

# What’s New in the Patient Safety World

June 2023

## Childhood CT Scans and Cancer Risk

For years there has been debate about cumulative radiation dose and the subsequent risk of developing cancer (see list of our prior columns below). The special concern has been in children who receive multiple CT scans.

The most recent statistics on the issue come from Taiwan. Wang et al. ([Wang 2023](#)) analyzed data from Taiwan’s publicly funded health care system. They identified participants younger than 25 years with newly diagnosed intracranial tumors, leukemia or lymphoma, from 2000, to 2013 and compared them to 10 non-cancer controls for each case, matching by sex, date of birth and day of entry to the cohort.

Compared with no exposure, exposure to a single pediatric CT scan did not increase risk of intracranial tumors, leukemia or lymphoma. Those who received 2-3 CT scans had an increased risk of intracranial tumor (adjusted OR 2.36), but not leukemia, non-Hodgkin lymphoma or Hodgkin lymphoma. Those exposed to 4 or more CT scans had an elevated incidence (IRR 2.30) of one of these cancer outcomes. Age of exposure was a significant risk factor as well. Receiving 4 or more CT scans at or before 6 years of age was associated with the highest risks of cancer, followed by ages 7-12 years and 13-18 years.

The findings of this study once again underscore the importance of prudent use of CT scanning in the pediatric population. Programs like Imaging Gently® and SCANSMART have focused on reducing unnecessary CT imaging in children and minimizing radiation dose in those cases where CT scanning is appropriate.

### Some of our previous columns on the issue of radiation risk:

- February 2, 2010      [“The Hazards of Radiation”](#)
- November 23, 2010    [“Focus on Cumulative Radiation Exposure”](#)
- March 2010            [“More on Radiation Safety”](#)
- June 2011             [“Progress in Reducing Radiation from CT Scans”](#)
- April 2013             [“Radiation Risk of CT Scans: Debate Continues”](#)

- June 4, 2013 [“Reducing Unnecessary CT Scans”](#)
- July 2013 [“More on the CT/Cancer Debate”](#)
- January 2017 [“Still Too Many CT Scans for Pediatric Appendicitis”](#)
- November 2017 [“SCANSMART Program to Use CT Safely in Children”](#)

## References:

Wang W-H, Sung C-Y, Wang S-C, Shao Y-HJ. Risks of leukemia, intracranial tumours and lymphomas in childhood and early adulthood after pediatric radiation exposure from computed tomography. CMAJ 2023; 195(16): E575-E583  
<https://www.cmaj.ca/content/195/16/E575>

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