

Recipients of organ transplants at increased risk for broad range of cancers

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Patients who have received a solid organ transplant, such as kidney, liver, heart or lung, have an overall cancer risk that is double that of the general population, with an increased risk for many different types of malignancies, according to a study in the November 2 issue of *JAMA*.

"In 2010, a total of 28,664 transplants were performed in the United States, including 16,899 kidney transplants, 6,291 [liver transplants](#), 2,333 [heart transplants](#), and 1,770 [lung transplants](#)," according to background information in the article. Solid organ transplant recipients have an increased cancer risk due to immunosuppression and oncogenic [viral infections](#). "A better understanding of cancer risk in transplant recipients would help clarify the role of the immune system, infections, and other factors in the development of [malignancy](#), and could identify opportunities to improve transplant safety."

Eric A. Engels, M.D., M.P.H., of the National Cancer Institute, Rockville, Md., and colleagues conducted a study to examine the overall pattern of cancer following solid organ transplantation. The researchers used linked data on solid [organ transplant recipients](#) from the U.S. Scientific Registry of Transplant Recipients (1987-2008) and 13 state and regional cancer registries to determine relative and absolute cancer risk in transplant recipients compared with the general population.

The data included 175,732 transplants (39.7 percent of the U.S. total during 1987-2008). Most of the included recipients were male (60.9 percent), and the median (midpoint) age at transplant was 47 years. The

most common transplanted organs were kidney (58.4 percent), liver (21.6 percent), heart (10.0 percent), and lung (4.0 percent). Transplant recipients were linked to 10,656 malignancy diagnoses during follow-up, with analysis indicating an overall doubling of cancer risk compared with the general population.

Risk was increased for 32 different malignancies, some related to known infections (e.g., anal cancer, Kaposi sarcoma) and others unrelated to infection (e.g., melanoma, thyroid and lip cancers). The most common malignancies with elevated risk were non-Hodgkin lymphoma (n = 1,504) and cancers of the lung (n = 1,344), liver (n = 930), and kidney (n = 752), which together comprised 43 percent of all cancer cases in transplant recipients compared with 21 percent in the U.S. general population.

Non-Hodgkin lymphoma risk was elevated, compared with the general population, for recipients of all organ types. For lung cancer, the elevated risk was greatest among lung recipients but also was present for recipients of other organs (kidney, liver, heart). Liver cancer risk was only elevated for liver recipients. Kidney cancer risk was highest in kidney recipients, but was also elevated among liver and heart recipients.

"In conclusion, this large-scale registry linkage study documents a wide spectrum of [cancer risk](#) among transplant recipients. Some malignancies arise from the loss of immunologic control of oncogenic viruses, but others are unrelated to known infections. Additional contributing factors for some cancers may include other effects of chronic immune disturbance or inflammation, underlying medical conditions, or medication toxicity. Our findings should stimulate research into carcinogenic mechanisms associated with [organ transplantation](#). The elevated risk for a broad range of malignancies among transplant recipients, coupled with improvements in long-term survival, should encourage further development of approaches to prevention and early

detection of cancer targeted to this population," the authors write.

More information: *JAMA*. 2011;306[17]:1891-1901.

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