

Report highlights understudied, unwelcome side of cancer treatment

March 6 2012

The number of cancer survivors in the United States has tripled since 1971 and yet gains in survival have come at the price of second malignancies and cardiovascular disease, according to a long-awaited report by a national scientific committee chaired by Lois B. Travis, M.D., Sc.D., of the University of Rochester Medical Center.

The [Journal of the National Cancer Institute](#) is publishing a detailed summary online March 6, 2012, and will publish the summary in hard copy on March 13. The expert [scientific committee](#), which was convened by the National Council on [Radiation Protection](#) and Measurements (NCRP), deliberated intensely for five years as they considered some of the most important [repercussions](#) of radiation treatments and made several important conclusions and recommendations.

Their comprehensive, 425-page report will be made available in the spring. Before reports are approved and published by the NCRP, they undergo extensive peer review by an outside panel of experts, who provide substantial and critical comments that are addressed by the scientific committee. The revised report is then reviewed by [all members of the NCRP](#) before final revision and publication.

"For many survivors the successes of treatment have been offset by the late effects of [cancer](#) and its therapy," said Travis, a professor in the Department of [Radiation Oncology](#) and director of the Rubin Center for [Cancer Survivorship](#) at the James P. Wilmot Cancer Center at URMC.

"Although many complex factors influence the risk of second malignancies and other health issues after cancer treatment – including lifestyle choices such as diet, exercise, alcohol and tobacco use, as well as genetics, age, and immune system function -- it is vital that we develop the best possible long-term risk estimates and prediction models, and that we establish research priorities and identify concrete ways to prevent serious additional health problems among [cancer survivors](#)."

The committee's focus was on the consequences of radiation therapy, which is a cornerstone of [cancer treatment](#) and used in approximately 50 percent of all cancer cases. (Chemotherapy is addressed to a lesser degree, when it is used in combination with radiation.)

Louis S. Constine, M.D., professor and vice-chair of the URM C Department of Radiation Oncology, was a member of the NCRP scientific committee and echoed Travis' sentiments. He added that although radiation can be a life-saving therapy, it is critical that physicians and patients be alert to long-term side effects and plan appropriately for follow-up. As clinical director of the Wilmot Cancer Center's survivorship division, he is working with others to develop a program that will provide patients with a comprehensive plan for their post-cancer care.

Among the NCRP's key findings:

- Newer radiotherapy treatment methods and techniques result in a different distribution of the radiation to organs and tissue than older treatment regimens. However, the current models used to assess risk of second malignancies and [cardiovascular disease](#) are often based on older treatment regimens. Newer risk-prediction models should be based on the dose absorbed by the organ and the type of radiation prescribed.

- Once a patient develops a second primary cancer, few studies have gone on to describe survival after the diagnosis of the second malignancies.
- Establishing a research infrastructure that can be used by the many disciplines involved in the care of survivors is important.
- Specifically, follow-up studies of cancer survivors should evaluate populations treated with modern radiotherapy methods such as tomotherapy, cyber knife, etc., and at reduced field sizes and lower dosages.
- More studies are needed to analyze all aspects of the relationship between radiation dose and risk of second malignancies and heart disease.
- Long-term, large-scale studies are needed to follow cancer survivors of all ages, but particularly those who are adolescents and young adults, and characterize their risks as they age.
- Studies are needed to understand the molecular and genetic underpinnings of radiotherapy-associated late health effects, with a particular focus on patients who develop two or more primary cancers after radiation treatment.
- Modern [radiation](#) techniques and lower doses results in a much smaller risk of cardiovascular problems for patients. However, an important non-cancer cause of death for some survivors is radiation-related heart disease, including pericardial disease, coronary artery disease, valvular dysfunction, conduction abnormalities, and stroke.

More research and analysis is needed to predict the high complication rates in certain populations of cancer patients.

Provided by University of Rochester Medical Center

Citation: Report highlights understudied, unwelcome side of cancer treatment (2012, March 6)

retrieved 14 May 2024 from <https://medicalxpress.com/news/2012-03-highlights-understudied-unwelcome-side-cancer.html>

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