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# Cancer fears prompt call to cut hospitals' CT scan radiation levels

Risk is 'low', but one in 2,000 will develop a new cancer after an abdominal scan, warns government advisory body

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**Sarah Boseley**, health editor  
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Nursing staff prepare a CT scanner. Comare says radiation exposure from the machines has to be set against the benefit of accurate patient diagnosis. Photograph: Christopher Furlong/Getty Images

Radiation doses used in CT hospital scanners to diagnose injuries and diseases should be reduced to the lowest possible level, to avoid potential harm, a government advisory body has warned.

The Committee on Medical Aspects of Radiation in the Environment (Comare) – originally set up to investigate radiation emissions from the Sellafield nuclear plant – says one adult in 2,000 (or one child in 1,000) who has an abdominal scan, which subjects a patient to the highest amount of radiation, will develop a new cancer as a

result.

The committee said the risk remains low – the exposure is the same as 4.5 years of natural background radiation – and has to be set against the advantages of swift and accurate patient diagnosis.

But Comare chairman Alex Elliott said the use of CT scans is rapidly increasing. There were 1m CT scans a year in England in the 1990s. There are now around 5m a year, rising at around 10% a year with no sign of levelling off.

Experts want to ensure hospitals use the equipment as safely as possible. "There is no threshold below which radiation is not harmful to you. There is no dose that gives you no detriment. But a very low dose gives very small detriment," Elliott said.

Children are at a higher risk than adults, and scientists now know there are groups of people who are genetically more susceptible to radiation. They include women who carry mutations in their BRCA1 or BRCA2 genes which increases their chances of breast cancer. A CT scan before the age of 30 further raises that risk.

Modern machines have settings that can very precisely adjust the radiation dose, so that it is at the optimal level for the individual, whatever their size and shape. They can also be set just to scan the small area the doctor wants investigated, so as little of the body as possible is exposed.

Comare says hospitals must bear these things in mind when buying new machines and also ensure their staff are trained to adjust them properly.

Elliott is concerned that not all hospitals divulge details of the amount of radiation to which they are exposing their patients. Comare recommends that they be required to report on the radiation doses they use. In a survey, only a third of hospitals replied.

"I need this data," said Elliott. Without it, experts cannot establish how many cancers may actually be caused by medical radiation. "That's why we want it to be mandatory."

The UK does better than most other countries at keeping medical radiation at low levels, he said. Levels of radiation exposure in Britain are half those in the United States; where 50% is from artificial sources, compared to 16% in the UK. "But 90% of that 16% is from medical diagnostic equipment," said Elliott, so it is worth taking any opportunity to reduce it.

Comare's 16th report "Patient radiation dose issues resulting from the use of CT in the UK" has gone to the Department of Health, where a working group is considering how to

implement the recommendations.

- This article was amended on 15 August 2014 to clarify that it is mutations in the BRCA1 or BRCA2 genes that increase the risk of breast cancer, rather than the BRCA1 or BRCA2 genes themselves.



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