Screening for Breast Cancer

TO THE EDITOR: In 2009, the U.S. Preventive Services Task Force (USPSTF) recommended that starting regular screening mammography before the age of 50 years should be an individual decision that takes patient context into account, including the patient’s values regarding specific benefits and harms (1, 2). As a metric, Nelson and colleagues (3) calculated the number needed to invite (NNI) to screening to prevent 1 death from breast cancer by conducting a meta-analysis of several trials. They concluded that the net benefit is smaller for women aged 40 to 49 years with a larger NNI than for women aged 50 to 59 years. However, they did not consider different follow-up periods when comparing NNI by age group. For women aged 40 to 49 years, the average follow-up varied from 10.7 to 16.8 years in 8 trials included in the meta-analysis, whereas follow-up varied from 12.9 to 18.1 years for women aged 50 to 59 years in 5 trials and from 14.3 to 15.5 years for women aged 60 to 69 years in 2 trials. Shorter follow-ups for women aged 40 to 49 years will lead to lower cumulative mortality, which results in an overestimation of NNI.

We aimed to estimate the NNI adjusted by the follow-up period in each available study to compare NNIs between different age groups. We applied similar methods and included similar mammography trials to those used in Nelson and colleagues’ meta-analysis (3). We conducted a meta-analysis of the trials to estimate the pooled relative risk (RR) from a random-effects model under a Bayesian analysis by using the WinBUGS package (MRC Biostatistics Unit, Cambridge, and Imperial College School of Medicine, London, United Kingdom) (4). We included 8 trials (5–10), 5 trials (5, 9, 10), 2 trials (5), and 1 trial (5) for women aged 40 to 49 years, 50 to 59 years, 60 to 69 years, and 70 to 74 years, respectively. The NNI to screening to prevent 1 breast cancer death was defined by the USPSTF as the inverse of the absolute risk reduction. Here, the risk was the mortality rate during follow-up (death per person). In considering the follow-up period of studies, we estimated NNI by using the mortality rate per year (death per person-year). The estimated NNI was based on a 1-year follow-up. Thus, when we compared the NNI on the assumption that the follow-up was x years, we divided the estimated NNI by x. We tried to estimate the NNIs on the assumption of 10-, 15-, and 20-year follow-ups.

The pooled RRs and NNIs for reducing breast cancer mortality in Nelson and colleagues’ report and our estimates calculated by the WinBUGS package are shown in the Table. When comparing NNIs, the follow-up period directly affects the results. The NNIs are necessarily greater in shorter follow-ups, which means that, if not adjusted for follow-up, the NNI can be overestimated for younger age groups with relatively shorter follow-ups. The USPSTF recommendations for mammography screening stated that an NNI of 1904 for women aged 40 to 49 years was too high, yet an NNI of 1339 for women aged 50 to 59 years was adequate (2). However, when we adjusted for the follow-up of the trials, the estimated NNIs for women aged 40 to 49 years were 1599 with a 15-year follow-up and 1199 with a 20-year follow-up. Whatever the conclusion, it should not be based on biased estimates of NNIs for reducing breast cancer mortality by age group.

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References


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IN RESPONSE: We agree with Dr. Saika and colleagues that adjustment for follow-up time when estimating the NNI to mammography screening to prevent 1 breast cancer death provides more comparable results across age groups. However, the purpose of our meta-analysis was primarily to determine the effectiveness of mammography screening in reducing breast cancer mortality among women in their 40s, not to determine differences between age groups. Estimates of NNI are a way to illustrate magnitudes of effect that may be more relevant to clinical applications than RRs for some audiences. These estimates were calculated in the 2002 review (1), and we provided them in the updated review for consistency. Results indicate imprecise point estimates with overlapping confidence intervals that do not differentiate the 3 age groups in both the unadjusted NNI estimates and the estimates adjusted for follow-up provided by Dr. Saika and colleagues.

In general, NNI estimates would be expected to decrease with longer follow-ups for any event that accumulates over time, and Dr. Saika and colleagues results are consistent with this. However, their results are also a consequence of dividing the NNI estimates by the follow-up period, thereby imposing an inverse relationship by definition rather than allowing the data to reveal such a relationship. Their calculations also assume that the mortality rate is the same across all follow-ups, which may not be accurate, and for 20 years after screening, a period for which data are not yet available.

The USPSTF enlisted a more rigorous approach than using NNI estimates to evaluate ages to initiate and discontinue screening by commissioning statistical models from the Cancer Intervention and Surveillance Modeling Network (CISNET) (2). The USPSTF final recommendations (3) were based on its determination of the balance of benefits and harms of screening mammography for specific age groups from multiple data sources detailed in our evidence review and the CISNET report (2). Our NNI estimates were only 1 piece of this puzzle.

Also, to clarify, we included the Canadian National Breast Screening Study-2 (4) in our analysis of women age 50 to 59 years, although the reference in our review was incorrectly cited as the Canadian National Breast Screening Study-1.

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References

The Need for Biomedically and Contextually Sound Care Plans in Complex Patients

TO THE EDITOR: Weiner and colleagues (1) provide evidence that error-free treatment plans are rarely created for patients with biomedical and contextual complexity (9%) and are not commonly created for those with contextual (22%) or biomedical (38%) complexity alone. This is not surprising given that primary care physicians are already expected to devote 1.5 times their available patient contact hours to providing preventive, long-term care, and acute medical services (2). Nonetheless, implementing improved skills in error-free or, at least, error-reduced care plans for the complex 1% to 5% of patients who use one quarter to one half of health resources (3) will be essential for patient-centered medical homes and accountable care organizations to succeed in augmenting quality care and lowering health-related costs (4). Barriers to improvement in these most needy patients, whose care is expensive, can be removed only through consistent identification and outcome-changing intervention, including contextual life-situation support.

Weiner and colleagues thus raise a practical, system-based question in this time of health reform: Can already overtaxed clinicians be expected to personally uncover and create individualized care plans in patients with biomedical and contextual complexity? Logically, to do so would require decreasing the number of patients per physician panel, thereby increasing available patient contact time; expanding the number of treatment-level clinicians (for example, physicians, physician assistants, nurse practitioners); or adding speci-
cialized support personnel to clinician teams, such as case managers (5), who can assist treating practitioners in individualizing biopsychosocial and health system support for complex patients.

As physicians intimately involved in augmenting the care of patients with health complexity, we see Weiner and colleagues’ findings as a clinical challenge for physicians who wish to practice quality medicine. Perhaps a greater challenge, however, is for those involved in enhancing system-level care delivery (for example, in designing patient-centered medical homes or accountable care organizations) to create financially sustainable practice environments that allow practitioners time to consistently address biomedical and contextual needs in patients with complicated life and health situations.

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Potential Conflicts of Interest: The authors own a health complexity and physical and mental health integration medical management company.

References

IN RESPONSE: A finding of our study that surprised us was that although physicians who spent more time with patients were more likely to probe for biomedical or contextual red flags, they were not more likely to provide contextually appropriate care. For example, in the case of a patient whose health literacy problems accounted for an inability to dose his diabetes medications correctly, physicians more often identified the literacy issue during longer visits but were not more likely to appropriately intervene. Physicians who intervened, however, did not on average have longer visits. Physicians who avoid contextual errors seem to think differently, considering context not as an afterthought but instead as a part of the clinical reasoning process. We recently studied an educational intervention that suggests such reasoning processes can be effectively taught (1).

Drs. Kathol and Kathol propose that if physicians had more time and specialized support personnel, such as case managers and midlevel providers, they would be more likely to provide contextually appropriate care. Although we did not find that additional time alone helped, the combination of additional time and a medical home environment might substantially improve care. Physicians who, during longer visits, unmasked health literacy problems as the root cause of a patient’s poor diabetes control may simply have concluded that there was nothing they could do about it, without having, for instance, a diabetes educator who could assist. We share the concern that the major challenge for physicians involved in enhancing system-level care delivery is designing financially sustainable practice environments that support physicians who have developed the cognitive skills to individualize care, with the resources and tools needed to do so.

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Potential Conflicts of Interest: None disclosed.

Reference

Correction

Correction: Acute Sinusitis

In the recent In the Clinic on acute sinusitis (1), the figure title on page ITC3-2 was incorrect. The correct title is: “Diffuse pansinusitis with mucosal thickening and polyposis in the anterior sinuses.” This has been corrected in the online version.

Reference