# Rising CT scan use linked to increasing cancer risk among young patients



In the realm of modern medicine, the balance between the benefits and risks of diagnostic imaging, particularly CT scans, has become a pressing concern. While these scans can be lifesaving diagnostic tools, there is increasing evidence suggesting that their overuse may expose patients to unnecessary radiation, potentially elevating their risk of developing cancer.

The overwhelming reliance on high-tech imaging stems, in part, from a deep-seated fear—fear of missing critical diagnoses. As one physician candidly reflects, the medical imperative often seems to lean towards comprehensive testing rather than judicious application. This approach has resulted in significant increases in CT scan utilisation; statistics reveal that in the UK alone, over seven million CT scans are performed annually. The implications are profound when considering that each scan utilises ionising radiation, which can damage DNA cells and contribute to mutation over time.

In the US, a recent study published in JAMA Internal Medicine estimated that the 93 million CT scans performed in 2023 could lead to over 100,000 new cancer cases, accounting for around 5% of new cancer diagnoses. Although this data pertains to the US, its relevance to UK practice is heightened by similar trends in scanning rates and technologies. Notably, abdominal and chest scans have been identified as particularly high-risk procedures.

Growing evidence supports the assertion that the risk is even more pronounced in younger patients. A comprehensive analysis involving nearly one million individuals who underwent CT scans before age 22 revealed a concerning association between exposure to radiation from these scans and heightened risk of blood cancers. Remarkably, the risk of developing such malignancies increased significantly with varying radiation doses, suggesting that even a single CT scan could result in an increased risk of developing a serious condition.

This growing body of research highlights the need for a reevaluation of established protocols surrounding the utilisation of CT scans, especially in paediatric care. Experts recommend that physicians rigorously assess the necessity of a CT scan before proceeding and consider alternative diagnostic methods when feasible. This is especially true in cases of suspected head trauma, where studies indicate a link between radiation exposure from CT imaging and subsequent brain cancer, indicating a potential case of ‘doing harm’ under the guise of thoroughness.

Comments from medical professionals underscore the importance of engaging patients in dialogues about potential risks associated with imaging. One physician recounted making decisions on whether to proceed with scans during a night shift, opting against unnecessary radiation exposure for two patients who presented with low-risk conditions. These crucial choices illuminate the moral and ethical dimensions faced by practitioners, who must weigh immediate diagnostic benefits against long-term health outcomes.

While the case for breast screening via mammography has been mentioned as a critical preventive measure that can save lives despite some risk, the consensus is clear: a cultural shift is necessary within the medical community. More thoughtful consideration of scan requisitions is paramount. As highlighted by recent studies, a significant proportion of patients may be subjected to cancer-inducing radiation without any clear clinical justification. The path forward demands not just vigilance but also an evolving perspective on patient care—one that prioritises informed consent and holistic assessments.

In the quest for effective healthcare, the message is clear: every CT scan must not only be justified but also managed with the utmost prudence, ensuring that the primacy of "do no harm" is not merely a principle, but a practice ingrained in the fabric of medical decision-making.

### Reference Map

1. Paragraphs 1, 2, 3, 4, 5, 6, 7: 1, 3, 4, 5
2. Paragraph 2, 5: 2, 7
3. Paragraph 5, 6: 6
4. Paragraph 3, 7, 8: 3, 4, 5

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## Bibliography

1. <https://www.dailymail.co.uk/health/article-14704353/CT-scans-raise-cancer-risk-doctor-ask-first.html?ns_mchannel=rss&ns_campaign=1490&ito=1490> - Please view link - unable to able to access data
2. <https://pubmed.ncbi.nlm.nih.gov/36451138/> - A systematic review and meta-analysis published in BMC Cancer examined the cancer risks associated with CT scans in adults. The study found a significant increase in cancer risks following CT scans, with a combined odds ratio of 5.89. The risk was positively correlated with radiation dose and the number of CT scan sites. The analysis included data from 111.6 million adult participants across Asia, Europe, and America, highlighting the importance of awareness regarding potential cancer risks from CT scans.
3. <https://jamanetwork.com/journals/jama/article-abstract/2812406> - An article in JAMA discusses a study that investigated the association between CT scan radiation exposure and the risk of blood cancers in young individuals. The research, based on data from approximately 900,000 European children who underwent at least one CT scan before the age of 22, found an almost twofold increased excess risk per 100-mGy dose. The findings suggest that 1 to 2 children per 10,000 undergoing a CT scan may develop a blood cancer due to radiation exposure.
4. <https://www.iarc.who.int/news-events/risk-of-hematological-malignancies-from-ct-radiation-exposure-in-children-adolescents-and-young-adults> - The International Agency for Research on Cancer (IARC) published a report confirming a clear association between exposure to radiation from CT scans in young people and an increased risk of hematological malignancies. The study indicates that a radiation dose of 100 milligray to the bone marrow from CT scans increases the risk of developing a hematological malignancy by a factor of about 3, suggesting that among 10,000 children who receive one CT examination, about 1–2 radiation-associated hematological malignancies are expected to occur during the 12 years after the examination.
5. <https://www.sciencedaily.com/releases/2023/11/231109121441.htm> - ScienceDaily reported on a multinational study confirming the association between CT scans in young people and an increased risk of cancer. The study analyzed data from almost one million individuals who underwent at least one CT scan before the age of 22. The results show a clear association between the total radiation doses to the bone marrow from CT scans and the risk of developing both myeloid and lymphoid malignancies, with a dose of 100 mGy increasing the risk of developing a blood cancer by a factor of about 3.
6. <https://jamanetwork.com/journals/jama/fullarticle/2808648> - A meta-analysis published in JAMA Internal Medicine evaluated the estimated lifetime gained with various cancer screening tests, including CT scans for lung cancer. The study found that lung cancer screening with CT did not significantly reduce all-cause mortality, with a relative risk of 0.97 (95% CI, 0.88-1.08). The analysis suggests that while CT screening may detect lung cancer at an earlier stage, it does not necessarily translate into a survival benefit, highlighting the need for careful consideration of the risks and benefits of such screening.
7. <https://link.springer.com/article/10.1186/s12885-022-10310-2> - An article in BMC Cancer presents a systematic review and dose-response meta-analysis on CT scans and cancer risks. The study found that cancer risks for adults following CT scans were significantly increased, with a combined odds ratio of 5.89. The risk was positively correlated with radiation dose and the number of CT scan sites. The analysis included data from 111.6 million adult participants across Asia, Europe, and America, emphasizing the need for awareness of potential cancer risks associated with CT scans.