

Preventive health care and the media

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Case description

You are at a loss. You have just watched a webinar on cancer screening and were taken aback when the benefit of mammography screening for women in their 50s was discussed. One death from breast cancer is prevented for every 1333 women screened over 7 years.¹ However, in the newspaper this morning, you read about the expected tsunami of breast cancer as mammographic screening was suspended during the coronavirus disease 2019 pandemic.

Linda, your first patient of the afternoon, has read the same article. She is worried because her screening mammogram has been delayed. Linda is 54 years old and has no symptoms and no specific risk factors for breast cancer. She wants you to assist her in scheduling her mammogram as soon as possible.

You wonder about the diverging information on breast cancer screening and how to make sense of these opposing views.

Certain affirmations can have a profound effect on the hopes and fears one can have about health and the promise of medicine. Screening for disease directly echoes what most wish for their care—that is, early detection of diseases leading to longer survival with less pain and no lasting undesirable effects. “Prevention is better than cure” and “earlier is better” are maxims so well known that it appears difficult to go against what seems to be common sense.²

Evidence suggests that most people—including physicians—tend to overestimate benefits and underestimate harms of health interventions, including screening.^{3,4} The reasons underlying this phenomenon are complex and are linked to our cognitive processes. Our intuition is often misguided by what we refer to as the *therapeutic*

illusion, an unjustified enthusiasm for tests or treatments.⁵ It takes a conscious effort to step back from what our instincts tell us.

The media plays a special role—often unrecognized and thus unaddressed—in shaping our views and expectations toward health care and the outcomes of screening. Stories offering information about benefits (eg, avoided deaths) and harms (eg, overdiagnosed cases and false positives) in a transparent way are uncommon, even if this information is key to making a decision about screening.⁶ (In an unpublished study reviewing 1173 unique media stories on early detection tests [the protocol has been previously published], only 37% mentioned harms, while 97% mentioned benefits [only 14% used absolute numbers]. Of those stories where views potentially conflicted, only 12% had a disclosure [M. O’Keeffe, personal communication, August 26, 2020].) Narratives and anecdotes of survivors are powerful, but can often be misleading. The paradox of screening⁸ is almost never explained, leading to an increased sense of prevalence of disease and a biased estimation of possible benefits. This unbalanced information can explain why so many patients are surprised that there are possible harms associated with screening tests.⁹

To best inform the public and our patients, it is important for media stories to be congruent with the scientific data available and with the values of those who will ultimately bear the burden of screening. Physicians and patients need to be aware of the shortcomings that affect media reports on screening interventions. It is not an easy task when uncertainty is not presented, and thus positive outcomes are exaggerated and generalized. As physicians, we owe it to our patients to be familiar with common reporting shortcomings and how they affect coverage of preventive health care.

Key points

- ▶ In most preventive screening interventions, there are trade-offs between potential harms and benefits. These trade-offs, if misrepresented, might contribute to unjustified expectations.
- ▶ Physicians must be aware of the shortcomings of many media reports (print press, social media, radio, or television) that shape a distorted image of preventive health care.
- ▶ Shared decision making requires an understanding of the magnitude of the benefits and harms of screening interventions in easy-to-understand or simple terms.
- ▶ We should seek measures of benefit or harm expressed by absolute risk reduction or through natural frequencies. Decision aids provide such measures and assist shared decision making.

Physicians and therapeutic illusion: the why

In media reports, increased disease detection or increased 5-year cause-specific survival is often described as if directly showing benefit from screening.¹⁰ Information about diagnostic testing in symptomatic people is often confused with screening, and common biases, such as lead-time bias, length-time bias, overdiagnosis, and overtreatment, are often ignored.

Excessively optimistic views (arising from a cognitive illusion called the *optimism bias*) let physicians believe in the necessity of screening, thus triggering the ordering of tests even if not congruent with a patient's values.¹¹ This silent epidemic of misreading our patients' preferences is nurtured by lopsided reports in scientific and lay literature. Physicians with a good comprehension of the evidence and adequate numeracy skills do recommend against ineffective screening, while others might inadvertently misinform their patients.^{12,13}

Medical practice involves constant decision making. Most of the time we rely on quick, intuitive, automatic strategies (heuristics) to make decisions under uncertainty.¹⁴ One of the most potent heuristics is the *availability heuristic*, which leads us to overestimate the likelihood of certain diagnoses by more easily recalling recent or unusual cases¹⁵ (eg, that one patient in whom we found a cancer with a screening mammogram).

Other factors also play into our inability to be rational when we practise. Keeping track of the literature is a daunting task—more so because knowledge is increasing exponentially. The tendency is to repeat what we believe has worked well in the past, without approaching our practice with a critical lens. Many health care workers tend to harbour a pathophysiologic representation of disease, which is limiting and often wrong. Cancers were once thought to be a relentless progressive disease. We now know that some progress rapidly, some cause death, and some progress slowly or not at all.

Media and therapeutic illusion: the how

Journalists are subject to constraints that affect their work, including time pressure, word counts, scarce resources, and editing processes. They are also confronted by the biases of their sources, the challenge of explaining scientific content, and the constant demand for “newsworthiness.”^{16,17} These pressures are even worse with increasing competition. Social media has become a force in today's culture. As a result, journalists of the traditional media have lost their monopoly on information sharing and must compete fiercely to keep their jobs. The revenues of the written press are declining,¹⁸ making it difficult for reporters to get the resources they need to cover a complex story with the balance that readers deserve.

Unambiguous messages can increase demand for screening.^{19,20} In the context of strong recommendations for a screening test, this is probably overall a good thing.

But when a screening test has a closer balance between benefits and harms, the media should put forward the message in a way that would help individuals to make an informed choice. Too often, this does not occur. The option or the “appropriateness” of not doing something is seldom presented. Therefore, when a patient comes in, both the doctor and the patient are unconsciously prone to act. Often what they believe has little to do with factual knowledge of benefits and harms.

Repeated one-sided or unbalanced messages arise in part from the therapeutic illusion. These messages become entrenched in the minds of patients and physicians alike, leading to false beliefs. The magnitude of the effect of preventive care and intervention is often perceived to be well above reality. Even when experts might interpret an article as recommending against a screening test, laypeople might get a different message.²¹ Thus, many are surprised when they see the absolute numbers presented in clinical decision aids about screening.

Readers of this series will know that we have previously discussed at length both the possible benefits and harms of screening. We have also described tools to enhance shared decision making that can help us convey these difficult concepts.²² Visual aids are helpful in getting this counterintuitive message across.²³

Over the smoke screen: the good, the bad, and the ugly of screening in the media

The good: nuance and accurate information. Print journalists and those who share information on social media and radio need to get the message right. They have a critical role to play, as they reach a wide audience. Highlighting the balance between possible benefits and harms can be achieved, and some do provide just and accurate information (**Box 1**).²⁴ A brilliant example is Renée Pellerin's book *Conspiracy of Hope* about breast cancer screening.²⁵

Some journalists have the resources to dig deeper and offer the full story, which is never as simple as “screening saves lives.” Ultimately they depend on their sources and this represents a challenge. Individuals who directly profit from more screening seldom make that information transparent or available and might not give opposing arguments. Acquiring original sources instead of relying on press releases is helpful in balancing information.

Discussions about screening need to be nuanced. They need to reflect what is known on the subject to tackle myths and misconceptions. The goal of a good report is not to influence, but to inform. Explaining that earlier detection is not equal to increased survival and that possible benefit needs to be balanced by possible harms is difficult and demands deeper thinking.

The bad: nurturing our therapeutic illusion. Many journalists do not have the background knowledge to understand what screening can and cannot do, and would probably benefit from basic epidemiology

Box 1. Checklist of criteria for high-quality health reporting

How do you tell if a media report is presenting balanced information?

- The story adequately quantifies the benefits of screening:
 - The numbers are presented in absolute terms
 - The reported results are clinically important (not just statistically significant)
 - The difference between population risk and individual risk is explained
 - The story explains how this might affect health or quality of life (does not report only on surrogates)
 - The story does not rely too much on anecdotes
 - The story reports all outcomes (not just the secondary ones that show a positive result; eg, reporting on increased detection but not on patient-oriented outcomes such as the effect on mortality)
- The story adequately explains or quantifies the harms of screening:
 - There is an explanation about common harms (eg, false positives, overdiagnosis) and their common consequences (eg, labeling, overtreatment, unnecessary tests)
 - The numbers are presented in absolute terms
- There is a discussion about the balance of benefits and harms
- The story compares different alternatives (screening vs not screening)
- The story clearly reports for whom this might be an appropriate option (eg, which age group) without inferring that it might apply more broadly
- The story discusses the quality of the evidence:
 - Explains the scientific basis of the recommendation
 - a systematic review of the literature vs an expert opinion
 - randomized trials or observational data
 - Discusses the shortcomings of the evidence
- The story does not incite “disease-mongering” (ie, it promotes public awareness, not the selling of tests or treatments)
- The story uses independent sources and identifies conflicts of interest
 - The story relies on the recommendations given by independent bodies (eg, the Canadian Task Force on Preventive Health Care)
 - If there are conflicts, the story reports how were they handled

Adapted from HealthNewsReview.org.²⁴

training.²⁶ They might not appreciate the pitfalls of “medicine by press release” as opposed to the benefits of a critical analysis of primary research. Other hazards include reporting on studies that asked the wrong question; presenting statistically significant results as if they were clinically important; and not recognizing

studies with inappropriate designs and biased samples, or which analyze data incorrectly. While this might lead to faulty communications or incomplete information, there is no intent to mislead.

A common pitfall is to present benefit with relative numbers and harm with absolute numbers. If we say that prostate cancer screening decreases this specific cancer mortality at 10 years by 15% and tell you that the risk of being overdiagnosed is 3% (given a true diagnosis of cancer, but the cancer you have would not have given you any symptoms), would you realize that 15% was a relative number (representing 1 fewer prostate cancer death per 1000 men screened over 13 years) while the 3% was an absolute number, equivalent to 33 men per 1000 screened?

Reporting numbers in relative terms without specifying it and without providing the information in absolute terms is misleading and should be avoided. Putting forward outcomes that are not important to patients (eg, doubling of creatinine level) while ignoring outcomes important to patients (eg, amputation) is also misleading. Examples of common shortcomings in media reports are given in **Table 1**.^{2,27-39}

The ugly: willingly promoting interests different from patients' interests. One cannot underestimate the importance of the media in setting the public agenda. Many organizations are aware of how powerful the media can be in promoting their own interests under the cover of promoting patients' wellness. Unfortunately, at times there is deliberate misrepresentation of the facts and such untruths then become “real facts” for many. Some organizations (eg, device manufacturers, pharmaceutical companies, patent or shareholders, screening organizations) wish to manipulate public opinion and allow false beliefs to become “evidence” (eg, antivaccination groups still citing Wakefield's flawed study about the measles-mumps-rubella vaccine and autism⁴⁰). This promotes sharing and resharing of skewed information. A study by Döbrössy et al notes that “unscientific statements shared by lay people are frequently not minor misunderstandings but fundamental to the scientific rationale of screening.”⁴¹

For example, if a company is selling diagnostic equipment, they are happy to report how their technology reveals more cancers. However, they are unlikely to divulge that they have no studies demonstrating that this discovery decreases either mortality or the development of advanced cancer (eg, the stable incidence of metastatic breast cancer in screened populations⁴²). It is not enough to rely solely on diagnosing more early cancers. This is never a direct proof of benefit, as more sensitive technologies increase the risk of overdiagnosis and lead-time bias is present.

Final thoughts

A physician's recommendation is an important predictor of the uptake of screening interventions.⁴³ That underlines

Table 1. Common shortcomings of media reports

POTENTIAL SHORTCOMING	EXAMPLE OF BAD REPORTING	EXAMPLE OF GOOD REPORTING
Using a relative risk instead of (or without) an absolute risk	Press release by the NIH Screening for lung cancer decreases your risk of dying by 20%. ²⁷ The press release states the number of deaths in each group, but not the absolute risk reduction	Canadian Task Force on Preventive Health Care A discussion tool gives absolute numbers: 3 fewer individuals per 1000 will not die of lung cancer out of 1000 heavy smokers screened ²⁸
Confusing diagnostic procedures with screening	Fox News story Posts a story and a video about a 32-year-old woman who got a colonoscopy because of abdominal discomfort and weight loss. She encourages all young people to get screened ²⁹	HealthNewsReviews.org Explains the distinction between a diagnostic procedure and a screening procedure. In a screened population (without symptoms), the prevalence of disease is much less, so the benefits are less likely, but the harms are still present ³⁰
Only talking about benefits	Websites 98% of reports on lung cancer screening mention benefits, while only 48% present any harms ³¹	Article about communicating risk Reports benefits and harms of screening tests using absolute (or natural) numbers with the same denominator ³²
Reporting benefits in relative terms and harms in absolute terms	Time article about SPRINT SPRINT reported a 38% reduction in heart failure and a 43% reduction in deaths from heart problems (relative risk) with a 1% to 2% increase of side effects apart from falls (absolute risk) ³³	The published SPRINT results The absolute reduction for heart failure was 0.8% and for cardiovascular mortality was 0.6% ³⁴
Equating increased 5-y survival with benefits	Radio advertisement, New Hampshire, 2007 Oct 29 "I had prostate cancer 5, 6 years ago. My chances of surviving prostate cancer, and thank God I was cured of it, in the United States, 82%. My chances of surviving prostate cancer in England, only 44% under socialized medicine" ³⁵	HealthNewsReview.org Explains how 5-y survival statistics should not be used to report benefits of screening. Lead-time bias and overdiagnosis will increase the 5-y survival rate in the screened group, even if there is no true benefit ³⁶
Assuming benefit when screening leads to more detection of disease	Press release from a company making 3D mammography technology "We remain resolute in our commitment to developing innovative new technologies ... which [detect] more invasive cancers than conventional mammography, improving a woman's chance of survival" ³⁷	Testing Treatments "Finding more disease is not evidence of effectiveness. The possibility of overdiagnosis (which increases survival statistics) is always present. In the absence of studies confirming a benefit, we shouldn't imply one" ²
Thinking screening is the only reasonable choice	A video on Facebook Promotes prostate cancer screening by digital rectal examination or PSA. ³⁸ No explanations are provided about the total lack of evidence on the effectiveness of the digital rectal examination. There is no discussion about the option of not being screened, or about the possibility of being overdiagnosed	Globe and Mail column After reviewing the facts, the column clearly states that men should be informed before deciding to be screened or not ³⁹

NIH—National Institutes of Health, PSA—prostate-specific antigen, SPRINT—Systolic Blood Pressure Intervention Trial.

the need for primary care providers to understand the benefits and harms of screening; the need to refrain from recommending unproven screening tests; and the need for shared decision making when the benefits and harms are in close balance (eg, breast cancer screening).

Physicians will be asked by patients to discuss media stories that present incorrect or incomplete information about benefits and harms. To do this well, we need usable, balanced information (good knowledge translation tools) and the skills to understand how best to communicate benefit, risk, and effect size to patients.

Case resolution

You are more aware of the different ways information is conveyed. You now know you need to look for absolute

risk and balanced information about the benefits and risks of screening. You use the decision aid from the Canadian Task Force on Preventive Health Care on breast cancer screening¹ to inform Linda. She is surprised about the possible harms and understands there is no rush for her next mammogram. She is grateful for this information. She did not know there was a decision to make. She will continue to think about this and will make a decision later as to whether she will be screened.

You keep in mind the suggestions of Cochrane and Holland: "If a patient asks a medical practitioner for help, the doctor does the best possible. The doctor is not responsible for defects in medical knowledge. If, however, the practitioner initiates screening procedures the doctor is in a very different situation. The doctor should,

in our view, have conclusive evidence that screening can alter the natural history of the disease in a significant proportion of those screened.¹⁴⁴

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