



EDITORIALS

Full disclosure about cancer screening

Time to change communication from dodgy persuasion to something straightforward

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Communication about cancer screening is dodgy: benefits are overstated and harms downplayed. Several techniques of persuasion are used. These include using the term “prevention” instead of “early detection,” thereby wrongly suggesting that screening reduces the odds of getting cancer. Reductions in relative, rather than absolute, risk are reported, which wrongly indicate that benefits are large.¹ And reporting increases in 5 year survival rates wrongly implies that these correlate with falls in mortality.² Prasad and colleagues put their finger on another misleading practice: claiming that screening “saves lives” despite the lack of proof that overall mortality is decreased.³

A fall in cancer specific mortality alone cannot prove that lives are saved—the cause of death may be systematically misclassified or screening and subsequent cancer treatment may increase deaths from other causes, most likely as a consequence of overdiagnosis and overtreatment.^{3 4} To prove that screening saves lives one needs to find a difference in overall mortality. Yet detecting such a difference, if it exists, with reasonable statistical power in the general population would require studies with millions of participants. Can we get around this dilemma?

Prasad and colleagues propose reporting overall mortality in addition to cancer specific mortality and, if there is no difference in overall mortality, to stop claiming that screening saves lives. I agree but would like to add some additional points to their call for more honesty.

Firstly, reporting cancer specific and overall mortality is essential because not only do patients lack an understanding of what constitutes evidence for “saving lives,” but many doctors do too. In a US sample, 47% of 412 physicians wrongly thought that the detection of more cancers in screened than in unscreened populations proved that screening saves lives. And 76% wrongly thought that if people with screen detected cancers had better 5 year survival rates than those with symptom detected cancers, then screening saved lives.⁵ Given such widespread confusion, it can be helpful to report both cancer specific mortality and overall mortality.

Secondly, overall cancer mortality should also be reported, where possible. If there is a reduction in cancer specific mortality that does not result in death from other sources or from misclassification, then this reduction should be reflected

in a fall in overall cancer mortality (which includes cancer specific mortality). Because the base rate of overall cancer mortality is lower than that of overall mortality, tests have a higher power to detect such a difference. Overall cancer mortality can control for systematic errors in classifying cancer causes of death.³ It cannot, however, capture non-cancer deaths caused by treatment, which is a limitation.

Tools for informed choice

Prasad and colleagues write, “As long as we are unsure of the mortality benefits of screening, we cannot provide people with the information they need to make an informed choice. We must be honest about uncertainty.” But even if this uncertainty cannot be removed, we can provide people with useful tools, such as fact boxes (figure).⁶ We use a fact box on mammography screening that reports all three measures of mortality, based on a Cochrane review.⁷ It clearly shows that cancer specific mortality is reduced by 1 in 1000 women and that this difference is not reflected in overall cancer deaths nor in overall mortality. The harms are specified numerically so that an informed decision about screening is possible. Every article and pamphlet should provide a fact box summary to facilitate informed decisions.

Breast cancer early detection by mammography HARDING CENTER FOR RISK LITERACY

Mammography screening may reduce the number of women who die from breast cancer, but that does not mean that lives are saved: no reduction has been shown for overall mortality and overall cancer deaths (including breast cancer). Among all women taking part in screening, some women will be overdiagnosed with non-progressive cancer and unnecessarily treated.

Numbers for women aged 50 years or older who did or did not participate in screening for about 10 years

Benefits	1000 women without screening	1000 women with screening
How many women died from breast cancer?	5	4
How many women died from all types of cancer?	21	21
How many women died from any cause?	84	84
Harms		
How many women without cancer experienced false alarms or biopsies?	-	50-200
How many women with non-progressive cancer had unnecessary partial or complete breast removal?	-	2-10

Source: [1] Gatzsche, PC, Jorgensen, KI (2013). *Cochrane database of systematic reviews* (1): CD001877.pub5
Numbers in fact box are rounded. Where no data for women above 50 years of age are available, numbers refer to women above 40 years of age.
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Fact box on mammography screening for breast cancer

Rather than pouring resources into “megatrials” with a small chance of detecting a minimal overall mortality reduction, at the additional cost of harming large numbers of patients, we should invest in transparent information in the first place. It is time to change communication about cancer screening from dodgy persuasion into something straightforward.

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- 1 Gigerenzer G. Breast cancer screening pamphlets mislead women. *BMJ* 2014;348:g2636.
- 2 Welch HG, Schwartz LM, Woloshin S. Are increasing 5-year survival rates evidence of success against cancer? *JAMA* 2000;283:2975-8.
- 3 Prasad V, Lenzer J, Newman DH. Why cancer-screening tests have never been shown to “save lives”—and what we can do about it. *BMJ* 2016;352:h6080.
- 4 Black WC, Haggstrom DA, Welch HG. Response: all-cause mortality in randomized trials of cancer screening. *J Natl Cancer Inst* 2002;94:865-6.
- 5 Wegwarth O, Schwartz LM, Woloshin S, Gaismaier W, Gigerenzer G. Do physicians understand cancer screening statistics? A national survey of primary care physicians. *Ann Intern Med* 2012;156:340-9.
- 6 Schwartz LM, Woloshin S, Welch HG. Using a drug facts box to communicate drug benefits and harms: two randomized trials. *Ann Intern Med* 2009;150:516-27.
- 7 Gøtzsche PC, Jørgensen KJ. Screening for breast cancer with mammography. *Cochrane Database Syst Rev* 2013;6:CD001877.

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