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# CT Scans on Children Worry Experts

By SHIRLEY S. WANG

Fewer CT scans were done on American children in recent years after a steep increase from 1996 to 2005, a new study showed, but medical experts said they remain concerned that too many youngsters are being unnecessarily exposed to the procedure's harmful radiation.

Medical experts said that about one-third of kids who receive the scans likely are exposed unnecessarily to radiation from the equipment.



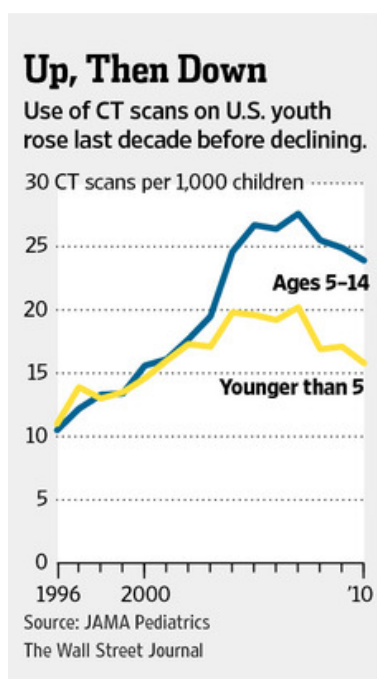
A new study of use of CT scans in children suggests kids are getting exposed to unnecessary radiation, which increases their risk of cancer. Shirley Wang reports on the News Hub.

Ionizing radiation from computed tomography equipment, which uses X-rays to examine internal organs for bleeding, fractures or cancer, among other purposes, has been linked in previous studies to increased risk of cancer. Children appear particularly vulnerable because their organs are still developing and they have a longer period for cancer to form.

In Monday's study, published in *JAMA Pediatrics*, researchers examined the rates and radiation dosages of CT scans used in children across seven large U.S. health-maintenance organizations between 1996 and 2011. The study examined data on the 152,000 to 370,000 children who got scans each year, for a total of 4.85 million child-years of observation. One child-year refers to data for one child over one year.

For the 10 years up to 2005, use of scans doubled in kids younger than 5 and tripled in those aged 5 to 14. The rates then plateaued between 2006 and 2007 and began to decline between 2008 and 2010.

"This is adding more to the body of knowledge of we're...overdoing CT scans in general and ionizing radiation in everyone, especially children," said Eric Topol, director of the Scripps Translational Science Institute in La Jolla, Calif., who studies medical technologies and wasn't involved in the current study.



The recent decrease may be connected in part to growing concerns about cancer risk from CT radiation, but probably also is related to a push to reduce unnecessary and expensive testing, said Diana Miglioretti, the first author on the study and a biostatistics professor at the University of California, Davis. Health-care spending of many types fell during the recession.

However, there still likely is overuse of CT scans in children, Dr. Miglioretti said. For instance, medical evidence suggests that children with suspected appendicitis first should get an ultrasound, which doesn't use radiation, but many times they receive a CT scan initially.

The researchers also used radiation-dosage information for CT scans, combined with prior studies on the amount of radiation associated with cancer, to project how many additional cancers might result from CT scans in childhood.

They found that the highest risk was for abdomen scans, where one case of cancer could be expected in 300 to 400 girls and one in 700 to 800 boys who received such a scan.

In addition, the scientists found huge variations in the dosage of radiation received by children of similar age and body size for the same type of scan, counter to medical guidelines recommending that doctors use the lowest dose possible to obtain an image. If unnecessary imaging could be eliminated and the top

radiation doses lowered to the average dose, the number of cancers linked to CT scans could be reduced by 62%, Dr. Miglioretti said.

But it is difficult to measure how many CT scans are unnecessary and how many unnecessary surgeries or other interventions may result when a CT isn't used to first diagnose an ailment, said Marta Hernanz-Schulman, head of the pediatric commission of the American College of Radiology. "You have to be very judicious and very careful," she said.