

Evidence-based truths about the benefit of cancer screening

In my capacity as past Chair of the Cancer Care Member Interest Group of the College of Family Physicians of Canada and regular contributor to and coordinator of the Oncology Briefs series in *Canadian Family Physician*, I wish to express my profound concern that *Canadian Family Physician* would publish an article with such blatant misinformation as was found in “Debunking myths about screening. How to screen more judiciously.”¹ This article includes statements that are erroneous at best and dangerous at worst. The following are examples.

It is a myth that earlier detection of cancer results in better outcomes. In fact, earlier-stage cancer is directly correlated with reduced mortality, increased survival, and decreased morbidity of treatment, all of which are better outcomes than are seen in late-stage cancer.² The authors suggest that earlier detection needlessly identifies cancers that would not impact outcomes due to slow growth or regression. Scientific data do not support the spontaneous regression of cancers: in a study of 479 untreated breast cancers followed over 10 years, zero cancers spontaneously regressed or disappeared.³

It is a myth that newer technology produces more benefit. Age-standardized mortality rates have consistently declined in Canada since 1984 for breast, lung, prostate, and colorectal cancers.⁴ From 1975 to 2019, US breast cancer mortality decreased by 58%, attributable to both screening and treatment.⁵ These large mortality reductions reflect the evolution of cancer diagnostics and therapies that have revolutionized how we diagnose and treat cancers. To name just 2 examples, trastuzumab, a targeted agent, has reduced absolute 10-year mortality by 6.9% and all-cause mortality by 6.5% in patients with human epidermal growth factor receptor 2 (HER2)-positive breast cancers.⁶ Adjuvant immunotherapy in patients with unresectable stage III non-small cell lung cancer has reduced the risk of death by 28% at 5 years compared with placebo.⁷

It is a myth that cancer screening saves lives. The 5-year survival for women for stage I breast cancer is 100%, for stage III is 74%, and for stage IV is 23%.⁸ Non-small cell lung, colorectal, and cervical cancers have similar declines in survival with advancing stage.⁹⁻¹¹ Cancers diagnosed through screening are earlier-stage cancers with better survival and decreased mortality, meaning that lives are saved.

Cancer screening is not for everyone and patient preferences and comorbidities must always be considered when engaging in shared decision making on this topic. I strongly believe that Canadian family physicians are educated enough and have enough common sense to have screening discussions judiciously so as to avoid

overdiagnosis in patients with competing medical issues or advanced age. The statements made by the lead author and colleagues in this article risk misinforming a nation of family physicians about the pros and cons of screening. The publication of this misinformation is especially concerning given that the author holds the influential and, theoretically, neutral position of Co-Chair of the Canadian Task Force on Preventive Health Care, the national body that determines screening guidelines for our country.

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Competing interests
None declared

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Response

In reflecting on the points raised by Dr Wilkinson in the May 2024 issue of *Canadian Family Physician*,¹ we would like to offer the following responses.

On earlier detection. On how earlier detection is needlessly identifying cancers that would not impact outcomes, Dr Wilkinson wrote: “Scientific data do not support the spontaneous regression of cancers: in a study of 479 untreated breast cancers followed over 10 years, zero cancers spontaneously regressed or disappeared.”^{1,2}

We are puzzled by this point, as spontaneous regression is tangential to our question: Does earlier detection of cancer result in better health outcomes? On this, the most important question, we provided 3 examples in cancer screening (ie, melanoma, neuroblastoma, and thyroid cancer).³ Scientists know that high-quality evidence is

required to be confident that earlier is better. To counter this point in our article, Dr Wilkinson referenced a single cohort study of the persistence of screen-detected breast tumours (ductal carcinoma in situ or invasive cancer).^{1,2} This reference was to an observational study that did not report health benefits that would truly matter to patients. As we write this letter, the benefit of detecting ductal carcinoma in situ remains uncertain.

Bottom line? Earlier detection is essential for screening to be of benefit. Importantly, early detection is often not beneficial.

On new technology. On newer technology and health benefits for our patients, Dr Wilkinson wrote: “From 1975 to 2019, US breast cancer mortality decreased by 58%, attributable to both screening and treatment.”¹

To be clear, we referred to technology in our article in the context of imaging for cancer screening.² However, Dr Wilkinson is touting the benefits of newer “cancer diagnostics and therapies.”¹ Interestingly, as cancer treatment improves, screening to achieve earlier detection becomes less important. In the context of screening, it is challenging to disentangle the fraction of cancer deaths prevented by improved treatment from that attributable to improved imaging. Research shows improvements in treatment were responsible for most of the observed reduction in breast cancer mortality in the United States.⁴

On screening saving lives. On the point that “Cancers diagnosed through screening are earlier-stage cancers with better survival and decreased mortality, meaning that lives are saved,”¹ 5-year survival statistics are presented as evidence.

An early article in the Prevention in Practice series made the following key point: In screening for cancer, appropriate outcome measures for determining benefit include overall and disease-specific mortality; inappropriate measures include incidence (new cases) and 5- or 10-year survival.⁵ The use of a metric such as 5-year survival is highly inappropriate to judge the effect of screening because of the problems of lead-time bias, length-time bias, and overdiagnosis of screening-detected cancers. By definition, an overdiagnosed cancer does not kill. Overdiagnosis, lead-time bias, and length-time bias lead to a mirage of benefit.

To contend that lives are saved at the population level is inaccurate, as explained in our article. This important point received further support from a recent analysis of estimated lifetime gained by cancer screening tests.⁶

We would all hope to reduce premature mortality from cancer, or indeed from any disease. Our patients need clinicians who relay accurate information they can understand in a calm, nonemotional way. It is profoundly unjustified to suggest that members of the Canadian Task Force on Preventive Health Care are anti-screening when we write about the science and the

need to balance potential harms against any benefits of cancer screening.

Our patients would be better served by collective efforts to attack our lack of knowledge about screening, rather than continuing to attack the myths or those who point to them. We suffer from many knowledge gaps with respect to the value of cancer screening interventions, including that of newer screening tests. Randomized controlled trials are sorely needed to address these gaps.

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Competing interests

None declared

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Correction

In the article “Approach to working with at-risk patients expressing a desire for discharge,”¹ which appeared in the March 2024 issue of *Canadian Family Physician*, the acknowledgment was inadvertently omitted. It should have read as follows:

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The online version of this article has been corrected.

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