BETTER SAFE THAN SORRY?

A review this week estimated that computed tomography is responsible for 2% of all cancers in the US. **Zosia Kmietowicz** asks whether the increasing private use of this technique for screening is a good idea

There can be few doctors who haven't had at least one patient ask them about the value of health screening tests using computed tomography in the past few months. Look up momentarily from the pavement or your seat on public transport and it is highly likely you will catch a glimpse of an advertising hoarding promoting state of the art diagnostic machinery for an all over health check.

"Beat your silent killers" with scans tailored to your individual needs, say the websites of the clinics offering screening services. Some clinics even offer a reduction for loyalty, with repeat scans at a discount. Keep reading and the stories of early diagnoses that would otherwise have gone unnoticed can trigger worrying thoughts about what disease you could be harbouring—and make even long suffering NHS stalwarts reach for a credit card.

The clinics offer an array of preventive medical examinations. As well as full body scans there are scans for particular parts of the body—the heart, lungs, and abdomen are

especially targeted because of their susceptibility to symptomless diseases that can kill suddenly. Comprehensive tests may also be needed, say the clinic websites. Ask for it and you can have it—computed tomography, magnetic resonance imaging, positron emission tomography, scans, radiography, ultrasonography, bone densitometry, spirometry, blood tests, urine tests, faeces inspections, electrocardiography, and echocardiography.

Although there are no official figures, anecdotal reports from general practitioners and hospital doctors suggest that many people find the adverts, the case histories, and word of mouth accounts

of scanning experiences alluring. One company, Capio healthcare, which boasts a fleet of mobile scanners, says it processed some 270 000 laboratory analyses and 14 000 scans in 2005. Lifescan, which offers lung and heart computed tomography and virtual colonoscopy, opened its first screening centre in 2003 and now has seven clinics.

But many commentators say such health checks prey on the population of worried

well and financially secure, who boost the profits of such companies by unnecessarily paying anything from £250 to £1300 (€350-€1820; \$510-\$2680) a time.

Official opinion

Last year the Department of Health responded to the purported rise in opportunistic screening by asking the radiation safety watchdog to look at the issue of unregulated computed tomography (CT) screening for asymptomatic people offered by the private sector. A report from the Committee on the Medical Aspects of Radiation in the Environment (COMARE) has been expected since the summer and is currently awaiting approval by ministers. It is expected to be published early next year.

Although its contents cannot be predicted, the report is unlikely to recommend CT screening as a means of delivering better public health. Gill Markham, vice president of the Royal College of Radiologists, who sat on the COMARE subcommittee which produced the report, said that the basic message is that targeting asymptomatic people for computed tomography screening "is not on." The college has seen more complaints from the public about private sector

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screening in recent months and she admits it is an increasing problem.

The US Food and Drug Administration does not recommend CT screening. Backed by the American College of Radiology, the American College of Cardiology/American Heart Association, the US Preventive Services Task Force, and others the FDA says that it “knows of no data demonstrating that whole-body CT screening is effective in detecting any particular disease early enough for the disease to be managed, treated, or cured and advantageously spare a person at least some of the detriment associated with serious illness or premature death.” It adds that “the harms from scans currently appear to be far more likely and in some cases may not be insignificant.”¹

Although the statement was last updated in 2005, Paul Allan, consultant radiologist at the Royal Infirmary in Edinburgh, says there is no new evidence that would justify any changes. While there are few documented benefits of CT screening for people with no symptoms, there are known drawbacks. In a review for the Royal College of Physicians of Edinburgh and the Royal College of Physicians of Glasgow in 2004, Dr Allan pointed out that, “With the production of impressive

3-D reconstructions and other fancy techniques it is easy to forget that relatively high doses of radiation are used in the production of these images.”²

Radiation exposure

A computed tomogram of the abdomen or pelvis delivers an effective dose of 10 mSv (millisieverts) to the patient, equivalent to 500 chest x ray examinations or 4.5 years’ exposure to background radiation³—a dose with an estimated risk of inducing fatal cancer of 1 in 2000.²

In the past 15 years developments in CT technology have driven up radiation doses. Some modern multislice scanners can deliver 200 sequences in a single examination, compared with the 40-50 slices of older scanners. In his review Dr Allan says that in 1989 computed tomography accounted for 2% of all x ray examinations but contributed 20% of the collective dose to the general population from diagnostic screening. By 1998 these figures had doubled to 4% of examinations and 40% of the collective dose.

Lifescan recently funded a group called the Clinical Advisory Committee on Diagnostic Imaging (CACODI) to look at the

safety and benefits of opportunistic CT screening. The resulting report,⁴ which the group says is the first evidence based review of CT screening, looks at research on scans of the colon, heart, and lung—reflecting the services Lifescan offers. It quotes the 1 in 2000 risk of fatal cancer from a scan. But it adds: “This can be compared to the normal spontaneous risk of fatal cancer which is about 1 in 4 (25%). Whilst the doses involved are greater than conventional (plain film) radiography any theoretical risks from the doses involved are small and need to be considered alongside potential benefits.”

CACODI says that the true benefits and potential dangers of radiation exposure need to be better understood and calls for a review of the linear number threshold, which is used to calculate radiation risk and which it says “fails to stand up to close scrutiny.”

It’s easy to be sceptical and dismissive about a report which has been paid for by a company that offers CT screening as its core business. But the report is upfront about the paucity of evidence supporting screening for some diseases. In its analysis of the usefulness of CT screening for detecting lung cancer the report recognises the limitations. Although CT screening has been proved to be able to detect indolent lung cancers at an early stage, it is still not known whether treatment improves survival. In addition, more aggressive lung cancers, which have a poorer prognosis, can be missed, the report says.

Other commentators have pointed out that CT screening of the lungs carries a high risk of morbidity. Of patients who had abnormalities detected in recent screening trials, 88-97% had false positive results.⁵ Healthy people had to have needle aspiration, with its associated risks of complications and morbidity.⁵

CACODI, Dr Allan, and Dr Markham agree that the most promising application of CT screening is coronary artery calcium scoring for people at high risk of heart disease. CACODI says that there is no evidence that finding a high coronary calcium score and starting treatment affects mortality. However, it adds, “Absence of evidence does not constitute evidence of absence of benefit.” People who are told they have a high calcium score are more likely to make lifestyle changes that could reduce their risk of cardiac events. The report calls for a trial to look at the whether

coronary calcium scoring is cost effective and the effect of intervention.

Psychological harm

According to Lifescan, opportunistic screening services have sprung up in response to demand from a society obsessed with its health, largely because we are repeatedly sold a diet of cancer statistics and figures on premature deaths from heart disease. CT screening provides the means to allay those fears for many people, said a spokeswoman for Lifescan.

But most commentators say that for people with no symptoms CT screening often triggers anxiety and does not console. It can also send a message of false reassurance if tests are clear, maybe even providing in some cases approval for a current lifestyle, which may not necessarily be healthy.

Clare Gerada, a general practitioner in Lambeth and chair of ethics at the Royal College of General Practitioners, doesn't mince her words. "They are a waste, unethical, and cruel," she said. She has seen patients' lives turned upside down because they have been told they had cancer when they didn't. "The anxiety diagnoses can create is unacceptable for patients and for the NHS, which has to unpick findings."

"My sense is that these tests are going to make an awful lot of money for some people. You only offer screening if you know what you are going to find and if it is treatable. The biggest risk of full body health scans is psychological health. They should come with a health warning," Dr Gerada said.

The problem, she says, is that many scans will pick up abnormalities with uncertain consequences. These patients are then fast tracked through the NHS for a raft of further tests at considerable cost. "You can have every test under the sun, but still not find out what is wrong with you. Also, you can find some lump that turns out to be totally harmless," she said.

Other screening services

However, there are some private screening tests which are justified, believes James

Morrow, a general practitioner in Sawston, Cambridge. Dr Morrow admits that the NHS cannot provide all the screening tests that the world of medicine has to offer.

"One central core belief of medical ethics is patient autonomy. It is terribly paternalistic to say let's not give patients the information," he said. Information on tests with proved benefit should be freely and readily available to patients, he believes. "If the NHS does fund a test then fantastic. But if it doesn't then it should be able to make it available at an affordable price."

Dr Morrow does not support CT screening, which he says fails on the first basic medical principle of first do no harm. But until recently he ran a self-pay ultrasound screening service for abdominal aortic aneurysm that was used by 59 general practices in the south of England. He had seen a previously healthy patient die suddenly from the condition and after the publication of the multicentre aneurysm screening study,⁶ which showed that screening men saved lives, could see no reason for not allowing patients to decide whether they wanted to spend £95 on a screening test.

But the service was forced to close after the BMA's local medical committee issued a notice that doctors using the service could be acting illegally. Doctors were warned that they could be in breach of their contracts for receiving a fee for the use of their surgeries outside opening hours and incur breaches of the Data Protection Act by allowing a company to contact patients on their lists. Both actions could make them liable to fitness to practise procedures by the General Medical Council. The Department of Health says it is currently assessing whether screening for aortic aneurysm is both feasible and cost efficient.

Dr Morrow felt his service was fully supported by the patients who used it. "We were offering patients a choice—empowering them," he said. "We are not taking away NHS resources and we are not making a profit. But what we were doing was saving people's lives."

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Regulation

But should private clinics be better regulated? CACODI calls for "equal regulation and standards for both government and private sector provision" with annual audits for private clinics by an independent body such as the Healthcare Commission. But its attempts to involve the public sector and colleges in establishing a framework from which to propel the debate surrounding screening have been met with a "wall of silence."

Dr Allan raises the important point of the ionising radiation (medical exposure) regulations, which set out basic measures for protecting people's health against the dangers of ionising radiation from medical procedures.⁷

"All medical exposures have to be justified and have to be for a medical purpose. Who is the medical expert that signs the form in cases of unregulated private health screening?" he said. "If it is an SHO who is doing a locum job then you have to wonder how much thought is given to the risk benefit ratio of the examination in these circumstances."

Dr Allan says there will always be two points of view about the benefits and harms of opportunistic CT screening. And in a consumer led culture there will always be organisations ready to meet the demand for what is seen by some as a route to better health.

Scans must be done by a specialist rather than a generalist and the regulations might help to introduce some kind of regulation to protect patients, said Dr Markham.

The recommendations of the COMARE report are eagerly awaited. And the Department of Health's response to them even more so.

Zosia Kmietowicz is a freelance journalist in London
zkmietowicz@bmi.com

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- 3 Royal College of Radiologists. *Making the best use of clinical radiological services*. 4th ed. London: RCR, 1998.
- 4 Clinical Advisory Committee on the Diagnostic Imaging. *Report on the safety and efficacy of CT screening*. CACODI, July 2007. www.cacodi.org.uk/reports/.
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- 6 Ashton HA, Buxton MJ, Day NE, Kim LG, Marteau TM, Scott RA, et al. The multicentre aneurysm screening study (MASS) into the effect of abdominal aortic aneurysm screening on mortality in men: a randomised controlled trial. *Lancet* 2002;360:1531-9.
- 7 *The ionising radiation (medical exposure) regulations 2000*. Statutory instrument 2000 No 1059. www.opsi.gov.uk/si/si2000/20001059.htm.