

## Screening: a step too far. A matter of concern

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In August 2007, Saga Insurance contacted its customers, inviting them to consider 'Saga Health Screening: a health check with real insight', which 'uses modern CT scanners to "look inside" the human body to give an indication of what is going on'. The brochure enclosed with the letter explained the 'Saga Multiscan', which includes a computerized tomography (CT) scan of the heart (to identify coronary calcification) and the colon ('virtual colonoscopy'), a bone density scan, a diabetes type 2 test and a cholesterol test – all available to Saga customers for £530. The examinations and tests are provided by Lifescan Ltd.

The proposed screening tests have not been shown to be worthwhile. They may identify medical problems, but it is not always clear what remedy is available, or that the remedial action offered following screening is effective and safe, or whether these actions would be better taken by everyone over a certain age without screening, for example, the use of statins by everyone over 55 years in the prevention of coronary heart disease. And the X-ray radiation exposure from CT scanning is a concern.<sup>1</sup> The heart scan appears to be a relatively poor screening test that has not been sufficiently well documented in trials of its screening performance (detection rate and false-positive rate) judged against myocardial infarction rather than coronary artery stenosis.<sup>2–4</sup> Relative risk ranging from about three to 20 have been reported in people with and without high coronary calcification scores. There are differences of opinion on how the test should be used in medical practice.<sup>5</sup> Such testing seeks to identify coronary artery calcification that would prompt medical preventive treatment, which would probably be useful anyway (e.g. statins). It may also prompt an invasive remedy, such as an angioplasty, which would be based on belief, rather than evidence, and the procedure carries a small but serious risk of a stroke and myocardial infarction.

Colonoscopy by flexible sigmoidoscopy is currently under investigation as a screening test; it is too soon to assess the benefits and harm.<sup>6</sup> This is also the position with the so-called 'virtual colonoscopy' (CT colonoscopy) as a general screening test.<sup>7</sup> It is less accurate than conventional colonoscopy for polyps less than 1 cm in diameter and has not been evaluated from a screening perspective. Bone density scanning is a poor screening test for osteoporotic fractures<sup>8</sup> as is cholesterol testing for ischaemic heart disease,<sup>9,10</sup> even though both are crucial in the causation of the two disorders which has inappropriately encouraged them in screening.<sup>11</sup> Screening for diabetes (the method of screening is not specified in the brochure) is still of uncertain value;<sup>12</sup> many authorities think that general preventive strategy is the right approach – principally, the avoidance of obesity rather than screening.

The brochure states that 'if signs of illness are found before any symptoms show it is possible to take the appropriate remedial action more quickly – and potentially with a more effective result'. The keyword here is 'potentially' effective (or more correctly 'possibly' effective). The proposed screening is presented as desirable on the basis

of a belief in its value, not based on evidence of value. The brochure states that some people opt to have a scan simply 'for their own peace of mind'. But contrary to popular belief, screening is usually a weak means of providing reassurance because screening generally misses most cases of the disease for which screening is carried out. If, for example, a screening test detects half of all future cases of colon cancer and has a false-positive rate of 1%, it would be discriminatory, but the people with screen-negative results would not have a zero or minimal risk of colon cancer; it would be reduced by 50%.

Not only do we lack evidence that this sort of screening confers a benefit, we know that it will also cause harm. Apart from the radiation risk from imaging techniques that use X-rays, there are other ways in which screening causes harm. It always causes anxiety. Many abnormalities turn out to be false-positives frequently after sleepless nights waiting for the result of a definitive diagnostic test or procedure, which often carries risk of physical harm. In medical screening, there is always some harm, which is only acceptable if there are also confirmed benefits that outweigh the harm.

The Saga initiative is not isolated. Other insurance companies give financial discounts for similar 'screening' and several companies offer this. Recently, Salman *et al.*<sup>13</sup> considered whole-body magnetic resonance imaging scanning for 'health check ups' and concluded that such scanning should be restricted to research. There is, emerging in Britain, a culture in which judgments on medical screening practice are being made in the absence of evidence that a particular screening method is an effective and safe way of reducing morbidity and mortality from a specific disorder. In some cases, such as whole-body scanning, the disorder(s) are not specified. Often, quantitative information on the screening performance of the test is not given, usually because it is not known. The present culture appears unaware of publications on the principles of screening<sup>14–18</sup> and the criteria for a worthwhile screening test.

The culture needs to change, so that screening is subject to professional scientific assessment before it is promoted to the public. Education and self-regulation are probably the preferred approaches, since these encourage responsibility while retaining valuable flexibility that can be lost with governmental regulation. But if governmental regulation is to be avoided, health service providers, insurers and scientists in medical screening need to work together and prepare a Medical Screening Code of Practice. Demonstrating compliance with such a Code of Practice would go a long way towards securing public trust and reassuring people of the value of screening services that are offered.

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## REFERENCES

- 1 Berrington A. CT screening: safe and effective? *J Med Screen* 2007; **14**:165-8
- 2 Morteza N, Erling F, Harvey SH, *et al.*, for the SHAPE Task Force From vulnerable plaque to vulnerable patients – part III. A new paradigm for the prevention of heart attack. *Am J Cardiol* 2006; **98**:S2-15
- 3 Greenland P, Bonow RO, Brundage BH, *et al.* ACCF/AHA 2007 clinical expert consensus document on coronary artery calcium scoring by computed tomography in global cardiovascular risk assessment and in evaluation of patients with chest pain. *J Am Coll Cardiol* 2007; **49**:378-402
- 4 Budoff MJ, Achenbach S, Blumenthal RS, *et al.* Assessment of coronary artery disease by cardiac computed tomography. *Circulation* 2006; **114**:1761-91
- 5 Waugh N, Black C, Walker S, McIntyre L, Cummins E, Hillis G. The effectiveness and cost-effectiveness of computed tomography screening for coronary artery disease: systematic review. *Health Technol Assess* 2006; **10**:39
- 6 Atkin WS, Edwards R, Wardle J, *et al.* Design of a multicentre randomised trial to evaluate flexible sigmoidoscopy in colorectal cancer screening. *J Med Screen* 2001; **8**:137-44
- 7 Rosman AS, Korsten MA. Meta-analysis comparing CT colonography, air contrast barium enema, and colonoscopy. *Am J Med* 2007; **120**: 203-10
- 8 Law MR, Wald NJ, Meade TW. Strategies for the prevention of osteoporosis and hip fracture. *BMJ* 1991; **303**:453-9
- 9 Wald NJ, Law MR. A strategy to reduce cardiovascular disease by more than 80%. *BMJ* 2003; **326**:1419-23
- 10 Wald NJ, Law MR. Screening for future coronary heart disease. In: Marmot M, Elliott P, eds. *Coronary Heart Disease Epidemiology: from Aetiology to Public Health*. 2nd edn. Oxford: Oxford University Press, 2005;706-13
- 11 Wald NJ, Hackshaw AK, Frost CD. When can a risk factor be used as a worthwhile screening test? *BMJ* 1999; **319**:1562-5
- 12 Stolk RP. Screening for diabetes. *BMJ* 2007; **335**:457-8
- 13 Salman RA-S, Whiteley WN, Warlow C. Screening using whole-body magnetic resonance imaging scanning: who wants an incidentaloma? *J Med Screen* 2007; **14**:2-4
- 14 Wilson JMG, Jungner G. *Principles and Practice of Screening for Disease*. Geneva: World Health Organization, 1968
- 15 McKeown T. Validation of screening procedures. In: Lord Cohen of Birkenhead, Williams ET, MacLachlan G, eds. *Screening in Medical Care. Reviewing the Evidence*. Oxford: Nuffield Provincial Hospital Trust, Oxford University Press, 1968
- 16 Holland WW, Stewart S. *Screening in Health Care*. London: Nuffield Provincial Hospitals Trust, 1990;140
- 17 Cuckle HS, Wald NJ. Introduction: principles of screening. In: Wald NJ, ed. *Antenatal and Neonatal Screening*. Oxford: Oxford University Press, 1984;1-22
- 18 Wald NJ. Journal of Medical Screening. *J Med Screen* 1994; **1**:1-2