – 12:30 PM
Helen Wood Hall, Room 4W301

EVERYONE IS WELCOME